

STANDARD PROJECT FICHE

**FURTHER DEVELOPMENT OF A NATIONAL CONFORMITY
ASSESSMENT SYSTEM AND METROLOGY INFRASTRUCTURE**

Contents

| | | |
|-----------------|--|-------------------|
| 1. | <u>Basic information</u> | <u>page № 4</u> |
| 1.1 | <u>Cris number</u> | <u>page № 4</u> |
| 1.2 | <u>Title</u> | <u>page № 4</u> |
| 1.3 | <u>Sector</u> | <u>page № 4</u> |
| 1.4 | <u>Location</u> | <u>page № 4</u> |
| 1.5 | <u>Duration</u> | <u>page № 4</u> |
| 2. | <u>Objectives</u> | <u>page № 4</u> |
| 2.1 | <u>Overall objective(S)</u> | <u>page № 4</u> |
| 2.2 | <u>Project purpose</u> | <u>page № 4</u> |
| 2.3 | <u>Accession partnership (ap) and npaa priority</u> | <u>page № 4</u> |
| 2.4 | <u>contribution to national development plan (and/or structural funds development plan/sdp)</u> | <u>page № 4</u> |
| 2.5 | <u>Cross border impact</u> | <u>page № 5</u> |
| 3. | <u>Description</u> | <u>page № 5</u> |
| 3.1 | <u>Background and justification</u> | <u>page № 5</u> |
| 3.2 | <u>Sectoral rationale</u> | <u>page № 10</u> |
| 3.3 | <u>Results</u> | <u>page № 10</u> |
| 3.4 | <u>Activities (including means)</u> | <u>page № 12</u> |
| 3.5 | <u>Linked activities</u> | <u>page № 15</u> |
| 3.6 | <u>Lessons learned</u> | <u>page № 20</u> |
| 4. | <u>Institutional framework</u> | <u>page № 22</u> |
| 5. | <u>Detailed budget</u> | <u>page № 25</u> |
| 6. | <u>Implementation arrangements</u> | <u>page № 27</u> |
| 6.1 | <u>Implementing agency</u> | <u>page № 27</u> |
| 6.2 | <u>Twinning</u> | <u>page № 28</u> |
| 6.3 | <u>Non-standard aspects</u> | <u>page № 28</u> |
| 6.4 | <u>Contracts</u> | <u>page № 28</u> |
| 7. | <u>Implementation schedule</u> | <u>page № 28</u> |
| 7.1 | <u>Start of tendering/call for proposals</u> | <u>page № 28</u> |
| 7.2 | <u>Start of project activity</u> | <u>page № 28</u> |
| 7.3 | <u>Project completion</u> | <u>page № 29</u> |
| 8. | <u>Equal opportunity</u> | <u>page № 29</u> |
| 9. | <u>Environment</u> | <u>page № 29</u> |
| 10. | <u>Rates of return</u> | <u>page № 29</u> |
| 11. | <u>Investment criteria</u> | <u>page № 29</u> |
| 11.1 | <u>Catalytic effect</u> | <u>page № 29</u> |
| 11.2 | <u>Co-financing</u> | <u>page № 29</u> |
| 11.3 | <u>Additionality</u> | <u>page № 29</u> |
| 11.4 | <u>Project readiness and size</u> | <u>page № 29</u> |
| 11.5 | <u>Sustainability</u> | <u>page № 30-</u> |
| 11.6 | <u>Compliance with state aids provisions</u> | <u>page № 30</u> |
| 12. | <u>Conditionality and sequencing</u> | <u>page № 30</u> |
| <u>Annex 1</u> | <u>Logframe in standard format</u> | <u>page № 34</u> |
| <u>Annex 2</u> | <u>Detailed implementation chart</u> | <u>page № 50</u> |
| <u>Annex 3</u> | <u>Contracting and disbursement schedule, by quarter, for full duration of project (including disbursement period)</u> | <u>page № 51</u> |
| <u>Annex 4</u> | <u>Pre-feasibility study</u> | <u>page № 52</u> |
| <u>Annex 4A</u> | | <u>page № 73</u> |

| | | |
|-----------------|--|-------------------|
| <u>Annex 4B</u> | | <u>page № 85</u> |
| <u>Annex 4C</u> | | <u>page № 91</u> |
| <u>Annex 4D</u> | | <u>page № 94</u> |
| <u>Annex 4E</u> | | <u>page № 95</u> |
| <u>Annex 4F</u> | | <u>page № 99</u> |
| <u>Annex 5</u> | <u>Preliminary forecast</u> | <u>page №112</u> |
| <u>Annex 6</u> | <u>Need assessment of conformity assessment bodies</u> <u>relating to component 5</u> | <u>page № 132</u> |
| <u>Annex 7</u> | <u>Reference list of relevant laws and regulations</u> | <u>page № 204</u> |
| <u>Annex 8</u> | <u>Reference list of relevant strategic plans and</u> <u>studies</u> | <u>page № 206</u> |
| <u>Annex 9</u> | <u>List of acronyms and abbreviations</u> | <u>page № 207</u> |

STANDARD PROJECT FICHE

1. Basic Information

1.1 **CRIS Number: 2006/018-343.02.01**

1.2 **Title: Further development of a national conformity assessment system and metrology infrastructure**

1.3 Sector:

1.4 Location: Bulgaria, Sofia

1.5 Duration:

Phase 1 – 2005 – duration 21 months;

Phase 2 – 2006 – duration 21 months

2. Objectives

2.1 Overall Objective(s):

Facilitating Bulgaria's integration into the EU's Internal Market through enhancement of exportability and competitiveness of priority Bulgarian industrial sectors.

2.2 Project purpose:

The project purpose is to ensure provision of adequate and reliable services to Bulgarian industry and relevant protection and safety of society by means of:

- **Strengthening the administrative and technical capacity** of the institutional infrastructure concerned with the national conformity assessment system, including fundamental and legal metrology institutions, national market surveillance and designating authorities and accreditation system with respect to the implementation of basic strategy documents, New Approach legislation and alignment with the EU practice;
- **Exchange and provision of information in the field of conformity assessment** by means of establishing a state-of-the-art information management system, serving the activities of the institutional units involved, including a national contact point for the economic operators offering services in electronic way.

2.3 Accession Partnership (AP) and NPAA priority

Priorities defined in the Accession Partnership 2003 as regards the ability to assume the obligations of membership

Free movement of goods

- Take necessary horizontal and procedural measures.
 - Strengthen administrative capacity in the field of standardisation and support the development of the conformity assessment bodies and laboratories.
- Ensure that the transposition of all New and Old Approach Directives is completed and that the texts are fully in line with EC legislation.

2.4 Contribution to National Development Plan (and/or Structural Funds Development Plan/SDP)

Not applicable

2.5 Cross Border Impact
Not applicable

3. Description

3.1 Background and justification

Since the beginning of the accession negotiations Bulgaria has made a significant progress towards the harmonization of the European legislation in the field of free movement of goods which has been acknowledged by the last several Regular Reports of the European Commission. The provisional closing of Chapter 1 "Free movement of goods", part of which are "Legal metrology and pre-packaged products" and "New Approach Directives" requires efforts to be focused mainly on transposition and enforcement measures.

The main needs of Bulgarian industry are as follows:

- Free access to the European market;
- Recognition of testing and measurement results;
- Recognition of accredited certificates;
- Services at reasonable prices;
- Confidence in Bulgarian conformity assessment system

In respond to the stated needs in 2002 Bulgaria started negotiations for signing Protocol to the Europe Agreement on Conformity Assessment and Acceptance of industrial products (PECA). It is evidence of the EU recognition of the Bulgaria's advances made in aligning national legislation and practice with the European one. At the current stage PECA negotiations cover six sectors - LVD, EMC, Machinery, Lifts, Gas Appliances and Toys. After PECA entering into force (by the end of 2005) Bulgaria will participate fully in the Community internal market in the products concerned. As a result the Bulgarian industry will face the competitive pressure of the European single market.

Bulgarian state authorities, business partners and non-governmental organizations have reviewed and discussed their readiness to meet the European single market challenges after joining the EU. As a result a Strategy for enhancement of the quality policy through development of national policies on systems of standardisation, metrology and accreditation, national conformity assessment and market surveillance of industrial products and an Implementation Plan were developed. These strategy documents were adopted by Decision № 949/07.12.2004 of the Council of Ministers.

The main strategy goals are directed towards:

- Strengthening the national conformity assessment system;
- Recognition of test, calibration, certification and inspection results;
- Effective market surveillance to support consumer protection.

For the implementation of that strategy, the efforts of the authorities are directed towards enforcement of measures through strengthening the established institutional infrastructure and improving economic operators' awareness. The efforts are, in particular, focused on interrelated activities between fundamental and legal metrology, conformity assessment and accreditation systems and market surveillance.

According to the Law amending the Law on Measurements (published in State Gazette, No. 95/01.11.05) State Agency for Metrology and Technical Surveillance

was re-organised into State Agency for Metrological and Technical Surveillance (SAMTS) after Directorate General “National Center of Metrology” and Directorate General “Measures and Measuring Instruments” have been segregated from the Agency. On the basis of the directorates segregated a Bulgarian Institute for Metrology was established.

In the New Approach sectors, the State Agency for Metrological and Technical Surveillance retains the overall responsibility for designation of conformity assessment bodies and for implementation of market surveillance activities. The Agency’s basic obligations related to the above-mentioned fields are stipulated in the Law on Measurements and Law on Technical Requirements for Products (LTRP).

In Bulgaria the public affairs related to ensuring traceability, accuracy and reliability of measurements are regulated by the Law on Measurements. The EU legislation in the field of legal metrology and pre-packages is transposed into Bulgarian legislation through the Law and respective secondary legislation.

In the Republic of Bulgaria the task of establishing traceability of measurement results to the international measurement standards is assigned to Directorate General "National Center of Metrology" (DG "NCM"), the national metrology institution, which at the current stage is a structural unit within the newly established Bulgarian Institute for Metrology (BIM).

In 1999 State Agency for Metrology and Technical Surveillance, DG “NCM” signed CIPM Mutual recognition of national measurement standards and of calibration and measurement certificates issued by a national metrology institute (MRA). With respect of the latter special efforts are to be made by DG “NCM” on establishing new calibration and measurement capabilities (CMC). At the current stage 15 of the NCM CMC have been approved while 152 are at different stages of approval.

Taking into consideration the requirements of priority industry sectors as specified in the guidance documents - Middle-term Strategic Planning and Long-term Orientation Plan for development of national measurement standards and infrastructure of calibration laboratories, adopted under Phare 2000 programme, NCM still needs strengthening of its technical expertise and measurement capacity. On the basis of these guidance documents “Long-term program for the development of the national measurement standards of the Republic of Bulgaria for the period 2004 – 2010” was developed and adopted by Decision of the Council of Ministers. Through the technical assistance and supply of equipment envisaged for NCM within the project framework the attainment of the Programme’s objectives and satisfaction of the priority industry needs will be strongly supported. Special attention is given to the international recognition of the NCM Calibration Certificates in the fields of thermometry, flow rate, length, optic and force measurements, further development of NCM knowledge management system and enhancement of expertise in new fields such as nano-metrology, quantum effect, cryogen radiometry, X-ray dosimetry, ion-exchanged chromatography and radio-frequency measurements.

BIM is the body, which is responsible for the implementation of the governmental policy in the field of legal metrology. In accordance with the Law on Measurements and in order to ensure accuracy and reliability of measurement results all measuring instruments that are used in the health sector, public safety, environmental protection, state and municipal receivables and commercial payments are subject to metrological control. The task for performing metrological control is assigned to

Directorate General "Measures and Measuring Instruments" (DG "MMI"), which is a separate unit within the BIM structure.

In the light of the recently adopted by the European Parliament and the Council New Approach Directive 2004/22/EC on Measuring Instruments (MID), which will be transposed into Bulgarian legislation as an Ordinance under LTRP, significant efforts are required as regards undertaking relevant enforcement measures. This issue addresses both the EU Member States and Bulgaria as an applicant country. Preparation of the MID implementation in Bulgaria has already been undertaken through a self-evaluation and analysis of the existing administrative and measurement capacity within the respective structural units within BIM and SAMTS - Directorate General "Measures and Measuring Instruments" and Directorate General "Metrological Supervision" (DG "MSv") respectively.

The forthcoming MID implementation requires specific support as regards the establishment of measuring instruments conformity assessment-related infrastructure. This process will concern the existing structural units within SAMTS (DG "MSv") and BIM (DG "MMI") as well as other potential players in the field.

Through establishment of BIM a potential conflict of interests between the different activities related to conformity assessment, designation of conformity assessment bodies and market surveillance will be avoided. On the other hand, a separate independent conformity assessment body for measuring instruments covered by MID will be set up. The project will facilitate establishment of necessary implementation practice in conformity assessment and market surveillance of measuring instruments covered by MID and support economic operators' awareness. In the project activities will be involved all potential conformity assessment bodies in the field of MID. For strengthening the DG "MMI" technical capacity as a future designated body testing equipment for conformity assessment of particular types of measuring instruments is planned to be supplied. These legislative amendments and structural re-organisation will in no way adversely affect the proper implementation of activities to be undertaken within the present project.

The Law on Technical Requirements for Products (LTRP) as a horizontal framework law provides for carrying out conformity assessment and market surveillance activities required by the respective New Approach Directives, as well as technical inspection of high-risk equipment. The law also assigns the functions relating to designation of conformity assessment bodies (CABs) only to SAMTS through its Directorate "Designation of Conformity Assessment Bodies" (D "DCABs"), except in the field of construction products where they remain responsibility of the Ministry of Regional Development and Public Works. Those two institutions are the designating authorities with regard to the adopted New Approach Directives. By 10 February 2006 forty nine (49) designations were granted in the scope of twelve (12) New Approach Directives (one designation means one designated body under a particular ordinance).

Cooperation and joint activities between SAMTS Directorate "DCABs" and EA "BAS" are of significant importance for establishing reliable and effective designation process. In order to align with European latest developments in the New Approach field it is necessary to introduce the approach based on the use of accreditation for designation purposes, for which the respective project activities are proposed.

The LTRP stipulates the rules for performing market surveillance of the products placed on the market and/or put into service, covered by the New Approach Directives as well as in-service inspection of high-risk equipment were precisely

laid down. According to the provisions of the law the SAMTS carries out market surveillance through Directorate General "Market Surveillance" (DG "MS") and is responsible for in-service inspection of high-risk equipment through Directorate General "Technical Inspection" (DG "TI"). At present the market surveillance activities, effectively carried in the country, are related mainly to products intended for the end consumers. This project aims at establishment of the required knowledge and experience for performing market surveillance of products intended for industrial use in terms of development of the respective working procedures and their practical implementation.

SAMTS through its Directorate General "Metrological Supervision" will be the responsible institution for carrying market surveillance of non-automatic weighing instruments, measuring instruments under the scope of MID and medical devices with measuring functions.

The Executive Agency "Bulgarian Accreditation Service" (EA "BAS") is the national accreditation body. EA "BAS" has adopted a Strategy for accession to EA MLA in the different fields. Since 2001, the Agency is a full member of European cooperation for Accreditation (EA). The full EA "BAS" membership of EA led to signing EA Memorandum of Understanding in June 2001, thus enabling the Agency to apply for a signatory to the EA Multilateral Agreements. In December 2002 BAS submitted an application for a signatory to the EA Multilateral Agreements, and in March 2005 EA MAC passed decision EA "BAS" to sign MLAs in the fields of quality management systems certification bodies and personnel certification bodies. Recent developments indicate that with the expected status of a signatory to EA MLAs, EA "BAS" has occupied a growing share of client interest within its fields of accreditation: testing laboratories and calibration laboratories, quality management systems certification bodies, product certification bodies, personnel certification bodies, inspection bodies and environmental management systems certification bodies.

EA "BAS" capacity strengthening as a follow up from previous preparation to signing EA MLAs, becomes even more important in view of maintaining its competence as a signatory and enhancing the Bulgarian market for accession to EU. All sectors of the Bulgarian economy, and in particular those of strong competitiveness, inter alia

- foodstuffs,
- chemistry and chemical products,
- textiles,
- pharmaceuticals

need accredited certification bodies, in order to operate effectively and meet the challenges of the EU single market. Along with the first two MLAs which are expected to be signed on the forthcoming General Assembly of EA, EA "BAS" will need to meet requirements not only within the more traditional fields such as testing laboratories and calibration laboratories, but also in the fields of product certification bodies, inspection bodies and environmental management systems certification bodies. EA "BAS" staff should gain experience with the specific requirements of **Eco-Management and Audit Scheme (EMAS) and Good Laboratory Practice (GLP)**.

It is therefore important that effort is made towards international recognition through all MLAs as soon as possible. Cooperation and joint activities between SAMTS

Directorate "DCABs" and EA "BAS" are of significant importance for establishing reliable and effective designation process.

In terms of economic impact that would result in:

- enhanced market accession opportunity for the Bulgarian operators
- greater confidence in the quality of services provided by laboratories, certification and inspection bodies;
- continuous development of quality systems of accredited subjects;
- continuous improvement of quality of services and skills of personnel employed by the accredited subjects and of used technical facilities;
- economic benefits for the accredited subjects and their clients.

The Bulgarian economic operators have good knowledge of basic New Approach principles. However, a significant number of these operators are still not fully aware of the responsibilities which they must assume under the new technical legislation as well as the carrying out of respective obligations. Therefore, further support is needed regarding the issue where business should go for answers to more detailed questions. Assistance and special advice is required in order to enable the establishment of a national point as a source of information on enforcement of and interpretations on the legislation which they can address.

The lack of technical assistance in this aspect can be a barrier to the Bulgarian enterprises in order to establish compliance with the regulations. Especially the Small and Medium-sized Enterprises have a high risk to lose business opportunities if they are not able to comply with the requirements. On the other hand, there is no information provider as regards the issues related to metrology, conformity assessment, accreditation and market surveillance at a national level. Provision of appropriate information exchange will bridge this gap and will contribute to raising the awareness of producers and importers and to reducing circulation of non-compliant goods.

An information system as well as a help-desk shall be established to assist the business in receiving information on NA Directives requirements and market surveillance practice. The implementation of this system would result in a real value-added in terms of shortening the delays in making information available to the economic operators.

At present SAMTS needs further support for effective exchange of information among its regional departments on the one hand and, on the other hand, between the market surveillance units and different market surveillance authorities within the country, such as customs authorities, Commission on Trade and Consumer Protection and other parties concerned in order to prevent placing non-compliant goods on the market.

The project proposed will contribute to the proper enforcement of *acquis* and implementation of the Strategy for enhancement of the quality policy through development of national policies on systems of standardisation, metrology and accreditation, national conformity assessment and market surveillance of industrial products. The latter will support the process of further strengthening the national conformity assessment system, in particular its administrative and technical aspects thus creating a basis for successful accession of Bulgaria to the EU.

3.2 Sectoral rationale
Not applicable

3.3 **Results:**

The project, consisting of four (4) components, foresees producing the following results in the different fields specified:

Year 1

A. Technical Assistance

Component 1: Fundamental Metrology

Technical Assistance for Directorate General “National Center of Metrology” (DG “NCM”)

R.1.1. NCM Knowledge Management System completely developed and effectively implemented.

R.1.2. Five (5) international comparisons performed creating prerequisites for international recognition of the NCM Calibration Certificates in the fields of thermometry, flow rate, length, optic and force measurements.

R.1.3. Six (6) NCM experts trained in specific new fields of measurements: nanometrology, quantum effect, cryogen radiometry, X-ray dosimetry, ion-exchanged chromatography, radio-frequency measurements.

Component 2: Legal Metrology

Technical Assistance for Directorate General “Measures and Measuring Instruments” (DG “MMI”) and Directorate General “Metrological Supervision” (DG “MSV”) and economic operators, including conformity assessment bodies (CABs)

R.2.1. Economic operators informed on MID implementation specifics.

R.2.2. 20 DG “MMI” experts and potential CABs personnel successfully trained in the implementation of conformity assessment modules under MID.

R.2.3. DG “MMI” quality system established and application for accreditation as product certification body by BAS submitted.

R.2.4. DG “MMI” business plan developed.

R.2.5 Enhanced expertise of DG “MMI” experts on utility meters related issues.

Component 3: Designation of conformity assessment bodies, accreditation and market surveillance

Technical Assistance for designation of conformity assessment bodies, accreditation and market surveillance

R.3.1. Established coordination mechanism and coherent approach of notified bodies in implementation of conformity assessment procedures under NA Directives.

R.3.2. Enhanced expertise of Bulgarian designated/notified bodies thus enabling them to provide competitive services to industry.

R.3.3. Improved technical expertise of 40 market surveillance inspectors on the NA Directives already in force as well as newly transposed ones with a special focus on goods intended for industrial use (Machinery, CIVEX, ATEX, PED, Recreational crafts, Lifts, MID etc.).

R.3.4. Interlaboratory comparisons in six (6) fields and three (3) proficiency testing schemes (PTs) organized and conducted.

R.3.5. EA MLA criteria to MLA signatories met in the fields of accreditation of calibration and testing laboratories, product certification bodies, environment management systems certification bodies and inspection bodies.

R.3.6. Launch procedure for signing EA MLA Protocols in the fields of:

- Calibration laboratories;
- Testing laboratories;
- Product certification bodies;
- Inspection bodies;
- Environmental management systems certification bodies.

R.3.7. Specific accreditation programmes for accreditation of candidate conformity assessment bodies under the New Approach Directives developed and implemented.

R.3.8. Accreditation used as a privileged tool for designation/notification and Bulgarian notification practice consistent with EU one.

B. Supply

Component 1: Supply of Equipment for Directorate General “National Center of Metrology”

R.1.4. Metrology laboratories operating in the priority fields defined in the Middle-term Strategic Planning equipped and operational, traceability of measurement standards established and ten (10) NCM experts trained in equipment use and operation as well as in software application.

C. Supply

Component 3: Supply of Equipment for Executive Agency “Bulgarian Accreditation Service”

R.3.11. State-of-the-art information system and IT equipment for BAS supplied and fully operational.

Component 4: Exchange and provision of information in the field of metrology, conformity assessment and market surveillance

R.4.1. State-of-the-art information system in BIM and SAMTS and IT equipment supplied and fully operational serving the needs of BIM and SAMTS administrative units as well as the other parties concerned (state authorities; economic operators, CABs etc.);

R.4.2. Application software developed and operational as follows:

- Document flow management software;
- Customer relationship management software;
- Enterprise resources planning.

Year 2

A. Technical Assistance

Component 2: Legal Metrology

Technical Assistance for Directorate General “Measures and Measuring Instruments” (DG “MMI”) and Directorate General “Metrological Supervision” (DG “MSv”) and economic operators, including conformity assessment bodies (CABs)

R.2.6. Twenty five (25) SAMTS inspectors successfully trained on the EU practice as regards the market surveillance of measuring instruments under the scope of the NA Directive on Measuring Instruments and on Non-Automatic Weighing Instruments (MID and NAWI).

R.2.7. Elaborated procedures for market surveillance of measuring instruments covered by MID and NAWI.

R.2.8. Eight (8) trainers, five (5) from BIM and three (3) from SAMTS, trained in Bulgaria and in an EU Member State on practical implementation of MID conformity assessment procedures and market surveillance respectively.

R.2.9. Twenty (20) BIM experts trained on practical implementation of conformity assessment procedures of medical devices with measuring functions.

Component 3: Designation of conformity assessment bodies, accreditation and market surveillance

Technical Assistance for designation of conformity assessment bodies, accreditation and market surveillance

R.3.9. Six (6) BAS assessors successfully trained in the specific requirements of EMAS (3 assessors/lead assessors) and GLP (3 assessors/lead assessors) as regards their implementation;

R.3.10. Integration and experience gained of BAS experts as a result of participation of 10 experts in the EA working/experts groups.

R.3.11. Ten (10) experts from SAMTS and Bulgarian Drug Agency (BDA) trained in implementation of the designation and surveillance procedures with respect of conformity assessment bodies for medical devices.

R.3.12. Improved market surveillance expertise of SAMTS and BDA inspectors on NA Directives on medical devices.

B. Supply

Component 2: Supply of Equipment for BIM

R.2.10. Testing and verification laboratories equipped and operational with respect of MID provisions, traceability of measurement standards established and 10 BIM experts trained in equipment use and operation as well as in software application (*see Annex 4*).

R.2.11. Testing and verification laboratories for medical devices with measuring functions equipped and operational with respect of MDD provisions, traceability of measurement standards established and 5 BIM experts trained in equipment use and operation (*see Annex 4*).

Component 5: Supply of Equipment for CABs in the field of NA Directives on electrical equipment designed for use within certain voltage limits, lifts and construction products

R.5.1. Testing equipment for conformity assessment of electrical equipment designed for use within certain voltage limits, lifts and construction products supplied and operational, and staff trained.

3.4 Activities (including means)

The activities undertaken within the project shall be implemented by means of two service and three supply contracts (for more details, please refer to the Logframe matrix – Annex 1).

Year 1

A. Technical Assistance

Component 1: Fundamental Metrology

Technical Assistance for Directorate General “National Center of Metrology” (DG “NCM”), BIM

A.1.1. Completing the development of the NCM Knowledge Management System in terms of adding new tools, including such related to NCM research activities as well as respective training modules;

A.1.2. Organisation and NCM participation in 5 international comparisons in the fields of thermometry, flow rate, length, optic and force measurements in order to establish required entries of Calibration and Measurement Capabilities;

A.1.3. Training of 6 NCM experts in EU metrology and/or associated institutes in the fields of nano-metrology, quantum effect, cryogen radiometry, X-ray dosimetry, ion-exchanged chromatography and radio-frequency measurements, specified in the Long-term Strategic Orientation Plan and Long-term Program for development of national measurement standards.

Component 2: Legal Metrology

Technical Assistance for Directorate General “Measures and Measuring Instruments” (DG “MMI”), BIM and Directorate General “Metrological Supervision” (DG “MSv”), SAMTS and economic operators, including conformity assessment bodies (CABs)

A.2.1. Organisation of awareness campaign on the MID implementation for economic operators;

A.2.2. Training of 20 DG “MMI” experts and potential CABs personnel on the implementation of the conformity assessment modules under MID;

A.2.3. Elaboration of the DG “MMI” quality system and preparation for accreditation of DG “MMI” as a product certification body for measuring instruments covered by MID;

A.2.4. Development of DG “MMI” business plan.

A.2.5. Participation of DG “MMI” experts in the regular meetings of WELMEC WG 11 “Utility meters”.

Component 3: Designation of conformity assessment bodies, accreditation and market surveillance

Technical Assistance for designation of conformity assessment bodies, accreditation and market surveillance

A.3.1. Establishing a coordination mechanism and strengthening of notified bodies working groups with respect to coherent application of NA conformity assessment procedures;

A.3.2. Effective participation of Bulgarian notified bodies in the work of the respective European notified bodies working groups;

A.3.3. Improvement of the technical expertise of 40 market surveillance inspectors on the NA Directives already in force as well as newly transposed ones with a special focus on goods intended for industrial use (Machinery, CIVEX, ATEX, PED, Recreational crafts, Lifts, MID etc.);

- Analysis of existing legislation and enforcement authorities relating to the NA product groups not intended for end-consumers;
- Study-visits in EU member-states operating similar market surveillance system;
- Organisation of regional workshops for dissemination of expertise acquired during the study-visits;
- Development of working procedures for market surveillance of product groups not intended for end-consumers;
- Organisation of joint market surveillance campaigns, in Bulgaria, covering at least three product groups.

A.3.4. Organisation and execution of six (6) interlaboratory comparisons (3 for testing laboratories and 3 for calibration laboratories) and three (3) proficiency testing schemes (PTs) for inspection bodies;

A.3.5. On the job training of 32 BAS assessors/lead assessors by EU accreditation body in order to meet the EA MLA signatory criteria in the following fields:

- Calibration laboratories – 5 expert missions;
- Testing laboratories – 10 expert missions;
- Product certification bodies – 5 expert missions;
- Inspection bodies – 10 expert missions;
- Environmental management systems certification bodies – 2 expert missions.

A.3.6. Re-evaluations/scope extension of BAS by EA evaluation team and entering EA MLAs;

A.3.7.1. Development of specific accreditation programmes for accreditation of candidate conformity assessment bodies under the New Approach Directives;

A.3.7.2. Training of 10 D "DCABs" experts and 20 BAS experts in the implementation of accreditation programmes;

A.3.8. Updating and improvement of D "DCABs" designation procedure with respect of accreditation programmes for CABs accreditation under the NA Directives and practical implementation (including on-the-job training of 3 D "DCABs" experts in a EU member-state accreditation body and notification authority);

B. Supply

Component 1: Supply of Equipment for Directorate General "National Center of Metrology", SAMTS

A.1.4. Procurement of metrology equipment for NCM standard laboratories operating in priority fields of measurements specified in the Middle-term Strategic Planning, including calibration traceable to internationally recognised measurement standards, putting into operation and training (see Annex 4).

Component 3: Supply of Equipment for Executive Agency "Bulgarian accreditation Service"

A.3.11. Procurement of a state-of-the-art information system, IT and training equipment for EA "BAS" to ensure operation of own and external assessor teams and administration for handling and tracking client contracts (see Annex 4).

Component 4: Exchange and provision of information in the field of metrology, conformity assessment, accreditation and market surveillance

A.4.1. Supply of equipment for establishment of a state-of-the-art information system and IT equipment in BIM and SAMTS in order to facilitate the fulfillment of all duties of the specialised administration as well as the requirements of related external parties (state authorities; economic operators, CABs etc.) (see Annex 4);

A.4.2. Development and putting into operation of application software serving BIM and SAMTS and national contact point activities:

- Document flow management software
- Customer relationship management software
- Enterprise resources planning.

Year 2

A. Technical Assistance

Component 2: Legal Metrology

Technical Assistance for State Agency for Metrological and Technical Surveillance (SAMTS), Bulgarian Institute for Metrology (BIM) and economic operators, including conformity assessment bodies (CABs)

A.2.6. Training of twenty five (25) SAMTS inspectors on the EU practice as regards the market surveillance of measuring instruments under the scope of the NA

Directive on Measuring Instruments and on Non-Automatic Weighing Instruments (NAWI);

A.2.7. Elaboration of procedures and relevant documentation covering the activity of market surveillance of measuring instruments covered by the MID and NAWI;

A.2.8. Training of eight (8) trainers, five (5) from BIM and three (3) from SAMTS, in Bulgaria and in an EU Member State on practical implementation of MID conformity assessment procedures and market surveillance respectively.

A.2.9. Training of twenty (20) BIM experts in practical implementation of conformity assessment procedures of medical devices with measuring functions.

Component 3: Designation of conformity assessment bodies, accreditation and market surveillance

Technical Assistance for designation of conformity assessment bodies, accreditation and market surveillance

A.3.9. Training of six (6) BAS assessors/lead assessors on the requirements of EMAS (3 assessors/lead assessors) and GLP (3 assessors/lead assessors) and the respective accreditation practice;

A.3.10. Participation of 10 BAS experts in the EA working/expert groups activities, as a follow-up to strengthening capacity in the fields of requested EA MLAs.

A.3.11. Practical training of ten (10) experts from SAMTS and BDA in implementation of the designation and surveillance procedures with respect of conformity assessment bodies for medical devices.

A.3.12. Improvement of market surveillance expertise of SAMTS and BDA inspectors on NA Directives on medical devices.

B. Supply

Component 2: Supply of Equipment for BIM

A.2.10. Procurement of metrology testing equipment for conformity assessment of measuring instruments under the relevant MID modules including calibration traceable to internationally recognised measurement standards, putting into operation and training (see Annex 4).

A.2.11. Procurement of metrology testing equipment for conformity assessment of medical devices, including calibration traceable to internationally recognised measurement standards, putting into operation and training.

Component 5: Supply of Equipment for CABs in the field of Directives on electrical equipment designed for use within certain voltage limits (LVD), lifts and construction products (CPD)

A.5.1. Procurement of testing equipment for conformity assessment of electrical equipment designed for use within certain voltage limits, lifts and construction products, including putting into operation and training.

3.5 Linked activities:

A. Phare Programme

The present project is a logical follow-up of all previously implemented and currently on-going interrelated Phare projects focused specifically on the field of conformity assessment and metrology. The overall concept is to cover the whole process starting from creating the respective institutional framework and service infrastructure in the area of conformity assessment, proceeding to its strengthening in particular by means of enforced New Approach *acquis* and functioning infrastructure ensuring free movement of industrial goods and finally achieving completely developed national conformity assessment system. Thus the target aimed at was to proceed with a gradual building on the system following a specific

sequence of the phases as mentioned and their proper implementation so as to reach the final objectives, i.e. providing adequate and reliable services to industry, relevant protection and safety of society and enhancing exportability and competitiveness of priority Bulgarian industrial sectors.

With respect of proper implementation of the First Phase – 2005 of this project the following preparatory activities have been performed:

- Terms of Reference for provision of technical assistance by independent experts for elaboration of the Final Technical Specifications of the measurement standard and IT equipment to be supplied and for participation in the tender evaluation process were developed.
- Framework contract procedure for selection of independent experts for elaboration of the Final Technical Specifications of IT equipment to be supplied and for participation in the tender evaluation process was conducted. As a result of the latter two IT experts were selected by the Evaluation Committee members and the Evaluation Report was submitted to the EC Delegation for approval.
- The EC Delegation did not approve the Evaluation report and the Framework contract procedure was re-launched.
- Technical Specifications of measurement standard equipment for which technical assistance for drafting the final technical specification documents has not been required were developed by the responsible experts of the Beneficiary.
- Framework contract procedure for selection of independent experts for elaboration of the Final Technical Specifications of measurement standard equipment to be supplied and for participation in the tender evaluation process was conducted. As a result of the latter a team of experts was selected by the Evaluation Committee members and the Evaluation Report was submitted to the EC Delegation for approval.
- Required Terms of Reference under Technical Assistance Components in the fields of legal and fundamental metrology, and designation of conformity assessment bodies, market surveillance and accreditation were developed and submitted to the Central Finance and Contracts Unit (CFCU) within the Ministry of Finance for approval and next proceeding within the required deadline.
- The developed Terms of Reference for Technical Assistance were revised according to the remarks and recommendation of the EC Delegation and submitted to the CFCU for approval and next proceeding. At present the documents are in the process of finalization.

Within the framework of the current project supply components concerning equipment that was planned to be delivered under Phare Programme 2002, Project BG 0201.12 “Strengthening of the national conformity assessment system” and Phare Programme 2003, Project BG2003/004-937.02.01 “Strengthening of the administrative and measurement capacity for enforcement of legislation on liquid fuels and measuring medical devices. Strengthening of the national thermophysics measurement capacity” were included. The equipment requested concerns the fields of conformity assessment of electrical equipment designed for use within certain voltage limits, lifts, construction products, flow rate measurements and medical devices with measuring functions.

As regards flow rate measurements and medical devices with measuring functions technical assistance part was also included in the Project Fiche – Phare 2006.

Taking into consideration

- the significance of the equipment addressed for supporting the strengthening process of the national conformity assessment system (LVD and Lifts are covered by PECA Sectoral Annexes) and for proper performance of legal metrology-related obligations arising from the forthcoming implementation of the New Approach Directives on Measuring Instruments and Medical Devices,
- the fact that at present four, eighteen and four designated bodies operate in the field of LVD, CPD and Lifts respectively, and that relevant technical specifications for supply of equipment required in view of the proper functioning of these designated bodies have been prepared,
- the lack of possibilities such equipment supply to be financed under alternative financial sources,
- the constantly increasing demands of the Bulgarian economic operators for high level services to be provided in the fields of conformity assessment and legal metrology,

it was decided the equipment to be re-planned and included under Phare Programme 2006.

The very specific nature of some part of the standard and testing equipment to be supplied within the fields mentioned is considered as a main reason for the unsuccessful tendering.

Phare 2003

The purpose of project BG2003/004-937.02.01 “Strengthening of the administrative and measurement capacity for enforcement of legislation on liquid fuels and measuring medical devices. Strengthening of the national thermophysics measurement capacity.” is to ensure effective and reliable liquid fuels quality control, proper metrological control of measuring instruments in the fields of health care and flow rate as well as temperature measurements traceability and equivalence. Within the project framework technical assistance and supply of equipment for the liquid fuels quality control, medical devices with measuring functions and measuring systems for liquids other than water will be provided. As regards the national thermophysics measurement capacity standard measurement equipment for realisation of the International Temperature Scale - ITS 1990 will be supplied.

Phare 2002

The Phare 2002 Project BG0201.12 “Strengthening of the national conformity assessment system” is designed to provide the necessary support for achieving the requirements as regards provision of adequate services to industry by CABs, standardisation and metrology institutes. The support to be received under this project is of crucial importance since it covers the three key players within the conformity assessment system, including selected CABs/testing laboratories (with proven competence, expertise and sustainability enabling them to operate as notified bodies under New Approach sectors) and national metrology institute adequately meeting industry demands, as well as the standardisation body providing effective information services in line with the CEN/CENELEC practice.

The project is targeted at improving the technical level and expertise of the main parties involved in the conformity assessment sector some of which were already

provided with the basic minimum training and equipment under Phare 2000 but need upgrading of the existing testing laboratories and provision of in-depth specialised training in NA Directives fields. The most sustainable and promising CABs/testing laboratories operating in the priority NA fields will be adequately equipped and trained, the metrology laboratories upgraded so as to meet the industry demands for required services.

The measurement standard equipment in the field of optical measurement, which was planned to be supplied under this project and not successfully contracted, was delivered under a separate project financed by funds of the state budget allocated for fulfillment of commitments made in the process of preparations for European Union accession.

Twinning Light Project “Strengthening the technical inspection capacity and alignment with EU practice” BG/2002/IB/FI/01/UE

This first project in the field of technical inspection, currently under implementation, envisages establishing inspection practice corresponding to the good practice in EU Member States, ensuring safe operation of high-risk equipment in the country providing protection of human life, property and environment and creation of a basis for further liberalisation of inspection market. Moreover, with a view to the forthcoming separation of market surveillance-related functions and supporting the proper functioning of the national conformity assessment system inspectors dealing with in-service inspection of high-risk equipment should increase their competence and expertise in certain sectors covered by NA directives under the guidelines and instructions by leading EU inspectors in the respective fields.

Phare 2001

Twinning light Project BG/2001/IB/FI-02 TLF “Establishment of Designating Authorities (future notifying authorities) and designation procedures under New Approach Directives” supported the CABs designation activities of both beneficiaries - Directorate "Designation of Conformity Assessment Bodies" within SAMTS and the Ministry of Regional Development and Public Works. The designating personnel were trained in evaluation and notification system for notified bodies in the EU Member States and implementation of the Ordinances, transposing NA Directives. The experts from Directorate "DCABs" have been positively assessed as regards their knowledge of NA Directives, the evaluation process itself and competency for carrying out their obligations pursuant to the LTRP and the ordinances as well as assessment of compliance with the requirements of the BDS EN 45 000 series of standards and BDS ISO/IEC 17 025.***Phare 2000***

The recently finalised Phare 2000 Project BG0003.02 “Establishing a conformity assessment system” led to a significant progress in:

- Achieving international recognition of measurement results and creating conditions to respond to industry demands;
- Developing a network of certification bodies as a prerequisite for establishment of designated bodies in the New Approach sectors;
- Facilitating the process of international recognition of test and calibration results produced in Bulgaria, as well as of certification of products, quality systems, personnel and inspection reaching EA (European cooperation for Accreditation) level;
- Establishing a functioning system for effective market surveillance in the areas covered by the NA Directives by theoretical and practical (on-the-job) training

of DG "MS" personnel in EU Member States market surveillance administrations.

Within the framework of this project in the field of market surveillance DG "MS" personnel obtained specific training by EU experts in development and implementation of computer applications to administer all relevant data, manage actual cases and exchange information with national and international counterparts which need to be integrated into an established information management system.

In the accreditation field the theoretical and practical training, joint assessments, etc. carried out under the project supported the preparation of BAS for meeting the requirements for signing MLA. As a result of the expertise enhanced initial evaluation of BAS has been successfully performed by EA lead assessors. BAS positive evaluation is a basis for its future application for signing EA MLA for calibration and testing laboratories and product certification bodies.

The most important results in the metrology part of Phare 2000 project are the successful completion of the full joint assessment of metrology laboratories by EU and BAS experts and the renovation of related laboratory premises. This is a step forward to the mutual recognition of measurement results and calibration certificates by national metrology institutions, which will also have significant impact on conformity assessment activities. This project laid also the foundations of the system that should be strengthened, including further development of DG "NCM" Knowledge Management System. Middle-term Strategic Planning and Long-term Orientation Plan for development of national measurement standards and the infrastructure of calibration laboratories were elaborated and approved as the two underlying documents on the basis of which NCM will operate in the future, outlining the priority fields of measurements as regards the Bulgarian industry demands.

As a result, the Phare 2000 Project established the basis of the respective institutional framework and service infrastructure in the area of conformity assessment and provided specific basic training of the personnel of certification, accreditation, market surveillance and metrology bodies by means of sharing experience and best practice with EU experts thus contributing to fulfillment of Europe Agreement obligations in the field of "Free movement of goods".

B. Other bilateral projects

Bilateral Project BUL0019 under FEU+6 Pre-accession Programme as a part of the Danish EU-integration Programme

Under this project assistance in bilateral comparison between the Bulgarian and the Danish national measurement standards as an EUROMET Project was conducted. It is a part of the activities undertaken to achieve international recognition of the Bulgarian calibration certificates.

PSO-Projects under PSO Pre-accession Programme

A PSO-Project 99/BG/9/1 for "European conformity assessment - strengthening the institutional structure and relational infrastructure in the field of LVD" has been completed. The project is implemented by NMi (The Netherlands National Metrology Institute) / RvA (The Netherlands Accreditation Body) and is finalised with a joint accreditation of one testing laboratory within Executive Agency "Certification and Testing" and four testing laboratories from the private sector all operating in the electrical industry

The financial support provided by the Dutch government under the PSO-Project PPA03BG02 concerning conformity assessment of non-automatic weighing instruments will contribute to strengthening of the relevant Bulgarian infrastructure

as regards practical application of procedures under Directive 90/384/EEC. Direct beneficiaries of the project are Directorate General "Measures and Measuring Instruments" and Directorate "Designation of Conformity Assessment Bodies" within SAMTS. The project is open to manufacturers of non-automatic weighing instruments and economic operators. The results attained under both PSO projects present certain value added to the process of establishment of the national conformity assessment system.

The present project will not duplicate any of the above-mentioned projects. It will make maximum use of the experience gained from all previous linked Phare and other donors activities concerning the development of the national conformity assessment system. As a result the national conformity assessment system, including designation of CABs, accreditation, market surveillance and metrology, will be strengthened and properly functioning by means of providing adequate and reliable services to the Bulgarian industry.

3.6 Lessons learned:

During the recent years State Agency for Metrology and Technical Surveillance (currently BIM and SAMTS) has been actively involved in the enforcement of the New Approach *acquis* as well as establishing the relevant infrastructure with a view to contributing to free movement of industrial goods. It has gained significant experience in the European principles implementation while coordinating and participating in the working groups in charge of drafting the respective Bulgarian legislation. A series of workshops and seminars intended for awareness raising of economic operators, conformity assessment bodies and regulators has been organised and hosted by the Agency. Within the framework of previous projects a series of training campaigns was organised by the Agency and its social partners which contributed significantly to raising public awareness as regards metrology, conformity assessment and market surveillance-related activities by involvement of all interested parties encouraged to share their knowledge and practical experience.

Both BIM and SAMTS personnel have acquired sound experience in programming and implementation of Phare and bilateral projects that strongly contributes to the effective planning of future projects and to setting up feasible and attainable objectives.

As stated in the Bulgaria 2005 comprehensive monitoring report (issued 25.10.2005) the framework legislation for the horizontal and procedural measures necessary for the administration of the *acquis* in the New Approach sectors is almost in place well as the most of the sectoral legislation. However, further efforts are needed with regard to equipment and protective systems for use in potentially explosive atmospheres, radio equipment and telecommunications terminal equipment personal protective equipment, pressure equipment, cableway installations, recreational crafts and non-automatic weighing instruments. The transposition of the *acquis* on medical devices has not yet begun. The European Commission (EC) states that the implementing structures are in place in the fields of standardization, metrology, accreditation, conformity assessment and market surveillance. The EC acknowledges that Bulgaria is generally meeting the commitments and requirements arising from the accession negotiations in the fields of horizontal and procedural measures, sectoral legislation under the new approach, as well as old approach directives and is expected to be in a position to implement this *acquis* from accession. As regards the horizontal measures, conflict of interest should be avoided through further segregation of standardisation, certification, market surveillance and accreditation functions. Some parts of legislation remain to be adopted or adjusted, both in the new and old approaches.

According to the overall assessment and findings of the Peer Review Mission on Market Surveillance and Metrology in Bulgaria performed by TAIEX office in 2003, SAMTS have actively contributed to the dissemination of information about the New Approach legislation so as to raise the awareness of their personnel as well as among market operators with respect of the new regime. Nevertheless, the report concludes that there is an obvious need for continuous spread of information and for training to improve administrative as well as detailed technical knowledge on the application of the New Approach regime.

In order to build up an efficient system for co-ordinating market surveillance activities there is a need for improving communication facilities to set-up an IT system that could be used in between market surveillance actors (primarily for SAMTS and its local inspectorates). This could be achieved by extending the system developed under the twinning project (Phare 2000 Programme), provided it included a searchable database of products and actions.

The peer review missions performed under the recently finalised EU/EFTA “Quality Infrastructure” Project covered the fields of metrology, testing-certification-inspection, accreditation and market surveillance. The evaluation states that Bulgarian metrology has gone through a very positive evolution. Through new legislation, new management and a strategically coordinated use of both PHARE aid and bilateral aid-programmes, a modern and well-coordinated metrology organisation has emerged.

Under the ongoing “Quality Infrastructure for Bulgaria and Romania” Project peer review missions for assessing the progress made since the evaluations made under the previous Quality Infrastructure Project in the fields of testing-certification-inspection and market surveillance of product under NA Directives was conducted. In both Evaluation Reports it is pointed out that progress has been made in the fields concerned.

BIM and SAMTS has proven very good in reaching its goals but should start looking towards the long-term strategy. This will involve making the transition from establishing a metrology system that is very focused on directives and other EU-related issues towards a system, where Bulgaria as a mature member of the EU will need metrology to support national competitiveness.

Although BIM and SAMTS has progressed very well during the last few years, still specific competences are lacking. The latter involves needs for training in certain technical disciplines as well as in some of the aspects of implementing directives. The problem of attracting the right scientific personnel should be resolved through modern concepts such as human resource management and knowledge management and also the necessary inter-laboratory comparisons for the documentation of the CMCs of NCM have to be addressed. Moreover, NCM still needs to improve and modernise its equipment and the Phare Programme presents an opportunity for funding and that the Bulgarian legal metrology could benefit from active participation in the work of WELMEC.

In the field of accreditation it is recommended to change the policy regarding measurement traceability and to train staff on the requirements and EA policy for interlaboratory comparisons for calibration laboratories. EA BAS must seek to comply with the requirements for accreditation of calibration and test laboratories as soon as practically possible and thereafter to apply to EA for evaluation to become a signatory to the EA MLAs, so that Bulgarian laboratories are given the chance to compete in the same markets as laboratories in the rest of Europe.

The overall conclusion of the Bulgarian market surveillance system is that within the short time of practice, BIM and SAMTS have proved that Bulgaria, when continuing the approach and allocating the appropriate resources, will be able to reach the level of EU/EFTA. Substantial efforts must be allocated in order to implement and establish the appropriate market surveillance activities within the next coming years. The implementation of market surveillance should be supplemented with assistance to the Bulgarian enterprises to establish compliance with the requirements. Market surveillance inspectors need to obtain additional specialised expertise especially when the market surveillance activities will be extended and fully implemented. The establishment of a common electronic information system will be used for coordination of market surveillance activities and exchange of information.

4. Institutional Framework

The following is the institutional framework in which the project will have to operate.

Component 1: Fundamental Metrology

Technical Assistance and Supply of Equipment for DG “NCM”, BIM

The basic obligations of the Directorate General “National Centre of Metrology” are to establish and develop the national measurement standards, ensure traceability of the national measurement standards to the international measurement standards or to measurement standards of Member States of the Meter Convention, disseminate units of measurements, perform calibration and comparisons. The total number of staff is 68. Since 2000, DG “NCM” has participated actively in the EUROMET activities and since the beginning of 2003 is a full member of EUROMET.

Component 2: Legal Metrology

Technical Assistance for DG “MMI”, BIM and DG “MSv”, SAMTS

The beneficiaries of this component are Directorate General “Measures and Measuring Instruments” within Bulgarian Institute for Metrology and Directorate General “Metrological Supervision” within State Agency for Metrological and Technical Surveillance.

Directorate General “Measures and Measuring Instruments” is responsible for legal metrology activities and performing type examination, initial and subsequent verification of measuring instruments subject to metrological control. The directorate includes one “Type examination of measuring instruments” Department and six Regional Departments situated on the territory of the country. The total number of staff is 296. Three type examination and three calibration laboratories have been accredited under Phare 2000 Programme.

Directorate General “Metrological Supervision” is organised in one “Control and Methodology” Department and 12 Regional Departments over the country. The total number of staff is 125.

The basic obligations of the Directorate General “Metrological Supervision” are to:

- perform monitoring on the use of units of measurement;
- supervise persons who manufacture, import, repair, or use measuring instruments;
- authorise persons and supervise the activities of persons authorised for verification of measuring instruments;
- supervise the use of measuring instruments placed on the market;
- register and control the persons manufacturing or importing pre-packages or bottles used as measuring containers.

Component 3: Designation of conformity assessment bodies, accreditation and market surveillance

Technical Assistance for SAMTS, D “DCABs”, DG "MS", DG “TI” and for BAS

The beneficiaries of this component are Directorate "Designation of Conformity Assessment Bodies", Directorate General "Market Surveillance" and Directorate General "Technical Inspection" (DG “TI”) within the SAMTS structure and the Executive Agency "Bulgarian Accreditation Service".

Directorate "Designation of Conformity Assessment Bodies" acts as a designating authority of conformity assessment bodies in the scope of the ordinances transposing the New Approach Directives (except for the fields of construction products and medical devices). The main directorate's obligations include assessment of the technical competence and capability of bodies applying for designation under the respective Directives. The Directorate contributes to the establishment of a national conformity assessment system by providing assistance and co-ordinating designated bodies' participation in international projects and programmes. The total number of staff is 10.

The basic obligations of the Directorate General “Market Surveillance” are to monitor the products placed on the market and/or put into service for which essential requirements are laid down in the respective ordinances under the Law on Technical Requirements for Products, to carry out checks of the products placed on the market and/or put into service with regard to existence of the conformity marking and/or instructions for use in Bulgarian language as well as checks of the products' declaration of conformity. The Directorate General "Market Surveillance" is organised in one "Control and Methodology" Department and 9 Regional Departments over the country. The total number of staff is 101.

Directorate General "Technical Inspection" acts as the inspection body for high-risk equipment with main responsibilities related to the following activities:

- Technical inspection (technical examinations, tests) of :
 - steam and water boilers, boilers operating with organic heat-transfer media, pressure vessels, steam and hot water pipelines, gas installations, pipelines and installations for natural gas and liquefied hydrocarbon gases, acetylene installations;
 - lifts, cranes, cableway installations and drag lifts.
- Licensing persons for carrying out technical inspection of high-risk equipment (HRE);
- Accident analysis;
- Keeping of HRE register as well as a register of the persons licensed for carrying out technical inspection of HRE.

The activities of DG “TI” cover the whole territory of the country. For this purpose, in all regions it has its own administrative units with a different number of personnel, depending on the number of the equipment installed. In a structural aspect DG "TI" is organised in one Central Department "State Technical Inspection", located in Sofia, which is assigned with the task to perform mainly methodological and coordination functions (give guidelines and directions), drafting of normative documents, control, etc. and 12 Regional Departments involved in carrying out the real technical inspection activities. The total number of staff is 141.

The Executive Agency "Bulgarian Accreditation Service" is the national accreditation body in the Republic of Bulgaria, operating the following accreditation schemes:

- accreditation of test and/or calibration laboratories;

- accreditation of product certification bodies;
- accreditation of quality systems, environmental management systems and personnel certification bodies;
- accreditation of inspection bodies;
- accreditation of verifiers.

The total number of BAS staff is 25.

Component 4: Exchange and provision of information in the field of metrology, conformity assessment, accreditation and market surveillance

The beneficiaries of this component are two of the BIM and three of the SAMTS directorates,: Directorate General “National Center of Metrology, Directorate General “Measures and Measuring Instruments”, Directorate General “Market Surveillance”, Directorate General “Technical Inspection” and Directorate “Designation of Conformity Assessment Bodies”. The result of the project will not lead to any change in the institutional framework as described above.

With a view of monitoring the project implementation a Steering Committee shall be established after project's commencement involving all the beneficiaries or institutions. It will be composed of management representatives of the respective beneficiaries in charge of the different components:

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The Steering Committee will also include a representative of the Central Finance and Contracts Unit (CFCU) at the Ministry of Finance as well as of the EC Delegation to Bulgaria. The Committee will meet once per three months and it will be responsible for taking project implementation-related decisions. The Secretariat will be held by the State Agency for Metrological and Technical Surveillance.

5. Detailed Budget

| | Phare/Pre-Accession Instrument support | Co-financing | | | Total Cost |
|----|--|-----------------------|--------------------|--------------------|------------|
| | | National Public Funds | Other Sources (**) | Total Co-financing | |
| €M | | | | | |

| | | | | | |
|---|------------------|------------------|--|-----------------------|------------------|
| | | (*) | | of Project | |
| Year 2005 - Investment support jointly co funded | | | | | |
| Component 1 | 2 625 000 | 875 000 | | 875 000 | 3 500 000 |
| Component 3 | 150 000 | 50 000 | | 50 000 | 200 000 |
| Component 4 | 750 000 | 250 000 | | 250 000 | 1 000 000 |
| Investment support – sub-total | 3 525 000 | 1 175 000 | | 1 175 000 | 4 700 000 |
| <i>% of total public funds</i> | <i>max 75 %</i> | <i>min 25 %</i> | | | |
| | | | | | |

In case of parallel co-funding (per exception to the normal rule, see special condition as indicated below: Not applicable

| | | | | | |
|---|------------------|--|--|--|------------------|
| Year 2005 Institution Building support | | | | | |
| Component 1 | 300 000 | | | | 300 000 |
| Component 2 | 350 000 | | | | 350 000 |
| Component 3 | 1 295 000 | | | | 1 295 000 |
| IB support | 1 945 000 | | | | 1 945 000 |

| | | | | | |
|---------------------------|------------------|------------------|--|--|------------------|
| Total project 2005 | 5 470 000 | 1 175 000 | | | 6 645 000 |
|---------------------------|------------------|------------------|--|--|------------------|

(*) contributions from National, Regional, Local, Municipal authorities, FIs loans to public entities, funds from public enterprises

(**) private funds, FIs loans to private entities

| | | | | | |
|---|------------------|------------------|--|------------------|------------------|
| Year 2006 - Investment support jointly co funded | | | | | |
| Component 2 | 2 625 000 | 875 000 | | 875 000 | 3 500 000 |
| Component 5 | 1 583 000 | 528 000 | | 528 000 | 2 110 000 |
| Investment support – sub-total | 4 208 000 | 1 403 000 | | 1 403 000 | 5 611 000 |
| <i>% of total public funds</i> | <i>max 75 %</i> | <i>min 25 %</i> | | | |

In case of parallel co-funding (per exception to the normal rule, see special condition as indicated below: Not applicable

| | | | | | |
|---|------------------|--|--|--|------------------|
| Year 2006 Institution Building support | | | | | |
| Component 2 | 300 000 | | | | 300 000 |
| Component 3 | 735 000 | | | | 735 000 |
| IB support | 1 035 000 | | | | 1 035 000 |

| | | | | | |
|---------------------------|------------------|------------------|--|------------------|------------------|
| Total project 2006 | 5 243 000 | 1 403 000 | | 1 403 000 | 6 646 000 |
|---------------------------|------------------|------------------|--|------------------|------------------|

(*) contributions from National, Regional, Local, Municipal authorities, FIs loans to public entities, funds from public enterprises

(**) private funds, FIs loans to private entities

NOTES:

Technical specifications for equipment to be provided under Components 1, 3 and 4 shall be developed with the technical assistance of independent external experts and shall be financed under 2005 Project Preparation Facilities (approximately to the amount of 100 000 Euro). As regards the budget of standard measurement and IT equipment to be supplied (over 1 000 000 Euro) for SAMTS and BIM two independent external experts (one expert per field) during the evaluation of offers received are required (approximately to the amount of 15 000 Euro).

Technical specifications for equipment to be provided under Component 2 shall be developed with the technical assistance of independent external experts and shall be financed under 2006 Project Preparation Facilities (approximately to the amount of 25 000 Euro). As regards the budget of testing equipment to be supplied (over 1 000 000 Euro) for SAMTS and BIM one independent external expert during the evaluation of offers received is required (approximately to the amount of 10 000 Euro).

The budget required for preparation of the above-mentioned Technical specification documents and for evaluation of offers received, where needed, shall be considered as indicative and it is not included in the total project budget.

6. Implementation Arrangements

6.1 Implementing Agency

The implementing agency is the Central Finance and Contracts Unit (CFCU) which tasks and responsibilities are described in Article 3 of the CFCU Bulgarian Memorandum of Understanding signed between the Government of the Republic of Bulgaria and the European Commission. These responsibilities concern mainly tendering, contracting, administration, accounting and payments.

The project is implemented in close co-operation with the beneficiaries the Bulgarian Institute for Metrology, State Agency for Metrological and Technical Surveillance and the Executive Agency "Bulgarian Accreditation Service" the delegated tasks of which are preparation of project fiches, ToRs, TS, assistance in the coordination of sub-project activities and project implementation in general.

Contact details of the Project Authorised Officer (PAO):

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Contact details of BAS:

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E-mail: ea_bas@mi.government.bg

6.2 Twinning

Not applicable

6.3 Non-standard aspects

According to the rules of the Practical Guide (PRAG) some items of equipment to be supplied under Component 1, in particular in the field of length, electricity, time and frequency and chemistry measurements will require Derogation from the rules of origin.

6.4 Contracts

The project is expected to be contracted under two (2) service contracts and three tender procedures for supply, with up to three (3) contracts.

The service contract 1 for Year 1 with an estimated value of € 1 945 000 will include the following components:

- Component 1: TA for BIM;
- Component 2: TA for BIM and CABs;
- Component 3: TA for designation of conformity assessment bodies, accreditation and market surveillance

The two supply contracts for Year 1 with a total estimated value of € 4 710 000 will be as follows:

Contract 2: Component 1: Equipment for BIM;

Contract 3: Component 3: State-of-the-art information system and IT equipment for BAS and Component 4: State-of-the-art information system and IT Equipment for BIM and SAMTS.

The service contract for Year 2 with an estimated value of € 1 035 000 will include the following components:

- Component 2: TA for SAMTS;
- Component 3: TA for designation of conformity assessment bodies, accreditation and market surveillance.

The supply contract for Year 2 with an estimated value of € 5 611 000 will include the following components:

- Component 2: Supply of equipment for BIM;
- Component 5: Supply of equipment for CABs in the fields of LVD, CPD and Lifts.

7. Implementation Schedule

7.1 Start of tendering/call for proposals

The TORs and project specifications under Phase 1 – 2005 ready in May 2006.

The TORs and project specifications under Phase 2 – 2006 will be ready by March 2007.

7.2 Start of project activity

Expected date of commencement of first contract under Phase 1 – 2005 – January 2007.

Expected date of commencement of first contract under Phase 2 – 2006 – January 2008.

7.3 Project completion

Expected date of last payment under last contract under Phase 1 – 2005 – November 2008.

Expected date of last payment under last contract under Phase 2 – 2006 – November 2009.

8. Equal Opportunity

The management of the beneficiary institutions will ensure that men and women are equally represented in all training measures. For and during all training events, lists of participants will be established and kept with the project documentation thus giving a proof of the existing gender distribution. The issue of women's participation will have to be addressed in the progress reports.

9. Environment

The project and in particular its investment component shall not have any discernible or harmful effects on the environment. Environmental conditions within the laboratory premises will be in compliance with the requirements of local environmental regulations.

10. Rates of return

Investment support for the activities carried out, as prescribed by laws, are non-profit oriented. Preliminary forecast concerning the investment components envisaged under the current project is given in Annex 5 Preliminary forecast.

11. Investment criteria

11.1 Catalytic effect:

In the last few years, some type examination laboratories at BIM were renovated and new measurement standards were purchased by means of the state budget and various European programmes (weighing instruments, electric energy meters, water meters). However, considerable financial means are still necessary to establish up-to-date standard and testing laboratories.

As the financial resources necessary for the implementation of the above activities could not be fully financed by the national budget due to its limited capabilities it is obvious that the strong EU support is essential. The latter will contribute to the strengthening of the institutional capacity of the Bulgarian beneficiaries and will assist them to reach the level of the relevant EU institutions at the time of accession of Bulgaria to the EU.

11.2 Co-financing:

In addition to the EU funds the investment components of the project will receive co-financing from the State budget through Directorate "National Fund" at the Ministry of Finance to the total value of € 1 403 000 - 25% of the total investment budget are envisaged for joint co-financing of equipment supply.

11.3 Additionality:

Not applicable

11.4 Project readiness and size:

As a complement to the previous Phare programmes BG 9602 and Phare 2000 Project BG 0003.02, the ongoing Phare 2002 Project BG 0201.12, Phare 2003 BG 2003/004-937.02.01, the investments under the current project are based on deep needs analyses of the fundamental and legal metrology, conformity assessment and accreditation systems as well as market surveillance (Annex 4) with regard to the achievement of the project's objectives.

A preliminary needs assessment as regards the equipment to be supplied in the first and second programming year (2005 and 2006) has been made.

The list of the necessary metrology equipment to be supplied in the first programming year (2005) is drafted on the basis of the Middle-term Strategic Planning developed under Phare 2000 Sub-project BG0003.02.02.

Because of the very specific nature of the equipment to be purchased, it is necessary to receive an expert advice on detailed elaboration of the technical specifications under all Components prior to project implementation.

11.5 Sustainability:

The equipment to be purchased under Phare 2005-2006 Programme is intended for a service life of at least 10 years. All equipment will be required to comply with the applicable EU norms and standards and will be in line with EU sector policy *acquis*. It will not cause any adverse effects on the environment. Maintenance of the equipment, in particular, the cost relating to periodical calibration, spare parts and supplies, will be borne by the SAMTS and BIM budget.

11.6 Compliance with state aids provisions

The beneficiaries of this project are state organisations acting in the fields of fundamental and legal metrology, conformity assessment and accreditation systems as well as market surveillance all having state executive functions.

12. Conditionality and sequencing

Prior to implementation of the project, the following conditions will have to be met:

- Before contracting of the supplies, adequate environmental conditions for carrying out measurements with required reliability at the existing laboratories are assured;
- Continuous availability of expertise and funding required for equipment use and maintenance.

Most important milestones of the Components are as follows:

Component 1: Fundamental Metrology

Year 1

M.1. Equipment for metrology laboratories supplied, installed and put into operation, and staff trained on its use;

M.2. NCM participates in 5 international comparisons thus establishing respective entries of NCM CMC;

M.3. State-of-the-art information system supplied and operational at BIM serving the DG "NCM" needs;

M.4. Knowledge Management System effectively operating;

M.5. NCM experts qualified in new fields of measurements as specified in the Long-term Orientation Plan and Long-term programme for development of national measurement standards.

Component 2: Legal Metrology

Year 1

- M.1. Awareness campaign on the MID implementation organised for economic operators;
- M.2. DG "MMI" experts and potential CABs personnel successfully trained on the implementation of conformity assessment modules under MID;
- M.3. DG "MMI" quality system established and application for accreditation by BAS submitted;
- M.4. DG "MMI" business plan developed;
- M.5. State-of-the-art information system supplied and operational at BIM and SAMTS serving the DG "MMI" and DG "MSv" needs.

Year 2

- M.6. Elaborated procedures and relevant documentation covering the activity of market surveillance of measuring instruments covered by the MID and NAWI;
- M.7. DG "MMI" and DG "MSv" trainers-of-trainees successfully trained in Bulgaria and in an EU member state on the respective MID provisions;
- M.8. Testing and verification laboratories equipped and operational, traceability of measurement standards established and staff trained on equipment use and operation as well as on software application.

Component 3: Conformity Assessment System

Year 1

- M.1. Effective operation of the Bulgarian designated bodies at national and EU level;
- M.2. Coherent approach as regards application of CA procedures;
- M3. Provision of competitive services to industry by designated/notified bodies;
- M4. State-of-the-art information system supplied and operational at SAMTS serving the Directorate "Designation of Conformity Assessment Bodies" needs;
- M5. DG "MS" inspectors with improved technical expertise on the NA Directives already in force as well as newly transposed ones with a special focus on goods intended for industrial use;
- M6. Interlaboratory comparisons in six (6) fields and three (3) proficiency testing schemes (PTs) conducted;
- M7. EA MLA criteria to MLA signatories met;
- M8. Specific accreditation programmes for accreditation of candidate CABs under the NA Directives implemented;
- M.9. State-of-the-art information system, IT and training equipment for EA "BAS" supplied and fully operational.

Year 2

- M11. Six (6) BAS assessors successfully trained on the specific requirements of EMAS and GLP as regards their practical implementation;
- M12. Integration and experience gained of BAS experts as a result of their participation in the EA working/experts groups;
- M13. Designation and surveillance procedures in the field of medical devices developed and staff trained in their application;
- M.14. Market surveillance campaign in the field of medical devices conducted.

Component 4: Exchange and provision of information in the field of metrology, conformity assessment, accreditation and market surveillance

Year 1

- M.1. State-of-the-art information system and IT equipment within BIM and SAMTS supplied;
- M.2. National contact point operational.

Component 5: Supply of equipment for CABs in the field of LVD, CPD and Lifts

M.1. CABs testing laboratories operating in the field of LVD, CPD and Lifts adequately equipped and capable to perform the relevant conformity assessment procedures.

ANNEXES TO PROJECT FICHE

1. Logframe in standard format
2. Detailed implementation chart
3. Contracting and disbursement schedule, by quarter, for full duration of project (including disbursement period)
4. Pre-feasibility study
5. Preliminary forecast
6. Need assessment of conformity assessment bodies –relating to Component 5
7. Reference list of relevant laws and regulations
8. Reference list of relevant strategic plans and studies
9. List of acronyms and abbreviations

ANNEX 1: Logframe planning matrix

| | | |
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| <p>LOGFRAME PLANNING MATRIX FOR</p> <p>Project: Further development of a national conformity assessment system and metrology infrastructure</p> | <p>Programme name and number</p> | |
| | <p>Contracting period (Year 1) expires 30.11.2007</p> | <p>End of execution of contracts (Year 1) expires 30.11.2008</p> |
| | <p>Contracting period (Year 2) expires 30.11.2008</p> | <p>End of execution of contracts (Year 2) expires 30.11.2009</p> |
| | <p>Total budget Year 1: 6 645 000</p> | <p>Phare budget Year 1: 5 470 000</p> |
| | <p>Total budget Year 2: 6 645 000</p> | <p>Phare budget Year 2: 5 242 500</p> |

| Overall objective | Objectively verifiable indicators | Sources of Verification |
|---|---|--|
| <p>Facilitating Bulgaria's integration into the EU's Internal Market through enhancement of exportability and competitiveness of priority Bulgarian industrial sectors.</p> | <ul style="list-style-type: none"> • 8 % increase of industrial products export to the EU by the end of 2009 • EA MLA signed in the fields of calibration laboratories, testing laboratories, quality systems certification bodies, product certification bodies, | <ul style="list-style-type: none"> • Bulgarian trade statistics • EUROSTAT • Branch chambers studies • EA web site |

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| | personnel certification bodies, inspection bodies and environmental management systems by 2008 | | |
| Project purpose | Objectively verifiable indicators | Sources of Verification | Assumptions |
| <p>The project purpose is to ensure provision of adequate and reliable services to Bulgarian industry and relevant protection and safety of society by means of:</p> <ul style="list-style-type: none"> • Strengthening the administrative and technical capacity of the institutional infrastructure with the national conformity assessment system, including fundamental and legal metrology institutions, national market surveillance and designating authorities and accreditation system with respect to the implementation of basic strategy documents, New Approach legislation and alignment with the EU practice; | <ul style="list-style-type: none"> • New BIM CMC entries submitted for review by EUROMET Technical Committees • At least one CAB designated in the scope of MID | <ul style="list-style-type: none"> • EUROMET Web-site • BIM and SAMTS • EC Regular Report | <ul style="list-style-type: none"> • Economic and business development does not undergo significant changes that can jeopardise the projections for project implementation; • Investment climate continues to improve in the industry sectors concerned. |

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| | <ul style="list-style-type: none"> • MID market surveillance added to the operational market surveillance system • Extended scope of designations granted • EA MLA signatory criteria met | <ul style="list-style-type: none"> • Periodical MID market surveillance reports • Registry of the issued and withdrawn conformity assessment authorisations published in the official bulletin of SAMTS • Minutes of the EA General Assembly • EA web site | |
| <ul style="list-style-type: none"> • Exchange and provision of information in the field of conformity assessment by means of establishing a state-of-the-art information management system, serving the activities of the institutional units involved, including a national contact point for the economic operators offering services in electronic way. | <ul style="list-style-type: none"> • SAMTS, BIM and BAS activities traceable through the respective established IT systems • Institutional information systems established • Functioning national contact point able to satisfy the information needs of economic operators • Increased number of service requests by 20 % | <ul style="list-style-type: none"> • Project reports at SAMTS and BAS • SAMTS web site • BIM web site • BAS web site | |
| Results | Objectively verifiable indicators | Sources of Verification | Assumptions |
| <i>Year 1</i> <i>A. Technical Assistance</i> | Knowledge | <ul style="list-style-type: none"> • Training records at BIM | <ul style="list-style-type: none"> • Increased industry and trade demand for |

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| | other information materials) | |
| R.2.2. Twenty (20) BIM experts and potential CABs personnel successfully trained in the implementation of conformity assessment modules under MID. | <ul style="list-style-type: none"> • At least satisfactory rating of the staff trained about the results of training • Personnel trained able to apply properly the respective conformity assessment procedures | <ul style="list-style-type: none"> • Training records at BIM <p>Supporting training materials at BIM</p> <ul style="list-style-type: none"> • Project reports at BIM, SAMTS and CFCU |
| R.2.3. BIM quality system related to legal metrology activities established and application for accreditation as product certification body by BAS submitted. | <ul style="list-style-type: none"> • Quality system documentation prepared by April 2008 • Application for accreditation submitted by June 2008 | <ul style="list-style-type: none"> • BIM • BAS |
| R.2.4. BIM business plan for legal metrology activities developed. | <ul style="list-style-type: none"> • Business plan documentation developed by April 2008 | <ul style="list-style-type: none"> • BIM |
| R.2.5 Enhanced expertise of BIM experts on utility meters related issues | <ul style="list-style-type: none"> • BIM experts acquainted with latest developments in the field of utility meters | <ul style="list-style-type: none"> • Experts reports at BIM |

Component 3: Designation of conformity assessment bodies, accreditation and market surveillance

Technical Assistance for designation of conformity assessment bodies, accreditation and market surveillance

R.3.1. Established coordination mechanism and coherent approach of notified bodies in implementation of conformity assessment procedures under NA Directives.

R.3.2. Enhanced expertise of Bulgarian designated/notified bodies corresponding to the level of EU notified bodies thus enabling them to provide competitive services to industry.

R.3.3. Improved technical expertise of 40 market surveillance inspectors on the NA Directives already in force as well as newly transposed ones with a special focus on goods not intended for end-consumers (Machinery, CIVEX, ATEX, PED, Recreational crafts, Lifts, MID etc.)

- At least 5 decisions/positions of designated bodies working groups adopted

- Increased client satisfaction from CA services provided to national and foreign clients

- Positive results of surveillance procedure

- Market surveillance staff trained (40 SAMTS inspectors) and able autonomously to implement market surveillance procedures

- At least satisfactory rating of the staff trained about the results of training

- SAMTS

- CABs records at respective CABs/testing laboratories
- SAMTS audit reports

- Training certificates at SAMTS Human resources Department
- Training records and rating sheets

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| <p>R.3.4. Interlaboratory comparisons in six (6) fields and three (3) proficiency testing schemes (PTs) organized and conducted.</p> | <ul style="list-style-type: none"> • Certificates issued for each of the laboratories participating in the comparisons • 9 Reports | <ul style="list-style-type: none"> • BAS documentation • Comparisons participating organisations |
| <p>R.3.5. EA MLA criteria to MLA signatories met in the fields of accreditation of calibration and testing laboratories, product certification bodies, environment management systems certification bodies and inspection bodies.</p> | <ul style="list-style-type: none"> • Reports of EA team on EA “BAS” assessors by the end of 2007 | <ul style="list-style-type: none"> • BAS |
| <p>R.3.6. Launch procedure for signing EA MLA Protocols in the fields of:</p> <ul style="list-style-type: none"> • Calibration laboratories; • Testing laboratories; • Product certification bodies; • Inspection bodies; • Environmental management systems certification bodies. | <ul style="list-style-type: none"> • Evaluation by EA completed by March 2007 • MLAs signed by end of 2008 | <ul style="list-style-type: none"> • BAS • EA Secretariat |
| <p>R.3.7. Specific accreditation programmes for accreditation of candidate conformity assessment bodies according to respective harmonized standards under the New Approach Directives developed and implemented.</p> | <ul style="list-style-type: none"> • Specific accreditation programmes established by the beginning of 2008 • 45 BAS assessors successfully trained and able to implement the procedures • 10 SAMTS experts | <ul style="list-style-type: none"> • BAS Quality Manual • BAS web site • SAMTS |

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| | successfully trained and able to implement the procedures | | |
| R.3.8. Accreditation used as a privileged tool for designation / notification and Bulgarian notification practice consistent with EU one. | <ul style="list-style-type: none"> • Relevant procedures updated and improved by the end of 2007 • At least 50% of CABs designated on the basis of accreditation | <ul style="list-style-type: none"> • Project reports at SAMTS and CFCU • Registry of the designations granted and withdrawn published in the official bulletin of SAMTS • Experts reports | |
| | • | • | |
| <p>B. Supply Component 1: Supply of Equipment for BIM R.1.4. Metrology laboratories operating in the priority fields defined in the Middle-term Strategic Planning equipped and operational, traceability of measurement standards established and ten (10) BIM experts trained in equipment use and operation as well as in software application.</p> | <ul style="list-style-type: none"> • Equipment supplied and operational by the end of May 2006 at the respective BIM laboratories • Staff successfully trained in the equipment operation and software application | <ul style="list-style-type: none"> • Acceptance protocols at BIM and CFCU • Training records • Training manuals | |
| <p>C. Supply Component 3: Supply of Equipment for Executive Agency "Bulgarian Accreditation Service" R.3.11 State-of-the-art information system, IT and training equipment for EA "BAS" supplied and fully operational.</p> | <ul style="list-style-type: none"> • IT and training equipment supplied and operational by the end of May 2007 | <ul style="list-style-type: none"> • Acceptance reports at BAS and CFCU | |

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| <p>Component 4: Exchange and provision of information in the field of metrology, conformity assessment and market surveillance</p> <p>R.4.1. State-of-the-art information system in SAMTS, and BIM and IT equipment supplied and fully operational serving the needs of SAMTS administrative units as well as the other parties concerned (state authorities; economic operators, CABs etc.).</p> | <ul style="list-style-type: none"> IT equipment supplied and operational by the end of May 2008 | <ul style="list-style-type: none"> Acceptance reports at SAMTS, BIM and CFCU |
| <p>R.4.2. Application software developed and operational as follows:</p> <ul style="list-style-type: none"> - Document flow management software - Customer relationship management software - Enterprise resources planning. | <p>User software and system documentation</p> <p>Users manual submitted by the end of 2008</p> | <p>Acceptance report at SAMTS and CFCU</p> |
| <p>Year 2</p> <p>A. Technical Assistance</p> <p>Component 2:</p> <p>R.2.6. Twenty five (25) SAMTS inspectors successfully trained in the EU practice as regards the market surveillance of measuring instruments under the scope of the NA Directives on Measuring Instruments and on Non-Automatic Weighing Instruments (MID and NAWI)..</p> | <p>At least satisfactory rating of the staff trained about the results of training</p> | <p>Training records</p> <p>Project reports at SAMTS and CFCU</p> |
| <p>R.2.7. Elaborated procedures for market surveillance of measuring instruments covered by MID and NAWI.</p> | <ul style="list-style-type: none"> Working procedures approved by mid of 2008 | <ul style="list-style-type: none"> Documentation at SAMTS Project reports at SAMTS and CFCU |
| <p>R.2.8. Eight (8) trainers, five (5) from BIM and three (3) from SAMTS, trained in Bulgaria and in an EU Member State on practical implementation of MID conformity assessment procedures and market</p> | <ul style="list-style-type: none"> Eight (8) inspectors, five (5) from BIM and three (3) from SAMTS able to | <ul style="list-style-type: none"> Project reports at SAMTS |

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| <p>surveillance respectively.</p> | <p>implement MID conformity assessment and market surveillance procedures without external assistance</p> <ul style="list-style-type: none"> • Training programme and documentation developed by the end of project | | |
| <p>R.2.9. Twenty (20) BIM experts trained on practical implementation of conformity assessment procedures of medical devices with measuring functions.</p> | <ul style="list-style-type: none"> • BIM experts able to implement properly respective conformity assessment procedures | <ul style="list-style-type: none"> • Project reports at BIM | |
| <p>Component 3 R.3.9. Six (6) BAS assessors successfully trained in the specific requirements of EMAS (3 assessors/lead assessors) and GLP (3 assessors/lead assessors) as regards their implementation.</p> | <ul style="list-style-type: none"> • 3 training certificates on EMAS • 3 training certificates on GLP • Training records and manuals in place by the end of 2008 | <ul style="list-style-type: none"> • Project reports at BAS and CFCU | |
| <p>R.3.10. Integration and experience gained as a result of participation of 10 EA “BAS” experts in the EA working/experts groups.</p> | <p>Experts reports on shared experience, and recommendations made, within 15 days from EA group meeting</p> | <ul style="list-style-type: none"> • BAS – QM | |
| <p>R.3.11. Ten (10) experts from SAMTS and Bulgarian Drug Agency (BDA) trained in implementation of the</p> | <ul style="list-style-type: none"> • At least one notified body assessed | <ul style="list-style-type: none"> • Records at SAMTS | |

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| <p>designation and surveillance procedures with respect of conformity assessment bodies for medical devices.</p> | | | |
| <p>R.3.12. Improved market surveillance expertise of SAMTS and BDA inspectors on NA Directives on medical devices</p> | <ul style="list-style-type: none"> • At least satisfactory rating of the staff trained about the results of training • At least one market surveillance campaign conducted | <ul style="list-style-type: none"> • Training records and rating sheets • Market surveillance reports, | |
| <p><i>B. Supply</i> <u>Component 2: Supply of Equipment for BIM</u> R.2.10. Testing and verification laboratories equipped and operational with respect of MID provisions, traceability of measurement standards established and 10 BIM experts trained in equipment use and operation as well as in software application (<i>see Annex 4</i>).</p> | <ul style="list-style-type: none"> • Equipment supplied and operational by the end of 2008 at the respective BIM laboratories • 20 BIM experts trained and able autonomously to operate with the equipment and software application | <ul style="list-style-type: none"> • Acceptance protocols at BIM and CFCU • Training records • Training manual | |
| <p>R.2.11. Testing and verification laboratories for medical devices with measuring functions equipped and operational with respect of MDD provisions, traceability of measurement standards established and 5 BIM experts trained in equipment use and operation (<i>see Annex 4</i>).</p> | <ul style="list-style-type: none"> • Equipment supplied and operational by the end of 2008 at the respective BIM laboratories • 5 BIM experts trained and able autonomously to operate with the equipment and software application | <ul style="list-style-type: none"> • Acceptance protocols at BIM and CFCU • Training records | |

| <p>Component 5: Supply of Equipment for CABs in the field of LVD, CPD and Lifts R.5.1. Testing equipment for conformity assessment of low voltage equipment and lifts supplied and operational, and staff trained in equipment use and operation.</p> | <ul style="list-style-type: none"> • Equipment supplied and operational by the end of 2008 at the respective CABs | <ul style="list-style-type: none"> • Acceptance protocols at SAMTS and CFCU | |
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| Activities | Means | | Assumptions |
| <p><i>Year 1</i> A. Technical Assistance <u>Component 1: Fundamental Metrology</u> <u>Technical Assistance for BIM</u> A.1.1. Completing the development of the BIM Knowledge Management System in terms of adding new tools, including such related to BIM research activities as well as respective training modules.</p> | <p>Technical assistance contract</p> | | <ul style="list-style-type: none"> • Clear trend set and demonstrated needs of providing adequate conformity assessment and accreditation services arising from strengthened and expanded enforcement mechanism. • Effective cooperation between the designating and accreditation authorities established. |
| <p>A.1.2. Organisation and BIM participation in 5 international comparisons in the fields of thermometry, flow rate, length, optic and force measurements in order to establish required entries of Calibration and Measurement Capabilities.</p> | <p>Technical assistance contract</p> | | |
| <p>A.1.3. Training of six (6) BIM experts in EU metrology and/or associated institutes in the fields of nano-metrology, quantum effect, cryogen radiometry,</p> | <p>Technical assistance contract</p> | | |

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| X-ray dosimetry, ion-exchanged chromatography and radio-frequency measurements, specified in the Long-term Strategic Orientation Plan and Long-term Program for development of national measurement standards | | | |
| <u>Component 2: Legal Metrology</u> <u>Technical Assistance for SAMTS, BIM and CABs</u> A.2.1. Organisation of awareness campaign on the MID implementation for economic operators. | Technical assistance contract | | |
| A.2.2. Training of twenty (20) BIM experts and potential CABs personnel on the implementation of the conformity assessment modules under MID. | Technical assistance contract | | |
| A.2.3. Elaboration of the BIM quality system related to legal metrology activities and preparation for accreditation as a product certification body for measuring instruments covered by MID. | Technical assistance contract | | |
| A.2.4. Development of BIM business plan for legal metrology activities. | Technical assistance contract | | |
| A.2.5. Participation of BIM experts in the regular meetings of WELMEC WG 11 “Utility meters”. | Technical assistance contract | | |
| <u>Component 3: Designation of conformity assessment bodies, accreditation and market surveillance</u> <u>Technical Assistance for designation of conformity assessment bodies, accreditation and market surveillance</u> A.3.1. Establishing a coordination mechanism and strengthening of notified bodies working groups with respect to coherent application of NA conformity assessment procedures. | Technical assistance contract | | |
| A.3.2. Effective participation of Bulgarian notified | Technical assistance | | |

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| bodies in the work of the respective European notified bodies working groups. | contract | |
| A.3.3. Improvement of the technical expertise of 40 market surveillance inspectors on the NA Directives already in force as well as newly transposed ones with a special focus on goods not intended for end-consumers(Machinery, CIVEX, ATEX, PED, Recreational crafts, Lifts, etc.). | Technical assistance contract | |
| A.3.4. Organisation and execution of six (6) interlaboratory comparisons (3 for testing laboratories and 3 for calibration laboratories) and three (3) proficiency testing schemes (PTs) for inspection bodies. | Technical assistance contract | |
| A.3.5. On the job training of 32 BAS assessors/lead assessors by EU accreditation body in order to meet the EA MLA signatory criteria in the following fields: <ul style="list-style-type: none"> • Calibration laboratories – 5 expert missions; • Testing laboratories – 10 expert missions; • Product certification bodies – 5 expert missions; • Inspection bodies – 10 expert missions; • Environmental management systems certification bodies – 2 expert missions. | Technical assistance contract | |
| A.3.6. Re-evaluations/scope extension of BAS by EA evaluation team and entering EA MLAs | Technical assistance contract | |
| A.3.7.1. Development of specific accreditation programmes for accreditation of candidate conformity assessment bodies according to respective harmonized standards under the New Approach Directives. | Technical assistance contract | |
| A.3.7.2. Training of ten (10) SAMTS experts and | Technical assistance | |

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| twenty (20) BAS experts in the implementation of accreditation programmes. | contract | |
| A.3.8. Updating and improvement of SAMTS designation procedure with respect of accreditation programmes for CABs accreditation under the NA Directives and practical implementation (including on-the-job training of three (3) SAMTS experts in an EU member-state accreditation body and notification authority). | Technical assistance contract | |
| | | |
| B. Supply Component 1: <u>Supply</u> of Equipment for BIM A.1.4. Procurement of metrology equipment for BIM standard laboratories operating in priority fields of measurements specified in the Middle-term Strategic Planning, including calibration traceable to internationally recognised measurement standards, putting into operation and training. | Purchase of equipment - training | |
| Component 3: <u>Supply</u> of Equipment for BAS A.3.11. Procurement of a state-of-the-art information system, IT and training equipment for EA "BAS" to ensure operation of own and external assessor teams and administration for handling and tracking client contracts. | - Purchase of equipment | |
| Component 4: Exchange and provision of information in the field of metrology, conformity assessment, accreditation and market surveillance A.4.1. Supply of equipment for establishment of a state-of-the-art information system and IT equipment in SAMTS and BIM in order to facilitate the | - Purchase of equipment | |

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| fulfillment of all duties of the specialised administration as well as the requirements of related external parties (state authorities; economic operators, CABs etc.). | | |
| A.4.2. Development and putting into operation of application software serving SAMTS, BIM and national contact point activities: <ul style="list-style-type: none"> - Document flow management software - Customer relationship management software - Enterprise resources planning. | Technical assistance contract | |
| Year 2 A. Technical Assistance Component 2: Legal Metrology <u>Technical Assistance for SAMTS, BIM and CABs</u> A.2.6. Training of twenty five (25) SAMTS inspectors on the EU practice as regards the market surveillance of measuring instruments under the scope of the NA Directives on Measuring Instruments and on Non-Automatic Weighing Instruments. | Technical assistance contract | |
| A.2.7. Elaboration of procedures and relevant documentation covering the activity of market surveillance of measuring instruments covered by MID and NAWI. | Technical assistance contract | |
| A.2.8. Training of eight (8) trainers-, five (5) from BIM and three (3) from SAMTS, in Bulgaria and in an EU Member State on practical implementation of MID conformity assessment procedures and market surveillance respectively. | Technical assistance contract | |
| A.2.9. Training of twenty (20) BIM experts in practical implementation of conformity assessment procedures of medical devices with measuring | Technical assistance contract | |

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| functions. | | |
| <p><u>Component 3: Designation of conformity assessment bodies, accreditation and market surveillance</u></p> <p><u>Technical Assistance for designation of conformity assessment bodies, accreditation and market surveillance</u></p> <p>A.3.9. Training of six (6) BAS assessors/lead assessors on the requirements of EMAS (3 assessors/lead assessors) and GLP (3 assessors/lead assessors) and the respective accreditation practice.</p> | Technical assistance contract | |
| <p>A.3.10. Participation of 10 BAS experts in the EA working/expert groups activities, as a follow-up to strengthening capacity in the fields of requested EA MLAs.</p> | Technical assistance contract | |
| <p>A.3.11. Practical training of ten (10) experts from SAMTS and BDA in implementation of the designation and surveillance procedures with respect of conformity assessment bodies for medical devices.</p> | Technical assistance contract | |
| <p>A.3.12. Improvement of market surveillance expertise of SAMTS and BDA inspectors on NA Directives on medical devices</p> | Technical assistance contract | |
| <p><i>B. Supply</i></p> <p><u>Component 2: Supply of Equipment for BIM</u></p> <p>A.2.10. Procurement of metrology testing equipment for conformity assessment of measuring instruments under the relevant MID modules including calibration traceable to internationally recognised measurement standards, putting into operation and training.</p> | Purchase of equipment | |
| <p>A.2.11. Procurement of metrology testing equipment</p> | | |

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| <p>for conformity assessment of medical devices, including calibration traceable to internationally recognised measurement standards, putting into operation and training.</p> | <p>Purchase of equipment</p> | | |
| <p>Component 5: Supply of Equipment for CABs in the field of LVD, CPD and Lifts A.5.1. Procurement of testing equipment for conformity assessment of low voltage equipment and lifts, including putting into operation and training.</p> | <p>Purchase of equipment</p> | | |
| | | | <p>Preconditions Before contracting of the supplies, adequate environmental conditions for carrying out measurements with required reliability at the existing laboratories are assured.</p> |

ANNEX 2: DETAILED IMPLEMENTATION CHART

| Component | 2006 | | | | 2007 | | | | 2008 | | | |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Year 1 | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Qtr1 | Qtr2 | Qtr3 | Qtr4 |
| Contract 1 (Service contract): Component 1 (<i>separate Lot</i>): TA for BIM; Component 2 (<i>separate Lot</i>): TA for SAMTS, BIM and CABS; Component 3 (<i>separate Lot</i>): TA for designation of conformity assessment bodies, accreditation and market surveillance | | T | T/C | I | I | I | I | I | I | I | | |
| Contract 2 (Supply contract): Component 1 (<i>up to 7 Lots</i>): Equipment for BIM | | T | T/C | I | I | I | I | I | I | I | | |
| Contract 3 (Supply contract): Component 3 (<i>separate Lot</i>): Equipment for Executive Agency “Bulgarian Accreditation Service”; Component 4 (<i>separate Lot</i>): Exchange and provision of information in the field of metrology, conformity assessment and market surveillance | | T | T/C | I | I | I | I | I | I | I | | |

| Component | 2007 | | | | 2008 | | | | 2009 | | | |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Year 2 | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Qtr1 | Qtr2 | Qtr3 | Qtr4 |
| Contract 4 (Service contract): Component 2 (<i>separate Lot</i>): TA for SAMTS, BIM and CABS; Component 3 (<i>separate Lot</i>): TA for designation of conformity assessment bodies, accreditation and market surveillance. | | T | T | C | I | I | I | I | I | I | I | I |

| | | | | | | | | | | | | |
|---|--|---|---|---|---|---|---|---|---|---|---|---|
| Contract 5 (Supply contract): Component 2 (up to 7 Lots): Equipment for BIM; Component 5 (up to 3 Lots): Equipment for CABs in the field of LVD, CPD and Lifts. | | T | T | C | T | T | C | I | I | I | I | I |
|---|--|---|---|---|---|---|---|---|---|---|---|---|

C - Contracting
 T – Tendering
 I – Implementation

ANNEX 3: Contracting and disbursement schedule, by quarter, for full duration of project (including disbursement period)

| Project title | Further development of a national conformity assessment system and metrology infrastructure | | | | | | | | | | | |
|--|---|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|----------|------|
| Year 1 | 2006 | | | | 2007 | | | | 2008 | | | |
| | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Qtr1 | Qtr2 | Qtr3 | Qtr4 |
| Contract 1 (Service contract) | | | | | | | | | | | | |
| Contracting | | | € 1,945 M | € 1,945 M | € 1,945 M | € 1,945 M | € 1,945 M | € 1,945 M | € 1,945 M | | | |
| Disbursement | | | € 1,167 M | | € 1,459 M | | € 1,750 M | | € 1,945 M | | | |
| Contract 2 (Supply contract) | | | | | | | | | | | | |
| Contracting | | | | € 3,5 M | € 3,5 M | € 3,5 M | € 3,5 M | € 3,5 M | € 3,5 M | € 3,5 M | € 3,5 M | |
| Disbursement | | | | € 2,1 M | | | € 3,15 M | | | | € 3,5 M | |
| Contract 3 (Supply contract) | | | | | | | | | | | | |
| Contracting | | | | € 1,21 M | € 1,21 M | € 1,21 M | € 1,21 M | € 1,21 M | € 1,21 M | € 1,21 M | € 1,21 M | |
| Disbursement | | | | € 0,726 M | | | € 1,089 M | | | | € 1,21 M | |

| Project title | Further development of a national conformity assessment system and metrology infrastructure | | | | | | | | | | | |
|--|---|------|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Year 2 | 2007 | | | | 2008 | | | | 2009 | | | |
| | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Qtr1 | Qtr2 | Qtr3 | Qtr4 |
| Contract 4 (Service contract) | | | | | | | | | | | | |
| Contracting | | | | € 1,035 M | € 1,035 M | € 1,035 M | € 1,035 M | € 1,035 M | € 1,035 M | € 1,035 M | € 1,035 M | € 1,035 M |
| Disbursement | | | | € 0,621 M | € 0,621 M | € 0,621 M | € 0,776 M | € 0,776 M | € 0,932 M | € 0,932 M | € 0,932 M | € 1,035 M |
| Contract 5 (Supply contract) | | | | | | | | | | | | |
| Contracting | | | | € 5,611 M | € 5,611 M | € 5,611 M | € 5,611 M | € 5,611 M | € 5,611 M | € 5,611 M | € 5,611 M | € 5,611 M |
| Disbursement | | | | € 3,366 M | € 3,366 M | € 3,366 M | € 3,366 M | € 3,366 M | € 5,049 M | € 5,049 M | € 5,049 M | € 5,611 M |

ANNEX 4: Pre-feasibility study

As it was already mentioned according to the Law amending the Law on Measurements (published in State Gazette, No. 95/01.11.05) State Agency for Metrology and Technical Surveillance was re-organised into State Agency for Metrological and Technical Surveillance (SAMTS) after Directorate General “National Center of Metrology” and Directorate General “Measures and Measuring Instruments” have been segregated from the Agency. On the basis of the directorates segregated a Bulgarian Institute for Metrology was established.

At present, the Bulgarian Institute for Metrology is the responsible institution for fundamental and legal metrology, while the State Agency for Metrological and Technical Surveillance is the responsible authority for market surveillance in the scope of New Approach; designation of conformity assessment bodies; technical inspection of high-risk equipment and quality control of liquid fuels.

According to the Rules of Procedure of the Bulgarian Institute for Metrology it is organised into two (2) directorates general and one (1) directorate.

According to the last amendments to the Rules of Procedure of the State Agency for Metrological and Technical Surveillance it is organised into four (4) directorates general and four (4) directorates.

Direct beneficiaries under this project are the following structural units within BIM and SAMTS:

1. Fundamental metrology (BIM)

Directorate General "National Center of Metrology" is responsible for establishing, maintaining and improving the national measurement standards as well as ensuring their traceability to the international ones or to measurement standards of the Member States of the Meter Convention, and disseminating the units of measurement through calibration.

As a result of SAMTS active participation in EUROMET activities and projects through its DG “NCM”, the EUROMET criteria for full membership were met and in May 2003 the Agency was accepted as a full member of EUROMET. The Quality Management System of DG “NCM” was successfully presented at the Quality System Forum in March 2003 and approved by the EUROMET members.

According to the general guidelines and recommendations as laid down in the Middle-term Strategic Planning (developed under Phare 2000) DG “NCM” still needs to strengthen its administrative capacity and measurement capabilities in order to meet the demands of the Bulgarian industry as regards traceability of measurements performed. For this purpose sets of standard measuring equipment are to be supplied and the personnel responsible for carrying out the respective types of measurements is to be trained.

In 200 a draft of a Long-term program for development of the national measurement standards of the Republic of Bulgaria (LTP) covering the period from 2004 to 2010 has been developed. The programme comprises of twelve 12 sub-programmes, 10 of which contain proposals for development of measurement standards in various measurement fields, sub-program “National Metrology Complex”, sub-program “Human resources and dissemination of knowledge” and a financial framework for its implementation.

The draft of this program has been developed on the basis of analysis focusing on study and forecast of the needs related to ensuring traceability of measurements in the country, a Report on the national measurement standards status prepared in 2001, Middle-term Strategic Planning and Long-term Orientation Plan (as mentioned above), policies and programmes of the international

metrology organisations of which the Republic of Bulgaria is a member and recommendations given by European experts regarding the assessment of the candidate countries' quality infrastructures.

The programme has been subject to internal discussions, presentation and open debates with experts from government and non-government organisations, Bulgarian Academy of Sciences, higher education institutions etc. The different sub-programmes in various measurement fields have been discussed and considered at the meetings of specialised expert councils. The LTP draft has been adopted at the 8th regular meeting of the National Council of Metrology and has been subsequently coordinated with the ministries and agencies. Officially, the Long-term program for development of the national measurement standards of the Republic of Bulgaria covering the period from 2004 to 2010 was adopted by Decision of the Council of Ministers of 6 January 2005.

Technical assistance under this project is necessary for the LTP implementation in the part concerning:

- **Qualification of DG "NCM" personnel in new fields** – nano-metrology, quantum effects, cryogen radiometry, X-ray dosimetry, ion-exchanged chromatography, radio-frequency measurements.

The Long-term program for development of the national measurement standards of the Republic of Bulgaria envisages developing of potential for setting up or providing support to joint “centres” for future scientific or research activities, i.e. identification (jointly with the customers and partners) of 5 or 6 fields of national and international significance, namely electrochemistry, massspectrometry, radionuclides activity, length, spectrophotometry and vibration, which should serve as a basis for integration into various research projects. The role of these “centres” will be to develop and coordinate the use of technical facilities and expertise in the country aimed at achieving rapid development of new methods and technologies in areas, which are important for industry and society, and implementing government policies and strategies related to quality, science, innovation and industrial growth.

With regard to the above mentioned one (1) NCM expert per each of the fields is to be trained in order to become acquainted with the respective development trends and practice. The experts trained will draft a plan for development of the respective fields of measurement at national level based on the LTP. It is considered reasonable the training to be performed for a six-month period (one man-month per expert) in EU metrology institutions or associated laboratories. The training will be a step towards development and management of scientific and research activities thus creating preconditions for capacity-building in scientific metrology with a view to transferring the world achievements in this field to the respective users – science, industry, society.

- **Knowledge management system (KMS)**

The insufficient experience in management and implementation of scientific and research activities and the existing decision-taking system for management of personnel and activity are among the current problems facing the implementation of the objective set out in LTP for step-by-step transformation of DG “NCM” into an institute for scientific and research activities in the field of metrology. Establishment of conditions for application of the good practices and methods for measurement, being assisted by the knowledge management system, is of primary significance for the work of the new metrological institute. Knowledge management system has been developed on the basis of analysis and needs assessment and drafted KMS structure under the PHARE 2000 program. It is introduced on a step-by-step basis in compliance with previously developed action plan and development model. Completion of the KMS development will be ensured by means of

expanding the knowledge management system in the field of improvement of technical and professional knowledge, application of key processes for management of human resources and competencies, introduction of external and European practices and knowledge in establishment, improvement and examination of measurement standards, improvement of external and internal communications.

- **Organization and participation in international comparisons**

The participation of DG “NCM” in international comparisons is required for the implementation of the signed CIPM MRA agreement for recognition of CMC. Bulgaria has developed CMC in compliance with the industry needs and the available measurement standards and equipment. The current situation analysis shows that a significant part of the measurement standards do not correspond to the state-of-the-art measurement equipment. The technology level of the predominant part of measurement standards is equal to the one existing in the 80s of the 20th century. Also there is an obvious trend towards worsening the status of measurement standards in use. This project targets at achieving a sufficient degree of equivalence of the national measurement standards and recognition of additional and improved measurement and calibration capabilities of DG “NCM” which, with regard to scope and uncertainty, comply with the Bulgarian industry. This in turn will result in successful alignment of Bulgarian measurement system with the European one. The Phare projects implemented so far have contributed to the creation of conditions for ensuring traceability of measurements with respect to the most crucial needs.

Up to the present the approval of the NCM CMC are at different stage of the EUROMET approval procedure and the CMC status is as follows:

CMC - DG "NCM" status December 2004

| Measurement field | NCM approved CMCs | Submitted to EUROMET TC review | EUROMET Reviewed | Inter-RMO review | Inter-RMO reviewed – Final CMCs+ reports | Fully reliable CMCs, BIPM database |
|---------------------------|-------------------|--------------------------------|------------------|------------------|--|------------------------------------|
| Photometry and Radiometry | | | | | | 8 entries |
| Electrochemistry | | 6 | | | | 8 entries |
| Mass | | | | | 8 entries | |
| Pressure | | | | | 15 entries | |
| Force | 5 entries | | | | | |
| Electricity and magnetism | | | 70 entries | | | |
| Time and frequency | | | | 16 entries | | |
| Length | | | 9 entries | | | |
| Acoustics | | | 12 entries | | | |
| Vibration | | | 18 entries | | | |
| Photon dosimetry | | 7 entries | | | | |
| Flow | 2 entries | | | | | |
| Volume | | 6 entries | | | | |
| Thermometry | 8 entries | | | | | |
| Hardness | 6 entries | | | | | |

In order to approve CMC under PHARE 2002 program organization and carrying out of seven international comparisons in the fields of capacity measurement, inductance, DC voltage, AC voltage, sound pressure measurement in air, vibration acceleration, spectral measurement for UV/VIS has been provided for.

The comparisons proposed in the fields of thermometry, flow rate, length, optic and force measurements will add new CMC entries in thermometry, flow rate, optic and force measurements and will decrease length measurement uncertainty.

Supply of equipment: The equipment envisaged to be supplied under the project is specified on the basis of the list annexed to MTSP and the LTP, analysis of the current status of national measurement standards and industry needs within the country for ensuring measurement traceability.

28 experts from the DG "NCM" personnel will be trained (from 3 up to 15 days depending on the specific equipment and systems) after the equipment delivery.

Delivery of equipment for the fields of optic, electric, acoustic, ionizing radiation, hardness and force, as well as training for operation with the delivered equipment is provided for under Phare 2002 Project BG0201.12 "Strengthening of the national conformity assessment system".

Delivery of equipment for the national laboratory for temperature measurements and training for operation with the equipment supplied is provided for under Phare 2003 project.

List of equipment for DG "NCM"

Length and dimensional metrology

| Equipment | Cost (k€) |
|---|------------------|
| 1-D multifunction measuring machine | 120 |
| Secondary standards: Gauge blocks, plugs, rings, | 70 |
| He/Ne lasers with associated equipment | 170 |
| Roughness and roundness measuring equipment | 120 |
| Standard of roughness | 5 |
| Rotating table (angles) | 15 |
| Laser interferometer for dito | 50 |

Electricity

| Equipment | Cost (k€) |
|---|------------------|
| Zener diode (7) | 20 |
| Low thermal Scanner + DC null detector +software | 15 |
| Kelvin Varley divider | 40 |
| Temperature controlled enclosure (air) | 10 |
| Low current calibrator | 10 |
| EMC shielded room | 13 |
| | |
| Multi-junctions thermal converters with shunts | 95 |
| Accurate multi calibrator (up to 11 A) | 60 |
| Calibrator with current amplifier (20A) | 20 |
| Low voltage AC/DC transfer standard/voltmeter | 40 |
| Micropotentiometer | 20 |
| Nano-voltmeter (2) | 6 |

| | |
|---|-----|
| EMC shielded room | 13 |
| Automated resistance bridge with scanner and low value extender | 75 |
| 10 k Ω resistances (3) | 6 |
| Box of 10x1 k Ω | 4 |
| Resistances (1 Ω – 100 T Ω) 16 pieces (X2) | 28 |
| Automated high value resistance bridge (100 Ω to 1G Ω) with accessories | 65 |
| Temperature controlled oil bath | 25 |
| Capacitance meter | 40 |
| Set of fixed capacitors and inductances (in temperature controlled enclosure 2x10pF and 2x100pF, 3x10 mH) | 30 |
| Automated high precision RLC meter | 30 |
| EMC shielded room | 13 |
| Automatic calibration bench for energy and power with software With accuracy 0,005 % | 170 |
| Multi-range and multi-quantities calibrator | 20 |
| Portable standard for energy (three phases measurements) | 40 |
| Three phases phantom load | 15 |
| Measurement calibration software SSM 3000 for the reference standard model COM 303-3, ZERA GmbH | 3 |

Time - Frequency

| Equipment | Cost (k€) |
|-------------------------------------|-----------|
| Caesium clock (first one) | 70 |
| GPS receiver (first one) | 40 |
| Time interval counter | 3 |
| Software for time scale calculation | 10 |
| Computers | 3 |
| Caesium clock (second one) | 70 |
| GPS receiver (second one) | 40 |
| Phase comparator | 4 |

Mass and related quantities

| Equipment | Cost (k€) |
|---|-----------|
| Complementary mass standards 1mg-20 kg | 28 |
| Mass comparator 64 kg with software | 260 |
| Calibration system with Turbomolecular pump | 40 |
| Pressure balance for positive, negative and absolute pressure 7 MPa | 75 |
| Absolute balance (350 kPa) | 50 |
| Differential pressure balances (350kPa, 10MPa) | 100 |

| | |
|--|-----|
| 2 micro-manometers (4 kPa and 40 kPa) | 40 |
| Digital manometer (25 MPa) | 25 |
| Deadweight force standard and masses: 5 kN | 200 |
| Digital precision measuring amplifier/force transducers | 50 |
| Densimeter (density of liquids): comparator balance and associated equipment | 30 |
| Viscosimeter /viscosity (calibration bench /equipments) | 20 |
| Reference accelerometer | 3 |

Photometry-radiometry

| Equipment | Cost (k€) |
|---|------------------|
| Certified reference standards for spectrophotometer | 3 |
| Optical colorimeter | 45 |
| Measuring lamps | 5 |

Ionising radiation

| Equipment | Cost (k€) |
|---|------------------|
| Radon measurement bench (reference radioactive source Ra-226 and flow through sources of Rn-222, detectors, etc.) | 45 |
| Secondary transfer standard (neutron) | 15 |
| Reference 4 $\pi\gamma$ well - type high pressure ionizing chamber, reference radioactive sources - ^{99m}Tc , ^{131}I , ^{67}Ga , ^{204}Tl | 14 |

Metrology in chemistry

| Equipment | Cost (k€) |
|---|------------------|
| Automated titrator and software | 10 |
| Standard references material for electrical conductivity | 1 |
| Cryostat for electrochemistry | 7 |
| Primary cells for electrical conductivity and electrochemical cells | 60 |
| Photometer (O_3) | 30 |
| Spectro-photometer (NO_x , SO_x) | 15 |
| GC/MS + software | 100 |
| SOFTWARE | 500 |

TOTAL BUDGET (equipment + software): € 3 500 000

2. Legal metrology (BIM)

Directorate General “Measures and Measuring Instruments” is responsible for legal metrology activities and performing type examination, initial and subsequent verification of measuring instruments subject to metrological control. Since 2003 an authorization procedure has been initiated for laboratories as regards carrying out initial and subsequent verifications of electricity

meters,, water meters, heat meters and other measuring instruments. In case of conflicts DG “MMI” carries out metrological expertise of such measuring instruments.

In order to be capable to perform duly its basic obligations by covering the entire scope of examination and verification activities DG "MMI" must possess sets of testing standard equipment insufficient for the time being. This issue is of great importance for DG "MMI" activities because they, directly or indirectly, address the issues related to public health, public safety, public order, protection of the environment, levying of taxes and duties, protection of the consumers and fair trading.

DG “MMI” testing and verification laboratories, located in Sofia and 16 regional departments, were equipped mainly during 70s and 80s. The laboratory equipment is not state-of-the art and has no capabilities to cover the full range of measurements relating to the testing or verification of measuring instruments. For example, nowadays verification of taximeters is carried out on a route distance. Laboratory equipment used for verification and metrological expertise of electricity meters does not have satisfactory uncertainties as regards testing of high accuracy static electricity meters. Lack of laboratory equipment does not allow carrying out of such tests as vibration, durability, temperature and humidity control that are of great importance for reliable measurement performance. Therefore the supply of such monitoring equipment is required in order to assure proper environmental conditions within all laboratory premises of DG “MMI”.

With respect of the forthcoming adoption of MID, which will be transposed into Bulgarian legislation under the Law on Technical Requirements for Products, and its subsequent implementation, significant efforts are required as regards undertaking relevant measures. This issue addresses not only the EU Member States but all applicant countries as well. Preparation of the MID implementation in Bulgaria has already been undertaken through a self-evaluation and analysis of the existing administrative and measurement capacity within the BIM and SAMTS structural units, namely Directorate General "Measures and Measuring Instruments" (DG "MMI") and Directorate General "Metrological Supervision" (DG "MSv").

The Directive on Measuring Instruments applies to the devices and systems with a measuring function defined in the instrument-specific annexes concerning water meters, gas meters and volume conversion devices, active electrical energy meters, heat meters, measuring systems for continuous and dynamic measurement of quantities of liquids other than water, automatic weighing instruments, taximeters, material measures, dimensional measuring instruments and exhaust gas analyzers.

According to the current legislation these measuring instruments are subject to legal metrological control laid down in the Ordinance on Measuring Instruments under the Law on Measurements.

The forthcoming transposition in 2006 of the Directive on measuring instruments into the Bulgarian legislation will require the existence of already created and working conformity assessment bodies for measuring instruments falling within the scope of the Directive.

The experience gained from the implementation of the legislation, transposing the New Approach directives shows the need of well-established and functioning relevant conformity assessment bodies by the moment of coming into force of this legislation.

In this respect it is necessary the legislative basis to be prepared, on the basis of which the conformity assessment body for measuring instruments will be established and developed.

Through BIM establishin a potential conflict of interests between the different activities related to conformity assessment, designation of conformity assessment bodies and market surveillance is avoided. This fact will enable the separation of an independent conformity assessment body,

initially in the field of conformity assessment of non-automatic weighing instruments and subsequently in the field of assessment of water meters, gas meters and volume conversion devices, active electrical energy meters, heat meters, measuring systems for continuous and dynamic measurement of quantities of liquids other than water, taximeters, all covered by MID, by using the administrative and technical capacity of DG “MMI”.

In this connection supply of a new bench for gas flow rate measurements will ensure performing tests and verifications of big diameters gas flow meters. Provision of electricity meters and taximeters benches will allow regional departments to provide short-distance “product verifications” and metrological expertise of respective measuring instruments. In Bulgaria there are no manufacturers of measuring systems for liquids other than water. There are only manufacturers that produce ancillary equipment to those systems like indication devices and counters and companies which recycle and assemble measuring systems for liquids other than water.

The main importers of measuring systems for liquids other than water are mostly from the EU Member States. Part of those importers are authorized representatives of leading European companies. Most of the measuring systems for liquids other than water offered to Bulgarian market are second hand. That requires strengthened control of those systems.

Type approval testing and metrological control of measuring systems for liquids other than water is limited to determination of the flow rate and the accuracy of the systems. Technical capacity for testing of ancillary equipment and determination of its influence on the measurement accuracy is missing. It is not possible to take into account the influence of the external factors (ambient temperature and liquid temperature, liquid viscosity) on the accuracy, required by the respective legislation.

Taking into consideration the above-mentioned forthcoming implementation of MID certain supplementary measures need to be undertaken for carrying out all conformity assessment related-activities as laid down in the directive. The latter requires strengthening the technical expertise on measuring instruments conformity assessment procedures as well as improvement of the existing testing equipment for covering respective conformity assessment procedures. As regards the latter SAMTS uses all opportunities offered by different programs for supply of equipment needed, as the available financial resources are strongly insufficient. One part of the required equipment for DG “MMI” was already planned to be supplied under PHARE 2003 Programme, in particular in the field of measuring systems for liquids other than water and measuring instruments used in health care, but no contracts were concluded.

A draft Law on Medical Devices was elaborated, which is in a process of inter-institutional coordination. Through the Law and three ordinances on its implementation the Directives 90/385/EEC, 93/42EEC and 98/79/EC on medical devices will be transposed into Bulgarian legislation.

The Ordinance on the requirements to measuring instruments under the Law on Measurements determines the measuring instruments that are subject to legal control, including these that are subject to legal control because of national specifics and reasons. In the field of healthcare the following medical devices with measuring functions are subject to control: clinical thermometers, blood pressure meters, electrocardiographs, audiometers, clinical dosimeters, focimeters.

In the Ordinance the requirements to measuring instruments for which no relevant European directives exist are laid down on the basis of the respective recommendations of the International Organisation for Legal Metrology (OIML).

According to Article 26, paragraph 3 of the Law on Measurements, where the measuring instruments bear the conformity marking in accordance with the Law on Technical Requirements for Products, they are subject to subsequent verification.

According to the Law on Measurements, only medical devices with measuring functions that have a positive result from the metrological control must be used in the health sector. In Bulgaria mainly physiotherapeutic, sterilizing and surgical appliances and dental mechanical equipment is manufactured. However, within the country there are no producers of measuring instruments subject to legal control and used in the healthcare sector.

The measuring instruments used in the healthcare sector in Bulgaria are imported from the EU Member States as well as other countries like China, Russia, Japan, Singapore, etc.

The established trend for import of a great number of clinical thermometers and blood pressure meters from Russia and China still continues - about 90 %. Usually, these measuring instruments do not bear the conformity marking and that is why according to the Law on Measurements they are subject to type approval examination, initial and subsequent verifications.

The above mentioned imposes the carrying out of mandatory metrological control of measuring instruments used in health care in the next few years.

The condition of the equipment in the laboratories for carrying out control of clinical thermometers and focimeters is as follows:

- The standard thermometers were supplied in 1979. In some of the laboratories they are broken and somewhere they are unusable due to a change in the metrological characteristics or breaking of the mercury column;
- The thermostats do not have the necessary stability due to technical obsolescence;
- There is a centrifuge in only one laboratory, which is also technically obsolete and have undergone numerous repairs;
- Digital ohmmeter and resistance decades for control of clinical electrical thermometers are missing;
- The two sets of test lenses (Russian manufacturing) and the focimeter AUS of Jena (former DDR) were supplied in the 1970s and make the measurements difficult and inefficient. The latter is almost completely out of use.

In the laboratories for carrying out control of sphygmomanometers, the pressure balances were supplied more than 20 years ago. They do not ensure the necessary time for maintenance of the pre-set pressure values in spite of the frequent repairs. Measurement standards for control of automated sphygmomanometers are missing.

There is one laboratory for verification of audiometers in the country. Currently, a small number of audiometers are verified in this laboratory because of its limited technical capacity.

The equipment in this laboratory is also technically obsolete, very often it causes defects and inaccuracies in measurements and control. The establishment of a mobile laboratory is necessary for the purpose of performing verifications on the territory of the whole country.

According to the Law on Measurements these devices, following the OIML recommendations, have been included in the legally controlled group of measurements. Considerable increase of customers' applications is expected as from the current year. The available equipment capacity can not meet the expected demand due to its extremely low efficiency. On the other hand, its metrological characteristics is too poor to allow a type approval examination for devices imported from the countries like China, Russia, Japan, Singapore, etc.

Sustainable development of the Bulgarian manufacturers of measuring instruments will also rely on capabilities of Bulgarian CABs to assure qualified, reliable and short-distance services at reasonable prices.

In the light of the above mentioned reasons the following measuring and testing equipment should be provided:

Testing equipment for measuring systems for liquids other than water

The testing equipment supply includes design, supply and installation of and the equipment specified in the Table below.

| Equipment | Performance characteristics | Qty | Price (k€) |
|---|--|-----|------------|
| Test rig for type approval testing of fuel dispensers and calibration of fuel flow-meters | As specified in Annex 4.A | 1 | 350 |
| Test rig for type approval testing of LPG dispensers and calibration of LPG flow-meters | As specified in Annex 4.B | 1 | 470 |
| Calibration facilities for provers calibration | As specified in Annex 4.C | 1 | 80 |
| Equipment for performance of test for electronic measuring systems of fuel dispensers | As specified in Annex 4.D | 1 | 200 |
| Mobile laboratory for verification of fuel and LPG dispensers | As specified in Annex 4.E | 1 | 200 |
| Standard bench for gas flow meters testing | Flow from 50 to 1500 m ³ /h. Uncertainty $u = \pm 0,2 \%$ The standard bench shall include the following: <ul style="list-style-type: none"> • Flow rate meters – at least 4 pieces; • Controllers for pressure, temperature and humidity measurement; • Setting and control devices (valves and throttles); • Setting devices with end positioning ; • Fans (vacuum pumps); • Collectors; • Fittings. | 1 | 400 |

Note: The design cost is included in the respective prices of the equipment to be supplied.

Velocity, acceleration, vibration and impact measurement equipment

| Equipment | Performance characteristics | Qty. | Price (k€) |
|--|--|------|------------|
| Benches for verification of taximeters | Roller set with electric drive: Max. measuring speed at 2000 kg axle load: 60 km/h Max. measuring speed at 1400 kg axle load: 120 km/h | 6 | 240 |

Environment monitoring equipment

| Equipment | Performance characteristics | Qty. | Price(k€) |
|-----------------------------------|---|------|-----------|
| Environmental test chamber | Temperature range (as minimum) from -60 °C to 90 °C; Volume of the chamber > 4 m ³ Minimum humidity range: from 20 % to 95 % relative humidity | 1 | 100 |

Vibration measurement equipment

| Equipment | Performance characteristics | Qty. | Price (k€) | |
|-------------------------------------|---------------------------------|---|------------|-----|
| Bench for vibrations testing | <i>Random vibration</i> | | 1 | 100 |
| | Total frequency range | 10-150 Hz | | |
| | Total RMS level | 1,6 m.s ⁻² up to 16 m.s ⁻² | | |
| | ASD level 10-20 Hz | 0,048 m ² .s ⁻³ up to 4,8 m ² .s ⁻³ | | |
| | ASD level 20-150 Hz | - 3 dB/octave | | |
| | Number of axes | 3 | | |
| | <i>Sinusoidal vibration</i> | | | |
| | Frequency range | 10-150 Hz | | |
| | Max. acceleration level | 2 m.s ⁻² up to 10 m.s ⁻² | | |
| | Number of sweep cycles per axis | 20 | | |

Medical devices with measuring functions

| Equipment | Performance characteristics | Qty. | Price (k€) |
|--|-----------------------------|------|------------|
| Equipment for testing and verification of clinical thermometers | As specified in Annex 4.F | | 380 |
| Equipment for testing and verification of non-invasive blood pressure measuring instruments | As specified in Annex 4.F | | 220 |
| Equipment for optical measurements | As specified in Annex 4.F | | 50 |
| Equipment for acoustic values measurement for mobile laboratory | As specified in Annex 4.F | | 50 |

Electricity

| Equipment | Parameters | Pieces | Cost (k€) |
|---|--|--------|-----------|
| Automated measuring station (10-positional) for verification of electricity meters | Three-phase station for active and reactive power - Class 0,05 : 1. Standard three-phase electricity meter: <ul style="list-style-type: none"> • Power supply: 230 V +10 % • Power consumption: < 50 VA • Voltage range: up to 320 V | 6 | 660 |

| | | | |
|--|--|--|--|
| | <ul style="list-style-type: none"> • Current range: from 20 mA to 120A 2. Three-phase electronic current and voltage supply source : <ul style="list-style-type: none"> • Power supply: 230 V +10 % • Output power: < 300 VA • Voltage range : up to 320 V • Current range: from 0 mA до 120 A | | |
|--|--|--|--|

Total amount: € 3 500 000

Directorate General "Metrological Supervision", SAMTS is responsible for performing metrological supervision on persons who have responsibilities under the Law on Measurements, in particular, persons, who: use units of measurement, manufacture or import measuring instruments; use measuring instruments; repair measuring instruments; are authorized to carry out verification of measuring instruments; manufacture or import pre-packages or bottles used as measuring containers; offer pre-packages or bottles for sale.

The directorate's inspectors have a high professional qualification level but they still need to obtain further expertise on some specific aspects of their obligations concerning the implementation of legislation transposing the *acquis* related to legal metrology and pre-packages. Some practical aspects as regards the implementation of the secondary legislation on pre-packages have been addressed under a bilateral Project BUL0019 to FEU+6 Danish Pre-accession Programme, namely providing training for twenty (20) directorate's inspectors.

As regards the forthcoming MID implementation DG "MSv" will assume new responsibilities relating to market surveillance of the measuring instruments within the scope of the directive. With respect of the latter DG "MSv" inspectors need to be trained on market surveillance-related specifics.

The directorate strongly needs appropriate IT and communication facilities.

DG "MMI" and DG "MSv" experts have been taking part in the work of WELMEC Working Groups on Metrological Supervision (WG5), Pre-packages (WG6), Software (WG7) and Measuring Instruments Directive (WG8).

3. Designation of conformity assessment bodies, accreditation and market surveillance

Directorate "Designation of Conformity Assessment Bodies", SAMTS is responsible for assessment of technical competency and capability of bodies, applying for designation, to perform the procedures for conformity assessment of products with the essential requirements of twenty one ordinances transposing the respective New Approach Directives. The Directorate's activities are based on the already adopted designation procedure. Taking into consideration the fact that each NA Directive sets out some particularities as regards CABs designation, the structure of this procedure should be properly adjusted to them. The latter will require adequate training of the Directorate's personnel on their implementation.

The Directorate contributes to the establishment of a national conformity assessment system assisting and co-ordinating designated bodies' participation in various international projects and programmes.

The practical implementation of ordinances entails a number of difficulties for both the conformity assessment bodies and designating authorities, which are also responsible for performing surveillance regarding whether the requirements for granting designations have been met. This is due mainly to the fact that these activities are performed for the first time in the country as well as that certification activities have not been widely carried out within the country.

With regard to the above-mentioned the necessity exists of maintaining the qualification of directorate's personnel, and also need of broadening the experience within the scope of the rest of the ordinances, the latter being complex in nature and specific as regards the products to be assessed.

A number of activities related to ongoing development of new documents, as well as positions elaborated by the European Commission as regards setting out new requirements for notified bodies and conformity assessment activities have been undertaken within the European Union. The development of these documents is required due to the following facts:

- NA Directives set out only general requirements relating to conformity assessment bodies but do not contain any kind of guidelines with respect to the way of carrying out evaluation regarding whether these requirements have been met.
- No criteria for the work of the notifying authorities or of the notified bodies have been established. The requirements relating to notified bodies should be further precisely defined.
- A supplement to the directives is envisaged which shall make a provision that notified bodies are required to exchange experience among themselves.
- Also a discussion is to be carried out as regards undertaking of activities against notified bodies, where these bodies do not fulfill their obligations in compliance with requirements or where they fail to perform conformity assessment activities.
- Guidelines for the use of accreditation for the purposes of notification are to be established. With regard to this it is expected to ensure independence of accreditation activities from commercial conditions and competitiveness among various accreditation bodies. The respective legal measures will be laid down in a legislative document on notification.
- The European Commission considers that a provision should be made in the directives for exchange of information on non-compliant products subject to conformity assessment as well as a requirement for assistance in the activities of notified bodies working groups and exchange of experience among them.

In performing its activities Directorate "Designation of Conformity Assessment Bodies" is guided by and follows the European practice as regards assessment and designation of conformity assessment bodies but despite that further knowledge and implementation of new rules and requirements is needed.

It should be taken into consideration that the directorate's experts have limited access to the relevant EC working groups (NB-Coordination groups, Directives Expert groups, etc.) and are not familiar with the their organisational mechanisms and activities.

Up to the present moment the directorate's experts have been consulted and trained mainly on five ordinances transposing the following directives: LVD, EMC, Toys, Gas Appliances and Machinery (within the framework of the Twinning Light project BG/2001/IB/IF-02 "Establishment of designating authorities (future notifying authorities) and designation procedures under New Approach Directives").

Taking into consideration the facts mentioned above, the directorate's staff should obtain advisory support and be trained on implementation-related issues as regards the NA directives, in particular pressure equipment directive (PED), personal protective equipment directive (PPE), recreational crafts directive, hot water boilers and noise emission directives which will enable the requirements for notifying bodies and overall harmonisation with the European practice to be fully satisfied.

Economic operators need to be fully aware of the new technical regulations and access to crucial business information relevant to their activities. An information contact point should be established

in order to serve adequately and satisfy their needs in this respect. With view of this, respective IT and communication equipment should be provided, since at the present moment the latter is not at a satisfactory level. Availability of adequate equipment will provide opportunity for reliable information of higher quality - registers of the granted or withdrawn conformity assessment designations; updated lists of the published harmonised standards under the respective directives; documents established and kept during the process of evaluation of candidates applying for designation.

Directorate General "Market Surveillance", SAMTS which is responsible for surveillance of products placed on the market and/or put into service subject to essential requirements as defined by ordinances to the Law on Technical Requirements for Products transposing particular New Approach Directives. Market surveillance inspectors monitor that products placed on the market comply with the provisions of the applicable ordinances transposing the NA Directives. The directorate takes actions to restrict or prohibit the placing of products on the market or to withdraw products from the market.

Under the Twinning project within the frames of Phare 2000 project the market surveillance inspectors have been trained in the principles of the NA Directives and are able to apply practices of the market surveillance of products covered by the NA Directives. The training activities covered seminars on the NA Directives; preparation of annual plans for inspections; practical training in performing on-site visits and products sampling for testing purposes. During the study visits in Denmark and Spain the inspectors were introduced with the market surveillance practice and the operation of the established information system in these EU member states. Also some steps have been taken in order to improve the situation as regards availability of communication facilities - some pieces of IT equipment have been supplied and database established. Despite the improvements made, the directorate still needs adequate IT and communication facilities.

All the above-mentioned could serve as a basis for putting into operation of computer applications developed by means of which all relevant data will be administered, actual cases managed and information with national and international counterparts exchanged. For this purpose an integrated information management system needs to be established and implemented in the country.

According to the main findings and recommendations of the peer-review mission report (EU/EFTA "Quality Infrastructure" Project, 2003) on market surveillance the practical experience and technical competence seems at the present activities to be satisfactory. It is considered that when the market surveillance activities will be expanded and fully implemented, in addition specialised expertise of DG "MS" inspectors will be required.

Another recommendation addresses the issue of establishment of a common electronic information system, which can be used for co-ordination of market surveillance activities and exchange of information. Such information system is not yet available, but has to be implemented with possible access from all locations and inspectors.

The assessment of the progress made in the field of market surveillance conducted under the ongoing "Quality Infrastructure for Bulgaria and Romania" Project pointed out that progress has been made but there is still a need of strengthening of inspectors' expertise and establishment of common electronic information system for coordination of market surveillance activities and exchange of information.

Directorate General "Technical Inspection" is the unit within the SAMTS structure responsible for surveillance of high-risk equipment in the country.

Technical inspection in the Republic of Bulgaria dates back from 1917 when the Law on control of steam boilers and tanks was adopted. Till nowadays it exists on the basis of this law, which has been amended several times during the course of time, but its basic principles have remained unchanged. Initially the scope of technical inspection was limited only to steam and hot water boilers and tanks for compressed air. The present legal framework under which the technical inspection is carried out comprises of the Law on Technical Requirements for Products, namely Chapter Five “Technical inspection of high-risk equipment”, and the respective secondary legislation, e.g. the ordinances on safe operation and technical inspection of high-risk equipment (HRE). In recent years according to LTRP new types of high-risk equipment have been subject to technical inspection.

Because of the fact that technical inspection activities concern directly the interests of the Bulgarian producers and foreign investors, it is necessary the technical inspection to be carried out fully in conformity with the good practice in EU Member States. This objective has been supported by twinning light project which was the first project of this kind focused especially on alignment of Bulgarian legislation and technical inspection practice with the European one. In order to perform its activities at the level required it is recommendable that surveillance personnel obtain targeted practical training in the groups of products covered by certain NA directives which fall within the scope of technical inspection.

According to the last amendment of LTRP and Rules of Procedure of SAMTS the DG “TI” has been also assigned with market surveillance functions in the field of HRE. The latter will require respective practical training of DG “TI” personnel in newly assumed tasks.

In performing its activities DG “TI” works jointly and in close cooperation with a number of bodies and institutions in the country. The available IT and communication equipment does not adequately meet the directorate's needs. DG “TI” must be supplied with the required IT equipment and communication facilities so as to become a part of the common information management system, serving the activities of market surveillance authorities by offering services to the relevant parties in the field of conformity assessment.

Moreover, in the beginning of 2004 DG TI was accepted as a provisional member of CEOC which on the one hand will ensure successful exchange of information and experience on technical inspection and certification activities with the other members but on the other hand requires strong preparation with respect of facilitating the process of meeting the requirements for full membership. This presupposes that this inspection body must obtain specific assistance (advisory support, equipment, etc.) so as to enable it to fully meet all membership criteria. It should be taken into consideration that among others there should exist an established and operational information exchange system corresponding to the level of EU technical inspection bodies.

4. Exchange and provision of information in the field of metrology, conformity assessment, accreditation and market surveillance

4.1. INTRODUCTION

The State Agency for Metrological and Technical Surveillance (SAMTS) has the following activity fields:

- Market Surveillance;
- Technical Surveillance of High-Risk Equipment;
- Designation of Conformity Assessment Bodies;
- Liquid Fuels Quality Control;
- European Integration and International Cooperation.

The Bulgarian Institute for Metrology has the following activity fields:

- Fundamental Metrology (National Measurement Standards);
- Legal Metrology (Metrological Control).

To cover these fields BIM and SAMTS have the following organizational structure:

- Administrative-Legal and Informational Services Directorate, SAMTS;
- Financial-Economic Activity and Property Management Directorate, SAMTS
- National Center of Metrology (Directorate General), BIM;
- Measures and Measuring Instruments (Directorate General), BIM;
- Administrative-Legal Service, Financial-Economic Activities, Property Management, Informational Service and International Cooperation (Directorate), BIM;
- Metrological Supervision (Directorate General), SAMTS;
- Market Surveillance (Directorate General), SAMTS;
- Technical Inspection (Directorate General), SAMTS;
- Designation of Conformity Assessment Bodies Directorate, SAMTS ;
- Quality Control of Liquid Fuels (Directorate General), SAMTS;
- International Cooperation and European Integration Directorate, SAMTS.

The staff of SAMTS and BIM is located in:

- Central Office of Agency with 120 employees, Central Office of Metrology(NCM) with 190 employees and one Office with 55 employees, all in Sofia;
- 15 Regional Offices with 25-70 employees in Blagoevgrad, Burgas, Varna, Veliko Tarnovo, Vidin, Vratsa, Gabrovo, Lovetch, Pleven, Plovdiv, Rouse, Sliven, Stara Zagora, Haskovo and Shumen;
- 12 Local Offices with 2-5 employees in regional towns Pernik, Kjustendil, Yambol, Dobritch, Montana, Pazardjik, Smolian, Razgrad, Silistra, Targovishte and Kardjali;
- 9 Local Offices with 1 employee in Petritch, Dupnitsa, Gotse Delchev, Lom, Oriahovo, Karlovo, Kazanlak, Svishtov and Harmanli.

4.2. EXISTING COMPUTER AND INFORMATION RESOURCES

SAMTS and BIM use the following IT resources:

- One Local Area Network (LAN) at the Central Office of Agency in Sofia, connected to the Optical Network of Government Administration (ONGA), including: 1) One Internet Access/Firewall Server, 2) One LAN subsystem with Windows NT Server and 10 workstations (W/S), 3) One LAN subsystem with Windows NT Server and 5 W/S and 4) 5 individual W/S;
- One LAN at the Central Office of Metrology in Sofia, connected to ONGA, including: Windows 2003 Server, Sybase ASE 12.5 RDBMS with 5 client licenses, Internet Access/Firewall Server and 40 W/S;
- One LAN at the 3-th Office in Sofia 40, including Windows NT Server and 10 W/S;
- 15 LANs with Windows NT Servers and 5 W/S at all Regional Offices (In each Regional Office there are Regional Units of 6 Directorates of SAMTS);
- 90 stand alone W/S, located in Sofia and in the 26 Regions.

SAMTS faces the following IT problems:

- All computer equipment, excluding Windows 2k Server, is 4-5 years old;
- All network software allows only "File Transfer" operations;
- Internet is available for small number (40 of 955) of specialists;

Application Software - MS Office;

- There are no Applications for specific activities of the Directorates.

4.3. NEEDS

SAMTS and BIM target at:

- Additional development of the current existing system including improvement of the technical level, communications and functionality.
- Integrate all existing subsystems in a centralized system that allows better connectivity and management of resources.
- Improve customer services by on-line processing of requests and by offering full range of services via Internet and Intranet.

In order to improve the performance and the quality of the Information Services for their personnel and clients, SAMTS and BIM need:

- Building of Main Data Centers, one for SAMTS and one for BIM, with powerful Servers for Database Management, System Monitoring, Specific Applications and WEB-Applications;
- Installation and Implementation of High-Performance Relational Database Management Systems;
- Implementation of Enterprise Portals;
- Development of Applications for Specific Activities (Document Flow Management, Customer Relationships Management, Enterprise Resources Planning , etc.) and Integration in Portals;
- Upgrading of the existing LANs with:
 - 32 small File servers (16 for Agency and 16 for Metrology);
 - 230 new W/S (90 in Sofia Offices, 140 in the Regional Departments in Plovdiv, Varna, Burgas, Rouse, Blagoevgrad, Lovetch, Pleven, Stara Zagora, Haskovo, Vidin, Veliko Tarnovo, Vratsa, Gabrovo, Sliven and Shumen)
 - 36 high-productivity Network Printers;
- Supply of additional 25 W/S with modems and personal printers (16 for the Local Offices with 2-5 employees and 9 for the Local Offices with 1 employee).

Communications between Regional Offices and Offices in Sofia (Main Data Centers) will be via ONGA or ADSL services. Communications between local offices and the Central Office will be via Asynchronous lines.

Thus Enterprise Information Systems, working with Centralized Databases, will be established at SAMTS and BIM. It will serve the SAMTS and BIM activities as well, as adequately respond to the economic operators demands, providing information electronically via the national contact point.

This Systems and Portals solutions should provide connection to both SAMTS and BIM processes for 400 internal users, citizens, businesses, or partners so they can serve themselves. Also Portal solution will enable secure access across multiple platforms and devices, including support for Government to Business services.

Hardware and Base Software:

Database and Application Server – 2 pieces

| feature | value |
|-------------------------|------------------------------------|
| Processor | 64-bits, Multiprocessor, RISC |
| Memory | Up to 16GB |
| Disc Storage | Internal: 100GB External: 400GB |
| Operating System | 64- bits, Multi-user, Multi-task |
| Other | UPS 20kVA |

Relational Database Management System

| feature | value |
|----------------|------------------------------|
| Type | Sybase ASE 12.5 |
| Upgrade | Add Two Server Installations |
| Expand | Add 200 Client Licenses |

WEB Server - 2 pieces

| feature | value |
|-------------------------|------------------------------------|
| Processor | 64-bits, Multiprocessor, RISC |
| Memory | Up to 16GB |
| Disc Storage | Internal: 100GB External: 400GB |
| Operating System | 64- bits, Multi-user, Multi-task |

Enterprise Portal Server - 2 pieces

| feature | value |
|-------------------------|------------------------------------|
| Processor | 64-bits, Multiprocessor |
| Memory | Up to 4GB |
| Disc Storage | Internal: 100GB External: 200GB |
| Operating System | 32/64- bits, Multi-user |

External Storage Subsystem - 2 pieces

| feature | value |
|------------------|------------------|
| Disc space | Min. 1TB (RAID) |
| Operating System | ALL |
| Other | Host Independent |

Small Server – 32 pieces

| feature | value |
|------------------|----------------------------|
| Processor | 32/64-bits, Multiprocessor |
| Memory | Up to 4GB |
| Disc Storage | Internal: 100GB |
| Operating System | 32/64- bits, Multi-user |
| Other | UPS 1500kVA |

Personal Workstation – 230 pieces

| feature | value |
|------------------|--------------------|
| Processor | 32/64-bits, Single |
| Memory | Up to 256MB |
| Disc Storage | Internal: 40GB |
| Operating System | 32/64- bits |

Personal Workstation – 25 pieces

| feature | value |
|------------------|--------------------|
| Processor | 32/64-bits, Single |
| Memory | Up to 256MB |
| Disc Storage | Internal: 40GB |
| Operating System | 32/64- bits |

Network Printers – 36 pieces

| feature | value |
|---------|--------------------------|
| RAM | 16 MB |
| Other | 24 pages/min, monochrome |

Total Budget: 1 010 000 Euro

Executive Agency “Bulgarian Accreditation Service”

The Agency is a full member of European cooperation for Accreditation (EA) since 2001, and signed successfully two MLAs in March 2005 in the fields of quality systems certification bodies and personnel certification bodies. Recent developments indicate that with the expected status of a signatory to EA MLAs, EA “BAS” has occupied a growing share of client interest in its fields of accreditation. Strengthening the capacity of EA “BAS” becomes of greater importance, together with maintaining its competence as a signatory.

The signing EA MLAs in all fields of accreditation of EA “BAS” will affect positively the Bulgarian market for accession to the EU single market, and will serve to boost all sectors of the Bulgarian economy, inter alia

- foodstuffs,
- chemistry and chemical products,
- textiles,
- pharmaceuticals

in their effort towards competitiveness.

By average statistics, over 100 client contracts are concluded each year by the Agency, bringing the total of processed contracts to 400 at the end of 2004. Each client contract requires organizational and administrative service for the duration of accreditation, i.e. a period of 4 years, and at every step of the accreditation follow-up process. Separately, the Agency handles client enquiries on a day-to-day basis and interaction with other governmental organizations, economic operators and international partners, which call for modern hardware and software backup.

Currently EA “BAS” employs full-time staff of 25 persons, among which 1 executive director, 2 legal advisors, 3 accountants, 2 technical assistants, 1 head of human resource department and 16 lead assessors, each combining functions of administration and assessment in one or more of EA “BAS” fields of accreditation. To ensure its activities, the Agency also operates 9 external lead assessors and other assessor staff, entered on the official register of EA “BAS”. Despite its limited human resource capacity, the Agency has succeeded to prove professionalism and viability. On the other hand, the statute of a governmental body in subordination to the Ministry of economy has disadvantaged EA “BAS” from using its proceeds for renovation of equipment and adequate modernization of information and software facilities. The equipment now in use at the Agency is obsolete and inept to procure IT information backup and work environment to EA “BAS” staff.

From a total number of 23 personal computers now available at EA “BAS”, 14 have outdated technical parameters (Pentium II, below 100 MB RAM), 5 portable PCs have been purchased during the past three years (P IV, 256 MB RAM), and 4 work stations also supplied in 2002 (P Celeron/ AMD Athlon, 256 MB RAM). During 2004, a server has been installed to host critical business information and provide one-point gateway access to Internet.

The dominant part, if not all of the now existing IT equipment at EA “BAS” is outdated. The PCs do not meet the requirements for up-to-date communication, work on the Internet and information security. The personal computers at EA “BAS” cannot operate modern software products, anti-virus software, operational systems and text processing programs of recent generation.

The responsibilities of assessors, both BAS staff and external, involve working on a tight schedule and often away from BAS offices and in various locations outside Sofia city. Visiting clients, assessors perform functions of assessment and administrative work that require portable PCs instead

of the work stations now in use. The estimated need for IT equipment covers 30 portable personal computers to include EA "BAS" full time and external lead assessor staff, from which up to 5 PCs could be purchased from own income. Some 5 work stations will be needed for day-to-day processing of information at EA "BAS" headquarters.

The features of the required management information system (MIS) combining a help-desk should incorporate integrated software facilities for preparation of reports in relation to accreditation procedures including at a distance from EA "BAS" office, information system for document turnover and a database of accredited labs and CABs operating a tracking facility at each step of the accreditation process from registration of an application through the follow-up until expiry of an accreditation certificate, surveillance and current status of accreditation. The IT equipment should also provide for electronic signature at each work place and modern software products, e.g. operational systems, anti-virus software and text programs (XP or latest).

The procurement of a state-of-the-art information system and IT equipment for EA "BAS" will ensure operation of own and external assessor teams, in addition diminishing administrative work for handling and tracking client contracts. The effective personnel performance will result in lesser human resource demand.

In June 2004 by Decree № 523 /23.06.2004 the Council of Ministers transferred to EA "BAS" property - a room of 250 sq. m., located on the second floor in the same building as the headquarter offices. The room has been designated to serve as a training and conference center for EA "BAS". At completion of its renovation, the room will require modern presentation and conference facilities, meeting EA "BAS" needs to host seminars, presentations and trainings for its assessors, clients and partner organizations.

List of equipment for EA "BAS"

| No | Designation | Unit | Price per unit, EUR | Price, EUR |
|-----------|--|-------------|----------------------------|-------------------|
| 1 | Notebook CPU: Intel® Pentium®M processor 2.0GHz RAM: 512MB DDR; HDD: 60GB CD: CD-RWR | 25 | 2 000 | 50 000 |
| 2 | Network Printer – LJ, A4, Black & White, 600x600 dpi, speed 24 ppm, network ready | 4 | 1400 | 5 600 |
| 3 | UPS – 3 kVA, 120 min – load; Input Volt 187-285 VAC 1 phase, Output – 220 VAC 1 phase | 2 | 1 500 | 3 000 |
| 4 | Workstation CPU: CELERON D 2400Mhz, S478, 256k, 533Mhz RAM: 512 MB DDR HDD: 120.0 GB CD: CD-RWR Monitor: 17' Flat | 5 | 800 | 4 000 |
| 5 | Copy center (including network, printing, copying, stapling, duplex) | 1 | 11 000 | 11 000 |
| 6 | Scanners | 5 | 300 | 1 500 |

| | | | | |
|----|--|----|--------|---------------|
| 7 | Integrated Management Information System | 1 | 30 000 | 30 000 |
| 8 | Licenses software, 30 notebooks + 5 work stations | 35 | 35 000 | 35 000 |
| 9 | OS, MS Office | 1 | 500 | 500 |
| 10 | Electronic signature devices | 35 | 300 | 10 500 |
| 11 | 19` 42 Units RACK | 1 | 2 000 | 2 000 |
| 12 | System software, with client licenses - CorelDRAW Graphics Suite 11, English, Win98/2000/ME/NT/XP/Mac; ABBYY FineReader 6.0 Professional – Software for Optical Character Recognition for Cyrililic Symbols | 5 | 210 | 1 050 |
| | Technical equipment specification for the conference/ seminar/ training room, transferred to EA BAS by Decree № 523 /23.06.2004 of the CoM | | | |
| 13 | WorkStation Motherboard-System bus 800 MHz, DDR 400, ATA 100/Serial ATA/SCSI, USB 2.0 Fi-Wi, AGP 8X/Blue tooth, SB; Processor – min 2.0 GHz; FDD- 3.5”, 1,44 MB; HDD Controller; HDD – 1x60GB or up; Ultra ATA100/133, 7200 Rpm; RAM- 512 DDR 400; Video- 64/128 MB DDR video card 8xAGP; CDRW – 40/12/48; Speakers; Network card 10/100 Mb/s Ethernet; I/O ports – serial, parallel, USB 2.0 - 4 ports FI-WI (IE 1394)/Blue tooth; Keyboard; Mouse; pad; Microsoft Windows XP Professional Edition CD-ROM OEM; Monitor – 17” Flat display Monitor, 0.24 dpi; | 4 | 1700 | 6 800 |
| 14 | Notebooks 15” Viewable TFT Color Display; P4/2000/512K; 512 DDR, 40 GB 7200/ DVD+ RWR FDD 56k SB; LAN WIN XP Pro, Li-Ion battery | 5 | 1 700 | 8 500 |
| 15 | Multimedia projector 2400 ANSI Lumen Brightness; 1024x768 XGA Resolution; 400:1 Contrast; SXGA/UXGA comp. Inputs: DVI, RGB, Audio: stereo, Video-RCA, S-video, Outputs: USB, RGB, Audio: stereo RGB cable, Remote control, CD Rom, A/V cable, MACadapter, PC Audio cable, USB cable, power cord, manual Automatic and adjustable, Soft case, Screen | 2 | 1 300 | 2 600 |
| 16 | Electronic board for multimedia presentations | 1 | 7 000 | 7 000 |
| 17 | Copying machine Laser, digital, black and white, printer option, speed min 60 copies/min., A3 max | 1 | 1 500 | 1 500 |
| 18 | Audio system Presidential post, delegate posts, post controller, amplifier, two-band columns | 1 | 4 000 | 4 000 |
| 19 | Conference chair-tables | 90 | 30 | 2 700 |
| 20 | Conference tables, 2 x 12 persons, or 4 x 6 persons | 2 | 350 | 700 |
| 21 | Module lecturer configuration for multimedia, OHP, PC | 1 | 400 | 400 |

| | | | | |
|----|--|---|---------------------|-----------------------|
| 22 | Laminating machine | 3 | 150 | 450 |
| 23 | Binding machine | 3 | 400 | 1 200 |
| 24 | Air-conditioning installation, split system warm/cold and ventilation for a room of 250 sq. m. | 1 | 10 000 | 10 000 |
| | | | <i>TOTAL</i> | <i>200 000</i> |

SPECIFIC REQUIREMENTS FOR TEST RIG FOR TYPE APPROVAL TESTING OF FUEL DISPENSERS AND CALIBRATION OF FUEL FLOW METERS

1. General description

The test rig is intended to be used for:

- Type approval testing of fuel dispensers and flow meters;
- Calibration of fuel mass and volume flow meters;
- Testing of gas separators efficiency.

The test rig should be suitable for carrying out the test procedures for type approval of fuel dispensers and flow meters, and gas separators efficiency as specified in OIML R 117 *Measuring systems for liquids other than water* and producing test data required for the test report format according to OIML R 118 *Testing procedures and test report format for pattern evaluation of fuel dispensers for motor vehicles*. Test results are needed for conformity assessment of fuel dispensers according to Directive 2004/22/EEC *Measuring Instruments directive* (that repeals Directive 77/313/EEC on measuring systems for liquids other than water and Directive 71/319/EEC on meters for liquids other than water).

The test rig should be suitable for calibration of mass flow meters according to Annexes A and B of the OIML R 105 *Direct mass flow measuring systems for quantities of liquids*.

The test rig should deliver adjustable flammable liquids flow-rate at following conditions:

- Flow rate range: from 1 l/min to 500 l/min;
- Fluid: petroleum products (gasoline and diesel);
- Working pressure: 10 bar;
- Hydrostatic testing pressure: 15 bar.

The test rig should ensure measurement of delivered volume with **accuracy** satisfying the requirements of OIML R 117, e.g. the overall accuracy of the test bench must be better than 1/5 of the figures designated in Table 1 for accuracy classes 0.3 and 0.5.

Table 1. Maximum permissible relative errors, on volume indications, according accuracy classes (Table 2 of OIML R 117)

| | Accuracy classes | |
|---|------------------|--------|
| | 0.3 | 0.5 |
| A | ±0.3 % | ±0.5 % |
| B | ±0.2 % | ±0.3 % |

Row A applies to pattern approval of complete measuring systems, for all liquids, all temperatures and all pressures of the liquids, and all flow rates for which the system is intended to be, or has been approved.

Row B applies to pattern approval of a meter, for all liquids, all temperatures and all pressures of the liquids, and all flow rates for which the system is intended to be approved.

The accuracy classes of systems/instruments to be tested are specified in Table 2.

Table 2. Accuracy classes of measuring systems classified according to their field of application (according to Table 1 of OIML R 117)

| Class | Field of application |
|------------|--|
| 0.3 | Measuring systems on pipeline |
| 0.5 | <ul style="list-style-type: none"> • fuel dispensers for motor vehicles (other than LPG dispensers) • measuring systems on road tankers for liquids of low viscosity |

The test rig should be designed based on a concept that the required flow rate for measuring modules should be ensured by a minimum number of tanks and pumps.

The functional scheme of the test rig is shown on Figure 1.

The main measuring modules are: 1) for type approval testing of dispensers and 2) for type approval testing and calibration of flow-meters. For module (1) the measurement is envisaged to be carried out with calibrated capacity measures, while for module (2) a small volume prover is to be used. These modules are functionally connected in parallel, but during the tests they will operate separately. For example, when the calibration is carried out by means of a prover, the diversion to the capacity measures is blocked, and vice versa.

The working station shall provide possibility for connection of the tested fuel dispensers and flow meters to the respective modules.

In addition a diversion to the bench for testing of gas separators efficiency must be provided.

The monitoring of the tests performed shall be possible both at the working station and at the control room.

Automatic level gauges for measuring the level of liquid in the storage tanks (OIML R 85) must be provided.

The test rig for type approval testing of fuel dispensers includes also a supply module, which should provide continuous flow of fuel up to 500 liters/min. The supply module is common for all measuring modules (for type approval testing and calibration of flow meters and for bench for testing of gas separators efficiency of fuel dispensers). The supply module consists mainly of storage tanks, tank for measured liquid, speed regulated pump(s), flow regulator, gas indicator, control flow meter(s) and tank for fuel refilling.

The installation of equipment is intended to be in a building located in Stara Zagora (Figure 2). The planned layout of laboratory premises is shown on Figure 3. The premises are supplied with fire detection and fire safety alarm as well as with security alarm system and meet the sanitary and hygiene requirements for work with petrol products.

The disposition of all tanks shall be such as to ensure minimum pumps' power consumption, stable pumps' operation, absence of cavitation and air intake. The storage tanks shall be equipped with a refuelling/refilling pump.

The test rig should include **storage tanks** for the two types of fuel (gasoline and diesel). The storage tanks capacity should exceed the volume of the fluid circulating within the test rig. The storage tanks should be tested for leakage. Each tank should be fitted with a level indicator and a level alarm, a pressure relief valve designed for the volume and filling flow, a stop valve at the bottom and a drain pipe with a valve.

The storage tanks must be located outside the building.

The tank for the liquid used for system's cleaning should be fitted with a feeding pipe and a stop valve at the outlet. The tank should be located outside the building. The capacity of the tank for the cleaning liquid should exceed the volume of the fluid circulating within the test rig.

The liquid chemical composition shall not cause any adverse environmental impacts.

The liquid chemical composition shall cause minimum corrosion effect on the system and shall be compatible with the fuel sealing and hydraulics.

The capacity of the **tank for measured fluid** must exceed the volume of the whole rig (including pipes) and to ensure continuous flow for up to 3 minutes at maximum flow rate.

The tank for measured fluid should be designed for a working pressure of 10 bar.

The tank for measured fluid should be located inside the premises in a temperature regulated room or case. The temperature of the room or case shall be regulated from minus 25 °C to 55 °C during the tests.

The tank for measured fluid should be provided with fuel homogenization system, necessary level indications and alarm and pipe for fuel sampling.

An adjustable and speed regulated electro-pump or set of electro-pumps should compensate fuel charge losses related to the various diameters of pipes at maximum flow rate and should ensure working pressure up to 10 bar and delivery from 0.5 m³/h to 40 m³/h at the working station input.

The test rig should include three **test loops** intended for following flow rates:

- Flow-rate from 1 to 50 liters/min and nominal pipes diameter DN 25 (1");
- Flow-rate 15 to 150 liters/min and nominal pipes diameter DN 50 (2");
- Flow-rate 125 to 500 liters/min and nominal pipes diameter DN 100 (4").

Each test loop should include:

- Regulated valve for flow regulation (adapted to the flow-rate);
- Automatic flow regulation equipment;
- Relief valve (adapted to the flow-rate);
- Check valve (adapted to the flow-rate);
- Gas extractor, fitted with a pipe for removing the gas in a funnel at a safe location;
- Calibrated mass flow-meter (Coriolis effect) for controlling the flow rate during testing of dispensers with resolution 0.05 % of the minimum value of the designed flow rates;
- Pipes adapted to the building design and the rig functionality
 - an appropriate length of straight and without any derivation or obstacle length of pipes upstream of the flow-meter to allow proper conditions for the flow-rate metering,
 - ISO/TR 3313:1998 – Measurement of fluid flow in closed conduits. Guidelines on the effects of flow pulsations on flow-measurement instruments.

The working station of the test rig should include:

- Two (2) isolating valves;
- Hose reels fitted with flexible hoses rolled on recalling drums to easily connect to:
 - different types of dispensers and different standard flanges,
 - different types of flow meters and different standard flanges (including flow-meters on road tankers);
- System for absorption and collection of possible leakages and spills;

- Tools necessary for adapting dispenser on the testing loop (including wrenches with pneumatic motors for assembling and disassembling).

The test rig should include two **manually operated inlet / outlet valves** for flow diversion to the testing loop intended for gas separators efficiency testing.

The determination of delivered volume in case of fuel dispensers' testing is supposed to be carried out with standard capacity measures (volumetric method) as specified in OIML R 120.

The test rig should include a **collecting tank meeting the at least the following requirements:**

- compatible with the ranges of liquid volumes to be measured;
- provided with dispositions for filling and emptying.

The test rig should include **tank for recuperation of the fluid** in pipes (by gravity) having capacity equal to the volume of pipes multiplied by 1.5.

All **the pipes** design should prevent remaining pockets of liquid after draining. A general slope of the pipes of minimum 3 to 5 % must be set up to allow correct and safe draining. Appropriate minimum straight length of pipes upstream and downstream of measuring devices must be provided. The length and configuration of the pipe's layout should be adapted to the laboratory premises and the installation design (see Fig. 1).

The pipes should be designed for the working pressure (10 bar) and made from stainless material, suitable for the petroleum product used.

The inside wall roughness (Rz) of the pipe before flow meters must be less than 2.

The valves should be constructed and designed for the fluids and pressures used on the rig and fitted with indicators of positions and indicators of flow direction.

For flow rate regulation a pneumatic piloted regulation valve must be used.

For prevention against hydraulic shocks, **absorbers** must be appropriately located.

The flow-rate regulation must be carried out by the pneumatic piloted regulation valve, a flow-rate meter, and automatics to set the flow at the required value.

The Small Volume Prover should be provided with necessary automatics for flow-rate measurement.

The test rig should include a **test bench for fuel dispenser gas separators efficiency testing** that:

- Operates in bypass of the fuel test loop;
- Is designed to test separators for flow rates up to 100 m³/h.

The gas separator test bench should include the following auxiliary equipment:

- Air compressor (delivery pressure up to 10 bar);
- Air pressure tank (volume of the tank minimum 200 l);
- Gas meter with a maximum flow rate of 50 m³/h and accuracy 0.5 %;
- Flow meter with flow rate range up to 100 m³/h and accuracy 0.5 %.

The control room must ensure monitoring, recording and processing of measurement results obtained by the fuel measuring line as described in this Annex and by the LPG measuring line as described in Annex B.

A display located in the control room shall visualise the current values received in the process of measurements of the following parameters:

- ambient temperature: resolution 0.5 °C and accuracy 0,2 °C;

- atmospheric pressure: range 900 to 1040 mbar, resolution 0,5 mbar and accuracy 2 mbar;
- relative humidity of the air: range from 0 to 95 %, accuracy 0,5 %;
- pre-determined flowrate values: resolution 0.05 % from the nominal value and accuracy 0.1 % from the nominal value;
- temperature of the measured fluid before and after the working station, before the prover and before the standard volume measures: resolution 0.05 °C and accuracy 0.1 °C;
- pressure of the measured fluid before and after the working station: resolution 0.1 bar and accuracy 1.0 %;
- volume of the measured fluid, measured by the prover: accuracy 0.02 %.
- viscosity of the measured fluid: range from 0.5 mPa·s to 100 mPa·s, resolution from 0.05 to 0.5 mPa·s and accuracy 0.4 %;
- density of the measured fluid: resolution 0.0002 g/cm³ and accuracy 0.0005 g/cm³;
- fluid pressure at the outlet of the tested gas separator;
- air pressure at the inlet of the tested gas separator;
- air volume delivered to the gas separator's test bench;
- fluid flow rate at the outlet of the tested gas separator.

The equipment installed in the control room shall provide also control of the measurement process through:

- running and stopping of the pumps and air compressor;
- opening and closing of valves;
- control of regulators for establishment of the flow rate required.

The current values of pressure and temperature in the storage tanks and pipelines shall be visualised in the control room.

The control room shall also be equipped with a system, ensuring normal and safe operation of the test rig that signalises the reach of pre-failure and failure limit values of the following parameters:

- pipeline pressure before and after the pump;
- fluid level and temperature of the tank for measured fluid.

2. Specific requirements

| Item No. | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. |
|----------|---------------------------|--|------|
| 1 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 0.5 litre; • accuracy 0.02 %; • gauge scale with scale interval 0.1 % of nominal volume; • possibility for adjustment of the standard capacity measure volume. . | 1 |
| 1.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 2 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 1 litre; • accuracy 0.02 %; • gauge scale with scale interval 0.1 % of nominal volume; • possibility for adjustment of the standard capacity measure | 1 |

| | | | |
|------|---------------------------|--|---|
| | | volume. | |
| 2.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 3 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 2 litres; • accuracy 0.02 %; • gauge scale with scale interval 0.1 % of nominal volume; • possibility for adjustment of the standard capacity measure volume. | 1 |
| 3.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 4 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 10 litres; • accuracy 0.02 % ; • gauge scale with scale interval 0.1 % of nominal volume; • possibility for adjustment of the standard capacity measure volume.. | 1 |
| 4.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 5 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 20 litres; • accuracy 0.02 % ; • gauge scale with scale interval 0.1 % of nominal volume; • possibility for adjustment of the standard capacity measure volume. | 1 |
| 5.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 6 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 50 litres; • accuracy 0.02 %; • gauge scale with scale interval 0.1 % of nominal volume; • possibility for adjustment of the standard capacity measure volume. | 1 |
| 6.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 7 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 100 litres; • accuracy 0.02 %; • gauge scale with scale interval 0,1 % of nominal volume; • possibility for adjustment of the standard capacity measure volume. | 1 |
| 7.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 8 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 200 litres; | 1 |

| | | | |
|-------|--|--|------------------|
| | | <ul style="list-style-type: none"> • accuracy 0.02 %; • gauge scale with scale interval 0,1 % of nominal volume; • possibility for adjustment of the standard capacity measure volume. | |
| 8.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 9 | Portable small volume prover (SVP) with dual chronometry pulse interpolation capability | <ul style="list-style-type: none"> • full stroke piston type, • minimum flow rate: 0.060 m³/h or less, • maximum flow rate: 30 m³/h or more, • repeatability: 0.02 % or better, • total volume flow-rate error (accuracy): 0.1 % or better | 1 |
| 9.1. | SVP accessories: <ul style="list-style-type: none"> • set of flexible hoses • connectivity • recording unit • digital clock | <ul style="list-style-type: none"> • standard communication ports (RS-232, IEEE-488), • to record the speed and position of SVP piston movement with automatic mark of the beginning and of the end of test period; • synchronized with Internet official timers or equivalent and accuracy of 0.005 %. | 1 1 1 1 |
| 9.2. | Calibration certificate | Calibration by the manufacturer | 1 |
| 10 | Liquid in glass thermometers | <ul style="list-style-type: none"> • range from minus 50 °C to 25 °C; • scale division 0.2 °C; • accuracy 0.5 °C. | 6 |
| 10.1. | Calibration certificate | <ul style="list-style-type: none"> • calibration by the producer | 1 |
| 11 | Liquid in glass thermometers | <ul style="list-style-type: none"> • range from minus 5 °C to 60 °C; • scale division 0.2 °C; • accuracy 0.3 °C. | 6 |
| 11.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 12 | Digital chronometer | <ul style="list-style-type: none"> • accuracy 0.5 s | 1 |
| 12.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 13 | PC and testing and calibration application software | Computer system configuration: <ul style="list-style-type: none"> • processor minimum 2,6 GHz, 256 MB RAM, HDD 80 GB, 2 USB 2.0 ports, | 1 |

| | | | |
|--|--|--|--|
| | | <ul style="list-style-type: none"> • CD-R/W, • LAN 100 Mbit/s, • RS-232, IEEE-488 card, • 17" TFT – console, • keyboard, • mouse, • laser or LED printer, A4 format, 1200 dpi. <p>Application software:</p> <ul style="list-style-type: none"> • Windows compatible, • measurement data acquisition, data processing and reporting necessary for type approval testing of fuel dispensers and flow meters, calibration of fuel mass and volume flow meters and testing of gas separators efficiency as referred in item 2 and 3 of the General Description, • measured parameters current values display as specified in item 25 of the General Description, • temperature, pressure, viscosity and density corrections of the measured fluid volume calculation according to OIML Recommendations R 63, R 91 and R 120, maintenance of the standard data library opened for editing, • indication of the test and calibration results that do not meet the required specifications, • maintenance of measurement data archive. | |
|--|--|--|--|

Figure 1

FUNCTIONAL SCHEME OF THE TEST RIG FOR TYPE APPROVAL TESTING OF FUEL DISPENSERS AND CALIBRATION OF FUEL FLOW METERS

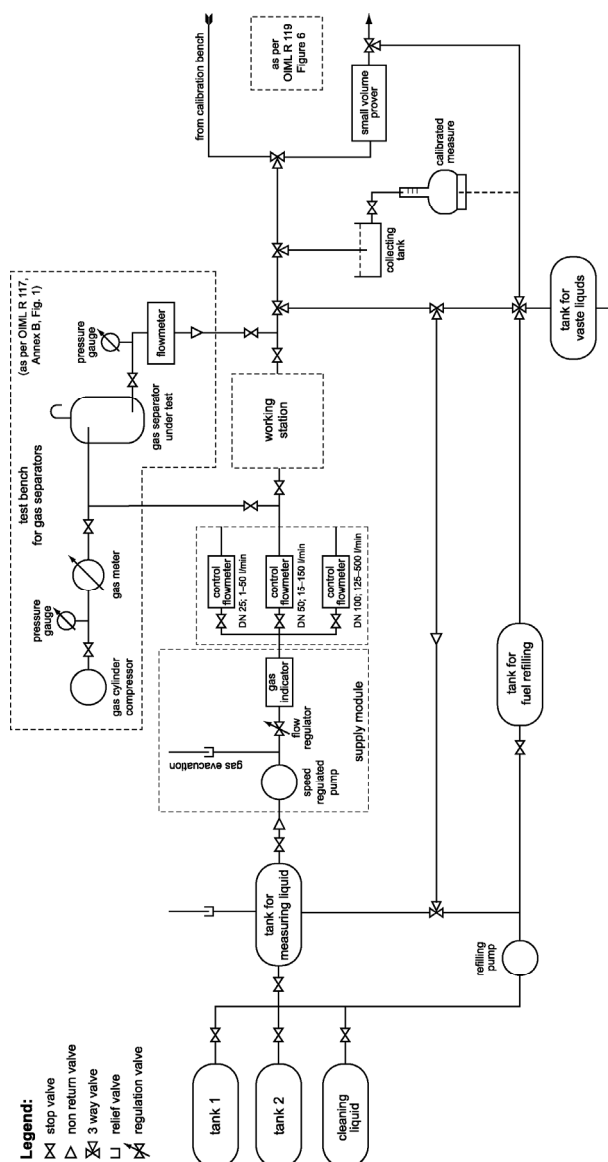
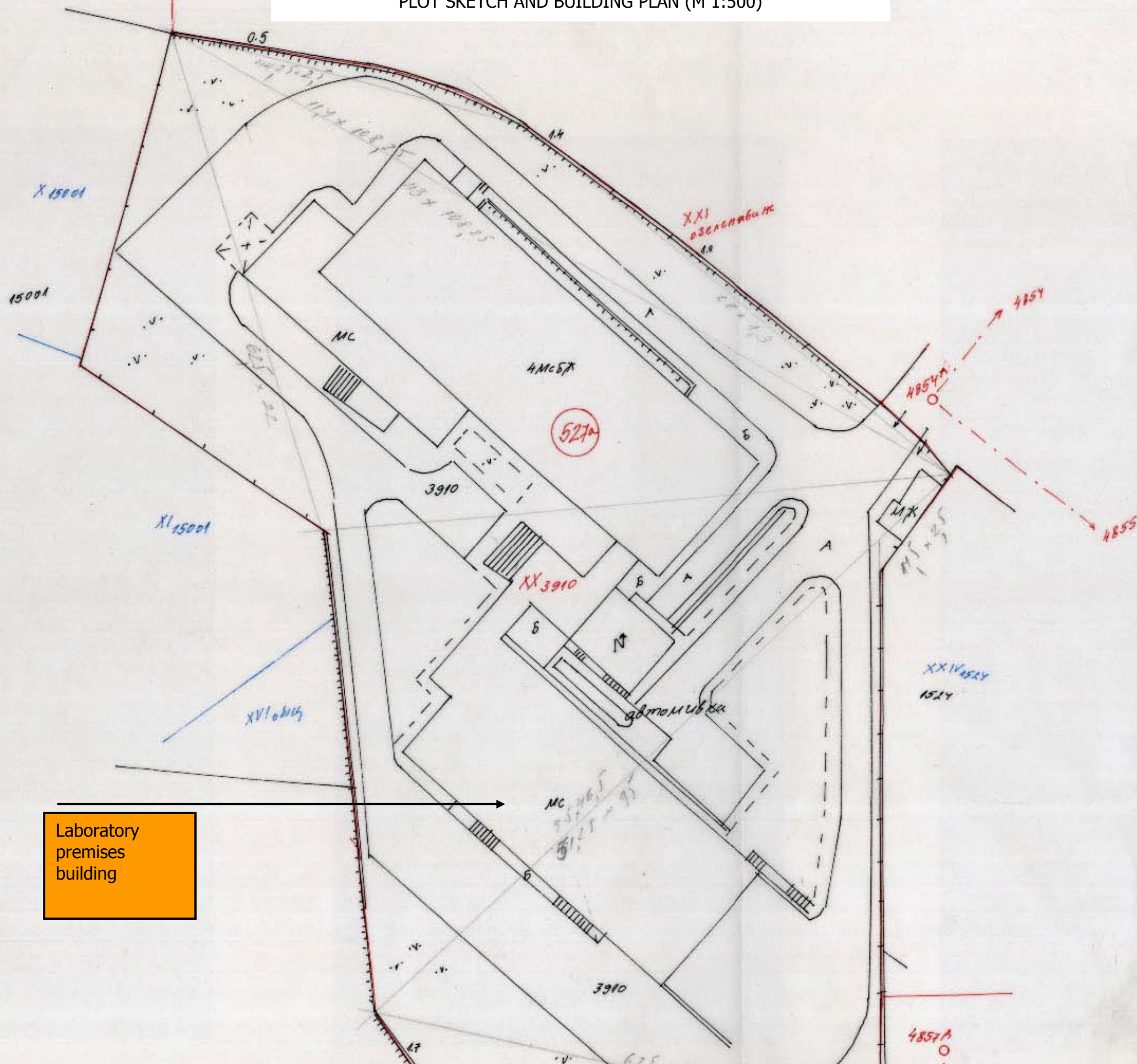


Figure 1. Schematic of the rig for testing of fuel dispensers and fuel flowmeters

Figure 2

PLOT SKETCH AND BUILDING PLAN (M 1:500)



Laboratory premises building

ОБЩИНА СТАРА ЗАГОРА
ДИРЕКЦИЯ "ТЕРИТОРИАЛНО И СЕЛИЩНО УСТРОЙСТВО"

СКИЦА № 2339
от 30.05.2002 г.
М 1: 500

Парцел (урег./неурег.поземлен имот)№ XX 5910.....
кв. 527a..... по ПУП на гр. (с) Стар Загора
утвърден със заповед № 1987 от 04.11.1997 г.
Площ на парцела (имота): 7721 кв.м. XX 5910 = 8700 кв.м.

Имотът е собственост на: Регистрален
метрополитен газоснабдителен район
Ак.т. № 84/18.06.1991
Ак.т. 232/1991

Скицата ще служи за: САЕМ

Скицата (визата) да се съгласува с: "ВиК" ЕООД, ЕРП, ТРД, "Газоснабдяване" ООД, "Булгаргаз", "Напоителни системи", ЛКС, ХЕИ, РВМС, РСПАБ, РВМС, РИОСВ, КАТ, ОПУ, РИМ, НИПК

Таксата от 7 лв. е внесена с кв. № 0227966/1001
Изчертал: И.С.Стефанова
Изчислил: М.Иванова
Нанесъл подземни кабели:
Съгласувал:
(инж. Н. Пиперова - началник отдел "КР")

ВИЗА: За проектиране на

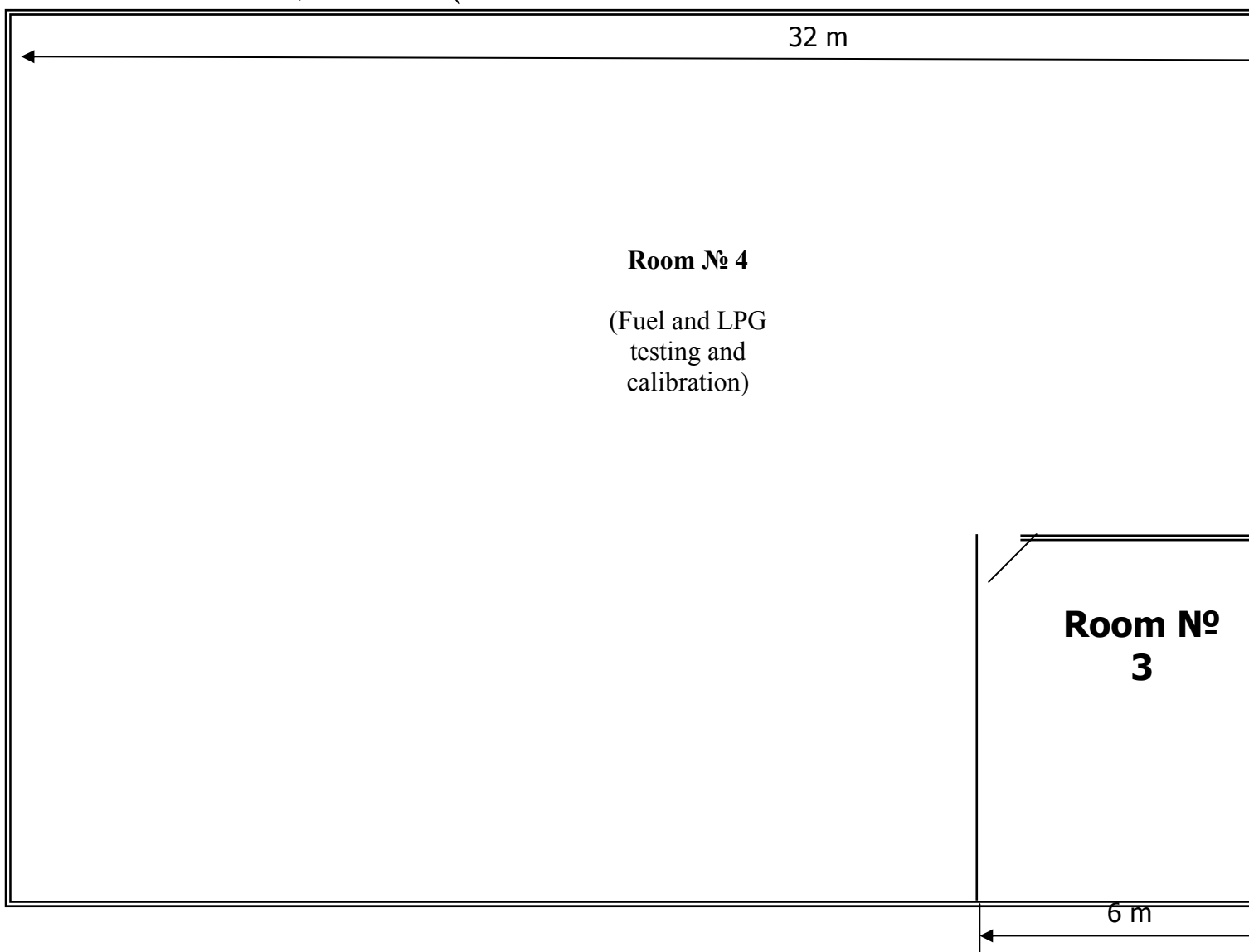
външни връзки: Ел, ВиК, телефонизация,
на основание ЗП, КЗСП, ЧКЗР, ЧЗР зап. №
и издаден документ за собственост

Инвестиционният проект да се предвиди в части:
Архитектурна, СК, Ел, ВиК, Телефонизация, ВП, ТТЕ,
Геоложки доклад, ПОИС, Технологична, Организация на движението и др.

Забележка:

ГЛАВЕН АРХИТЕКТ:

Figure 3: Laboratory Layout



ANNEX 4B

SPECIFIC REQUIREMENTS FOR TEST RIG FOR TYPE APPROVAL TESTING OF LPG DISPENSERS AND CALIBRATION OF LPG FLOW METERS

1. General description of the test rig

The test rig is intended to be used for:

- Type approval testing of LPG dispensers and flow meters;
- Calibration of LPG volume and mass flow meters;

The test rig should be suitable for carrying out the test procedures for type approval of LPG dispensers and flow meters as specified in OIML R 117 *Measuring systems for liquids other than water*. Test results are needed for conformity assessment of fuel dispensers according to Directive 2004/22/EEC on *Measuring Instruments* (that repeals Directive 77/313/EEC on measuring systems for liquids other than water and Directive 71/319/EEC on meters for liquids other than water).

The test rig should be suitable for calibration of mass flow meters according to Annexes A and B of the OIML R 105 *Direct mass flow measuring systems for quantities of liquids*.

The test rig should deliver adjustable LPG flow-rate at the following conditions:

- Flow rate range: from 1 l/min to 75 l/min;
- Fluid: LPG;
- Working pressure: 16 bar;
- Hydrostatic testing pressure: 30 bar.

The test rig should ensure measurement of delivered volume with **accuracy** satisfying the requirements of OIML R 117, e.g. the overall accuracy of the test bench must be better than 1/5 of the figures designated in Table 1 for accuracy class 1.0.

Table 1. Maximum permissible relative errors, on volume indications, according accuracy classes (Table 2 of OIML R 117)

| | Accuracy classes |
|---|------------------|
| | 1.0 |
| A | $\pm 1.0 \%$ |
| B | $\pm 0.6 \%$ |

Row A applies to pattern approval of complete measuring systems, for all liquids, all temperatures and all pressures of the liquids, and all flow rates for which the system is intended to be, or has been approved.

Row B applies to pattern approval of a meter, for all liquids, all temperatures and all pressures of the liquids, and all flow rates for which the system is intended to be approved.

The accuracy class of systems/instruments to be tested is specified in Table 2.

Table 2. Accuracy classes of measuring systems classified according to their field of application (according to Table 1 of OIML R 117)

| Class | Field of application |
|------------|-----------------------------------|
| 1.0 | LPG dispensers for motor vehicles |

The test rig should be designed based on a concept that the required flow rate for measuring module should be ensured by a minimum number of tanks and pumps.

The functional scheme of the test rig is shown on Figure 1.

The main measuring modules are: 1) for type approval testing of LPG dispensers and 2) for type approval testing and calibration of LPG flow-meters. For module (1) the measurement is envisaged to be carried out with a calibrated capacity measure, while for module (2) a small volume prover is to be used. These modules are functionally connected in parallel, but during the tests they will operate separately. For example, when the calibration is carried out by means of a prover, the diversion to the capacity measure is blocked, and vice versa.

The working station shall provide possibility for connection of the tested LPG dispensers and LPG flow meters to the respective modules.

The monitoring of the tests performed shall be possible both at the working station and at the control room.

The test rig for type approval testing of LPG dispensers includes also a supply module, which should provide continuous flow of LPG up to 100 l/h. The supply module consists mainly of storage tank, speed regulated pump, flow regulator, control flow meter.

The installation of equipment is intended to be in a building located in Stara Zagora (Annex A, Figure 2). The planned layout of laboratory premises is shown on Annex A, Figure 3. The premises are supplied with fire detection and fire safety alarm and security alarm systems and meeting the sanitary and hygiene requirements for work with petrol products.

The test rig should include **storage tank for LPG**. The storage tank capacity should exceed the volume of the fluid circulating within the test rig. The storage tank should be tested for leakage. The tank should be fitted with a level indicator and a level alarm, and a stop valve at the bottom.

The storage tank must be located outside the building.

The adjustable and speed regulated electro-pump should compensate LPG charge losses related to the various diameters of pipes at maximum flow rate and should ensure working pressure up to 16 bar and delivery from 0.5 m³/h to 6 m³/h at the working station input.

The test rig should include one **test loop** intended for flow rate from 1 to 75 l/min.

The test loop should include:

- Regulated valve for flow regulation;
- Automatic flow regulation equipment;
- Check valve;
- Calibrated mass flow-meter (Coriolis effect) for controlling the flow rate during testing of dispensers with resolution 0.05 % of the minimum value of the flow rates.

The working station of the test rig should include:

- Two (2) isolating valves;
 - Hose reels fitted with flexible hoses rolled on recalling drums to easily connect to:
 - different types of dispensers and different standard flanges,
 - different types of flow meters and different standard flanges (including flow-meters on road tankers);
 - Tools necessary for adapting dispenser on the testing loop (including wrenches with pneumatic motors for assembling and disassembling).
-

The determination of delivered volume in case of LPG dispensers' testing is supposed to be carried out with standard capacity measures (volumetric method).

The length and configuration of the pipe's layout should be adapted to the laboratory premises and the installation design (see Annex A, Figure 3).

The pipes should be designed for the working pressure (16 bar) and made from stainless material, suitable for LPG.

The inside wall roughness (Rz) of the pipe before flow meters must be less than 2.

The valves should be constructed and designed for the fluids and pressures used on the rig and fitted with indicators of positions and indicators of flow direction.

For flow rate regulation a pneumatic piloted regulation valve must be used.

For prevention against hydraulic shocks, **absorbers** must be appropriately located.

The flow-rate regulation must be carried out by the pneumatic piloted regulation valve, a flow-rate meter, and automatics to set the flow at the required value.

The Small Volume Prover should be provided with necessary automatics for flow rate measurement.

The control room must ensure monitoring, recording and processing of measurement results obtained by the fuel measuring line as described in Annex A and by the LPG measuring line as described in this Annex.

A display located in the control room shall visualise the current values received in the process of measurements of the following parameters:

- ambient temperature: resolution 0.5 °C and accuracy 0.,2 °C;
- atmospheric pressure: range 900 to 1040 mbar, resolution 0,5 mbar and accuracy 2 mbar;
- relative humidity of the air: range from 0 to 95 %, accuracy 0.,5 %;
- pre-determined flow rate values: resolution 0.05 % from the nominal value and accuracy 0.1 % from the nominal value;
- temperature of the measured fluid before and after the working station , before the prover and before the standard volume measure: resolution 0.05 °C and accuracy 0.1 °C;
- pressure of the measured fluid before and after the working station: resolution 0.1 bar and accuracy 1.0 %;
- volume of the measured fluid, measured by the prover: accuracy 0.02 %.
- density of the measured fluid: resolution 0.0002 g/cm³ and accuracy 0.0005 g/cm³.

The equipment installed in the control room shall provide also control of the measurement process through:

- pump's running and stopping;
- valves' opening and closing;
- control of the regulators for establishment of the flow rate required.

In the control room the current pressure and temperature values in the storage tanks and pipelines shall be displayed.

The control room shall be equipped with a system ensuring normal and safe operation of the test rig that signalises the reach of pre-failure and failure limit values of the following parameters:

- pipeline pressure before and after the pump;
 - LPG level and temperature of the tank.
-

2. Specific requirements

| Item No. | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. |
|----------|---|---|------------------|
| 1. | Standard capacity measure for LPG | <ul style="list-style-type: none"> nominal volume 20 litres, accuracy 0.04 %, gauge scale with scale interval 0.1 % of nominal volume, possibility for adjustment of the standard capacity measure volume. | 1 |
| 1.1. | Calibration certificate | <ul style="list-style-type: none"> calibration by the producer | 1 |
| 2. | Portable small volume prover (SVP) with dual chronometry pulse interpolation capability | <ul style="list-style-type: none"> full stroke piston type, minimum flow rate: 0.060 m³/h or less, maximum flow rate: 10 m³/h or more, repeatability error: 0.02 % or better total volume flow-rate error (accuracy): 0.1 % or better | 1 |
| 2.1. | SVP accessories: <ul style="list-style-type: none"> set of flexible hoses connectivity recording unit digital clock | <ul style="list-style-type: none"> standard communication ports (RS-232, IEEE-488), to record the speed and position of SVP piston movement with automatic mark of the beginning and of the end of test period, synchronized with Internet official timers or equivalent and accuracy 0.005 %. | 1 1 1 1 |
| 2.2. | Calibration certificate | <ul style="list-style-type: none"> calibration by the producer | 1 |
| 3 | Digital thermometer with long probe | <ul style="list-style-type: none"> range from minus 10 °C to 50 °C; resolution 0.1 °C; accuracy 0.3 °C. | 1 |
| 3.1. | Calibration certificate | <ul style="list-style-type: none"> calibration by the producer | 1 |
| 4 | Densimeter | <ul style="list-style-type: none"> range from 0.5 g/cm³ to 1.5 g/cm³; resolution 0.0002 g/cm³; | 1 |

| | | | |
|------|---|--|---|
| | | <ul style="list-style-type: none"> • accuracy 0.0005 g/cm³. | |
| 4.1. | Calibration certificate | <ul style="list-style-type: none"> • calibration by the producer | 1 |
| 5. | PC and testing and calibration application software | <p>Computer system configuration:</p> <ul style="list-style-type: none"> • Processor minimum 2.6 GHz, 256 MB RAM, HDD 80 GB, 2 USB 2.0 ports, • CD-R/W, • LAN 100 Mbit/s, • RS-232, IEEE-488 card, • 17" TFT – console, • keyboard, • mouse, • laser or LED printer, A4 format, 1200 dpi. <p>Application software:</p> <ul style="list-style-type: none"> • Windows compatible, • measurement data acquisition, data processing and reporting necessary for type approval testing of LPG dispensers and flow meters and calibration of LPG mass and volume flow meters as referred in item 2 and 3 of the General Description, • measured parameters current values display as specified in item 19 of the General Description, • temperature, pressure, viscosity and density corrections of the measured LPG volume calculation according to OIML Recommendations R 63, R 91 and R 120, maintenance of the standard data library opened for editing, • indication of the test and calibration results that do not meet the required specifications, • maintenance of measurement data archive. | 1 |

Legend:

- ⊠ stop valve
- ▷ non return valve
- ⊠ 3 way valve
- ⊏ relief valve
- ⊠ regulation valve

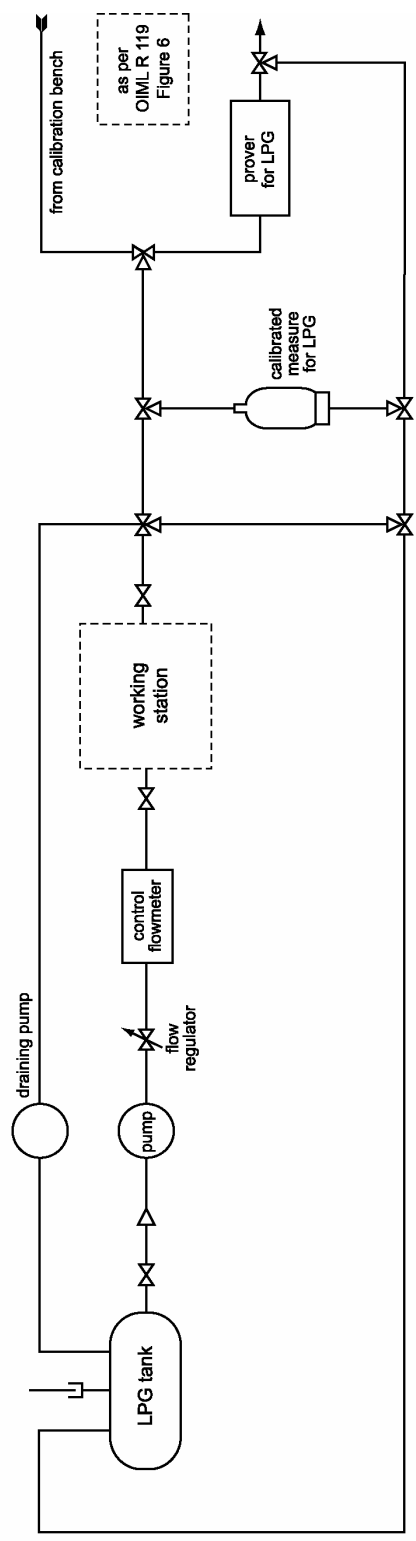


Fig. 1

FUNCTIONAL SCHEME OF THE TEST RIG FOR TYPE APPROVAL TESTING OF LPG DISPENSERS AND CALIBRATION OF LPG FLOW METERS

Figure 1: . Schematic of the rig for testing of LPG dispensers and LPG flowmeters

SPECIFIC REQUIREMENTS TO THE EQUIPMENT USED FOR CALIBRATION OF PROVERS

1. General description of the calibration facility

Calibration of provers is expected to be performed according to the scheme in Figure 1 (as per OIML R 119, Figure 6) using distilled water (water draw method). Calibration method of full stroke type prover must be by using standard weighing instrument.

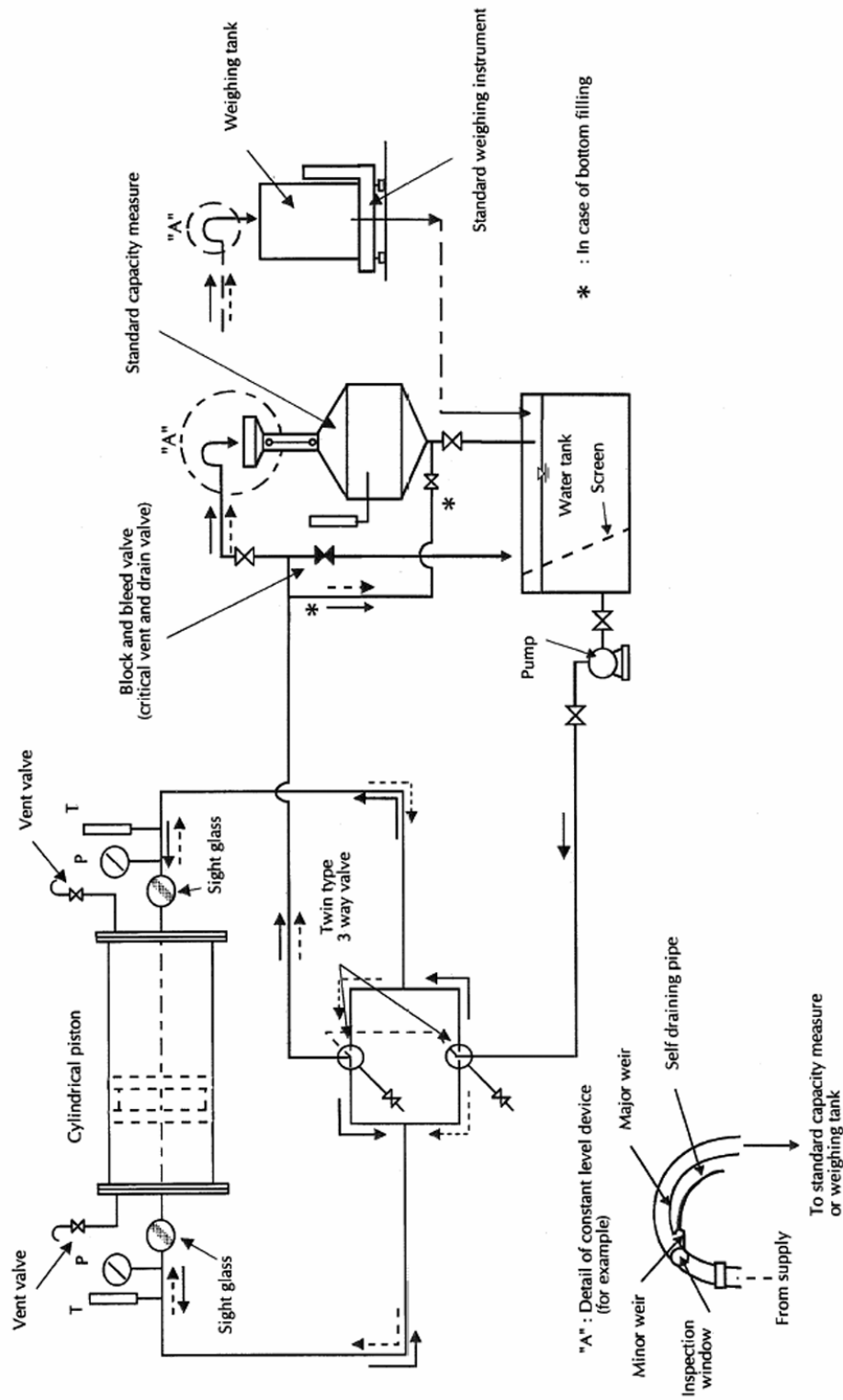
Calibration facility must ensure total uncertainty of 0.02 %.

2. Specific requirements for measuring equipment

| Item No. | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. |
|----------|--|---|------|
| 1 | Weighing instrument | <ul style="list-style-type: none"> • measurement range to comply to the prover's volume (see Annex A and Annex B), • class II, • resolution: maximum 2 g, • $e = 20$ g | 1 |
| 1.1. | Accessories | <ul style="list-style-type: none"> • fitted with a tank, • tank capacity to comply to the prover's volume, • tank weight to lay in the range of the initial zero setting device | 1 |
| 1.2. | Calibration certificate | Calibration by the manufacturer | 1 |
| 2 | Portable computer and calibration software | <p>Computer system configuration:</p> <ul style="list-style-type: none"> • Processor minimum 1,6 GHz, 512 MB RAM, HDD 40 GB, • 4 USB 2.0 ports, • CD-R/W, • external 3.5 FDD, • 15" display • mouse <p>Application software:</p> <ul style="list-style-type: none"> • Windows compatible • calibration data processing | 1 |

| | | | |
|--|--|---|--|
| | | <p>(conversion of mass measured to volume corrected by temperature, pressure, thermal expansion factor, air buoyancy and water displacement) and uncertainty calculation and reporting</p> <ul style="list-style-type: none">• maintenance of calibration data archive. | |
|--|--|---|--|

Fig. 1
 CALIBRATION OF FULL STROKE TYPE PROVER (WATER DRAW METHOD)



ANNEX 4D

SPECIFIC REQUIREMENTS TO THE PERFORMANCE TESTS EQUIPMENT FOR ELECTRONIC MEASURING SYSTEMS

1. General Description

The equipment is intended to be used for performance of the following tests of the electronic modules of fuel and gas dispensers (as per Table of the Annex A, R 117):

1. Dry heat influence factor
2. Cold influence factor
3. Damp heat, cyclic influence factor
4. Vibration influence factor (sinusoidal)

2. Specific requirements

| Item No. | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. |
|----------|---|---|------|
| 1 | Temperature/humidity test chamber | <ul style="list-style-type: none">• Minimum dimensions of the internal volume: width 1 m, depth 0.8 m, height 1.40 m,• Minimum temperature range: from minus 40 °C to 70 °C ,• Minimum humidity range: from 20 % to 95 % relative humidity. | 1 |
| 2 | Vibration table for sinusoidal vibrations (according to OIML R 117 Edition 1995, Annex A) | <ul style="list-style-type: none">• Minimum vibration frequency range: from 10 Hz to 150 Hz ,• Maximum acceleration level: 20 m.s⁻²,• Mass of the unit under test: max 20 kg,• Minimum table dimensions: 0.8 m x 0.8 m. | 1 |

SPECIFIC REQUIREMENTS FOR MOBILE LABORATORY FOR ON-SITE VERIFICATION OF FUEL AND LPG DISPENSERS

1. General Description

The mobile testing laboratory is intended for the second stage of an initial verification of measuring systems for liquids other than water, carried out at the assembling place, under working conditions, and by the liquid intended for use in the system.

2. Specific requirements to the vehicle

Vehicle - general specification:

- 2 seats,
- diesel engine, min 100 hp]
- speed: min 120 km/h (motorway)
- air – conditioned,

Additional requirements:

The vehicle must be equipped with:

- a grounding device to prevent static discharge in motion and a grounding cable when carrying out measurements,
- shelves and belts for securing the measurement standards during transportation,
- cabin isolated from the driver and ventilated compartment for storing the equipment.

The vehicle compartment must be consistent with the overall dimensions of the standards equipment. It shall be in conformity with the ergonomic and safety requirements in work.

The gravity centre of the vehicle together with the equipment has to be symmetrically disposed.

The vehicle compartment design shall:

- enable free loading and unloading through rails and devices;
- be provided with locking and fixing mechanisms enabling the equipment transportation even on unfinished road .

3. Specific requirements to the measurement standards and auxiliary equipment

The mobile measurement standard for petrol products has to be designed as a compact system.

The requirements to the standard equipment design are as follows:

- the technical and metrological specifications shall not be changed during transportation;
 - the design shall ensure complete fluid drain in the drainage tank;
 - the drainage tank (with a minimum capacity of 1.5 of the maximum volume of the biggest capacity measure of the measurement standard) shall be equipped with a pump and flexible connection (with length of 10 m) for fluid run off;
-

- the materials used shall be anti-static;
- the capacity measures system shall have transparent drain pipeline with a spherical stop valve for each capacity measure and one common for the system for the fluid run off in the drainage tank;
- the capacity measures shall be installed in such a way as to the measuring scale to be visible during measurements performed;
- free evaporation tanks connected with standard capacity measures by means of transparent hoses;

The LPG measurement standard shall be provided with valves, drainage pump and hoses enabling its draining,

Metrological specifications of the measurement standards are shown in the Table below.

| Item No. | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. |
|----------|---------------------------|--|------|
| 1 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 0.5 litre; • accuracy 0.02 %; • gauge scale with scale interval 0,1 % of nominal volume; • possibility for adjustment of the standard capacity measure volume. | 1 |
| 1.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 2 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 1 litre • accuracy 0.02 % • gauge scale with scale interval 0.1 % of nominal volume • possibility for adjustment of the standard capacity measure volume. | 1 |
| 2.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 3 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 2 litres • accuracy 0.02 % • gauge scale with scale interval 0.1 % of nominal volume • possibility for adjustment of the standard capacity measure volume. | 1 |
| 3.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 4 | Standard capacity measure | <ul style="list-style-type: none"> • nominal volume 10 litres • accuracy 0.02 % • gauge scale with scale interval 0.1 % of nominal volume • possibility for adjustment of the standard capacity measure volume. | 1 |

| | | | |
|-------|-------------------------------------|--|---|
| 4.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 5 | Standard capacity measure | <ul style="list-style-type: none"> nominal volume 20 litres accuracy 0.02 % gauge scale with scale interval 0.1 % of nominal volume possibility for adjustment of the standard capacity measure volume. | 1 |
| 5.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 6 | Standard capacity measure | <ul style="list-style-type: none"> nominal volume 50 litres accuracy 0.02 % gauge scale with scale interval 0.1 % of nominal volume possibility for adjustment of the standard capacity measure volume. | 1 |
| 6.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 7 | Standard capacity measure | <ul style="list-style-type: none"> nominal volume 100 litres accuracy 0.02 % gauge scale with scale interval 0.1 % of nominal volume possibility for adjustment of the standard capacity measure volume. | 1 |
| 7.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 8 | Standard capacity measure for LPG | <ul style="list-style-type: none"> nominal volume: 20 litres accuracy: 0.04 %, gauge scale with scale interval 0.1 % of nominal volume possibility for adjustment of the standard capacity measure volume. | 1 |
| 8.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 10 | Digital thermometer with long probe | <ul style="list-style-type: none"> range from minus 10 °C to 50 °C, resolution 0.1 °C, accuracy 0.3 °C | 1 |
| 10.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 12 | Digital chronometer | <ul style="list-style-type: none"> accuracy 0.5 s | 1 |
| 12.1. | Calibration certificate | Calibration by the manufacturer | 1 |
| 11 | Densimeter | <ul style="list-style-type: none"> range from 0.5 g/cm³ to 1.5 g/cm³ resolution 0.0002 g/cm³ accuracy 0.0005 g/cm³ | 1 |
| 11.1. | Calibration certificate | Calibration by the manufacturer | 1 |

| | | | |
|-----|-------------------|---|---|
| 12. | Portable computer | <ul style="list-style-type: none">• processor minimum 1,6 GHz, 512 MB RAM, HDD 40 GB,• 4 USB 2.0 ports,• CD-R/W,• external or internal 3.5" FDD,• 15" display• mouse | 1 |
|-----|-------------------|---|---|

ANNEX 4F

| Item No. | <i>Equipment</i> | <i>Metrological Specifications / Uncertainty / Accuracy / Class</i> | <i>Qty.</i> |
|----------|--|--|-------------|
| I. | EQUIPMENT FOR TESTING AND VERIFICATION OF CLINICAL THERMOMETERS | | |
| I.1 | Standard mercury-in-glass thermometers | Measurement range: (30-40) °C Scale division: 0.02 °C Accuracy: 0.02 °C | 4 |
| I.2 | Standard mercury-in-glass thermometers | Measurement range: (40-50) °C Scale division: 0.02 °C Accuracy: 0.02 °C | 4 |
| I.3 | Open circulating bath | Temperature stability in the bath working volume at (23 ± 5) °C within the laboratory: 0.02 °C . Measurement range: (20-50) °C ; Bath depth, mm: min 200; Working volume,: min 1 l | 4 |
| I.3.1. | Accessories | | |
| I.3.1.1. | Thermometer holders | Material: aluminum, plexiglass or equivalent Construction: two horizontal parallel lattices assembled in common holder with a minimum of 50 coaxial holes for each lattice as shown on Fig. 1. The holes number shall ensure maximum use of lattices' surface. One of the central holes shall conform to the dimensions of the thermometers mentioned in item I.1 and I.2. | 8 |
| I.3.1.2 | Bath covers for stand-by state | Bath covers shall conform to the dimensions of the bath | 4 |
| I.4 | Centrifuge | During rotation the thermometers shall reach nearly horizontal position. Test tubes material: thick-walled glass or Mercury non-absorptive and inert material. Number of test tubes: min 30 Internal diameter of test tubes: at least 20 mm Test tube length: approx. 100 mm Radial acceleration at the bottom of the test tubes: 600 m/s ² Note: The maximum length of the thermometers is usually up to 150 mm. | 4 |

| | | | |
|------------|--|---|---|
| I.5 | Stopwatch | Total measuring time: up to 30 min Scale division: 0.2 s Accuracy: 0.4 s | 4 |
| I.6 | Standard Platinum Resistance Thermometer (Pt 100) according to ITS-90 | Nominal resistance at 0 °C: 100 Ω Range: (0 - 100) °C Relative resistance of the thermometer: $W(29.7646\text{ °C}) \geq 1.11807$ Reproducibility in water triple point 3 mK Long term drift: 10 mK/ year | 4 |
| I.7 | Digital Ohmmeter | Bench Type Measurement range: from 10 Ω to 1 MΩ Accuracy: 20 ppm R + 10 ppm FS Resolution: 6 ½ digits Possibility for two- and four-wire connection (wire method). Interface: RS 232, IEEE 488 or equivalent standards of interface | 4 |
| I.7.2 | Accessories: | | |
| I.7.2.1 | Set of connection cables | Length: 3 m Terminated with type “crocodile” clips or other easily changeable electrical connectors. | 4 |
| I.7.2.2 | PC Application software for resistance measurements Printer Monitor | 256 MB of RAM HDD min 40 GB CPU 2 GHz Interface to match 1.7 and cable Laser or LED printer, A4-format LCD or CRT monitor, 17 “ | 4 |
| I.8 | Resistance decades | Ranges: up to 1 kΩ; Step: 0.001 Ω Accuracy: 0.01 % Possibility for two- and four-wire connection. | 4 |
| I.8.2 | Accessories: Set of connection cables | Length: 3 m Terminated with coupling or easily changeable electrical connectors. | 4 |
| II. | EQUIPMENT FOR TESTING AND VERIFICATION OF NON-INVASIVE BLOOD PRESSURE MEASURING INSTRUMENTS | | |
| II.1 | EQUIPMENT FOR TESTING OF NON-INVASIVE BLOOD PRESSURE MEASURING INSTRUMENTS | | |

| | | | |
|----------|---|--|---|
| II.1.1 | Reference manometer with digital output signal port, built-in hand pump and deflation valve | For testing sphygmomanometers according to OIML R 16-1: A.1; A.2; A.3; A.5; A.6; A.9; A.11; A.12. and OIML R 16-2: A.2; A.3; A.4; A.5; A.7; A.8; A.9; A.10; A.11; A.12. Display for numerical output of analysis data Range: up to 60 kPa Uncertainty: <0.1 kPa (0.8 mmHg) | I |
| II.1.1.1 | PC Printer Monitor | 256 MB of RAM HDD min 40 GB CPU 2 GHz Interface to II.1.1 Laser or LED printer, A4-format LCD or CRT monitor, 17 " | I |
| II.1.2 | Alternating pressure generator | For testing of the construction according to OIML R 16-1, A.12. Sinusoidal pressure variation: between 3 kPa and 30 kPa (20 mmHg and 220 mmHg) at a maximum rate of 60 cycles per minute. Pre-settable to 10 000 pressure cycles. | I |
| II.1.3 | Electro-mechanical pressure/suction pump | For testing of the function of the zero setting according to OIML R 16-2, A.9 (at minus 0,8 kPa, 0,8 kPa, 13 kPa). | I |
| II.1.4 | Set of artificial limbs | According to OIML R 16 – 1, A.5.2, <i>Note 2</i> : and OIML R 16 –2, A.7.2 <i>Note 3</i> “ <i>It is intended that the properties of the artificial limbs reflect some elastic properties of human limbs.</i> ” | I |
| II.1.5 | Patient simulator | For the auscultatory and/or oscillometric method, having additional deviations originating from the simulator of not more than 0.27 kPa (2 mmHg) for the mean value of the measurements and generating signals for blood pressure values of approximately: <ul style="list-style-type: none"> ▪ systolic pressure: 16 kPa (120 mmHg); ▪ diastolic pressure: 11 kPa (80 mmHg); ▪ pulse rate: 70 min⁻¹ – 80 min⁻¹ | I |

| | | | |
|--------|-------------------------|---|----------|
| II.1.6 | Vibration testing bench | <p>For testing of sphygmomanometers in vertical direction. Sine vibrations: Frequency: 25 Hz Amplitude: 0.35 mm Weight of the sphygmomanometer: up to 0.5 kg</p> <p>Including: shaker, amplifier, sensor, vibration control system, connecting and supply cables and attachments for fixation.</p> | <i>1</i> |
| II.1.7 | Mechanical shock bench | <p>For testing sphygmomanometers in a transportation packaging. Acceleration: 30 m/s² Adjustable shock frequency: from 1.3 Hz to 2 Hz Weight of the tested unit: up to 1 kg</p> <p>Including: shock system, amplifier, sensor, control system, connecting and supply cables and attachments for fixation.</p> | <i>1</i> |
| II.1.8 | DC voltage supply | <p>For testing the effect of voltage variations of the power source on the cuff pressure indication and on the result of the blood pressure measurement , according to OIML R 16 – 2, A.4.1; A.4.3; A.4.5 ; A.5.1 and A.5.3 Adjustable between DC 0 ÷ 25 V Output settable by steps of: 0.1 V</p> | <i>1</i> |
| II.1.9 | AC voltage supply | <p>For testing of the effect of voltage variations of the power source on the cuff pressure indication and on the result of the blood pressure measurement , according to OIML R 16 – 2, A.4.2; A.4.4 and A.5.2</p> <p>Adjustable between AC 0 ÷ 250 V Output settable by steps of: 0.1 V</p> | <i>1</i> |

| | | | |
|---------|-----------------------------|---|----------|
| II.1.10 | Digital multimeter | <p>Voltage: AC: 0 ÷ 1000 V DC: 0 ÷ 1000 V Current: 0 ÷ 1 A Resistance: 0 ÷ 100 kΩ</p> <p>Uncertainty: <0.5 % of the voltage measured</p> | <i>I</i> |
| II.1.11 | Electronic caliper | <p>For measurement of the internal diameter of the mercury tube according to OIML R 16-1, A.8</p> <p>Range: from 0 mm to 25 mm Tolerance: <0.05 mm;</p> | <i>I</i> |
| II.1.12 | Microscope | <p>For determination of the thickness of the scale marks and the scale spacing according to OIML R 16-1, A.7</p> <p>Measurement diameter: up to 6.5 mm Scale division: 0.05 mm Field of view: greater than or equal to 0.5 mm Magnification: between 20x and 30x</p> | <i>I</i> |
| II.1.13 | Electronic Quartz Stopwatch | <p>Scale division: 0.01 s Total measuring time: up to 60 min</p> | <i>I</i> |
| II.1.14 | Digital thermo-hygrometer | <p>With interface RS 232 or similar Temperature range: from minus 25 °C to 75 °C Resolution: 0.1 °C Relative humidity: up to 90 % RH Uncertainty of relative humidity: <5 %</p> | <i>I</i> |
| II.1.15 | Rigid metal vessel | <p>Closed hollow cylinder, with outlet and connector on the top side, used for replacing the cuff during the test.</p> <p>Capacity: (500 ± 25) ml $h_{\max} = 160$ mm Connector: Inside diameter: $\phi(5 \pm 0.5)$ mm $L = (12 \pm 0.5)$ mm</p> | <i>I</i> |

| | | | |
|---------|--|--|----|
| II.1.16 | Rigid metal vessel | <p>Closed hollow cylinder, with outlet and connector on the top side, used for replacing the cuff during the test.</p> <p>Capacity: (100 ± 5) ml $h_{\max} = 100$ mm Connector: Inside diameter: $\phi(5 \pm 0.5)$ mm $L = (12 \pm 0.5)$ mm</p> | 1 |
| II.2 | EQUIPMENT FOR VERIFICATION OF NON-INVASIVE BLOOD PRESSURE MEASURING INSTRUMENTS | | |
| II.2.1 | Portable reference manometer for on site measurements with digital output signal port , built-in hand pump and deflation valve | <p>Range: up to 40 kPa Uncertainty: <0.1 kPa (0.8 mmHg)</p> | 16 |
| II.2.2 | Portable digital thermo-hygrometer for on site measurements | <p>Temperature range: from 0 °C to 40 °C Resolution: 0.1 °C Humidity range: up to 90 % RH Uncertainty of humidity: <5 %</p> | 16 |
| II.2.3 | Rigid metal vessel | <p>Closed hollow cylinder, with outlet and connector on the top side, used for replacing the cuff during the test.</p> <p>Capacity: (500 ± 25) ml $h_{\max} = 160$ mm Connector: Inside diameter: $\phi(5 \pm 0.5)$ mm $L = (12 \pm 0.5)$ mm</p> | 16 |
| II.2.4 | Rigid metal vessel | <p>Closed hollow cylinder, with outlet and connector on the top side, used for replacing the cuff during the test.</p> <p>Capacity: (100 ± 5) ml $h_{\max} = 100$ mm Connector: Inside diameter: $\phi(5 \pm 0.5)$ mm $L = (12 \pm 0.5)$ mm</p> | 16 |

| II.3 | Accessories for II.1 and II.2: | The accessories shall be resistant to the following conditions: - ambient temperature - from minus 25 °C to 75 °C, and - working pressure - at least 60 kPa. | - | | | | | | | | | | | | | |
|--|---|--|--|--|--|-----|-----|--------|------|------|------|-----|--------|-------|-------|---|
| | • Hoses | Inside diameter: 4 mm Outside diameter: up to 8 mm | 40 m | | | | | | | | | | | | | |
| | • T-piece connectors | Compatible with the above-mentioned hoses (see position above) | 68 | | | | | | | | | | | | | |
| III. | EQUIPMENT FOR OPTICAL MEASUREMENTS | | | | | | | | | | | | | | | |
| III.1 | Standard focimeters | <ul style="list-style-type: none"> Measuring range: <ul style="list-style-type: none"> - Sphere Power: range from - 25 D to + 25 D; increments (steps) 0.125 D; 0.25 D. - Cylinder Power: range from - 25 D to +25 D; increments (steps) 0.125 D; 0.25 D. <p>For cylindrical lenses the focimeter has to be possible to measuring axis direction :</p> <p>range 0 ° to 180 °; increment (step) 1 °.</p> <ul style="list-style-type: none"> - Prism Power: range 0 to 20 Δ; increments (steps) 0.125 Δ; 0.25 Δ. <p>For prisms the focimeter has to be possible to measuring axis direction of the base: range from 0 ° to 360 °; increments (step) 1 °.</p> <p>Vertex and prismatic powers shall be displayed and be referred to either the green mercury line $\lambda_e = 546.07 \text{ nm}$ or to the yellow helium line $\lambda_d = 587.56 \text{ nm}$</p> <ul style="list-style-type: none"> Permissible tolerances: <p>Table 1: Vertex power</p> <table border="1"> <thead> <tr> <th colspan="2">Measurement range of vertex power, $\text{m}^{-1}(\text{D})$</th> <th>Permissible tolerances $\text{m}^{-1}(\text{D})$</th> </tr> </thead> <tbody> <tr> <td>< 0</td> <td>> 0</td> <td rowspan="2">± 0.01</td> </tr> <tr> <td>≥ -5</td> <td>≤ +5</td> </tr> <tr> <td>< -5</td> <td>>+5</td> <td rowspan="2">± 0.02</td> </tr> <tr> <td>≥ -10</td> <td>≤ +10</td> </tr> </tbody> </table> | Measurement range of vertex power, $\text{m}^{-1}(\text{D})$ | | Permissible tolerances $\text{m}^{-1}(\text{D})$ | < 0 | > 0 | ± 0.01 | ≥ -5 | ≤ +5 | < -5 | >+5 | ± 0.02 | ≥ -10 | ≤ +10 | 2 |
| Measurement range of vertex power, $\text{m}^{-1}(\text{D})$ | | Permissible tolerances $\text{m}^{-1}(\text{D})$ | | | | | | | | | | | | | | |
| < 0 | > 0 | ± 0.01 | | | | | | | | | | | | | | |
| ≥ -5 | ≤ +5 | | | | | | | | | | | | | | | |
| < -5 | >+5 | ± 0.02 | | | | | | | | | | | | | | |
| ≥ -10 | ≤ +10 | | | | | | | | | | | | | | | |

| | | | | | | |
|--|--|---|--|------------|--|--|
| | | < -10 ≥ -15 | $> +10$ $\leq +15$ | ± 0.02 | | |
| | | < -15 ≥ -20 | $> +15$ $\leq +20$ | ± 0.03 | | |
| | | < -20 ≥ -25 | $> +20$ $\leq +25$ | ± 0.05 | | |
| | | Table 2: Prismatic power | | | | |
| | | Measurement range of prismatic power, cm/m (Δ) | Permissible tolerances cm/m (Δ) | | | |
| | | > 0 ≤ 5 | 0.03 | | | |
| | | > 5 ≤ 10 | 0.05 | | | |
| | | > 10 ≤ 15 | 0.10 | | | |
| | | > 15 ≤ 20 | 0.15 | | | |
| | | > 20 | 0.20 | | | |

| | | <p>The standard focimeters shall have capacity for measuring lens with: Diameter at least 80 mm; Thickness: at least 20 mm. Translational movements of the lenses on the lens support of not less 30 mm in a direction perpendicular to the optical axis and to the adjusting rail shall be possible, starting from not more than 10 mm below the optical axis of the instrument. Digital display Internal or detached printer Interface RS232 or USB</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|--|--|---------------------------------|---------------------------------|----------------------|---------------------------------|------|------|-----|-----|------|------|-----|------|------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|---|-----|----------|
| <p>III.2</p> | <p>Sets of test spherical, prismatic and cylindrical lenses, for testing and verification of focimeters (according to ISO 9342:1996)</p> | <p>General: Test lenses shall be made of homogeneous white crown glass with a refractive index $n_d = 1.523 \pm 0.002$ or $n_e = 1.525 \pm 0.002$ selected to be free of bubbles and striae in an area of 4 mm radius surrounding the center of the free aperture. Spherical test lenses: -25 D, -20 D, -15 D, -10 D, -5 D, +5 D, +10 D, +15 D, +20 D, +25 D, Diameter: 40 mm, Free aperture: at least 15 mm, Design range according Table1: Table 1:</p> <table border="1"> <thead> <tr> <th>Nominal back vertex power, BVP</th> <th>Nominal back surface power, BSP</th> <th>Power range for BSP,</th> <th>Range for center thickness*, mm</th> </tr> </thead> <tbody> <tr> <td>- 25</td> <td>- 25</td> <td rowspan="9">± 1</td> <td>2-6</td> </tr> <tr> <td>- 20</td> <td>- 20</td> <td>2-6</td> </tr> <tr> <td>- 15</td> <td>- 15</td> <td>2-6</td> </tr> <tr> <td>- 10</td> <td>- 12</td> <td>2-8</td> </tr> <tr> <td>- 5</td> <td>- 9</td> <td>2-8</td> </tr> <tr> <td>+ 5</td> <td>- 5</td> <td>3-7</td> </tr> <tr> <td>+10</td> <td>- 3</td> <td>3-7</td> </tr> <tr> <td>+15</td> <td>- 1</td> <td>5-7</td> </tr> <tr> <td>+ 20</td> <td>0</td> <td>7-9</td> </tr> </tbody> </table> | Nominal back vertex power, BVP | Nominal back surface power, BSP | Power range for BSP, | Range for center thickness*, mm | - 25 | - 25 | ± 1 | 2-6 | - 20 | - 20 | 2-6 | - 15 | - 15 | 2-6 | - 10 | - 12 | 2-8 | - 5 | - 9 | 2-8 | + 5 | - 5 | 3-7 | +10 | - 3 | 3-7 | +15 | - 1 | 5-7 | + 20 | 0 | 7-9 | <p>2</p> |
| Nominal back vertex power, BVP | Nominal back surface power, BSP | Power range for BSP, | Range for center thickness*, mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 25 | - 25 | ± 1 | 2-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 20 | - 20 | | 2-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 15 | - 15 | | 2-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 10 | - 12 | | 2-8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 5 | - 9 | | 2-8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + 5 | - 5 | | 3-7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| +10 | - 3 | | 3-7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| +15 | - 1 | | 5-7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + 20 | 0 | | 7-9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | + 25 | 0 | | 9-11 | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|---|--|------|--|--|------|--------|------|--------|------|--------|------|--------|-----|--------|-----|------|------|------|------|------|------|------|------|------|
| | | <p>*The center thicknesses are required to guarantee stability in the negative power range.</p> <p>Table 2. Tolerances:</p> <table border="1"> <thead> <tr> <th>Nominal back vertex power, $m^{-1}(D)$</th> <th>Tolerance (maximum deviation), $m^{-1}(D)$</th> </tr> </thead> <tbody> <tr><td>- 25</td><td>0.03</td></tr> <tr><td>- 20</td><td>0.02</td></tr> <tr><td>- 15</td><td>0.02</td></tr> <tr><td>- 10</td><td>0.01</td></tr> <tr><td>- 5</td><td>0.01</td></tr> <tr><td>+ 5</td><td>0.01</td></tr> <tr><td>+ 10</td><td>0.02</td></tr> <tr><td>+ 15</td><td>0.02</td></tr> <tr><td>+ 20</td><td>0.03</td></tr> <tr><td>+ 25</td><td>0.03</td></tr> </tbody> </table> | | | | Nominal back vertex power, $m^{-1}(D)$ | Tolerance (maximum deviation), $m^{-1}(D)$ | - 25 | 0.03 | - 20 | 0.02 | - 15 | 0.02 | - 10 | 0.01 | - 5 | 0.01 | + 5 | 0.01 | + 10 | 0.02 | + 15 | 0.02 | + 20 | 0.03 | + 25 | 0.03 |
| Nominal back vertex power, $m^{-1}(D)$ | Tolerance (maximum deviation), $m^{-1}(D)$ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 25 | 0.03 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 20 | 0.02 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 15 | 0.02 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 10 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - 5 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + 5 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + 10 | 0.02 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + 15 | 0.02 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + 20 | 0.03 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + 25 | 0.03 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <p>Prismatic test lenses: 2 Δ, 5 Δ, 10 Δ, 15 Δ, 20 Δ; Dimensions, mm: (40 x 40) ± 0.2. Free aperture of prismatic test lenses: at least 15 mm</p> <p>Table 3: Tolerances:</p> <table border="1"> <thead> <tr> <th>Prismatic deviation, cm/m (Δ)</th> <th>Tolerances, cm/m (Δ)</th> </tr> </thead> <tbody> <tr><td>2</td><td>± 0.02</td></tr> <tr><td>5</td><td>± 0.03</td></tr> <tr><td>10</td><td>± 0.05</td></tr> <tr><td>15</td><td>± 0.10</td></tr> <tr><td>20</td><td>± 0.15</td></tr> </tbody> </table> <p>Cylindrical test lenses:</p> | | | | Prismatic deviation, cm/m (Δ) | Tolerances, cm/m (Δ) | 2 | ± 0.02 | 5 | ± 0.03 | 10 | ± 0.05 | 15 | ± 0.10 | 20 | ± 0.15 | | | | | | | | | | |
| Prismatic deviation, cm/m (Δ) | Tolerances, cm/m (Δ) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ± 0.02 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ± 0.03 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | ± 0.05 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | ± 0.10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | ± 0.15 | | | | | | | | | | | | | | | | | | | | | | | | | | |

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|------------|--|--|---|
| | | <p>The test lens shall be a rectangular positive plano cylinder of at least 5 D and shall have the dimensions:</p> <p>The cylinder axis shall be parallel to the longer side of the rectangle and shall be marked by a centerline. One of the longer sides shall be marked as the reference side.</p> <p>Tolerances:</p> <p>The angular deviation between the cylinder axis and the longer side of the rectangle (see the figure) shall not exceed 20' of arc.</p> <p>The displacement of the centerline from the afocal meridian shall not exceed 0.1 mm.</p> <p>These tolerances shall not be additive and allow the angular deviation between the cylinder axis and the centerline to be greater than 20' of arc.</p> | |
| III.2.1 | Microscope | <p>Depth measurement : at least 20 mm</p> <p>Metric reticle range: from 0 mm to 3 mm</p> <p>Scale division: 0.05 mm</p> <p>Accuracy : 0.01 mm</p> <p>Magnification: between 25x and 50x</p> <p>Microscope holder:</p> <ul style="list-style-type: none"> - material - stainless steel - possibility for a fine adjustment of the microscope's displacement in horizontal and vertical direction, - magnetic base with on/off switch. | 2 |
| IV. | EQUIPMENT FOR ACOUSTIC VALUES MEASUREMENT FOR MOBILE LABORATORY | | |

| | | | |
|--------|---|---|----------|
| IV.1 | Dual channel sound analyzer in real time mode with built-in octave and 1/3 octave filters | <p>Frequency range: from 16 Hz to 12500 Hz</p> <p>Accuracy: ± 0.3 dB</p> <p>Frequency weighting: A,C and Linear</p> <p>Dynamic range: 20 dB to 140 dB</p> <p>Measured Parameters: L_p, L_{eq}, L_{max}, L_{min}</p> <p>Octave and 1/3 octave filters: 16 Hz to 12500 Hz</p> <p>Serial Input/Output: RS 232 or IEEE 488</p> <p>Transportation suitcase.</p> | <i>l</i> |
| IV.2 | Microphone | | |
| IV.2.1 | Capacity microphone (1“) | <ul style="list-style-type: none"> - Frequency range: 50 Hz to 10 000 Hz ± 0.5 dB (Pressure Field) - Upper limit of dynamic range: 140 dB against $2 \cdot 10^{-5}$ Pa - Resonance frequency: ≥ 8 000 Hz - Class WS1P (IEC 61094-4) - Diameter: compatible with item IV.3 | <i>l</i> |
| IV.2.2 | Cable Preamplifier | compatible with item IV.2.1 | <i>l</i> |
| IV.3 | Artificial ear | <ul style="list-style-type: none"> - Frequency range: 20 Hz to 15000 Hz - Resonance frequency: ≥ 12 500 Hz - Acoustic connection chambers: $2 \cdot 10^{-6}$ m³ and $6 \cdot 10^{-6}$ m³ <p>Transportation suitcase.</p> | <i>l</i> |
| IV.3.1 | Calibration certificate | <p>Calibration points:</p> <p>125 Hz; 250 Hz; 500 Hz; 750 Hz; 1000 Hz; 1500 Hz; 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz, 8000 Hz and 10000 Hz</p> | <i>l</i> |
| IV.4 | Artificial mastoid | <ul style="list-style-type: none"> - Frequency range: 50 Hz to 10 000 Hz - Sensitivity related to charge and acceleration: 2 pC/ms⁻² at 1000 Hz | <i>l</i> |
| IV.4.1 | Calibration certificate | <p>Calibration points:</p> <p>125 Hz; 250 Hz; 500 Hz; 1000 Hz; 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz, 8000 Hz and 10000 Hz</p> | <i>l</i> |

| | | | |
|------|----------------------------|---|----------|
| IV.5 | Acoustic calibrator | <ul style="list-style-type: none"> - Frequency: 1 000 Hz \pm 1.5% - Sound pressure level: In the range of 90 dB to 125 dB \pm 0.2 dB against $2 \cdot 10^{-5}$ Pa - Distortion: < 1% - Static pressure influence for 100 Pa: \pm0.05 dB in temperature range (0–50) °C - Class 1 (IEC 942) Transportation suitcase. | <i>I</i> |
| IV.6 | Portable computer (LAPTOP) | CPU: \geq 2 GHz RAM: \geq 512 MB DDR HDD: \geq 40 GB DVD-R/CD-RW LAN 10/100 Mbps USB 2.0 Modem | <i>I</i> |

| | | | |
|------|---------------|--|----------|
| IV.6 | Motor vehicle | <p>Mini Van – general specification:</p> <ul style="list-style-type: none"> - 2 seats - diesel engine - air – conditioned - 80 horse powers <p>Additional requirements:</p> <ul style="list-style-type: none"> • Two level aluminum racks on the left and the right side of the Mini Van’s back part, elastically gripped by means of vibration absorbers; • Rack’s width: min 350 mm; • Racks’ length: the specifics of the Mini Van shall be considered. In case there is no side door, the whole length of the back part shall be used. • Racks’ height: the specifics of the Mini Van shall be considered and the remaining area above the cabinets shall be divided into two equal parts. • Belts for fixing the suitcases with apparatuses to be provided; • Lower part of the racks shall be formed as cabinets with doors. 1. Cabinet dimensions: <ul style="list-style-type: none"> ○ Height: 700 mm; ○ Width: 400 mm. • Inside the cabinets as shock absorbers rubber foam, Polyurethane foam or a material with similar properties shall be used. Insulated floor (rubber or other suitable non-slip material). | <i>1</i> |
|------|---------------|--|----------|

ANNEX 5 PRELIMINARY FORECAST

DIRECTORATE GENERAL “NATIONAL CENTER OF METROLOGY” - BIM

The mission of the GD “National Center of Metrology” in its quality of unique national metrological institute (NMI) in Bulgaria is, by creating and developing a system of national standards in the Republic of Bulgaria, to guarantee a stable basis for achievement of accuracy and traceability of measurements in the country and to create prerequisites for the development of the legal metrology, accreditation and certification as well as for the improvement of Bulgarian products competitiveness.

When implementing the trade agreements the World Trade Organization (WTO) requires availability of an internationally recognized measurement system. The international agreement for accreditation serves as an instrument for creation of confidence in the competence of measuring and testing laboratories, based on the concept that the performed measurements and test results are reliable, traceable and comparable. All this requires availability of an international network of trustworthy national standard laboratories which the trade partners could confide in and which the calibration and testing laboratories could refer to.

The national measurement system in its substance is considered as a national infrastructure. The National Center of Metrology is the source of traceability in the country by maintaining the national measurement standards and disseminating the reproduced by them values to the daily measurements in the industry, commerce and public utilities sector, for scientifically research activities, for the needs of the state and executive authorities.

In the last years the Bulgarian industry reports on stable and continuous growth of about 5 % per year. The Bulgarian legislation has been harmonized with the European as regards the requirements to the environment, the production safety related to the preservation of the consumers’ life and health, the implementation of good production and laboratory practices, quality management systems and systems using HACCP etc. 25 % of the imported goods in the country comprise new industry capacities on a state-of-the-art technological level.

All this leads to the increase of the calibration needs having an expanding range and higher accuracy as well as to the requirement for achieving international recognition of the measurement, testing and certification results.

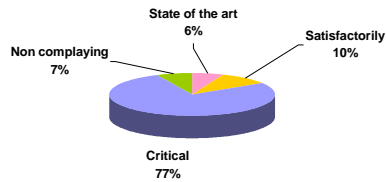
The national measurement standards represent the technical base of the quality infrastructure. Within the framework of the program PHARE 2000, project BG 0003.02.02, part “TA” a review of the available at the GD NCM standard equipment, its status and capabilities has been performed.

It has been ascertained that a significant part of the measurement standards does not comply with the modern level of development of the measuring technique. The measurement standards having a technological level of the 80-ty years of 20th century prevail. They do not comply with the required in the country accuracy any more and they do not achieve the satisfactory degree of equivalence to the international measurement standards or to the national measurement standards of the countries members of the Meter convention. Only 12 % of the measurement standards are estimated as being up-to-

date. 28 % of the measurement standards, which functions are partly or completely stopped, have a critical status. The main problem is their wearing off and their falling behind the modern technological level particularly significant regarding the state-of-the-art IT implementation. The trend of deterioration of the operation status of the measurement standards is constant in the last two years as seen on Figure below:



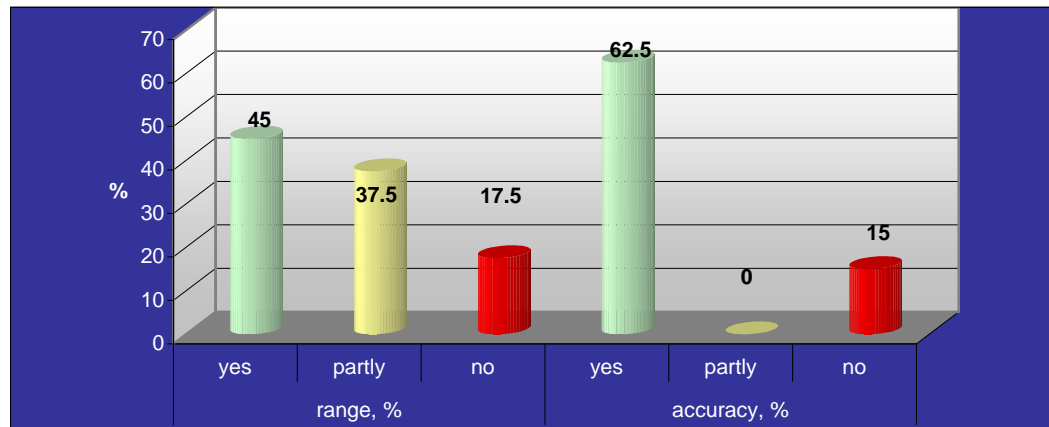
Technology level of the standards towards 2003



For evaluation of the Bulgarian industry needs of traceability and measurement accuracy an inquiry among 250 companies has been performed within Project PHARE 2000 Program. The results received determine 3 groups of measurement scope depending on their significance to the industry:

- ✓ Group 1: more than 70 % of the enterprises develop activity in the field of temperature measurements, mass measurements, electrical measurements, pressure measurements, length measurements and chemical measurements;
- ✓ Group 2: about 50 % of the enterprises develop activity in the field of force measurements, time and frequency measurements, flow measurements;
- ✓ Group 3: approximately 36 % of the enterprises develop activity in the field of optical measurements, volume measurements and ionizing radiation measurements.

By analyzing the customer's needs in the country it has been found out that the existing measurement standards ensure traceability for less than 50 % of the needs regarding the range and approximately 60% - regarding the accuracy, as it is shown on the Figure below:



To meet the requirements of the MRA (signed by SASM/GD NCM in October 1999) GD NCM presents via EUROMET its CMC tables which reflect the existing capabilities in the measurement subject fields. A great part of them does not satisfy the current industry needs, such as: pressure, viscosity, density, inductance, capacity and force measurements. The calibration in these fields is performed with uncertainty significantly exceeding the industry requirements, or in limited ranges, or in certain cases – for specified values only.

GD NCM has not presented CMC tables for other measurement fields (temperature, flow, electrical resistance, ionizing radiation, force, hardness etc.) due to the lack of modern measurement standards.

Supply of equipment according to Project PHARE 2005/6 is envisaged for the following fields of measurement: length, electrical quantities, time and frequency, mass and related quantities, photometry and radiometry, ionizing radiation, chemistry.

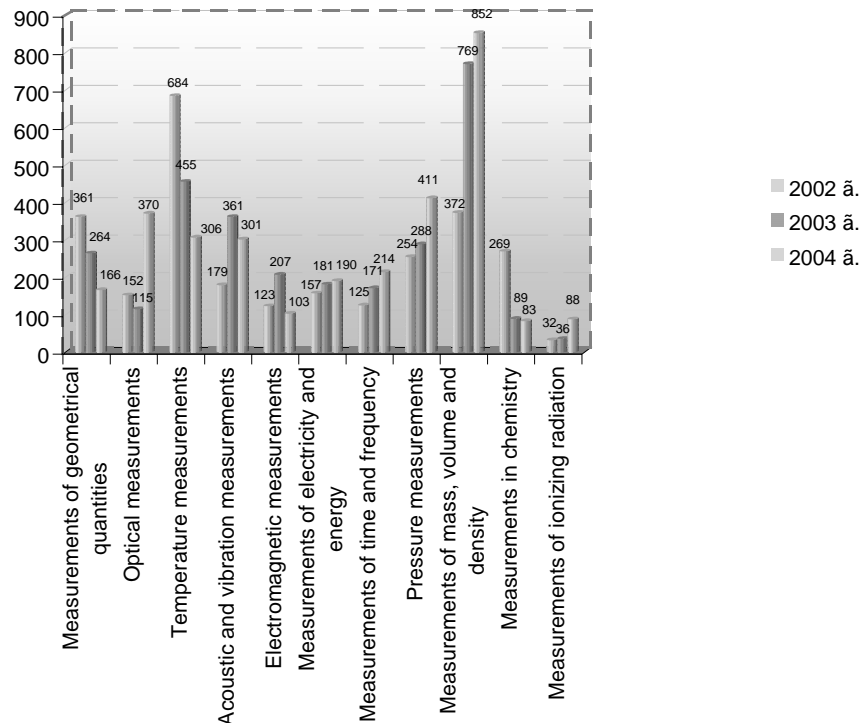
A list of the most needed equipment in measurement subject fields has been prepared, with the assistance of European experts, for satisfying the industry needs and for meeting MRA requirements for equivalence of the national measurement standards as well as for international recognition of measurement and calibration results performed by GD NCM. The following factors have been taken into account:

- Price of the measurement standards and equipment assuring their normal performance
- Availability of expensive measurement standards with operation resources covering a future period of 5 to 10 years
- Number and accuracy of the available measurement standards of lower accuracy levels in the country
- Meeting the requirements of *acquis communataires*
- Bulgarian producers of measuring instruments
- Impact degree of the reproduction of a unit on the system of national measurement standards
- Possibilities for co-operation with other metrological institutions
- Harmonized incorporation of the Bulgarian fundamental metrology in the infrastructure of the European measurement system
- Practice of countries commensurate with Bulgaria.

The equipment requested according to Project PHARE 2005/6, is aimed at assuring traceability of measurements for the industry needs. Modernization, additional equipping, substitution of the morally and technically outdated equipment with expired operational resource and incapability of proving to a sufficient degree the equivalence during international comparisons, is envisaged at first place. No purchase of primary measurement standards is planned. On the other hand this means that the yearly expenses for calibration of secondary and reference standards outside the country will increase. The expenses, for a given period of time and in certain cases, are commensurate with the price of the primary standard without providing possibilities for examinations inherent to the primary standards.

Development of measurement subject fields with limited customer needs is not envisaged, e.g. high frequency measurements, hydro acoustics etc., and the available in the country measuring instruments for these quantities are directed to foreign laboratories. In some fields it has been stacked on the use of reference and working standards of lower accuracy levels, e.g. fluid flow measurements and movement parameters.

The calibrated in GD NCM measurement standards and measuring instruments in the period 2002 – 2004 are between 2700 and 3000 per year. Their number with respect to the subject field measurements is shown on the table.



155 applications for calibration were refused in 2004 due to lack of technical capabilities (measurement standards). The consequences arising are impossibility of meeting the requirements of the harmonized legislation or raising the costs of Bulgarian production and deteriorating its competitiveness due to the necessity of their quality conformation abroad.

Examples:

- Viscosity measurements - GD NCM poses a set of 33 viscosity meters, type “Webelode”. The calibration of 10 of them (which does not assure the whole range and solves the traceability problem for several years) would cost 20 000 Euro, the system modernization by means of automation of the simultaneous reading of the discharge time for 3 viscosity meters amounts to 15 000 leva (appr. 7 500 Euro).

There are 3 European directives (98/70/EC; 1999/32/EC; 2003/17/EC) for quality control of liquid fuels which lay down the requirements to their quality assured by means of calibrated measuring instruments for viscosity and density.

- The country does not dispose of a measurement standard for ozone concentration and no traceability is provided but this activity is needed in connection with the implementation of the 3 European directives for ozone: 92/72/EEC from 1992, 96/62/EC from 1996 and 2002/3/EC. For observation of the ozone in the ground layer the Ministry for environment and waters maintains a national system for quality control of the atmospheric air by means of automated stations in the country. The ozone concentration is one of the continuously measured indicators.
- GD NCM does not dispose of a measurement standard for composition of gas mixtures necessary for the implementation of the national and European legislation to:

- Quality management of the air – framework directive 96/62/EC;
- Specifications/norms for fine dust particles, plumb, sulphur dioxide and nitrogen oxides - framework directive 99/30/EC, directive 99/69/EC for carbon oxide and carbon oil in the atmosphere.
- The pressure standards providing traceability of measurements related to the implementation of the European directives for pressure equipment are in use for a period of 20 to 40 years.

The Ministry of economics realized a pilot project for supporting the implementation of the HACCP system in small and medium sized enterprises in the field of meat processing and dairy industry. In 2005 grant scheme contracts were signed with 68 meat processing enterprises. The provision of grants to dairying enterprises is planned for the year 2006. For the implementation of the HACCP system it is necessary to provide traceability and national measurement standards with satisfactory equivalence for pressure, temperature, mass, volume, density and viscosity measurements; for time and frequency measurements for technological processes synchronization; for chemical analyses of composition and content of substances and elements in the products. Every year the EC grants to Bulgaria export quotas for such kind of production, and after 01.01.2007 it is expected to be a part of the EC market. The problem solving is directly related to the competitiveness not only of these enterprises but also to the European market as a whole as well as to the provision of safe products to the consumers.

One of the basic quantities in the electrical measurements is the electrical resistance which is within the scope of the Low Voltage Directive (LVD). Due to a permanent damage of the national measurement standard the traceability of the quantity is provided by means of a transfer standard Wavetek 4950. This narrows the range and leads to an increase of the uncertainty of unit dissemination up to 48 times which does not satisfy the industry needs.

In the field of time and frequency measurements the country disposes of a primary measurement standard – cesium generator purchased in 2000. The generator's producer guarantees 5 years usage during which its metrological characteristics will be preserved. Only this measurement standard among the similar ones in the Southeastern Balkan countries participates in the formation of the World time scale. It provides traceability to BIMP for three units – time, time interval and frequency. It is a fixed one and performs daily distance comparisons with a GPS system. As a result of our good co-operation and the international reputation of the laboratory BIPM has given to GD NCM free of charge a specialized GPS receiver for temporary use. Due to the geographical situation of Bulgaria the standard has regional significance. The laboratory has a 20-year experience in this field and it issues about 200 calibration certificates per year.

As a comparison, the number of calibrations performed by GD NCM is comparable to that performed by PTB - Germany and UME - Turkey but we have to take into account the staff proportion: PTB has over 1000 persons staff, UME - about 400, GD NCM – 75 persons.

The trend in future is GD NCM to reduce the number of calibrated standards to the typical for a NMI accuracy level in connection with the final establishment of the

metrological infrastructure of the country while preserving constant the number of the personnel in the standard laboratories related to the supplies according to this project.

There are types of measurements where the carrying out of a calibration request is delayed from 6 to 7 months since the application date – electrical energy measurements, temperature measurements.

The prices of the standards' calibration are formed according to the Tariff of the Ministry of finance and as a rule they are much lower (sometimes up to 10 times) than that in other European countries in spite of the power-consuming standards and equipment for maintenance of the laboratory environment and the lack of measurement automation, as well as in spite of the insufficient number of computers in the majority of laboratories. Significant influence on the maintenance of the standards exerts the money paid each year for calibration, transportation, insurances and bank deposits for the period of their stay abroad.

The GD NCN's customers assume only as an exception the risks connected to the transportation of the measurement standards abroad and the related to this higher costs for calibration, transportation, insurances, deposits, business trips and lost benefits for the time of standards' absence.

The GD NCM's buildings are evaluated as extremely inappropriate, having unsuitable location and being a subject to the impact of significant influence factors which to a great extent are uncompensated by the appropriate technical instruments or other protective measures. Due to that fact, by virtue of a Decision of the Counsel of Ministers No.307 dated 19.04.2004, SASM has been granted a terrain within the village of German - Sofia municipality, for the construction of a new metrological complex.

During 2004

- Implementation of a preliminary hydro-geological study of the terrain, elaboration of a project for detailed construction plan and obtaining of a visa for project elaboration from the Municipality of Sofia was contracted.
- A concept for the new metrological complex was elaborated.
- Draft technical specifications for the national standard laboratories were prepared.

Planned until the end of 2006:

- Elaboration of a working project for all parts of the buildings and installations of the new metrological complex;
- European experts' evaluations of the project compliance to the requirements for standard laboratories, PHARE 2002, project BG 0201.12.

From the beginning of 2007:

- First stage of the new metrological complex construction — reconstruction of the existing buildings, construction of new building (1), communication facilities building up.

From the beginning of 2008 to 2009:

- Second stage of the construction – new building (2) and finalization of the vertical planning of the whole complex.
-

It is envisaged the equipment supplied under the project PHARE 2005/6 to be installed in the laboratory premises of the new metrological complex in the village of German. The design and construction of the new metrological complex is set in the budget forecast for the period 2007 – 2009 according to the “Long-term program for the development of the national measurement standards of the Republic of Bulgaria for the period 2004 – 2010” adopted with a Decision of the CM dated 06.01.2005. For the long-term program execution the Bulgarian government has expressed its commitment by providing a budget financing surpassing twice the finances planned according to the international programs and projects.

New metrological complex – National standard laboratories

First stage – by the end of 2007

(Laboratories for which no delivery of equipment is foreseen under PHARE 2005-2006)

| Subprogram | Laboratory |
|-------------------------------|--|
| “Mass and related quantities” | “Mass” |
| | “Density and small volumes” |
| | “Large masses and large volumes” |
| | “Pressure” |
| | “Force” |
| | “Hardness” |
| “Electricity and magnetism” | “National standards for AC and DC voltage, current, capacity and inductance” |
| | “National standard for resistance” |
| | “National standard for magnetic inductance” |
| | “Radio frequency measurements” |
| | “Calibration of standards of electrical quantities” |
| | “Measuring transformers and high voltage” |
| | “Electrical power and energy” |
| “Time and frequency” | Standard laboratory for time and frequency measurements” |
| | Laboratory for time and frequency calibrations |
| “Temperature” | “Low temperatures” |
| | “Medium temperatures” |
| | “High temperatures” |
| | “Relative air humidity” |
| | “Calorimetry and flash point temperature” |
| “Photometry and radiometry” | “Photometry” |
| | “Radiometry” |
| | “Optical properties of materials” |

| | |
|--------------------------|-------------------------------|
| “Metrology in chemistry” | “Electrical chemistry” |
| | “Viscosity” |
| | “Mass spectrometry” |
| | “Gas analytical measurements” |
| “Ionizing radiation” | “Photon dosimetry” |
| | “Radionuclids activity” |
| | Specialized premises |

Second stage of the construction –2008/9

| | |
|----------------------------|--|
| “Acoustics and vibrations” | “Acoustic measurements” |
| | “Noise-silencing chamber” |
| | “Parameters of movement and impact acceleration” |
| “Length” * | Laboratories for length and angle measurements |

** (equipment delivery under PHARE 2005-2006 Programme is foreseen. The laboratory’s premises to be supplied are located at 2, “Prof.P.MutafchievSt., Sofia)*

DIRECTORATE GENERAL “MEASURES AND MEASURING INSTRUMENTS”, BIM

Within 2005 - 2007 period, Bulgarian economy should prepare for its successful functioning as part of the single European economic area.

Governmental programmes aimed at establishing stability and creating opportunities for expansion of Bulgarian economy, at stimulating competitiveness of Bulgarian industry, as well as at transposition of *acquis* for safe conditions and environment, may be achieved through an active policy towards promotion of metrology, including the successful integration of the latter into the metrological infrastructure of Europe.

Metrology, as science and practice of measurements, plays an essential role for industrial productivity and commercial transactions, and serves the society in achieving higher quality of life. Accurate and reliable measurements are essential prerequisite for public safety, energy saving, environmental protection, healthcare, product innovation, as well as for strengthening the positions of manufacturers and development of entrepreneurship in the conditions of globalisation and competitive national and international market.

Bulgarian legislation as regards measurements (in particular the Law on Measurements and the related to it secondary legislation) is harmonised with the European one, the latter including EU Framework Directive 71/316/EEC plus 23 specific Directives (16 base Directives and 7 amending Directives) from the Old Approach.

Law on Technical Requirements for Products establishes the horizontal framework for transposition of the New Approach directives into national legislation. This Law introduces the New Approach principles as regards technical requirements, as well as the Global Approach principles as regards conformity assessment. One of the primary objectives pursued by this Law is removing technical barriers to trade in the framework of the EU.

MID will be adopted by the Council of Ministers by the end of August 2006. The directive aims at establishing internal market for measuring instruments subject to metrological control and high level of consumer protection.

This imposes the necessity of analysing and optimising metrological control of measuring instruments within the country, by upgrading the existing laboratories and establishing new ones for testing of measuring instruments, as well as preparation and carrying out of the activities for achievement international recognition of type-examination results form of measuring instruments.

Fulfillment of this objective requires significant investments not only by the Government of Bulgaria but also by external sources. Taking into consideration the level of economic development of the country for the passed 15 years and the impossibility for the Government to make considerable investments in metrology development , and in particular of legal metrology, SAMTS and BIM seek financial and technical assistance by applying for participation in various international programmes and projects, among which the PHARE programme.

In this project under PHARE Programme (PHARE 2004-2006), DG MMI requests supply of equipment and technical assistance for fields where these are urgently needed.

For the last 25-30 years, no investments have been made in the fields proposed. The fields have been selected after an analysis of the present state of the equipment has been carried out and the mutual influence of the factors listed below has been taken into consideration:

- Depleted operational resource of the equipment and lack of equipment for particular testing scopes and verification of taximeters, electricity meters and gas flow rate meters;
- The total number of measuring instruments subject to metrological control;
- Growing tendency for gasification of great percent of households and industrial enterprises within the country;
- Transposition of *acquis* in the field of conformity assessment of measuring instruments in particular of type examination and verifications;
- Satisfaction of requirements of international recommendations in the field of legal metrology;
- Satisfaction of the requirements for participation and applying for the declarations of mutual confidence (DoMC) for acceptance of the results from type examinations of measuring instruments under the Mutual Acceptance Agreement (OIML-MAA);
- Competency;
- Value of the requested equipment and devices assuring their proper operation.

Information about the approved and verified measuring instruments, as well as about the incomes from this activity for the 2002 – 2005 period, as regards the subjects for which DG "MMI" applies through the present project, is given below.

Approved types of fuel dispensers and medical devices with measuring functions in 2005

| 2005 | Fuel and LPG dispensers | Medical devices |
|---|--------------------------------|------------------------|
| Number | 16 | 22 |
| Total sum of fees ¹ in BGN per service | 16 000 | 13 350 |

¹ The fees have been gathered from administrative services which do not include price for testing of measuring instruments

Verifications of fuel and LPG dispensers as well as medical devices carried out in 2005

| 2005 | Fuel and LPG dispensers | Medical devices |
|---|--------------------------------|------------------------|
| Number | 30 874 | 9819 |
| Total sum of fees ² in BGN per service | 771 420 | 120 177 |

Approved types of gas flow rate meters within the declared range

| Year | 2002 | 2003 | 2004 | 2005 |
|---|-------------|-------------|-------------|-------------|
| Number | 1 | 9 | 17 | 12 |
| Total sum of fees ³ in BGN per service | 150 | 1 350 | 4 350 | 4 500 |

The tendency for increase in the number of applications submitted and number of the approved types of gas flow rate meters within the range declared indicates the growing necessity of availability of such measuring instruments in the country.

Verification of gas flow rate meters

The lack of adequate in range and accuracy equipment, does not allow DG "MMI" to carry out verification of gas flow rate meters within the range declared. The "Gaztek" enterprise was authorised in 2003 for performing verifications of gas flow rate meters. According to data provided by this enterprise, about 800 verifications of the approximate value of 96 000 BGN are performed annually within the country.

Taking into consideration the forthcoming gasification of the country (up to the present moment the level of gasification is only about 1,5 %), and the construction of cross-border gas pipelines, the figures given are expected to increase many times.

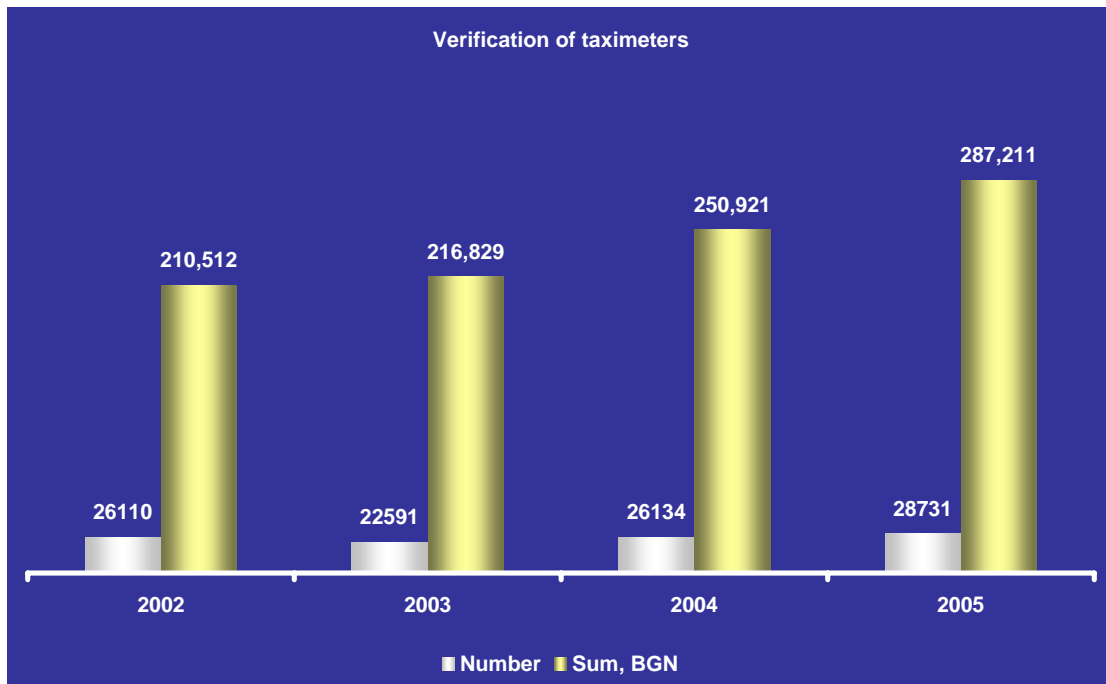
² The fees have been gathered from administrative services which do not include price for testing of measuring instruments

³ The fees have been gathered from administrative services which do not include price for testing of measuring instruments

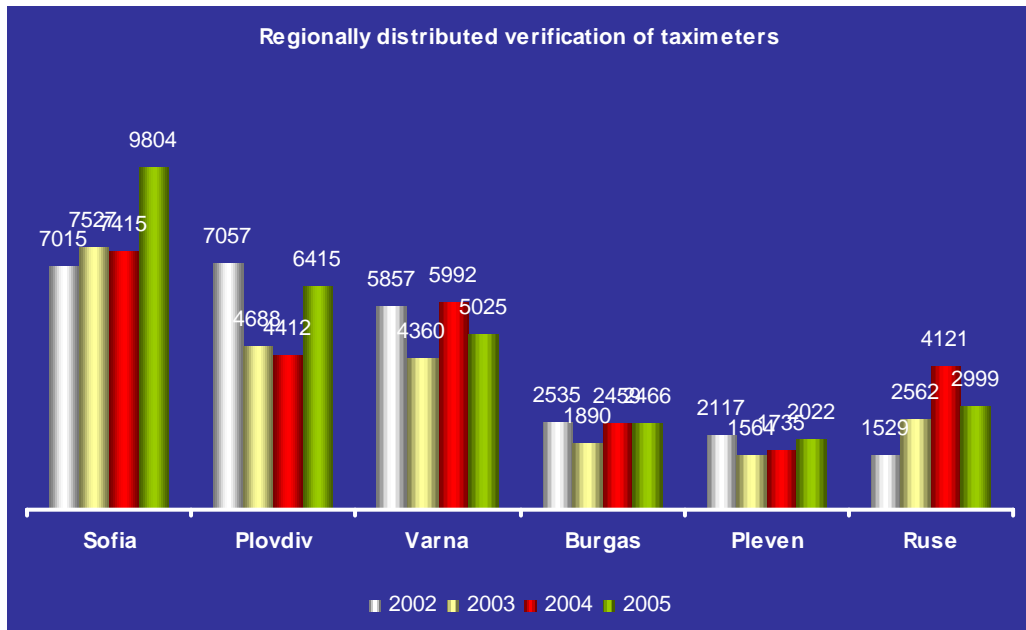
Approved types of taximeters

| <i>Year</i> | <i>2000</i> | <i>2001</i> | <i>2002</i> | <i>2003</i> | <i>2004</i> | <i>2005</i> |
|--------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Number | 12 | - | - | 2 | - | 5 |
| Total sum of fees in BGN per service | 4 800 | | | 1 600 | | 4 000 |

Verification of taximeters



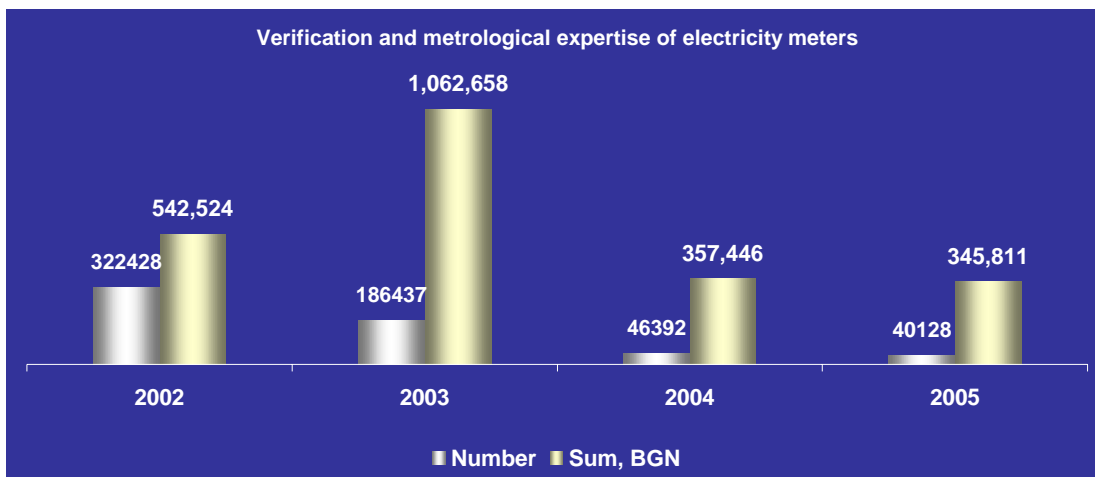
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Approved types of electricity meters

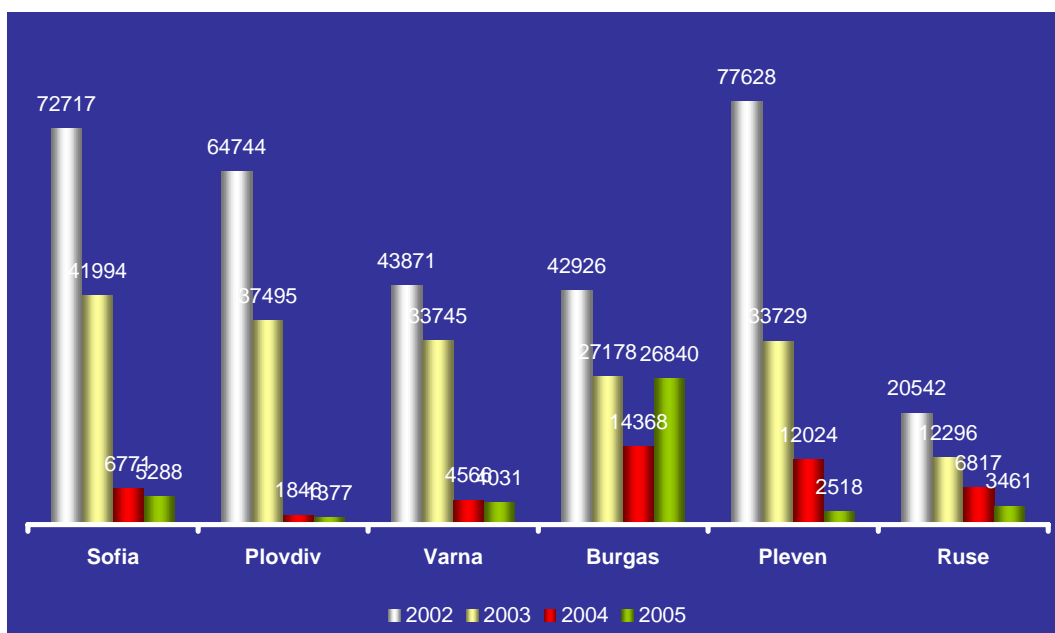
| <i>Year</i> | 2002 | 2003 | 2004 | 2005 |
|--------------------------------------|-------------|-------------|-------------|-------------|
| Number | 33 | 22 | 29 | 29 |
| Total sum of fees in BGN per service | 9 000 | 22 000 | 29 000 | 29 000 |

Verification and expertise of electricity meters



The tendency to a decrease in the number of verifications is due to the fact that since 2003 several laboratories (their number being over 10) have been authorized for performing this type of activity.

The number of the verifications and expertise performed is distributed among regions as shown in the figure below:



Approximately 600 types of measuring instruments have been tested during the given period. About 70 % of them are tested for climatic impacts, which stands for average 24 hours per tested type. Total time allotted for tests for climatic impacts during the given three-year period is about 10 000 hours.

The existing equipment, being installed in the 80's and combining outdated technical solutions and unsuitable overall dimensions, does not allow carrying out of tests within wide temperature range and within the respective humidity.

Due to the lack of adequate equipment DG "MMI" cannot perform testing for vibration resistance of measuring instruments. Great percent of the measuring instruments are subject to such testing, as referred to in international documents, recommendations, European norms, and national legislation. The measuring instruments should also meet the requirements of OIML D 11, edition 1994 as specified below:

Random vibration

| | |
|-----------------------|--|
| Total frequency range | 10-150 Hz |
| Total RMS level | 1,6 m.s ⁻² up to 16 m.s ⁻² |
| ASD level 10-20 Hz | 0,048 m ² .s ⁻³ up to 4,8 m ² .s ⁻³ |
| ASD level 20-150 Hz | - 3 dB/octave |
| Number of axes | 3 |
| Duration per axis | 2 minutes in each functional mode as defined in the appropriate OIML Recommendation or a longer period if necessary for carrying out the measurement |

Sinusoidal vibration

| | |
|---------------------------------|--|
| Frequency range | 10-150 Hz |
| Maximal acceleration level | 2 m.s ⁻² up to 10 m.s ⁻² |
| Number of sweep cycles per axis | 20 |

The fees, which are being gathered at present, are not relevant to the actual value of the service delivered. Pricing is state policy and does not depend on the resources invested.

Number of personnel involved in performing this activity is given below:

| Measuring instruments | Gas flow rate meters | Measuring systems for liquids other than water | Taximeters | Electricity meters | Medical devices with measuring functions |
|---|----------------------|--|------------|--------------------|--|
| Personnel | | | | | |
| Number of personnel carrying out testing of measuring instruments | - | 3 | 1 | 2 | 5 |
| Number of personnel carrying out verifications of measuring instruments | - | 21 | 12 | 24 | 24 |
| Annual expenditures for work salary in BGN | - | 172 800 BGN | 93 600 BGN | 187 200 BGN | 208 800 BGN |

Budget forecast for the period following the equipment supply

Testing of measuring instruments

| Measuring instruments | Gas flow rate meters | Taximeters | Electricity meters |
|--|----------------------|-------------------|--------------------|
| Time of operation of the equipment given in hours per year | 900 hours per year | 84 hours per year | 840 hours per year |
| Expected incomes / expenditures | | | |
| Price of the service given in BGN | 3 000 BGN | 1 650 BGN | 42 000 BGN |
| Number of personnel involved in delivering the service | 2 ⁴ | 1 ⁵ | 2 |
| Annual expenditures for work salary given in BGN | 14 400 BGN | 7 200 BGN | 14 400 BGN |

Verification of measuring instruments

| Measuring instruments | Gas flow tare meters | Taximeters | Electric meters |
|--|----------------------|-------------------------------|--------------------------------|
| Time of operation of the equipment given in hours per year | 1 500 hours per year | 780 hours per year for a rig | 1 040 hours per year for a rig |
| 1.2. Expected incomes / expenditures | | | |
| Price of the service given in BGN | 60 000 BGN per year | 31 200 BGN per year for a rig | 65 000 BGN per year for a rig |

⁴ The personnel involved in delivering the service, is also involved in testing of other measuring instruments and other activities.

⁵ The sums are calculated taking into account the average work salary of SAMTS employees up till March 2004. The sums include also revenue taxes and health and retirement insurance. Expenditures for work salary increase with an average annual pace of 8 %.

| | | | |
|--|------------|--|---|
| Number of personnel involved in delivering the service | 2 | 2 (of 12 in total – for the 6 rigs) | 4 (of 22 in total – for the 5 rigs) |
| Annual expenditure for work salary given in BGN ⁶ | 14 400 BGN | 14 400 BGN (86 400 BGN for 12 experts) | 28 800 BGN (158 400 BGN for 22 experts) |

⁶ The personnel involved in delivering the service, is also involved in testing of other measuring instruments and other activities.

Preparation of DG "MMI" laboratories where the equipment will be supplied

The equipment supplied to DG "MMI" will be installed in the existing laboratories . At present, the ambient conditions of these laboratories do not comply with those required as regards the activities performed. Therefore, premises should be repaired thus allowing maintenance of suitable ambient conditions in the laboratories, as required for the proper operation of the equipment supplied.

Expenditures for repair works of the premises, where the requested equipment will be installed, are provided for in the Budget forecast 2006–2008, as follows:

| Paragraphs | Budget 2006 | Budget 2007 |
|---|--------------------|--------------------|
| 2. Capital expenditures | | |
| General overhaul of fixed assets: | | |
| <ul style="list-style-type: none">• Repair works of the premises of six laboratories for verification and expertise of electricity meters in the Regional Departments in Sofia, Plovdiv, Burgas, Varna, Ruse, Pleven. | 300 000 BGN | |
| <ul style="list-style-type: none">• Establishment of stations for verification of taximeters in the Regional Departments in Sofia, Plovdiv, Burgas, Varna, Ruse, Pleven. | | 96 000 BGN |
| <ul style="list-style-type: none">• Repair works of premises for testing of climatic impacts in "TEMI" Department, DG "MMI", Sofia | | 28 000 BGN |
| <ul style="list-style-type: none">• Repair works of premises for testing of mechanical impacts (vibration) in "TEMI" Department, DG "MMI", Sofia | | 32 000 BGN |
| <ul style="list-style-type: none">• Repair works of premises for verification and testing of gas flow rate meters in Sofia Regional Department | | 44 000 BGN |
| Total expenditures: | 300 000 BGN | 200 000 BGN |

At the current stage the reconstruction of the premises of laboratories for testing medical devices with measuring functions and fuel and gas dispensers is ongoing.

ANNEX 6: NEED ASSESSMENT OF CONFORMITY ASSESSMENT BODIES RELATING TO COMPONENT 5

Centre for Testing and European Certification Ltd. Stara Zagora, Bulgaria

DESCRIPTION OF SERVICES

Center for Testing and European Certification, a private limited company located in Stara Zagora, was established on 11 February 2002 as a self-contained and independent body for conformity assessment of:

- construction products with the essential requirements in accordance with Directive 89/106/EEC;
- machines with the essential requirements in accordance with Directive 98/37/EEC;
- electrical equipment use within certain voltage limits in accordance with Directive 73/23/EEC;
- energy efficiency.

CTEC Ltd. Stara Zagora is successor of two testing laboratories with traditions in testing and research of machines and construction products:

- **Hraninvest** – Testing center is established more than 15 years ago and is specialized in the following fields: testing for safety of machines and equipment for food and tobacco industry, light industry, manufacturing of wood, metals, plastics and others.
- **Central construction laboratory of BAC** – established in 1963, with the aim of carrying out testing of construction products.

In the last two years after its registration CTEC Ltd. has elaborated, implemented and operated Quality Management System in accordance with BDS EN 45011 and BDS EN 45012.

Center for Testing and European Certification provides conformity assessment services in the following fields:

- ◆ Conformity assessment of construction products and production control system - authorization No. ACACP – 06/09.05.2003 by MRDPW in accordance to the Ordinance for essential requirements and conformity assessment of construction products laid down in Directive 89/106/EEC;
 - ◆ Conformity assessment of machines (identification number 009) according to the following procedures specified in the Machinery Directive 98/37/EC:
 - type examination
 - keeping of technical file
 - issuing certificate of adequacy for the technical file
 - ◆ Conformity assessment of electrical equipment designed for use within certain voltage limits in accordance with the Ordinance of electrical equipment designed for use within certain voltage limits. It's a new activity of the center. In spite of the fact the laboratory has been equipped with some modern equipment and testing
-

apparatuses it still needs additional equipment so as to perform required tests satisfying the standards requirements.

- ◆ Energy efficiency surveillance of energy consumer and carries out building certification in accordance with the Energy Efficiency Law.
- ◆ Technical inspection of high-risk equipment
- ◆ Testing of construction products at its own laboratory
- ◆ Testing of machines, equipment and devices in its own laboratory accredited by Executive Agency Bulgarian Accreditation Service (accreditation certificate BAS Reg. No. 10117)/18.02.2005.

Our objective is within the next two calendar years to develop the Centre as the best and competent private Bulgarian conformity assessment body, having its own laboratories for testing of machines, equipment and devices, and construction products, trained and competent personnel and laboratories equipped with modern measurement and testing equipment.

The Centre is an independent third party for conformity assessment of:

- construction products:
 - concrete and construction mixtures;
 - aggregates;
 - steel products;
 - masonry products;
 - electrical parts;
 - chimney parts;
 - water supply and sewerage systems products.
- machines and equipment for:
 - food products;
 - working of timber and similar materials;
 - light industry;
 - fodder production and mechanization of animal raising.
- portable hand machines
- apparatuses and equipment up to 1000 V, inclusive of home appliances.

The stages of the company development and related objectives can be summarized as follows:

- beginning - to find our customers and keep them as our customers, and to offer services which meet the ever changing customers' requirements;
- early years- consolidation of the company: employment of competent personnel, its training and retaining in the company, development of managerial structure.

The following are the priorities of the Centre:

- To become a notified body within 12 months.
 - To expand the scope of the evaluated groups of construction products within 24 months.
-

- To prepare a catalogue of the potential customers on the basis of a survey of the services available on the market.
- To organize a training for the manufacturers (suppliers) where to explain the necessity for conformity assessment of products with the substantial requirements ensuring safety of consumers and market competition. To provide assistance to them in the interpretation of the legislation and other regulations without influencing the decision of the manufacturer concerning certification.

To implement its objectives the Centre has to provide adequate:

- measuring and testing equipment required by the harmonized standards;
- regulations and technical standards;
- specialists with experience and professional competence.

STRATEGIC OBJECTIVES OF CTEC:

- Implementation and maintenance of an efficient quality management system;
- Establishment of strong confidence through strict adherence to regulations compulsory to bodies dealing with conformity assessment;
- Increase of competitive advantages;
- Employment of highly qualified personnel;
- Provision of systematic incentives to our employees to improve quality of services related to conformity assessment;
- Making better account of expenses in accordance with requirements and type of services offered in the field of conformity assessment;
- Modernization of measuring, test and control equipment in line with current regulation requirements;
- Constant improvements of the quality system;
- Maintenance of long-term growth and efficiency in the operations of the Center.

The Center for Testing and European Certification is in the process of notification for conformity assessment of machines.

CTEC is a beneficiary of Phare 2002 Programme in respect of Construction Product Directive, Machinery Directive and Low Voltage Directive.

LIST OF AVAILABLE LABORATORY EQUIPMENT IN THE FIELD OF LVD

| No. | Equipment | Parameters | Qty. |
|------------|---------------------|-------------------------------|-------------|
| 1 | High voltage tester | High voltage tester | 1 |
| | | Software | 1 |
| | | Communication cable | 1 |
| | | 1638 memory location | 1 |
| | | Calibration certificate | 1 |
| 2 | Non-contact laser | Non-contact laser thermometer | 1 |

| | | | |
|---|------------------------------------|--|----|
| | thermometer | Software | 1 |
| | | Communication cable | 1 |
| | | Protective case | 1 |
| | | Battery set | 1 |
| | | Analog cable | 1 |
| | | Adhesive tape | 1 |
| | | Calibration certificate | 1 |
| 3 | Digital precision Multimeter | Digital precision Multimeter | 1 |
| | | Thermocouple type J&K | 10 |
| | | Thermoresistance (Pt100) | 10 |
| | | Interface | 1 |
| | | Software | 1 |
| | | Power pack | 1 |
| | | Calibration certificate | |
| 4 | Analyzer electromagnetic radiation | Analyzer electromagnetic radiation | 1 |
| | | Absorbing clamp | |
| | | Near field probe set | 1 |
| | | Calibration certificate | 1 |
| 5 | Digital oscilloscope | Digital oscilloscope | 1 |
| | | GPIB interface | 1 |
| | | Software | 1 |
| | | Calibration certificate | 1 |
| | | Dell D-610 Highend Notebook with MS Office | 1 |

TECHNICAL SPECIFICATION OF THE REQUIRED EQUIPMENT IN THE FIELD OF LVD

| Item No. | Price EURO | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. |
|-----------------|-------------------|--|---|-------------|
| 1. | 2000 | Mobile stabilizer for regulated voltage | P=12kVA U _{output} =(from 180 to 280) V AC stabilization: ±1%; | 1 |
| 2. | 2800 | Three phase power analyser | Ranges: 0,3-1-3-10-30-100-300-1000 V | 1 |

| | | | | |
|-----|-------|--|--|----------|
| | | /multimeter for measurement of a.c. voltage, current, and 3 phase power/ | 03-0,1-0,3-1-3-10 A Basic accuracy: $\pm 0,1$; Resolution: 0,01%; Reading: $\pm 0,1$ %; Band width of voltage: 3 MHz | |
| 2.1 | | Standard PC - interface | USB 2.0 IEEE 1394 RS232C | |
| 2.2 | | Software | Windows compatible or equivalent Application Software for data processing | <i>1</i> |
| 2.3 | | Calibration certificate | By an accredited laboratory | <i>1</i> |
| 3. | 1200 | Kilovoltmeter | Range: from 0 to 30000 V DC/AC accuracy class: 0.5 or higher | <i>1</i> |
| 3.1 | | Calibration certificate | By an accredited laboratory | <i>1</i> |
| 4. | 15000 | Test source for high-voltage | Compliance with EN 61180-2:1994 or equivalent. Measuring function: Electric strength test with sinusoidal voltage, variable between 100 V and 50 000 V at a frequency 50 Hz. | <i>1</i> |
| 4.1 | | Calibration certificate | By an accredited laboratory | <i>1</i> |
| 5. | 10000 | Transient over-voltage test generator | The metrology characteristics are specified in IEC61180-2; Impulse test voltage, variable between 400 V and 20 000 V, wave-shape corresponding to the 1,2/50 μ s standard impulse specified in IEC 61180-1, cl. 6.1 and cl. 6.2 | <i>1</i> |
| 5.1 | | Calibration certificate | By an accredited laboratory | <i>1</i> |
| 6. | 7500 | Multi channel temperature meter | Settings: $^{\circ}$ C Thermocouples: Type K Resolution: 0,1 $^{\circ}$ C Provided with automatic and manual scanning features. Type K thermocouples with miniature plug connectors 100 pcs. diameter of wires: 0,3mm length: 2m | <i>2</i> |
| 6.1 | | Standard PC - interface | USB 2.0 IEEE 1394 RS232C | <i>1</i> |

| | | | | |
|------|------|--|--|----------|
| 6.2 | | Software | Windows compatible or equivalent Application Software for data processing | <i>I</i> |
| 6.3 | | Calibration certificate | By an accredited laboratory | <i>I</i> |
| 7. | 7500 | System for measurement of wall, floor and ceiling temperature rises of black test corner in compliance with p.11 of EN 60335-1 | Automatic monitoring and storage of the temperature rises of each thermocouple of the black test corner. Reading and storage of highest temperature rises. -Thermocouples: (3x100) pcs. -Corner dimensions: 1m x 1m x 1m -300 channel multiplexer | <i>I</i> |
| 7.1 | | Calibration certificate | By an accredited laboratory | <i>I</i> |
| 7.2 | | Standard PC - interface | USB 2.0 IEEE 1394 RS232C | <i>I</i> |
| 7.3 | | Software | Windows compatible or equivalent Application Software for data processing | <i>I</i> |
| 8. | 7500 | Conditioning chamber | Relative humidity: (from 30 to 97) % Temperature: (from -30 to 50) °C Internal dimensions: (1x1x1) m; Detachable calibrated thermometer and Rh meter for following the temperature and humidity | <i>I</i> |
| 8.1 | | Calibration certificate | By an accredited laboratory | <i>I</i> |
| 9.1 | 1000 | Equipment for horizontal and vertical flame test with an isolating chamber | Equipment in compliance with EN60695-11-10:1999 | <i>I</i> |
| 9.1 | | Calibration certificate | By the manufacturer or an accredited laboratory | <i>I</i> |
| 10. | 700 | Dynamometer spanner | Torque (from 0 to 3) Nm Spanner: from 3mm to 17 mm (included inbus) | <i>I</i> |
| 10.1 | | Calibration certificate | By the manufacturer or an accredited laboratory | <i>I</i> |
| 11. | 1000 | Flexing test apparatus | In compliance with figure 8 of EN60335-1: 2002; | <i>I</i> |
| 11.1 | | Calibration certificate | By the manufacturer or an accredited laboratory | <i>I</i> |

| | | | | |
|------|------|--|--|------------|
| 12. | 1200 | Thermocouples | Type K with miniature plug connectors; Diameter of wires: 0,3 mm; Length: 1 m | <i>100</i> |
| 12.1 | | Calibration certificate | By an accredited laboratory | <i>1</i> |
| 13. | 3600 | Temperature calibrator | Range: from 30 °C to 1200 °C Diameter of sensor under test: from 3 mm to 20 mm | <i>1</i> |
| 13.1 | | Calibration certificate | By an accredited laboratory | <i>1</i> |
| 14. | 1200 | Datalogger digital thermometer-hygrometer | Temperature range:(from 0 to 50) °C; Relative humidity: (from 30 to 97) %; Resolution: 0,1 °C or higher; Accuracy: ±0,5 °C or higher; Relative humidity: 1 % | <i>1</i> |
| 14.1 | | Standard PC - interface | USB 2.0 IEEE 1394 RS232C | <i>1</i> |
| 14.2 | | Software | Windows compatible or equivalent Application Software for data processing | <i>1</i> |
| 14.3 | | Calibration certificate | By an accredited laboratory | <i>1</i> |
| 15. | 1200 | Cord anchorage torque device /device for applying torque / | Range: from 0 to 4 Nm | <i>1</i> |
| 15.1 | | Calibration certificate | By the manufacturer or an accredited laboratory | <i>1</i> |
| 16. | 1000 | Precision electronic scales | Max= 5000 g; Min= 0,5 g; d=0,01 g; | <i>1</i> |
| 16.1 | | Calibration certificate | Calibration by an accredited laboratory | <i>1</i> |
| 17. | 3100 | Digital torque limiting screw driver with memory | According to EN 26789:1994 (EN ISO6789:2003) Range: 0.1 to 200 Nm Accuracy: ± 1 % | <i>1</i> |
| 17.1 | | Standard PC - interface | USB 2.0 IEEE 1394 RS232C | <i>1</i> |
| 17.2 | | Software | Windows compatible or equivalent Application Software for data processing | <i>1</i> |

| | | | | |
|------|-------|---|--|----------|
| 17.2 | | Calibration certificate | Calibration by an accredited laboratory | <i>I</i> |
| 18. | 42500 | Testing equipment in compliance with EN 60439-1, verification of short circuit withstand strength - point 8.2.3 and EN 60296-1 fusible safety device for low voltage (p.8.5 verification of braking capacity) | 80 kA – 1300V | <i>I</i> |
| 18.1 | | Software | Windows compatible or equivalent Application Software for data processing | <i>I</i> |
| 18.2 | | Calibration certificate | Calibration by an accredited laboratory | <i>I</i> |
| 19. | 3000 | Laptop (Notebook) | CPU Intel Pentium M 1.7GHz RAM 1024 MB DDR333 HDD 80 GB DVD±R/W Video Card 128 MB 15.4" TFT Wide WXGA 1280x800 LAN Interface 3 x USB 2.0 IEEE 1394 OS – MS Windows XP Profesional | <i>I</i> |
| 19.1 | 1000 | Colour laser printer | 600 x 600 dpi 16 MB 16 s/min – b.w. ; 4 s/min – col. CPU 150 MHz | <i>I</i> |
| 20. | 1000 | Current clamp | Nominal current ranges: 1- 30 A/ 1 - 300 A/1 – 3000 A Accuracy: 1 %; Working voltage: 600 V AC; | <i>I</i> |
| 20.1 | | Calibration certificate | Calibration by an accredited laboratory | <i>I</i> |

Total: 115 000 Euro

**TECHNICAL SPECIFICATION OF REQUIRED EQUIPMENT IN THE FIELD
OF CPD**

| Item No | Price in Euro | Item | Metrological Specifications, Uncertainty (Accuracy), Class | Qty. |
|----------------|--------------------------|--|---|-------------|
| F.I. | 145 085 | <u>MEASURING PRESS FOR MECHANICAL CHARACTERISTICS OF REINFORCING STEEL IN REINFORSED CONCRETE CONSTRUCTION MANSORY UNIT, PAVING STONE, CURB STONE, CHIMNEYS</u> | | |
| F.I.1 | 103 500 | Computer controlled universal testing machine | Tension test load shall be: from 100 N up to 1000 kN Compression test load shall be: from 100 N up to 2000 kN; Automatic changeover of scale sensitivity; Resolution: 100 N Accuracy class 1; Sets of grippers to test round specimens up to 40 mm and flats up to 70x35 mm; Max distance between grips: 700 mm; Min. distance between grips: 50mm; Test speed: 0-90 mm/min; The software shall include automatic processing of all the test parameters in compliance with EN 10002; Automatic output of test results; Printout of stress/strain diagram and test results | 1 |
| F.I.1.1 | 575 | Transverse test accessory | Steel specimens' diameter: from 5mm to 40mm | 1 |
| F.I.1.2 | 1150 | Flexure tester for centre and third point test on concrete beams | Concrete beams: 100x100x400/500 mm and 150x150x600/700 mm. | 1 |
| F.I.1.3 | 3450 | Bending tester attachment from computer controlled universal testing machine | Specimens' diameter: from 5 mm to 40 mm | 1 |
| F.I.1.4 | 2875 | Compression tester on concrete specimens for computer controlled universal testing machine | The tester shall consist of an upper platen with spherical seat and of a lower platen and shall be intended for specimens of 150x150x150 mm | 1 |
| F.I.2 | 23 000 | Electromechanical or hydraulic computer controlled tester | Tension test load shall be from 50 N to 100 kN; Constant crosshead speed: from 0,01 mm/min to 100 mm/min. Accuracy class: 1; Sets of grippers to test round specimens up to 10mm and flats up to 50x25mm; Max. distance between grips: 350mm; Min. distance between grips: 40mm; The software shall include automatic processing of all the test parameters in compliance with EN 10002; | 1 |

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| | | | Automatic output of test results; Display of stress/strain diagram in real time | |
| F.I.2.1 | 300 | Calibration certificate | An accredited laboratory | 1 |
| F.I.3 | 460 | Digital tester for testing of the self-alignment, alignment, restraint of movement of the upper plate and the accuracy of force indication of compression testers. | Specific testing software for the automatic data acquisition and processing of the plate self-alignment, alignment, stability and force measurements for the calibration and verification of compression testers. During operation, acquired data shall be displayed on the graphic screen of the tester and then shall be downloaded by serial ports to the PC and printer | 1 |
| F.I.3.1 | 9200 | Strain gauge column and load cells | Strain gauge column of capacity: 1000 kN or 2000 kN; Load cells of capacity: 30 kN, 300 kN, 600 kN and 1000 kN in compliance with EN 10002-3, class 1 | 1 4 |
| F.I.3.2 | 575 | Calibration certificate (The digital tester shall be calibrated together with the strain gauge column and load cells) | An accredited laboratory | 1 |
| F.II | 3795 | <u>HEAT CONDUCTIVITY COEFFICIENT MEASURING DEVICE OF THERMAL INSULATION MATERIALS, GLASS PACKAGE, JOINERY AND MASONRY PRODUCTS</u> | | |
| F.II.1 | 1725 | Heat conductivity measuring apparatus | Accuracy: 0,001 W/m.K The apparatus shall include computer control of the parameters and automatically calculating of heat conductivity coefficient "λ". | 1 |
| F.II.1.1 | 460 | Sonde (thermal sensors) - for thermal insulation materials | Thermal conductivity: from 0,025 to 0,25 W/(m.K) | 1 |
| F.II.1.2 | 460 | Sonde (thermal sensors) - for glass package square plate | Thermal conductivity: from 0,25 to 1,60 W/(m.K) | 1 |
| F.II.1.3 | 460 | Sonde (thermal sensors) - for masonry products(concrete) | Thermal conductivity: from 1,60 to 2,50 W/(m.K) | 1 |
| F.II.2 | 690 | Calibration certificates for the three sondes | An accredited laboratory | 3 |
| F.III. | 3105 | EQUIPMENT FOR TESTING OF GLASS PACKAGES IN COMPLIANCE WITH EN 1279-2:2002; EN 1279-3:2002 | | |
| F.III.1 | 2070 | Muffle furnace | Up to temperature: 1100 °C Electronic control Inside dimensions 300x200x250 mm | 1 |

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|----------------|----------------|--|--|----------|
| F.III.2 | 1035 | Scales | Accuracy: 0,001g Capacity: 300g | 1 |
| F.IV. | 4535 | <u>EQUIPMENT FOR TESTING OF CHIMNEY CONCRETE BLOCKS IN COMPLIANCE WITH EN 1858:2004</u> | | |
| F.IV.1 | 970 | Heat generator for combusted gas | In accordance with EN 1858:2004 CO/CO ₂ < 0,01 Up to temperature: 1000 °C Max flow rate: 1000 m ³ /h, Gas – natural | 1 |
| F.IV.2 | 1265 | Temperature measuring device | In accordance with EN 1858:2004 Eleven (11) sondes up to 1200 °C; Accuracy: 2,5 °C | 1 |
| F.IV.3 | 2300 | Flow meter | In accordance with EN 1858:2004 Up to flow rate: 1000 m ³ /h Accuracy: ±5 % of full scale | 1 |
| F.IV.4 | | Calibration certificates for items under IV.2 and IV.3 | An accredited laboratory | 2 |
| F.V. | 146 100 | <u>EQUIPMENT RELATED TO REACTION TO FIRE</u> | | |
| F.V. | | <u>APPARATUS FOR TESTING</u> | | |
| F.V. 1. | 9100 | Small flame apparatus | The apparatus must base on the German Kleinbrenner method for determining ignitability of building products in the vertical orientation by direct small flame In accordance with ISO 11925 - 2 | 1 |
| | 14000 | Non-combustibility test apparatus | In accordance with ISO 1182 The apparatus must measure temperatures of the furnaces, specimen's surface and specimen's centre by computer and records temperatures every 0.5 seconds. The computer automatically controls the process, displayed and records initial maximum and final temperatures, the total flaming time the mass loss. | 1 |
| F.V. 3. | 14000 | Oxygen bomb calorimeter | In accordance to ISO 1716 High-resolution temperature regulated oxygen bomb calorimeter with embedded control computer. User friendly interface LCD graphics display, high accuracy/resolution (platinum resistant thermometers) 2xRS232 interfaces, parallel port for printer. Thermostatically controller, bath circulator and pipette supplied ISO | 1 |

| | | | | |
|----------------|---------------|---|---|----------|
| | | | 1716 sample preparation device tiring wiri with cotton as accessories and accessories for installation. An oxygen supply | |
| F.V.4. | 9000 | Flooring radiant panel | In accordance with ISO 9239-1 The radiant hat is applied means of a gas-fuelled panel. One must generate a radiant energy flux distribution ranging nominal of 10.9kW/m ² to a minimum 1.1kW/m ² , with possible of up to 25kW/m ² . The test apparatus must have smoke-measuring system. Automatic ignition of the radian panel and data acquisition and analysis software. | I |
| F.V. 5. | 100000 | Single Burning Item test sistem and extraction equipment | In accordance with EN 13823 The sistem must contain a test apparatus, gas analisis instrumenmtation for heat release measurment, smoke measurment sistem burner gas train and controls, data acquisistion andanalisi softwere. The Windows based softwere must generate files that integrate with the current speadsheets for the calculation the Fire Growth Rate Index(FIGRA) and Smoke Growth Rate Index (SMOGRA) | I |
| F.VI | 52150 | EQUIPMENT FOR TESTING OF AGGREGATES | | |
| F.VI.1 | 5000 | Micro-Deval Apparatus | In compliance with EN 1097-1 | I |
| F.VI.2 | 16100 | Apparatus for testing of cycles freezing | Freezing temperature up to -25 ⁰ C thawing water up to +65 ⁰ C Volume: 500l Programing of treatment period and automatic recoding of working regime In compilation with EN 1367-1 | I |
| F.VI.3 | 16100 | Accelerated polishing machine and all accessories and spare parts to the machine | In compliance with EN 1097-8, EN 1341, 1342, 1343 | I |
| F.VI.4 | 14950 | AAV Abrasion machine | In compliance with EN 1097-8 | I |
| F.VI.5 | | Calibration certificates for F.VI.1, F.VI.2, F.VI.3, F.VI.4 | An accredited laboratory | 4 |
| F.VII. | 3450 | EQUIPMENT FOR SLAKED LIMES AND ADHESIVES | | |

| | | | | |
|----------------|-------------|--|---|-----------------|
| F.VII.1 | 3450 | Digital bond strength/pull-off tester - max 10 kN | Poddibility for tree measurement ranges: Working range :0.25 to 10 kN Resolution: 10 N Accutacy: Better than ± 1 % In compilation with EN 1348; EN 1015-2 Application software – instrument control software | <i>1</i> |
| F.VII.2 | | Calibration certificates | An accredited laboratory | <i>1</i> |

TOTAL BUDGET: 360 000 EURO

EXECUTIVE AGENCY “CERTIFICATION AND TESTING” - SOFIA

TESTING LABORATORY FOR HOUSEHOLD ELECTRICAL APPLIANCES

MISSION:

The laboratory activities are stipulated in the Organisational Statutes of the Executive Agency “Certification and Testing” according to Decree No. 221/25.09.2002 and comprise testing of products for conformity assessment purposes. Customers of the tests provided by the laboratory are Bulgarian companies manufacturing household electrical appliances, market surveillance bodies at SAMTS Directorate General “Market surveillance”, Committee of Trade and Consumers Protection, Consumers Association, trade companies and bodies carrying out conformity assessment with the requirements of Directive 73/23/EEC.

The laboratory carries out tests for electrical, mechanical and fire safety according to a number of European safety and performance standards for household and similar electrical appliances.

BRIEF HISTORY:

The laboratory was established in 1980 with the statute of state laboratory for testing of safety and performance of household and similar electrical appliances. The laboratory premises are situated in the town of Varna. The laboratory is financially supported by the state budget.

By 1985 the laboratory had already carried out 80% of the services in this area in the Republic of Bulgaria and at this moment it is the leading laboratory in this area of activities in the Republic of Bulgaria.

Currently the laboratory is under an accreditation procedure according to ISO/IEC 17025 carried out by the Executive Agency “Bulgarian Accreditation Service”.

The laboratory maintains international contacts in the field of testing and implementation of LVD and toys safety directive. These contacts are realised by participation in different projects such as Project PSO99/BG/9/1 with NMI (Netherlands) related to training for accreditation, Project BG 003.02.01 with AFNOR France related to technical assistance for implementation of New Approach directives and certification, Project INCOLAB G7RT-CT-2002-05106 (**I**nitiative and **C**o-ordination to prepare **L**aboratories in Newly Associated States for full implementation of the Low-Voltage Directive) with Estonia, Sweden, Slovenia, Denmark, Netherlands and Czech Republic related to implementation of the low voltage directive and inter-comparison tests in the temperature measurement and test field and EU/EFTA Project “Quality Infrastructure”, Task Joint-use of Facilities with the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia and Denmark.

In June 2004 the laboratory took part in the comparison study and circular test courses with the participation of the laboratories from the member countries of INCOLAB project.

DEVELOPMENT:

The Program for development of the laboratory involves:

- Extending the scope of the products and characteristics to be tested;
- Substitution of the outworn and obsolete equipment;
- Provision of new equipment related to the changes in the test methods given in the latest editions of the EN standards;
- Performance of internal calibration of the measuring devices and performing tests according to the requirements of ISO/IEC 17025.

For the Program realization the laboratory needs the equipment specified in the Technical Specification given below, where the separate items relate to the above groups as follows:

- items 5;9;12;13;18;19;22 – for extending of the scope;
- items 2;7;8;11;14;15;16;17;20;21;22;24;25;26 – for change of the obsolete equipment;
- items 1;3;6;10 new equipment;
- items 2;4;23;27 – for performance of internal calibration.

Remarks:

1. The equipment from item 2 is included in two groups – 1 peace for each of the groups.
2. The equipment from item 23 is included in two groups, as it substitutes amortized equipment and the scope will be extended.

TECHNICAL SPECIFICATION OF THE REQUIRED EQUIPMENT

| Item No. | Price EURO | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. |
|-----------------|-------------------|---|--|-------------|
| 1 | 5000 | High voltage portable source for electric strength test of insulation. | Metrology characteristics according p.13.3, table 5 of EN 60335-1:2002 as follows: -released energy: $\geq 800VA$ at the secondary winding midpoint tap of the isolating transformer -output voltage: $U=(\text{from } 0 \text{ to } 10000)V, 50/60Hz$ -short current: $I_s=200mA$ at $U_{out} \leq 4000V$; $I_s=80mA$ at $4000V \geq U_{out} \leq 10000V$ -turn off current: $I_r \geq 100mA$ at $U_{out} \leq 4000V$; $I_r \geq 40mA$ at $4000V \geq U_{out} \leq 10000V$ -indication: voltmeter 2,5 or higher and high voltage measurement uncertainty not exceeding $\pm 3\%$ of | 1 |

| | | | | |
|------------|-------------|---|--|----------|
| | | | measured voltage at leakage current less than 50% of I_r . -Sound indication at $I \geq I_r$ | |
| 1.1 | | Calibration certificate | | 1 |
| 2 | 4000 | One phase power analyser /multimeter for measurement of AC voltage, current, single phase power and energy / | Ranges:0,3-1-3-10-30-100-300-1000 V 0,03-0,1-0,3-1-3-10 A internal; and external shunt up to 32 A. Basic accuracy: $\pm 0,1$ or higher; Resolution: 0,01% or higher; Reading: $\pm 0,1\%$; Band width of voltage:1 MHz | 2 |
| 2.1 | | Calibration certificate | | 1 |
| 3 | 800 | Leakage and touch current tester | Metrology characteristics according figures 4,5 and 6 and appendix G of IEC 60990:1999. Tester voltmeter characteristics according appendix G, p.G2 and responding to: -d.c. for d.c. measurements -true r.m.s. for r.m.s. measurements -peak for peak measurements -input resistance not less than $1M\Omega$ -input capacitance not more than 200 pF for a.c. measurements -frequency range for AC measurements from 15 Hz to 1MHz or more if higher frequencies are involved -floating or differential input with common mode rejection of at least 40 dB up to 1 MHz. Ranges: 300mV-3V-30V-300V Basic accuracy: $\pm 0,1\%$ or higher Resolution: 0,01% Reading: $\pm 0,01\%$ | 1 |
| 3.1 | | Calibration certificate | | 1 |
| 4 | 1000 | Kilovoltmeter | Range: (from 0 to 10000)V ;50Hz accuracy class: 0.5 or higher | 1 |
| 4.1 | | Calibration certificate | | 1 |

| | | | | |
|-------------|-------------|--|--|-----------------|
| 5 | 3000 | Generator for sinusoidal voltage with variable frequency for testing of electric strength of windings | U _{out} =(from 0 to 250)V; regulated frequency (from 50 to 500)Hz; P _{out} : >200W | <i>1</i> |
| 6 | 3000 | Transient over-voltage test generator | The metrology characteristics are specified in IEC61180-2; wave-shape corresponding to the 1,2/50 μs standard impulse specified in IEC 61180-1 | <i>1</i> |
| 6.1 | | Calibration certificate | | <i>1</i> |
| 7 | 3000 | Digital multy channel temperature meter | Settings: °C Thermocouples: type K Resolution: 0,1° C, Memory for data storage and output for data logging or printing. Provided with automatic and manual scanning features. Channels: 10 or more Type K thermocouples with miniature plug connectors 30 pcs. diameter of wires: 0,3mm length: 2m | <i>1</i> |
| 7.1 | | Calibration certificate | | <i>1</i> |
| 8 | 7500 | System for measurement of the wall, floor and ceiling temperature rises of black test corner in comliance with p.11 of EN 60335-1 | Automatic monitoring and storage of the temperature rises of each thermocouple of the black test corner. Reading and storage of highest temperature rises. - Thermocouples : (3x100) pcs. -Corner dimensions:1m x 1m x 1m -300 channel multiplexer -User periodic equipment calibration according manufacture procedure. | <i>1</i> |
| 8.1 | | Calibration certificate | | <i>1</i> |
| 9 | 6000 | Portable system for electromagnetic field measurement of microwave leakage of microwave ovens | Range: from 300MHz to 30GHz) EMF density :from 0 to 500)W/m ² attenuator:10 dB attenuation | <i>1</i> |
| 9.1 | | Calibration certificate | | <i>1</i> |
| 10 | 2500 | Conditioning chamber | Temperature: from –30 to 50)°C volume: approximately 1 m ³ | <i>1</i> |
| 10.1 | | Calibration certificate | | <i>1</i> |
| 11 | 2500 | Equipment for tracking proof test with an isolating | Construction and specifications in compliance with IEC 60112 :1979 | <i>1</i> |

| | | | | |
|-------------|-------------|--|--|-----------------|
| | | chamber | /HD214/ | |
| 11.1 | | Calibration certificate | | <i>1</i> |
| 12 | 1000 | Equipment for horizontal and vertical flame test with an isolating chamber | Equipment in compliance with EN60695-11-10:1999 | <i>1</i> |
| 12.1 | | Calibration certificate | | <i>1</i> |
| 13 | 1000 | Spring-operated impact test apparatus | In compliance with IEC 60068-2-75 Impact energy: (from 0,2 to 1,0)J; | <i>1</i> |
| 13.1 | | Calibration certificate | | <i>1</i> |
| 14 | 1000 | Dynamometer for impact push force applied on standard test finger, test fingernail according to EN 60335-1:2002 | Range: - /from 0 to 50 / N - /from 0 to 200 / N | <i>1</i> |
| 14.1 | | Calibration certificate | | <i>1</i> |
| 15 | 1000 | Dynamometer for impact pull force | Range: - /from 0 to 20 / N - /from 0 to 100 / N | <i>1</i> |
| 15.1 | | Calibration certificate | By the manufacturer | <i>1</i> |
| 16 | 500 | Dynamometer spanner | Torgue /from 0 to 3/ Nm Spanner: from 3mm to 17 mm (included inbus) | <i>1</i> |
| 16.1 | | Calibration certificate | | <i>1</i> |
| 17 | 1000 | Flexing test apparatus (flexing test of supply cords of irons, mixers and similar) | In compliance with figure 8 of EN60335-1: 2002; | <i>1</i> |
| 17.1 | | Calibration certificate | | <i>1</i> |
| 18 | 5000 | Device for mechanical stress resistance test of blankets | In compliance with appendix BB of EN60335-2-17 | <i>1</i> |
| 18.1 | | Calibration certificate | | <i>1</i> |
| 19 | 1000 | Device for measurement of thickness of electro plated earthing coatings | Range: (from 0 to 10)µm or more Accuracy: ±0,5µm | <i>1</i> |
| 19.1 | | Calibration certificate | | <i>1</i> |
| 20 | 500 | Equipment for IP code test | In compliance with table VI of EN 60529:1991 (human access to risky parts- first number of IP code) | <i>1</i> |
| 20.1 | | Calibration certificate | | <i>1</i> |
| 21 | 500 | Equipment for IP code test | In compliance with table VII of EN 60529:1991 (access to solid foreign parts – first number of IP code) | <i>1</i> |
| 21.1 | | Calibration certificate | | <i>1</i> |

| | | | | |
|------|------|---|---|---|
| 22 | 2500 | Equipment for IP code test | In compliance with EN 60529:1991 (ingress of water-second number of IP code) Fig.3: 700x700mm Fig.4: R=400mm; R=600mm; R=800mm; R=1000mm Fig. 6: D=6,3mm Water flowmeter: (0-20)l/min | 7 |
| 22.1 | | Calibration certificate | | 1 |
| 23 | 3500 | Dry-block temperature calibrator | Range: (from 30 to 600 or more)°C Diameter of sensor under test: (from 3 to 20)mm | 1 |
| 23.1 | | Calibration certificate | | 1 |
| 24 | 2000 | Glow-wire appliance with an isolating chamber | temperature of the glow wire: from 550°C±10°C to 960°C±15°C (construction and specifications in compliance with EN 60695-2-10) | 1 |
| 24.1 | | Calibration certificate | | 1 |
| 25 | 150 | Thermocouples NiCr/NiAl/type K/ | Spare parts to glow-wire appliance, p.35 | 3 |
| 26 | 500 | Dynamometric screwdriver | Range: /from 0 to 4 / Nm ; Accessories suitable for applying torque to standard screws | 1 |
| 26.1 | | Calibration certificate | | 1 |
| 27 | 2000 | Precision electronic scales | Max= 5000 g, Min= 0,5g, d=0,01g e=0,1g, class II | 1 |
| 27.1 | | Calibration certificate | | 1 |

TOTAL BUDGET: 61 450 Euro

“Business Innovation Centre – IZOT” Co.

The main activity of “Business Innovation Centre – IZOT” Co. (BIC IZOT Co.) is offering an infrastructure for the development of high technologies in the field of electronics, computing technique, informatics, telecommunications and machine building.

There is a Conformity Assessment Directorate established at BIC IZOT Co., which is a separate unit under the direct management of the Executive Director. This Directorate is a designated conformity assessment body (identification number 026) for the scope of the following ordinances adopted under the Law on Technical Requirements for Products, transposing the relevant New Approach Directives:

- ✓ Ordinance on the essential requirements and conformity assessment of electrical equipment designed for use within certain voltage limits (Directive 73/23/EEC on low voltage equipment);
- ✓ Ordinance on the essential requirements and conformity assessment for electromagnetic compatibility (Directive 89/336/EEC on electromagnetic compatibility);
- ✓ Ordinance on the essential requirements and conformity assessment of radio and telecommunications terminal equipment (Directive 99/5/EC on R&TTE);
- ✓ Ordinance on the essential requirements and conformity assessment of toys (Directive 88/378/EEC on safety of toys).

In the field of conformity assessment of electrical equipment designed for use within certain voltage limits the directorate uses as sub-contractors three laboratories, which are accredited by the Executive Agency “Bulgarian Accreditation Service” (EA “BAS”).

The Centre possesses its own testing laboratory for electronic and office equipment, which is accredited according to BDS EN ISO/IEC 17025:2001.

The laboratory also carries out tests for electrical safety, climatic impact, mechanical impact, IP enclosures, acoustic measurements, length measurements and functional checks.

The laboratory may carry out tests according to BDS EN 60529 Degrees of protection provided by enclosures, only up to IP 4X. The conformity assessment of electrical equipment operating in the open or in a dusty environment requires carrying out tests for conformity with IP 5X and IP 6X according to BDS EN 60529. Upgrading/completion of laboratory equipment with a Dust Chamber (needed for IP 5X and IP 6X) will ensure carrying out conformity assessment of a much wider range of products designed for use in more severe operating conditions.

With a view of equipment upgrading and extending the testing range the use of a specialised instrument for measurement of safety characteristics of machines and equipment (according to BDS EN 60204) is necessary.

TECHNICAL SPECIFICATION OF THE REQUIRED EQUIPMENT

| Item No. | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. | Price EURO |
|----------|--|--|-------|---------------|
| 1. | Dust Chamber for IP 5X - IP 6X | Internal tank - 1 m ³ | 1 | 35 000 |
| 1.1. | Accessories | | 1 set | |
| 2. | Machine Tester for: <ul style="list-style-type: none"> • Discharge time test • Insulation test • Continuity test • Dielectric test | Range: (0 – 10) s Range: (0 – 500) MΩ Test voltage: (0 - 1200) V Range: (0 – 1,99) Ω Test voltage: (0 – 12) V AC Test current (0 – 25) A AC Range: (0 - 1500) V AC | 1 | 3 000 |
| 2.1. | Accessories | | 1 set | |

TOTAL BUDGET: 38 000 Euro

Testing laboratory for electrotechnical products ILEP at “ELPROM–ILEP” Ltd.

The testing laboratory ILEP established at “ELPROM–ILEP” Ltd. provides services to persons placing on the market and/or putting into service products falling mainly in the scope of the following regulations:

- Ordinance on the essential requirements and conformity assessment of electrical equipment designed for use within certain voltage limits (transposing Low Voltage Equipment Directive 73/23/EEC);
- Ordinance on the essential requirements and conformity assessment of machinery (transposing Machinery Directive 98/37/EC and Directives 98/79/EC);
- Directive 92/59/EEC on general product safety, transposed by the Law on consumers protection and rules of trading;
- Directive 93/42/EEC on medical devices.

The laboratory performs also tests related to electrical parameters of products covered by the ordinances, transposing the following EU Directives into the national legislation:

- Directive 88/378/EEC on safety of toys;
- Directive 89/686/EEC on personal protective equipment.

The ILEP personnel possess the required qualification, training, suitable long experience and very good knowledge of the tests carried out. The personnel have always been trained (where possible in advance) in compliance with the future laboratory tasks.

TECHNICAL SPECIFICATION OF THE REQUIRED EQUIPMENT

| Item No. | Price EURO | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. | | | | | | | | | | | | | | | |
|-------------------------|---------------------|--|--|----------------------------------|---------------------|--|--|-------|-------|--------|-----|-----|-------------------------|----|----|--------------|----|----|----------|
| 1. | 13000 | Test source for high-voltage | <p>Compliance with EN 61180-2:1994 or equivalent.</p> <p>Measuring function: Electric strength test with sinusoidal voltage, variable between 100 V and 50 000 V at a frequency 50 Hz.</p> <p>Measuring Ranges: 100 V ... 50 000 V</p> <p>Accuracy: A reference measurement system for voltage shall have an overall uncertainty within $\pm 2\%$ over its range of use. The accuracy shall not be influenced by a ripple factor up to 3%.</p> <p>Characteristics of high-voltage sources:</p> <table style="margin-left: 20px;"> <thead> <tr> <th style="text-align: left;">Test voltage, V</th> <th colspan="2" style="text-align: center;">Minimum current, mA</th> </tr> <tr> <td></td> <th style="text-align: center;">I_s</th> <th style="text-align: center;">I_r</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">< 4000</td> <td style="text-align: center;">200</td> <td style="text-align: center;">100</td> </tr> <tr> <td style="text-align: center;">≥ 4000 and < 10000</td> <td style="text-align: center;">80</td> <td style="text-align: center;">40</td> </tr> <tr> <td style="text-align: center;">≥ 10000</td> <td style="text-align: center;">40</td> <td style="text-align: center;">20</td> </tr> </tbody> </table> <p>The currents are calculated on the basis of the short circuit and release energies of 800 VA and 400 VA respectively at the upper end of the voltage ranges.</p> <p>The measurement uncertainty of the test voltage is not to exceed $\pm 3,0 \%$ of the measured voltage for a leakage current up to 50 % of I_r.</p> | Test voltage, V | Minimum current, mA | | | I_s | I_r | < 4000 | 200 | 100 | ≥ 4000 and < 10000 | 80 | 40 | ≥ 10000 | 40 | 20 | 1 |
| Test voltage, V | Minimum current, mA | | | | | | | | | | | | | | | | | | |
| | I_s | I_r | | | | | | | | | | | | | | | | | |
| < 4000 | 200 | 100 | | | | | | | | | | | | | | | | | |
| ≥ 4000 and < 10000 | 80 | 40 | | | | | | | | | | | | | | | | | |
| ≥ 10000 | 40 | 20 | | | | | | | | | | | | | | | | | |
| 1.1. | | <p>Accessories:</p> <p>Handle set for the high-voltage outlet</p> <p>Electrode system</p> <p>A set of high-voltage cables</p> | <p>For voltages at least up to 10 kV</p> <p>With tub for testing within oil environment</p> <p>For connecting the electrode system for voltages up to 50 kV</p> | 1 1 1 | | | | | | | | | | | | | | | |
| 1.2. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | 1 | | | | | | | | | | | | | | | |

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|------|------|--|--|----------|
| 2. | 9000 | Impulse voltage generator | <p>Compliance with EN 61180-2:1994 or equivalent</p> <p>Measuring function: Impulse test voltage, variable between 400 V and 20 000 V at a 1,2/50 μs standard impulse specified in EN 61180-1, cl. 6.1 and cl. 6.2.</p> <p>Tolerance of standard impulse:</p> <p>Peak value: $\pm 3\%$ Front time: $\pm 30\%$ Time to half-value: $\pm 20\%$</p> <p>Measuring Ranges: 400 V ... 20 000 V</p> <p>Accuracy: A reference measuring system for impulse voltage shall have an overall uncertainty within $\pm 3\%$ for peak value of full impulses and within $\pm 10\%$ for time parameters over its range of use.</p> | <i>I</i> |
| 2.1. | | <p>Accessories: Handle set</p> | For the high-voltage outlet for voltages at least up to 20 kV | <i>I</i> |
| 2.2. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| 3. | 6500 | RLC – meter | <p>Measuring function: RLC – meter: R [Ω]; C [F]; L [H]</p> <p>Measuring Ranges:</p> <ul style="list-style-type: none"> - R: from $5 \cdot 10^{-3}$ to $2 \cdot 10^9 \Omega$ - L: from $1 \cdot 10^{-7}$ to $2 \cdot 10^6$ H - C: from $3 \cdot 10^{-14}$ to $3 \cdot 10^{-1}$ F <p>Accuracy:</p> <ul style="list-style-type: none"> - R: $\pm 0,5\%$... 10% + 5 digits - L: $\pm 1,0\%$... 10% + 5 digits - C: $\pm 1,0\%$... 5% + 5 digits <p>Measurement rate: 1 measurement/s</p> <p>Response time: 1 s/component tested</p> <p>Measurement on 2 and 4 wires</p> <p>Monitoring: min; max; average</p> <p>functions: hold; rel.; sorting by value</p> <p>Frequency selector: 100 Hz to 1 kHz</p> | <i>I</i> |
| 3.1. | | <p>Accessories: Set of specific cables</p> | For fulfillment of the measuring functionalities of the equipment including for fulfillment of 2 and 4 wires testing schemas | <i>I</i> |
| 3.2. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |

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|------|------|--|--|--------------------------|
| 3.3. | | Application software for data post-processing, analysis and storage | Means for post-processing and/or storage of testing data and results should be provided: may include external and/or internal computer configuration or other specific processing devices with the required means of connectivity to the testing equipment, the relevant software for it and for graphical and statistical data processing, specific storage devices (if required), storage software, printers etc. (in English) | <i>I</i> |
| 4. | 5500 | High resistance meter | Measuring function: Resistance means: R [Ω] Measuring Ranges: R: from $3 \cdot 10^2$ to $3 \cdot 10^{15} \Omega$ at 50V/100V/250V/500V Accuracy: $\pm 0,1 \% \dots \pm 15 \% + 5$ digits Monitoring: min – max value storage | <i>I</i> |
| 4.1. | | Accessories: <ul style="list-style-type: none"> • Set of specific cables • Screening device | For fulfillment of the measuring functionality For measurement of high resistances and the relevant set of cables for connecting it to the equipment | <i>I</i> <i>I</i> |
| 4.2. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| 4.3. | | Application software for data post-processing, analysis and storage | Means for post-processing and/or storage of testing data and results should be provided: may include external and/or internal computer configuration or other specific processing devices with the required means of connectivity to the testing equipment, the relevant software for it and for graphical and statistical data processing, specific storage devices (if required), storage software, printers etc. (in English) | <i>I</i> |

| 5. | 18500 | Tensile-testing system (Dynamo – meter) | <p>Compliance with ISO 5893:2002 and ISO 7500-1 or equivalent.</p> <p>Measuring function: stretch force and stretch strength, stress.</p> <p>Measuring Ranges: force 0 ... 2500 N</p> <p>Resolution: ≤ 5 N</p> <p>Accuracy:</p> <ul style="list-style-type: none"> - for each force scale: class 1 - by extensometer: ≤ ± 1,0 % or ± 1 μm - by tensometer: ≤ ± 1,0 % <p>Jaw stroke: 0 ... 1000 mm</p> <p>Movement speed of the moving jaw:</p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Speed, mm/min</th> <th style="text-align: left;">Tolerances, mm/min</th> </tr> </thead> <tbody> <tr><td>1</td><td>± 0,2</td></tr> <tr><td>2</td><td>± 0,4</td></tr> <tr><td>5</td><td>± 1</td></tr> <tr><td>10</td><td>± 2</td></tr> <tr><td>20</td><td>± 2,5</td></tr> <tr><td>25</td><td>± 2,5</td></tr> <tr><td>50</td><td>± 5</td></tr> <tr><td>100</td><td>± 10</td></tr> <tr><td>200</td><td>± 20</td></tr> <tr><td>250</td><td>± 25</td></tr> <tr><td>500</td><td>± 50</td></tr> </tbody> </table> | Speed, mm/min | Tolerances, mm/min | 1 | ± 0,2 | 2 | ± 0,4 | 5 | ± 1 | 10 | ± 2 | 20 | ± 2,5 | 25 | ± 2,5 | 50 | ± 5 | 100 | ± 10 | 200 | ± 20 | 250 | ± 25 | 500 | ± 50 | <i>I</i> |
|---------------|--------------------|---|--|---------------|--------------------|---|-------|---|-------|---|-----|----|-----|----|-------|----|-------|----|-----|-----|------|-----|------|-----|------|-----|------|----------|
| Speed, mm/min | Tolerances, mm/min | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ± 0,2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ± 0,4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ± 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | ± 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | ± 2,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | ± 2,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | ± 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | ± 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | ± 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 250 | ± 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | ± 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1. | | Accessories: Set of exchangeable static and moving jaws including such for realization of stress | For fulfillment of the measuring functionality | <i>I</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.2. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.3. | | Application software for data post-processing, analysis and storage | Means for post-processing and/or storage of testing data and results should be provided: may include external and/or internal computer configuration or other specific processing devices with the required means of connectivity to the testing equipment, the relevant software for it and for graphical and statistical data processing, specific storage devices (if required), storage software, printers etc. (in English) | <i>I</i> | | | | | | | | | | | | | | | | | | | | | | | | |

| 6. | 2700 | The spring hammer test E_{hb}: Spring hammer. | Compliance with EN 60068-2-75:1997, clause 5, and annex E, and table E.1., and figure E.1. or equivalent Test function: impact Measuring Ranges: impact energy value: <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Impact energy, J</th> <th style="text-align: center;">Tolerance, J</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0,20</td> <td style="text-align: center;">$\pm 0,02$</td> </tr> <tr> <td style="text-align: center;">0,35</td> <td style="text-align: center;">$\pm 0,03$</td> </tr> <tr> <td style="text-align: center;">0,50</td> <td style="text-align: center;">$\pm 0,04$</td> </tr> <tr> <td style="text-align: center;">0,70</td> <td style="text-align: center;">$\pm 0,05$</td> </tr> <tr> <td style="text-align: center;">1,00</td> <td style="text-align: center;">$\pm 0,05$</td> </tr> </tbody> </table> | Impact energy, J | Tolerance, J | 0,20 | $\pm 0,02$ | 0,35 | $\pm 0,03$ | 0,50 | $\pm 0,04$ | 0,70 | $\pm 0,05$ | 1,00 | $\pm 0,05$ | I |
|----------------------|---------------|---|---|----------------------------|---------------|------|------------|----------|------------|------|------------|------|------------|------|------------|----------|
| Impact energy, J | Tolerance, J | | | | | | | | | | | | | | | |
| 0,20 | $\pm 0,02$ | | | | | | | | | | | | | | | |
| 0,35 | $\pm 0,03$ | | | | | | | | | | | | | | | |
| 0,50 | $\pm 0,04$ | | | | | | | | | | | | | | | |
| 0,70 | $\pm 0,05$ | | | | | | | | | | | | | | | |
| 1,00 | $\pm 0,05$ | | | | | | | | | | | | | | | |
| 6.1. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) for the all five listed impact energies and release pressure | I | | | | | | | | | | | | |
| 7. | 9000 | Multi-channel temperature recorder | Measuring function: Temperature Measuring Ranges: - 200 °C (- 100 °C) to 1200 °C Resolution: 0,1 °C Accuracy: $\pm (0,1 \% \text{ input} + 0,5 \text{ } ^\circ\text{C})$ Measurement rate: twenty channels for simultaneous testing of thermocouples Monitoring: min; max; avg Functions: hold; sorting by value | I | | | | | | | | | | | | |
| 7.1. | | Accessories: Fine wire thermocouples - min. length of 800mm – Type K Fine wire thermocouples - min. length of 800mm – Type J | Measuring range: - 50 °C to 350 °C; $t_{99}: \leq 5 \text{ s};$ Accuracy: Class 1 Measuring range: - 200 °C (- 100 °C) to 1200 °C; $t_{99}: \leq 5 \text{ s};$ Accuracy: $\pm (0,2 \dots 0,8) \% \text{ input}$ | 20 20 | | | | | | | | | | | | |
| 7.2. | | Application software for data post-processing, analysis and storage | Means for post-processing and/or storage of testing data and results should be provided: may include external and/or internal computer configuration or other specific processing devices with the required means of connectivity to the testing equipment, the relevant software for it and for graphical and statistical data processing, specific storage devices (if required), storage software, printers etc. (in English) | I | | | | | | | | | | | | |
| 8. | 12000 | Glow – wire | Compliance with EN 60695-2-10:2001 or equivalent Measuring function: Glow – wire flammability/ignitability test Measuring Ranges: <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Test temperature, °C</th> <th style="text-align: center;">Tolerances, K</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">500</td> <td style="text-align: center;">± 10</td> </tr> </tbody> </table> | Test temperature, °C | Tolerances, K | 500 | ± 10 | I | | | | | | | | |
| Test temperature, °C | Tolerances, K | | | | | | | | | | | | | | | |
| 500 | ± 10 | | | | | | | | | | | | | | | |

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|--------------|--------------|---|--|-----------------|
| | | | 550 ± 10 600 ± 10 650 ± 10 700 ± 10 750 ± 10 800 ± 15 850 ± 15 900 ± 15 960 ± 15 | |
| 8.1. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) for the all five listed impact energies and release pressure | <i>I</i> |
| 9. | 1900 | PC | At least one office PC configuration with printer should be included for overall test-data and results processing. Example office PC configuration: - CPU 2GHz or higher; - 512 MB DDR 333MHz or higher; - HDD 120 GB or higher; - FDD 1.44"; - DVD-CD R/W+/-; - LAN adapter 100Mbps; - AGP video card 128 MB DDR2 or higher; - Standard hardware V90 56K modem - Audio adapter, - 21" Color Monitor; - All standard PC communication ports e.g.: PS/2, USB, Parallel, FireWire etc. - Printer - laser; - MS Windows XP Professional or equivalent, MS Office XP Professional or equivalent for general office usage and post-processing of test results. | <i>I</i> |
| 10. | 11000 | Universal test instrument for testing the electrical safety of electrical equipment in accordance with: EN 60335; EN 60950; EN 61010; EN 60601-1 | Measuring functions: - function test with power analysis - temperature measurement - current measurement - voltage measurement - resistance measurement - high – voltage test - 25 A a.c. test current for protective conductor measurement | <i>I</i> |
| 10.1. | | Accessories: Set of cables, probes, thermocouples etc. | In compliance with the equipment functionality | <i>I</i> |

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|-------|------|---|--|----------|
| 10.2. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| 10.3. | | Application software for data post-processing, analysis and storage | Means for post-processing and/or storage of testing data and results should be provided: may include external and/or internal computer configuration or other specific processing devices with the required means of connectivity to the testing equipment, the relevant software for it and for graphical and statistical data processing, specific storage devices (if required), storage software, printers etc. (in English) | <i>I</i> |
| 11. | 9000 | The proof and the comparative tracking indices of solid insulating materials | Compliance with IEC 60112:2003, cl.7, Annex B or equivalent. Measuring Ranges: sinusoidal voltage, variable between 100 V and 600 V at a frequency of 48 Hz to 62 Hz Accuracy: $\pm 1,5 \%$ Source power: not less than 0.6 kVA | <i>I</i> |
| 11.1. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| 12. | 900 | Force (push – pull) combined gauge | Measuring function: force (push – pull) Measuring Ranges: from 0 to 300 N Resolution: ≤ 2 N Accuracy: $\pm 1,0 \%$ | <i>I</i> |
| 12.1. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| 13. | 900 | Spanner (torque – meter): torque spanner | Measuring function: Torque Measuring Ranges: from 0,1 to 5 Nm Resolution: 0,1 Nm Accuracy: $\pm 0,2 \%$ | <i>I</i> |
| 13.1. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| 14. | 900 | Torque screwdriver | Measuring Ranges: from 0,1 to 2,5 Nm Resolution: 0,1 Nm Accuracy: $\pm 0,2 \%$ | <i>I</i> |
| 14.1. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| 15. | 2500 | Humidity – meter recorder | Measuring function: Relative humidity Measuring Ranges: from 0 to 100 % RH Resolution: 0,1 % RH Operating temperature: 0 ... + 60 °C Accuracy: $\pm 2 \%$ RH (5 ... 98 % RH) | <i>I</i> |

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|-------|------|--|--|----------|
| 15.1. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| 15.2. | | Application software for data post-processing, analysis and storage | Means for post-processing and/or storage of testing data and results should be provided: may include external and/or internal computer configuration or other specific processing devices with the required means of connection to the testing equipment, the relevant software for it and graphical and statistical data processing, specific storage devices (if required), storage software, printers etc. (in English) | <i>I</i> |
| 16. | 2500 | UV - radiation test instruments for tests performed in accordance to: EN 61010; EN 60598-1; EN 60335-2-27 | Measuring function: UV-radiation | <i>I</i> |
| 16.1. | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |

TOTAL BUDGET: 105 800 Euro

Testing laboratory “Testing of electrotechnical products” PLC

The testing laboratory “Testing of electrotechnical products” PLC (IEP PLC) is a successor of the traditions of “ELPROM-ILEP” Ltd., ILEP at “Elprom-IEP” JSC., Laboratory complex at “Elprom-IEP” Ltd. and the testing laboratories for electrotechnical products established at IEP “Nikola Belopitov” and NIPKIEP Sofia, with more than 40 years of experience and practice in the fields of:

- testing of electrotechnical products;
- conformity assessment and product certification (product testing)

IEP PLC carries out tests according to particular parameters at the request of clients and according to requirements of international, European, regional and national standardisation documents (ISO, IEC, EN, DIN, DIN VDE, NF, ASTM, GOST, GOST R, BDS etc.).

In its activities IEP PLC collaborates and works jointly, and under the supervision of, with similar institutions and international organisations such as TÜV Rheinland, SGS, Lloyd's Register.

The laboratory carries out tests in accordance with the standards under the relevant ordinances as referred to in Article 7 of the Law on Technical Requirements for Products, transposing into the Bulgarian legislation the EU Directives as follows:

- Directive 73/23/EEC on low voltage equipment;
- Directive 98/37/EC on safety of machinery;
- Directive 93/42/EEC on medical devices;
- Directive 88/378/EEC on safety of toys.

TECHNICAL SPECIFICATION OF REQUIRED LABORATORY EQUIPMENT

| Item No. | Price EURO | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. |
|------------|--------------|--|--|----------|
| I. | | GENERATORS ACCORDING TO EN 61180-1:1994 (IEC 61180-1:1992) | | |
| I.1 | 14000 | PULSE VOLTAGE GENERATOR (Clause 10.1, 10.3 and 14.1 of IEC 60065-fig.5; Annex Q of IEC 60335-1 and Part 2 requirements; 14 of IEC 60335-2-76; 8.2.2 of IEC 60439-1 and IEC 60439-3; IEC 60947, etc.) | Voltage waveforms: 1,2/50 ± 30 /20/ % µs and 8/20 ± 30 /20/ % µs require IEC 60060:1989; ➤ the peak value: require table5 of IEC 60664-1:2003; ➤ tolerances on standard impulse: ○ peak value - ± 3 %; ○ front time - ± 30 %; ○ time to half-value - ± 20 %; ○ duration of overshoot: < 1 µs. ➤ Frequency of oscillations: not less than 0,5 MHz; ➤ The duration of overshoot: not over 1 µs; ➤ Source impedance: 500 Ω ± 50 Ω; | 1 |

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|-------|--|--|---|----------|
| | | | <ul style="list-style-type: none"> ➤ Source energy: $0,5 \text{ J} \pm 0,05 \text{ J}$; ➤ The short-circuit current at the test voltage: $< 0,1 \text{ A}$; ➤ Minimum time between the impulses: 3 s; ➤ Test voltage – $0,4 \text{ kV} - 20 \text{ kV}$; ➤ dv/dt variable from $100 \text{ v}/\mu\text{s}$ to $1 \text{ kV}/\mu\text{s}$; ➤ Test time , adjustable from 1 s to 1000 s ➤ Adjustable current limit; ➤ Display – preferred LCD; ➤ The peak value form 1 kV to 140 kV; ➤ Positive and negative polarity of output voltage; ➤ A built-in voltage divider; ➤ Fully programmable units (analog, IEEE 488 or RS232) or printer interface (USB or LPT); ➤ Remote control; ➤ External trigger input - 10 V, $1 \text{ k}\Omega$; ➤ External trigger output - 10 V, $1 \text{ k}\Omega$; ➤ Mains power – preferred 230 V, $50/60 \text{ Hz}$, type of plugs “Schuko” for single phase with ground. For 3- phase power supply 400 V is acceptable; ➤ Maximum storage energy – 1000 Joule; ➤ Energy storage capacitor C_s – $0.1 \mu\text{F}$; ➤ Discharge resistor R_e – 700Ω; ➤ Series resistor R_s - 200Ω; ➤ Load capacitor – $0.002 \mu\text{F}$; ➤ Damping resistor in series with to the HV-output – 50Ω; ➤ Output pulse polarity, switchable – POS/NEG; ➤ Charging time – 10 s | |
| I.1.1 | | Calibration certificate according to EN 61180-2:1994 (IEC 61180-2:1994) or equivalent | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | I |
| I.1.2 | | Software | Windows compatible or equivalent Application Software of the test generator and/or evaluation calibration and/or remote control. | I |

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| I.2 | 8500 | PULSE CURRENT GENERATOR | <p>Three standard impulse current waveforms: 1/20 ± 20 %, 8/20 ± 20 %, 30/60 ± 20 % as follows:</p> <ul style="list-style-type: none"> ➤ duration rectangular impulse current <ul style="list-style-type: none"> ▪ 300 μs; ▪ 500 μs; ▪ 1 000 μs; ➤ tolerances: <ul style="list-style-type: none"> ▪ for 1/20; 8/20 and 30/60 impulse <ul style="list-style-type: none"> ◆ peak value: ± 10%; ◆ front time T₁: ± 20%; ◆ time to half-value T₂: ± 20%; ▪ for rectangular impulses: <ul style="list-style-type: none"> ◆ peak value: + 20%, - 0%; ◆ duration of the peak T_d; ◆ overshoot the single peak amplitude: < 10% or the peak value; ◆ total duration: < 1,5 times the duration of the peak; ➤ Polarity reversal: < 10 % of the peak value ➤ Impulse output current, adjustable via charging voltage – 2 - 40 kA ± 5 %; ➤ Output pulse polarity, switchable – POS/NEG/ALT; ➤ Peak value of charging voltage – 0 - 12 kV ± 2 %; ➤ Maximum stored energy – 3600 Ws; ➤ Energy storage capacitor – 30 μF/10 kV; ➤ Charging time for max. charging voltage - < 60 s – adjustable; ➤ Remote control; ➤ Data display - preferred LCD; ➤ Fully programmable units (analog, IEEE 488 or RS232) or printer interface (USB or LPT); ➤ External trigger input - 10 V, 1 kΩ; ➤ External trigger output - 10 V, 1 kΩ; ➤ HV output - high current terminals on the top of the equipment or on another suitable position; ➤ Protective cover on the current terminals; ➤ Mains power – preferred 230 V, 50/60 Hz, type of plugs “Schuko” for single phase with ground. For 3- phase power supply 400 V is acceptable; | <i>I</i> |
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| I.2.1 | | Calibration certificate according to EN 61180-2:1994 (IEC 61180-2:1994) or equivalent | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| I.2.2 | | Software | Windows compatible or equivalent Application Software of the test generator and/or evaluation calibration and/or remote control. | <i>I</i> |
| I.2.3 | | Current viewing resistor | 0.5 mΩ, 20 MHz | <i>I</i> |
| I.2.4 | | PC interface cable | 5 m long fiber optical cable | <i>I</i> |
| I.3 | 7000 | ALTERNATING VOLTAGE GENERATOR (Clause 2.3.5 of IEC 60950; 8.2.2 of IEC 60439-1 and IEC 60439-3) | <p>Input voltage – preferred 230 V, 50/60 Hz, type of plugs “Schuko” for single phase with ground. For 3- phase power supply 400 V is acceptable;</p> <p>waveforms: sinusoid with both half-cycles closely alike;</p> <p>frequency: 45÷65 Hz;</p> <p>U_{out} : 2 000 V;</p> <p>ratio of peak to r.m.s. values: $\sqrt{2} \pm 5\%$;</p> <p>tolerances on peak value: $\pm 3\%$;</p> <p>the short-circuit current at the test voltage: < 0,1 A;</p> <p>voltage regulation: the difference in output voltage: measured 1 under no-load and full-load, after steady-state conditions shall not be greater than 5 %;</p> <p>Rise time: 20 – 80 % - 100 ns;</p> <p>PRF -1 kHz;</p> <p>High voltage and high impedance;</p> <p>The General-purpose interface bus (GPIB) is IEEE 488.1 and IEEE 488.2 compliant.</p> | <i>I</i> |
| I.3.1 | | Calibration certificate according to EN 61180-2:1994 (IEC 61180-2:1994) or equivalent | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| I.3.2 | | Software | Windows compatible or equivalent Application Software of the test generator and/or evaluation calibration and/or remote control. | <i>I</i> |

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| I.4 | 4500 | SIGNAL GENERATOR (Clause 7 of IEC 60065, etc.) | Input – preferred 230 V, 50/60 Hz, type of plugs “Schuko” for single phase with ground; Channels – 4 Sample rate – 20 MS/s Memory depth – 64 k Vertical resolution – 12 bits Output amplitude – 10 V Parallel digital output – 24 bits | I |
| I.4.1 | | Calibration certificate according to EN 61180-2:1994 (IEC 61180-2:1994) or equivalent | Calibration by an accredited laboratory (EA member, EA member, EA-MLA for calibration signed) | I |
| I.4.2 | | Software | Windows compatible or equivalent Application Software of the test generator and/or evaluation calibration and/or remote control. | I |
| II. | 11000 | DIGITAL MEMORY OSCILLOSCOPE | Input - preferred 230 V AC, 2 channels, type of plugs “Schuko” for single phase with ground; Vertical unfolding – from 2 mV/div to 5 mV/div; Accuracy: ± 3 %; Range: 150 MHz; 2 channel Color LCD; Max. voltage to channel – 300 V DC/AC; Maximum unfolding – 25GS/s; Base range: 1 ns/div to 10 s/div – accuracy: 0,1 %; Auto set function; FFT-function; serial measurement; Fully programmable units (analog, IEEE 488 or RS232) or printer interface (USB or LPT). | I |
| II.1 | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA-MLA for calibration signed) | I |
| II.2.1 | | Software | Windows compatible or equivalent Application Software for calibration of oscilloscope | I |
| II.2.2 | | Software | Windows compatible or equivalent Application Software for calibration of test generators | I |

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|------------|-------------|---|--|----------|
| V. | 9000 | PRECISION LOW RESISTANCE METER (Clause 13 of IEC 60065; 59 of IEC 60601, etc.) | According to EN 50191:2000 Measurement range: 1 $\mu\Omega$ -2 M Ω Constant current: 1 μ A – 1 A Basic measurement accuracy: 0.05 %; Test signals: DC+, DC-, Pulsed +/-, Pulsed + and Pulsed - Test terminals: 4 sheathed banana terminals and 1 GND Automating zeroing Input voltage – preferred 230 V \pm 10%, 50 Hz, type of plugs “Schuko” for single phase with ground and/or rechargeable battery supply | I |
| V.1 | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA member, EA-MLA for calibration signed) | I |
| V.2 | | Software | Windows compatible or equivalent Application Software for data treatment and/or evaluation calibration | I |
| V.3 | | Power supply cable | AC power cord 3 m | I |
| VI. | 8000 | EARTH BOND RESISTANCE TESTER (Clause 2.6.3.3 of IEC 60950, 27 of IEC 60335-1, etc.) | Preferred 4 in 1 tester: AC Hipot, DC Hipot, Insulation Resistance and Ground Bond tests CT, PE; <ul style="list-style-type: none"> ➤ Front panel – preferred LCD; ➤ Adjustable output current and milliohm trip ranges; ➤ Multiple test memories; ➤ Single step test mode: <ul style="list-style-type: none"> ▪ Insulation Resistance and Ground Bond Test Modes ▪ Continuous Duty Cycle Ratings ▪ Adjustable Output Current and Milliohm Trip Currents ▪ Fail Stop ON/OFF Mode. ➤ PLC remote inputs and outputs; ➤ Fully electronic AC-power source up to 60 A AC; ➤ Microprocessor controlled; ➤ Menu controlled test programme creation; ➤ Printer and remote control interface; ➤ From hand operation to automatic protocolling; Input Voltage - preferred 230V \pm 10% ; 50 Hz \pm 5%, type of plugs “Schuko” for single phase with ground; | I |

| | | |
|--|---|--|
| | <p>Fuse - 6.3A slow blow 250VAC;</p> <p>Output Current: AC 3 - 60A, 0.1 A Regulation: $\pm(2\%$ of Setting + 0.02 A) Voltage: AC 6 V and 12 V fixed</p> <p>Dwell Time Settings - 0 and 0.5 - 999.9 s, 0.1 s 0 for continuous running Accuracy: \pm (0.1% of Setting+0.05 s)</p> <p>High Limit Settings Range: 0 - 510 mΩ (EN 60335) Current: 0 - 510 mΩ for 0.0 - 10.0 A 0 - 200 mΩ for 10.1 - 25.0 A 0 - 150 mΩ for 25.1 - 30.0 A Resolution: 1 mΩ Accuracy: \pm (2% of setting + 2mΩ)</p> <p>Milliohm Offset Max. Offset Capability: 100 mΩ, 1 mΩ Accuracy: $\pm(2\%$ of setting + 2mΩ)</p> <p>Metering - <u>Ammeter (3 digits)</u> Range: 0 - 30 A Resolution: 0.1 A Accuracy: $\pm(3\%$ of Reading + 0.03A) <u>Ohmmeter (3 digits)</u> Range: 0 - 510 mΩ Resolution: 1 mΩ Accuracy: \pm (2% of Reading +2mΩ) <u>Timer (4 digits)</u> Range: 0 - 999.9 seconds Resolution: 0.1 seconds Accuracy: $\pm(0.1\%$ of Reading + 0.05 seconds)</p> <p>Remote control and signal output Remote control: Test, Reset and Withstand Processing Outputs: Pass, Fail, Test in Process, Start Out, and Reset Out</p> <p>Security Key Lock capability to avoid unauthorized access to all test parameters. Memory Lock capability to avoid unauthorized access to Memory locations.</p> <p>Environmental Operating Temperature: 0° - 40°C Relative Humidity: 20 to 80%</p> | |
|--|---|--|

| | | | | |
|-------|-------------|--------------------------------|--|----------|
| | | | Mechanical Bench style with tilt up front feet Dimensions: Portable Weight: Portable | |
| VI.1 | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA member, EA-MLA for calibration signed) | <i>I</i> |
| VI.2 | | Software | Windows compatible or equivalent Application Software for data treatment and evaluation calibration and/or remote control (and non-volatile memory) | <i>I</i> |
| VII. | 4000 | POWER QUALITY ANALYZER | Input voltage – preferred 230 V±10%, 50 Hz, type of plugs “Schuko” for single phase with ground or/and battery supply Volts: 5 – 1250 V Amps: 50 – 10 kA (accuracy - ± 1%) Frequency: 1 – 30 kHz (accuracy - ± 0.5) cos φ : 0.2 – 1 Power: 250 W – 1.5 GW (accuracy - ± 4%) Resistance: 500 Ω - 300 MΩ Harmonics: Volts – 1 st to 51 ^{sh} harmonic Amps – 1 st to 51 ^{sh} Watts – 1 st – 51 st Sags and swells: Voltage and current 4 min – 16 days (accuracy - ± 2 %) Inrush current: 1sec. to 5 min selectable – 1 A to 1000 A ; Capacitance: 50 nF – 500 μF (accuracy - ± 2 %) Temperature: -100°C - +400°C (accuracy - ± 0.5 %); Scope: DC, AC, AC+DC, peak, peak+peak, Hz, duty cycle, phase width, crest factor Recording: 4 min – 16 days Hard case - IP 51 | <i>I</i> |
| VII.1 | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA member, EA-MLA for calibration signed) | <i>I</i> |
| VII.2 | | Software | Windows compatible or equivalent Application Software for data treatment and/or evaluation calibration | <i>I</i> |
| VII.3 | | Accessories | | |
| | | | One pair extension lead test-1,5 m long | <i>I</i> |

| | | | | |
|---------------|-------------|--|--|----------|
| | | | Test leads with safety shrouded, standard diameter banana plug, included right-angle connector on one end and straight connector on the other – 100 V, 10 A | <i>I</i> |
| | | | One pair of sharp industrial test probes | <i>I</i> |
| | | | One pair slide-on alligator clips-1000 V, 10 A | <i>I</i> |
| | | | One pair safety grip, spring loaded hook clips-100V, 3A | <i>I</i> |
| | | | Heavy duty pin-grabber, spring loaded grabber hooks | <i>I</i> |
| | | | One pair fully isolated banana jack alligator clips – 600 V, 10 A | <i>I</i> |
| | | | Universal temperature probe | <i>I</i> |
| | | | Surface probe | <i>I</i> |
| | | | Thermocouple module -100°C - +400°C | <i>I</i> |
| VIII | 1000 | CURRENT CLAMP | Nominal current ranges: 1- 30 A/ 1 - 300 A/1 – 3000 A Continuous AC current range: 1 to 2400 A; Highest AC current: 4000 A; Accuracy: 1 %; Working voltage: 600 V AC; CAT III, 600 V; Maximum conductor diameter: 70 mm; Output cable Rechargeable battery supply | <i>I</i> |
| VIII.1 | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA member, EA-MLA for calibration signed) | <i>I</i> |
| IX | | SURVEY METER MICROWAVE FLUX DENSITY ACCORDING TO EN 60335-2-25:1996 (IEC 60335-2-25:1996) | | |

| | | | | |
|--------|-------|---|--|----------|
| IX.1 | 21000 | MICROWAVE BICONICAL BROADBAND ANTENNA (Clause 32 of IEC 60335-2- 25; IEC 61010- 1) | Nominal frequency range: 3-18 GHz Useable frequency range: 1-18 GHz Connector: female 50Ω N Index Ring: 190 mm Isotropic gain: type. -4/+3 dBi Antenna factor: 43-53 dB/m SWR type. 1.5-5 Balun 1:1 Inversion symmetry: type.< 0.5 dB Cross Polarisation Rejection: < -20 dB Max. Input Power: 10W Half power beam width (E- plane): 84°-85° Rechargeable battery supply | <i>I</i> |
| | | MICROWAVE LOG. – PER. ANTENNA | Nominal frequency range: 1-18 GHz Useable frequency range: 0.7-20 GHz Connector: female 50Ω N Isotropic gain: type. 8.6 dBi± 1 dB Antenna factor: 20-49 dB/m SWR type. < 2 dB Front to back ratio: > 25 Cross Polarisation Rejection: < 28 dB Max. Input Power: 50W Half power beam width(E- plane): 58° Half power beam width(H- plane): 60° Rechargeable battery supply | <i>I</i> |
| D.IX.1 | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA member, EA-MLA for calibration signed) | <i>I</i> |
| D.X. | 13000 | IONIZATION CHAMBER WITH RADIATION MONITOR | According to Annex H of EN 60950:1992 (IEC 60950:1991) Radiation monitor with effective area of: 10cm ² Limit: 5μSv/h Input voltage – 230 V±10%, 50 Hz, type of plugs “Schuko” for single phase with ground. | <i>I</i> |
| X.1 | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA member, EA-MLA for calibration signed) | <i>I</i> |
| XI. | 20000 | EQUIPMENT FOR MEASUREMENT OF LASER RADIATION (Clause 6.2 of IEC60065, 4.5.13 of 60950, etc.) | According to EN 60825-1:1999, EN 61040:1990, IEC 60405:2003 Range: wavelength 302.5 nm-4000 nm Minimal distance between measuring diaphragm and visual source: >100 mm | <i>I</i> |

| | | | | |
|--------------|-------------|--|---|----------|
| XI.1 | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA member, EA-MLA for calibration signed) | I |
| XII. | 8100 | PRECIZE MEMORY LCR METER (Annex G of IEC 60335-1 and Part 2 requirements; IEC 61010-1, etc.) | Five (5) in one (1) tester: AC/DC Hipot, Insulation resistance, Line Leakage Current and Ground bond measurement. Input voltage – 230 V±10%, 50 Hz, type of plugs “Schuko” for single phase with ground; Ratings: Cs, Cp – 0,01 fF to 9,99 F Ls, Lp – 0,002 nF to 99,99 H Z – 0,0001 mΩ to 99,99 MΩ Test frequency 10 Hz – 500 kHz Accuracy ± 0,002% Ranging - automatic 5kV AC, 6kV DC, 1kV IR, 30A GB Monitor DUT Current Draw (Power Consumption V-A) Store/recall 99 test setups, 99 steps/ setup Standard IEEE 488 and remote interface Optional RS-232 or Printer Interface, LCD graphic; Interface | I |
| XII.1 | | Calibration certificate | Calibration by an accredited laboratory (EA member, EA member, EA-MLA for calibration signed) | I |
| XII.2 | | Software | Windows compatible or equivalent Application Software for data treatment and/or evaluation calibration | I |

TOTAL BUDGET: 153 900 Euro

**ESTIMA KM Ltd., Sofia - Designated body for lifts and their safety components –
(Identification number 031)**

ESTIMA KM Ltd. is a designated conformity assessment body for lifts and their safety components under Directive 95/16/EC transposed into Bulgarian legislation by the respective Ordinance on the essential requirements and conformity assessment of lifts and their safety components.

The company performs conformity assessment applying the following procedures:

- EC Type-examination of lifts;
- Unit verification (for lifts);
- Final inspection (for lifts);
- EC Type-examination of safety components.

The company has a mobile laboratory testing lifts at their installation sites according to the above mentioned procedures.

The laboratory personnel comprise of 6 persons, 5 of them being engineers. As testing of lifts at their installation sites is required, the personnel must perform on-site checks. Test and measurement equipment is possible to be damaged during transportation. The intention of the laboratory is to set up at least 2 local offices in the territory of the country, well-equipped with measurement instruments, test and office facilities, so as to save time, expenses and in order to improve company services.

TECHNICAL SPECIFICATION OF REQUIRED EQUIPMENT

| Item No. | Item | Metrological Specifications / Uncertainty / Accuracy / Class | Qty. | Price EURO | Total amount in EURO |
|-----------------|---------------------------------------|--|-------------|-------------------|-----------------------------|
| 1 | ADIASYSTEM for lift inspection | Complex measurement system including program software, electric gauges and transducers for measurement of : - distance; - speed - force (rope forces, traction test, balance test) - acceleration; - vibrations; - pressure; - masses; - door features | 2 | 9 750 | 19 500 |

| | | | | | |
|----|------------------------------------|---|---|-------|--------|
| 2 | Industrial tachometer | - Revolution measurement; - Remote measurement of linear velocity; -Acceleration measurement; -Recording of velocity and acceleration/delay diagram -Program software | 2 | 850 | 1 700 |
| 3 | Insulation resistance meter | Test voltage 250, 500 V; Measured resistance 1 G Ω ; Checking of earth wire non-interruption | 2 | 300 | 600 |
| 4 | Three-phase measuring set | Up to 20 kW Up to 50 A (200A peak) Up to 600 V AC; Recorder output | 2 | 600 | 1 200 |
| 5 | Amplifier with recorder | With acceleration gauges | 1 | 1470 | 1 470 |
| 6 | Computers | portable | 4 | 750 | 3 000 |
| 7 | Digital balance | Up to 160kg | 2 | 350 | 700 |
| 8 | Measure device | For measuring kinetic energy | 2 | 200 | 400 |
| 9 | Office equipment set | Xerox, fax, scanner | 2 | 400 | 800 |
| 10 | Microbus (van) | For mobile laboratory | 2 | 12000 | 24 000 |

TOTAL BUDGET: 53 370 Euro

“Evrolift test” Ltd.

“Evrolift test” Ltd. is a designated conformity assessment body for lifts and their safety components (identification number 033), applying the following procedures:

1) For lifts:

- “EC type-examination (module B)”;
- “Final inspection”;
- “Unit verification (module G)”;

2) For safety components:

- “EC type-examination (module B)”;
- “Conformity to type with random checking (module C)”

The company activities contribute to implementation of the European standards into production and to improvement of quality of lifts and safety of their users.

In carrying out conformity assessment checks, measurements and examinations related to lifts installed in the buildings and laboratory, where safety components are tested, are performed.

The conformity assessment of lifts is a new activity in Bulgaria. The need of this activity is increasing, taking into consideration the great number of lifts and safety components manufacture. To respond to these needs the company will open new branches for lifts testing, which will require additional measuring equipment and vehicles, which are described below. In carrying out the necessary examinations of conformity assessment of lifts, the large quantity of calibrated weights should be transported to each building, where the lifts are to be installed, which is possible only using an appropriate truck (about 8 tones).

TECHNICAL SPECIFICATION OF THE REQUIRED EQUIPMENT

| Item No. | Item | Qty. | Price EURO |
|----------|---|------|------------|
| 1. | Measuring instruments | | |
| 1.1 | Clamp | 1 | 250 |
| 1.2 | Voltmeter up to 1000V AC and 600 V DC | 1 | 600 |
| 1.3 | Three-phase Wattmeter/Multimeter device – three amperemeters and three voltmeters | 1 | 1 500 |
| 1.4 | Luxmeter | 1 | 180 |
| 1.5 | Spidometer | 1 | 250 |
| 1.6 | Weighing instruments - 20 kg | 400 | 22 400 |
| 1.7 | Amperemeters up to 250A | 1 | 300 |
| 1.8 | Wattmeter up to 100 kW | 1 | 300 |
| 1.9 | Megohmmeter with test voltage 250V, 500V and 1000V | 1 | 600 |

| | | | |
|------|--|---|--------|
| 1.10 | Chronometer | 1 | 200 |
| 1.11 | Tachometer | 1 | 200 |
| 1.12 | Tachogenerator with computer | 1 | 2 000 |
| 1.13 | Compression and tension dynamometer up to 10 000 N | 1 | 600 |
| 1.14 | Writable device | 1 | 1 000 |
| 1.15 | Thermometer in range – 10°÷+50° | 1 | 300 |
| 1.16 | Pressure gauge up to 100 bar | 1 | 300 |
| 1.17 | PC | 1 | 1 500 |
| 2. | Transport | | |
| 2.1 | Truck | 1 | 40 000 |

TOTAL BUDGET: 72 480 Euro

INDEPENDENT CONSTRUCTION LABORATORY “INFRASTRUCTURE” Ltd.

Independent Construction Laboratory “Infrastructure” Ltd is registered with Decision №1 of 14.04.2003 in the company file № 3658/2003r. according to the Register of Sofia City Court – company department for 2003. The Head Office of the Laboratory is located in Sofia, 257, “Tzar Boris III” Blvd. Its main activities are as follows:

- Conformity assessment of construction products;
- Testing of construction materials, products and structures.

Independent Construction Laboratory at Independent Construction Laboratory “Infrastructure” Ltd is accredited by EA “BAS” in compliance with BSS EN ISO/IEC 17025:2001 with Accreditation Certificate № 142 ЛИ, valid till 31.03.2010 and activities in four sections - geotechnic, concrete, steel and asphalt..

Independent Construction Laboratory “Infrastructure” Ltd has been designated to carry out conformity assessment of construction products –№ ПООСН - 13 from 10.05.2004 under identification number 018 of the registry of the State Agency for Metrological and Technical Surveillance. Term of validity – 10.05.2009.

Independent Construction Laboratory “INFRASTRUCTURE” Ltd for almost five years existence has performed laboratory tests on main sites in Sofia and Bulgaria:

- Road LOT 1-79, section Daskalovo – Dupnitsa – reconstruction;
- Construction of Cut & Cover tunnel at road Gotze Delchev - Drama Border crossing and road II - 19 Gotze Delchev - Sadovo - Border from km 106+078 to km 106+501.70”;
- Depots for of life waste – G. Malina, Oriahovo – Mizia, Sevlievo, Petrich, Zlatitza;
- Reconstruction of railway section Mezdra – Roman;
- Strengthening of river Iskar – south of Sofia Airport;
- Reconstruction, development and extension of Sofia Airport. LOT B1 and LOT B2;
- “NOB of the American embassy in Sofia”;
- Construction of a Border Crossing Check Point and Ferry-Boat Terminal in Nikopol at the border crossing Nikopol – Turnu Magurele;
- Fly Ash depot “Bobov dol”;
- Sites, executive from “Lindner – Bulgaria”;
- Engineering geological research for design of motorway “Lulun”;
- Bridge over river Maritza - Road II-80 “Novo selo – Pastrogor;

Independent Construction Laboratory “INFRASTRUCTURE” Ltd has concluded 35 contracts on conformity assessment of construction products and has issued 154 certificates of conformity mainly related to aggregates, bitumen mixtures, concrete, road marking paints.

Independent Construction Laboratory “INFRASTRUCTURE” Ltd intends to extend its activity, and to complete laboratory equipment and modernize some devices for testing, related to conformity assessment of construction products according to the European harmonized standards.

TECHNICAL SPECIFICATION FOR THE REQUIRED EQUIPMENT

| Item No | Price in Euro | Item | Metrological Specifications, Uncertainty (Accuracy), Class | Qty. |
|--------------|---------------|--|---|---------------------|
| J.1 | 13 200 | Series Accelerated Polishing Machine EN 1097-8, 1341, 1342, 1343; BS 812:114 | Accelerated polishing machine Road wheel speed: 315 to 325 r.p.m. | 1 |
| J.1.1 | | Accessories: - Corn Emery - Flour Emery - Flakiness Sieve | Ungraded Ungraded 10 to14 mm | 50 kg 30 kg 1 |
| J.2 | 10 000 | Friction tester EN 1097-8; | Additional scale for PSV; | 1 |
| J.2.1 | | Accessories: - sliders with rubber pads - baseplate | 31,75 (± 0,5) x 25,4 (± 1,0) x 6,35 (± 0,5) mm | min.6 1 |
| J.3 | 2400 | Laboratory mixer with Electric Heater prEN 12697-35 | Planetary speeds: 8 positions - 50 to 150 r.p.m.; Spindle speeds: 10 positions - 115 to 400 r.p.m.; Capacity: 10 litres | 1 |
| J.3.1 | | Accessories: - Electric heater | Temperature range: +110 °C to 200° C | 1 |

| | | | | |
|--------------|------|--|---|-----------------------|
| J.4 | 800 | Automatic ring and ball apparatus with magnetic stirrer for Softening point of tar pitches EN 1427 | Test: up to 80 °C from 80 °C to 150 °C; Magnetic stirrer speed: from 0 to 150 r.p.m.; | 1 |
| J.4.1 | | Accessories: - Immersion heater - Magnetic stirrer - Temperature probe | -max temperature range 150° C 30 °C to +200 °C | 1 1 |
| J.5 | 8400 | Electronic automatic penetrometer with automatic controller and micrometer vertical adjustment (for bituminous materials) EN 1426; | | 1 |
| J.5.1 | | Accessories: - standard needle - penetration tins - penetration tins - transfer dish | - 2,5 g - h35/d55 mm; - h45/d70 mm; - glass - d 100 mm h 75 mm | 2 4 4 1 |
| J.6 | 6000 | Standard tar viscometer EN 12846; EN 13357; | | 1 |
| J.6.1 | | Accessories: - Cup - Cup -Gauge for 10 mm orifice -Gauge for 4mm orifice - Thermometer | 10 mm diameter 4 mm diameter 10 mm 4 mm Temperature range: 0 to 45 °C; subd. 0,2 °C | 1 1 1 1 1 |

| | | | | |
|---------------|------|--|---|------------------|
| J.7 | 3500 | Fraas temperature tester EN 12593 | Bending apparatus, plaque made of springly stainless steel 41x20x0,15 mm cooling apparatus, Thermometer range: from – 38 °C to + 30 °C, plate and stand; | 1 |
| J.8 | 8100 | Ductility testing machine prEN 13589 with Accessories | Output for PC or printer; Testing speed 50 mm/min; Temperature control for test condition 25 °C; Max. carriage displacement: 1500 mm; | 1 |
| J.9 | 1300 | Electronic balance 0 - 360 g EN 932-5; | Capacity: up to 360 g Resolution: 0,001g Under balance weighing facility | 1 |
| J.9.1 | | Accessories: - suspension hook | 100 mm | 1 |
| J.10 | 4100 | Electronic balance 4,0 kg EN 932-5; | - Electronic balances Capacity: up to 4000 g Resolution: 0,01g Under balance weighing facility | 2 |
| J.10.1 | | Accessories: - specific gravity frame - water tank - suspension hook - ware basket | Height 100 cm 400 ×400×330 mm approx. 100 mm -200 mm diameter, 200 mm deep, 1,70 mm wire mesh | 1 1 1 1 |
| J.11 | 6000 | Electronic balances 10,0 kg EN 932-5; | Capacity: min 10 000 g Resolution: 0,5 g Under balance weighing facility | 2 |
| J.11.1 | | Accessories: - suspension hook | 100 mm | 1 |

| | | | | |
|---------------|--------|---|---|--------------|
| J.12 | 2600 | Electronic balances 20,0 kg EN 932-5; | Capacity: up to 20 000 g Resolution: 0,2 g | 1 |
| J.13 | 2750 | Electronic balances 30,0 kg EN 932-5; | Capacity: min 30 000 g Resolution: 1,0 g | 1 |
| J.14 | 8800 | Laboratory dry oven with fan EN 932-5; EN 1097-5 | Capacity: min 400 l | 2 |
| J.15 | 5 500 | Laboratory dry oven with fan EN 932-5; EN 1097-5 | Capacity: 225 l | 2 |
| J.16 | 2400 | Laboratory dry oven EN 932-5; EN 1097-5 | Capacity: 50 l with air influence | 2 |
| J.17 | 14 000 | Rolling Thin Film Oven EN 12607-1 – resistance to hardening | With air influence, air compressor and electronic regulator maintaining a constant temperature 163 °C ± 0,5 °C | 1 |
| J.17.1 | | Accessories: -Container -Test Pan - Thermometer IP – | -d35 mm / h55 mm – -d140 mm / h9,5 mm -range 155 °C to 175 °C, - division 0,5 °C | 10 6 2 |
| J.18 | 2200 | Water bath prEN 12697-34 | Capacity: approx. 40 litter with digital controller Range: 0 °C to 100 °C | 1 |

| | | | | |
|-------------|------|---|---|---|
| J.19 | 3000 | Motorized sieve shaker - for sieves up to 315 mm diameter EN 932-5 | Sieve capacity: ten 200 mm sieves + pan and cover; six 300 mm sieves + pan and cover; Orbital action: \approx 327 oscillations per minute; Jarring action: \approx 40 vertical blows per minute; | 1 |
|-------------|------|---|---|---|

| | | | | |
|---------------|--------|---|---|---|
| | | | 16,0; 19,0; 20,0 22,4; 25,0; 28,0 31,5; 37,5; 50,0; 63,0; 75,0; 125,0 | 1 1 1 1 1 1 1 1 1 1 1 |
| J.21 | 6500 | Micro-Deval Apparatus EN 1097-1 | | 1 |
| J.21.1 | | Accessories: - Standard stainless steel cylinders - Stainless steel spheres - Stainless steel spheres - Stainless steel spheres | d =200mm and h =154 mm d=10mm d=18mm d=30mm | 4 25 kg 50 pieces 10 pieces |
| J.22 | 235000 | Computer controlled universal testing instrument - tensile, electronic extensometer for bars, flat and round specimens and steel strand, set jaws with automatic drawing of work diagrams EN 10002-1 EN ISO 15630 | - Max. tension test load: 600 kN; - Class 1 or higher in accordance with ISO 7500-1; - Distance between grips 0 ÷ 1000 mm; - Max. round diameter: 40 mm; | 1 |

| | | | |
|---------------|---|---|---|
| J.22.1 | Accessories: | | |
| | - Grip set for specimens with round cross section | Diameters of specimens : 10 to 40 mm; | 2 |
| | - Grip sets for flat specimens | Thickness of specimens: 1 to 40 mm; | 1 |
| | - Grip sets for strands | Strands with structure 1×7 | 1 |
| | - Electronic extensometer | Class 1 in accordance with ISO 9513; Measurement range 700 mm (-L ₀) Thickness of specimens: 1 to 40 mm | 1 |
| | - PC | CPU 2,8 GHz | 1 |
| | | HDD 120 GB | 1 |
| | | 512 MB RAM | 1 |
| | | FDD 1,44 MB | 1 |
| | | 1CD ROM | 1 |
| | 2 RS 232 C serial port | 1 | |
| | UCB 2.0 min 2 count | 3 | |
| | 1 SVGA card | 1 | |
| | 1 parallel port for printer | 1 | |
| | keyboard | 1 | |
| | mouse | 1 | |
| | Monitor 17" | 1 | |
| | | 1 | |
| | - Application Software; | -WINDOWS compatible | 1 |
| | - Printer | -Graphic printer A4 format, colour and B&W; | |
| J.22.2 | Calibration certificate for Extensometers only | Accredited Calibration laboratory | 5 |

| | | | | |
|---------------|------|---|---|-------------|
| J.23 | 6000 | Automatic asphalt centrifuge extractor for determination of binder content with Solvent Recover EN 12697-2 | | 1 |
| J.23.1 | | Accessories: - Centrifuge cups - Sieves set - Solvent Recover | Capacity: 300 g from 0,075 to 5 mm – solvent and head resistance 10 l/h | 3 1 1 |

TOTAL BUDGET: 350 000 EURO

BUILDING RESEARCH INSTITUTE – N I S I, Sofia, Bulgaria

The Building Research Institute NISI, founded in 1898, now is a state company (with statute of a trade organization with 100 % state participation) at the Ministry of Regional Development and Public Works (MRDPW).

During the past 108 years the staff and the technical equipment of the institute have been in constant development in benefit and for service of the construction branch in Republic Bulgaria and of the building activities in the whole economy, including residential, public and industrial buildings and constructions.

Basic directions in the activity of NISI are:

1. In compliance with the CPD NISI is designated by MRDPW as conformity assessment body and body for issuing of Bulgarian technical approvals for construction products before their placing on the market. The accreditation includes above 65 numbers – groups of building materials, wares and structures. Certificates are issued for compliance with the construction products standards, for the systems of factory production control, test reports of the initial type testing.

2. Testing Center for Construction – accredited by the Bulgarian Accreditation Service under BDS EN/ISO IEC 17025. Testing of construction products – concretes, mortars, steel, reinforcement, wood products, products of building chemistry, thermalinsulating, hydroinsulating and soundinsulating materials, soils, waters, geomechanics and foundation etc.

3. Control body – control center for construction (CCC) – fulfils control and issuing of certificates, that it complies with Bulgarian State Standard (BDS) and the Eurocodes for the corresponding building structures of buildings and facilities, technological equipment for the construction, machines and elements, control of electrical appliances and facilities up and above 1000 V, control of the parameters of the working environment.

4. Investigations, experimentation and design of unique and conventional constructions or parts of them (including building materials, products and wares) of the whole spectrum of the industry, public and residential buildings as well as and elements and works of the infrastructure;

5. Research projects related to new construction products, renovation in constructions etc.

6. Preparation of new normative documents, including Eurocodes, as well as actualization of acting: laws, directives, norms, technical and technological instructions, methodological directions and other connected with the regulation of the building process for the inquiry, survey, projecting, building production, putting into exploitation and exploitation maintenance of the constructions (buildings and facilities);

NISI has rich experience in drafting technical norms and currently it is working on the harmonisation of Bulgarian construction norms with EN. NISI experts are actively involved in the work of construction technical committees at the Bulgarian Institute for Standardisation. NISI provides postgraduate and postdoctoral training. NISI's symbol is a trademark of the Institute and symbolizes construction innovation in the country.

Testing and certification activity of NISI covers the whole country including neighbor countries such as Republic of Macedonia, Rumania, Turkey and Greece, from which we import construction products.



TECHNICAL SPECIFICATION OF THE REQUIRED EQUIPMENT

| Item No | Item | Metrological Specifications, Uncertainty (Accuracy), Class |
|--------------|---|--|
| H.3 H.3.1 | Computer control universal press (machine) for testing of tensile strength of reinforced steel, flat and round sample of steel and strands with automatic recording of working- diagrams, according to EN 10002 Accessories: Set of grippers (jaws) for testing samples of circular and flat shape with different sizes | Max. tension testload – 600kN; Distance between grips - $0 \div 1000$ mm; Max. rounds diameter – 40mm; Thickness of specimens- $1 \div 40$ mm Accuracy class: 1 according to ISO 7500-1 Calibration by an accredited laboratory shall be offered |
| H.5=H.3.2 | Extensometer for electronic recording of deformation at the testing tensile strength of steel, according to EN 10002 | Accuracy class: 1 according to ISO 9513 Measurement range – $(700 - L_0)$ mm Thickness of specimens- $1 \div 40$ mm Digital recoding of results |
| H.7 | Apparatus for testing of abrasion of rock materials according to the method “Micro Deval” | According to EN 1097-1 |
| H.8 | Drum for testing of abrasion of rock materials to the method “Los Angeles” Accessories: Set of 12 abrasive charges conforming to EN 1097-2 | According to EN 1097 – 2 |
| H.13 | Full set of sieving series for determination of the index of Flakiness | Diameter: 300 mm |
| H.14 | Electronic balance for underwater assessment Bouyancy balance system for underwater weighing | Range: $0 \div 15$ kg Accuracy: 0,5 g. |
| H.20 | Dynamometer (measure dose) with range 10 MN (1000t) for determination of prestressing strength of high-strength wire bundle Accessories: Interface cable for connection with a computer for transfer of data According to EOTA 98/456/EC and EN 10138 | Ring-shape construction with: light inner diameter of 370 ± 5 mm, outer diameter of 460 ± 5 mm, max height – 500mm; tenssmeterical determination of strength; long-term testing capacity; Accuracy class: 1 ton. Calibration by an accredited laboratory shall be offered |
| H.27 | “CBR” equipment for determination of bearing capacity of soil according to ASTM D-1883 and EN13286-47. | Independent charging from battery or rechargeable battery; Work period without battery change > 20 hours; Interface cable for connection with a computer for transfer of data |
| H.30 | Optical thickness gauge EN 1849 | Accuracy: 0,01 mm Loading force: 20 kPa Diameter of loading surface: 10 mm |
| H.31 | Apparatus for testing of cycles freezing /thawing in water according to EN ISO 10454-12, EN 1348, EN 12808-3 | Freezing temperature: up to -20°C ; thawing in water: up to 20°C ; fluctuation: $\pm 0,5^{\circ}\text{C}$; volume: over 200 l; programming of treatment period and automatic recording of regime. |

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| | | Calibration by an accredited laboratory shall be offered |
| H.34 | Pull-off testing machine with tensile force max 14 kN according to EN 1348, EN 1015-2 | <p><i>Possibility for three measurement ranges:</i></p> <ul style="list-style-type: none"> - low range: up to 500 N - middle range: up to 1 kN - high range: up to 14 kN <p>Digital recording of results; Capacity to regulate loading speed; Automatic registration of measurements</p> <ul style="list-style-type: none"> - Force measuring with digital manometer, display in N/mm² for discs of 50 mm diameter - Test metallic discs of 50 mm diameter – 50 pieces - Square metallic plates with dimensions 50 mm x 50 mm – 50 p |
| H.35 | Tensile testing machine with continuous recording of force according to EN 12311 | <p>Loading capacity: at least 500 N</p> <p>Digital recording of results; Capacity to regulate loading speed including (100±1) mm per m (500±50) mm/min; Automatic registration of measurements Width of grips: 50 mm and 250 mm</p> |
| H.36 | Automatic recording Vicat apparatus for setting time of cement according to EN 196-3 Accessories: - 2 penetration needles diameter 1,00 mm and 1,13 mm - 1 conical penetration needle for gypsum - 5 plastic moulds - Needle Cleaning Device -100 recording diagrams | <p>Capacity to:</p> <ul style="list-style-type: none"> - determine penetration intervals; - automatically record measures; <p>Timer range: about 1000 minutes;</p> |
| H.37 | Shrinkage measuring devices with digital gauge according to EN 12808-4 Accessories: Gage studs – 500pieces | For samples 4x4x16 cm |
| H.38 | Mortar workability apparatus by plunger penetration | According to EN 1015-4, EN 459-2 |
| H.40 | Apparatus for determination Li, K, Na, Ca, Ba according to EN 196-2, EN 196-21 | <p>Determination of Li, K, Na, Ca, Ba</p> <p>Digital and automatic recording of measures;</p> <p>Filters for Li, K, Na, Ca, Ba</p> <p>Air-compressor</p> |
| H.41 | Apparatus for abrasive resistance of ceramic tiles according to EN 1338, EN 1339, EN 1340, EN 1341, EN 1342 Accessories: white fused aluminium oxide of grain size F 80 according - 5 kg; | <p>Disk requirements: made of steel E 235 A (Fe 360A), diameter: 220±0,2 mm, edge thickness: 10±0,1 mm rotation frequency: 75 r/min; non-color quartz glass for apparatus calibration.</p> |
| H.42 | Apparatus for surface abrasive resistance of ceramic tiles with three nests according to EN ISO 10545-7 Accessories: steel balls of diameter 5 mm; steel balls of diameter 3 mm; steel balls of diameter 2 mm; steel balls of diameter 1 mm; | <p>Three nests for simultaneous testing; rotation frequency of bearing plate: 300 r/min; eccentricity: 22,5 mm; inner diameter of holders: 83 mm;</p> |

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| | white fused aluminium oxide of grain size F 80 according to ISO 8486 – 5 kg; cabin with fluorescent light –luminance 300 lx. | |
| H.45 | Infrared Dryer for Rapid Determination of Moisture Content according to EN 3251 | Min amount: up to 20. g Drying time: 1 ÷ 240 min Result shows in % or gram Accuracy: 0,01% or 0,01 g |
| H.46 | Retroflectometer RL/Qd according to EN 1436 | Illuminating angle: 1,24° Observation angle: 2,29° Measuring range: 0 – 1999 ncd.m ⁻² lx ⁻¹ External changer: 100-240V/50-60 Hz, Accumulator, 12V, 6,5A Calibration plate Battery charger Spare lamp |
| H.48 | Apparatus for determination of coating thickness and glittering according to EN ISO 2813 | Range : for gloss 0÷180 GU; for thickness: 0÷500 μ m Geometry: 20±0,1° 60±0,1° 85±0,1° Accessories: Checking Standard 20°; Checking Standard 60°; Checking Standard 85°; Checking Standard Mirror; Calibration Holder; Portable Printer 220 V; QC-link; Connection Cable. |
| H.49 | Apparatus for abrasion strength of coating paints according to ISO 11998 Accessories: abrasive wad holder with weight of 135±1 g; | Effective length of movement (300±5) mm 37±5 cycles/minute; cycle counter; |
| H.50 | Measurement equipment system for determination of coefficient of thermo conductivity of building materials - λ according to ISO 8302, EN 12667, EN 12664; EN 1946-2, DIN 52612 Accessories: Standard samples; Sealing (packing) plates; Thickness gauge; Appliance for press loading measuring with range of 50÷2500 N/m ² | Range: 0,05÷1,8 w/m.K Accuracy: 0,0001 w/m.K Absolute error: < 1,5% |
| H.51 | Testing equipment of thermal vision of the facades of buildings and engineering facilities | Range: -30°C ÷ +55 °C; Color visualization and digital recording of results |
| H.54 | <i>Analyser for building acoustics-</i> analysing multiparametric, multipurpose and multichannel system with a packet and | Range: 0÷140 dB Accuracy: 0,1 dB Class: 1 |

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| | <p>set for building acoustics Accessories: Portable installation hardware set and charger, Analysing software, Specialised software for building acoustics, LAN interface model, 6/1 channel in/out module, 2 sets of rechargeable batteries, portable computer, portable hand-operating noise meter with 1/1 and 1/3 octave filters, inner software for basic and frequency analysis, sound outlet “omni power” with threnody, power accelerator “omni power”, 10 meters of connecting cables, Acoustic shock machine.</p> | |
| <p>H.57</p> | <p>Portable digital device for measurement of temperature, radiant heat, infrared sonde, relative humidity, anemometer, pressure according to EN 27243; ISO 7243; EN 27726; ISO 7730</p> | <p>Stands for probes; Memory capacity > 3000 reports; Automatic recognition of plugged-in probe; Program capacity for statistical and graphical work with data, in capacity for formula editing; Interface cable for connection with a computer for transfer of data Each probe to be connected to the apparatus via a cable, 1.5 m long PUR coating. Independent charging from battery or NiMH rechargeable batteries (in sets) and charger; work period without battery change at least 10 h <i>Removable probe for measuring air velocity:</i> Measuring range: 0,1 ÷ 1,0 m/s and 1,0 ÷ 2,5 m/s; Accuracy: ± 0,1 m/s (0,1 ÷ 1,0 m/s) and ± 0,2 m/s (1,0 ÷ 2,5 m/s) <i>Removable three-functional probe for measuring simultaneously temperature, relative humidity and air velocity:</i> Measuring range: see respective values above; Accuracy: see respective values above; <i>Removable globe thermometer probe for measuring radiant temperature:</i> Measuring range: 0,0 ÷ 120 °C Accuracy: ± 0,5 °C (0,0 ÷ 50 °C), ± 1,0 °C (50 ÷ 120 °C), <i>Removable comfort level probe for measuring turbulence levels:</i> Measuring range: 0 ÷ 5,0 m/s; 0,0 ÷ 50 °C; Accuracy: ± (0,03 m/s +4% m.v.); ± 0,3 °C <i>Removable probe for distant noncontact measuring surface temperature (with laser technology or with infrared probe):</i> Measuring range: -30 ÷ 900 °C (range may be divided into subranges) Accuracy: ± 1 °C or ±1,0 %, <i>Removable probe for measuring differential pressure (magnetic probe):</i> Measuring range: 4 ÷ 100 hPa (range may be divided into subranges) Accuracy: ± 0,1 hPa (0 ÷ 20 hPa); ± 0,5 % (> 20 hPa), <i>Removable probe for measuring absolute pressure (magnetic probe):</i> Measuring range: 2000 hPa (range may be divided into subranges) Accuracy: ± 2 hPa, <i>Changeable Pitot tubes:</i> Measuring range: 0 ÷ 100 hPa, 0 ÷ 100 m/s;</p> |

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| | | <p><i>Volume flow funnel for measuring the extraction power of ventilation systems:</i> Measuring range: 20 ÷ 400 m³/h <i>Removable probe for measuring CO₂:</i> Measuring range: 0 ÷ 10000 ppm, 0 ÷ 1 vol% (range may be greater) Accuracy: ±50 ppm ±2 % of m.v. (0÷5000 ppm); ±100 ppm ±3% (>5000 ppm), <i>Removable probe for measuring CO:</i> Measuring range: 0 ÷ 500 ppm (range may be divided in subranges) Accuracy: ±5 ppm (0÷100 ppm); ±5 % of m.v. (>100 ppm), <i>Removable probe for super-quick measurement with spring tip for measuring surface temperature:</i> Measuring range: -200 ÷ +300 °C, Accuracy: ± 0,4 °C.</p> |
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TOTAL BUDGET: 600 000 €

EUROTEST CONTROL PLC, Sofia

"Eurotest Control" PLC is a company whose structure consists of a testing laboratory, a control body and a certification body. The Company possesses highly qualified personnel.

"Eurotest Control" PLC works with Bulgarian clients, foreign investors and companies from Balkan Peninsula.

The testing laboratory of "Eurotest Control" PLC is accredited according EN ISO/IEC 17025 by Executive Agency "Bulgarian Accreditation Service". The accreditation granted is valid till 2007.

The Company operates a certified quality system (QS). The QS certification is carried out by Lloyd's Register Bulgaria according to ISO 9001/2000 and is valid till 2007.

In 2005 a department "Conformity Assessment Body" was established within the company for conformity assessment of construction materials and products in line with the rules, as defined in Regulation for requirements and conformity assessment of construction products for the following groups of products: concrete, produced in manufactory conditions; ordinary cement; aggregates; masonry units; masonry mortar; building lime.

In March 2006 "Eurotest – Control" PLC. passed successfully the audit for evaluation of the company's competence and ability to perform the construction products-related conformity assessment procedures. Granting authorisation is expected.

The Company managed to purchase part of testing equipment required for proper implementation of its conformity assessment activities, in particular:

- Electric Sieve Shaker with Tamer D-200 mm, H-50 mm
- Large Capacity Sieve Shaker.

The "Eurotest-Control" PLC has a contract for carrying out testing of additive materials and concrete. We currently are also under finalization of the negotiations with Swedish company "Swedia", which are working on a project for construction of an airport in town of Prishtina. This contract is related to testing of all raw materials that will be used in the construction of the airport. In September our company will sign agreement with "Institute for studies and investigation" in Czech Republic for collaboration and join activities in the field of conformity assessment of construction materials.

The above stated provides for grounds to apply for support under PHARE Program Projects. The equipment planned to be delivered under the current project will lead to extension of our market share up to 5%.

TECHNICAL SPECIFICATION OF THE REQUIRED EQUIPMENT

| Item No | Price in Euro | Item | Metrological Specifications, Uncertainty (Accuracy), Class | Qty. |
|----------|---------------|---|--|----------|
| | | EQUIPMENT FOR CPD MEASUREMENTS | | |
| 1 | 3450 | LOS ANGELES ABRASION MACHINE | | |
| | | Los Angeles abrasion machine EN 1097-2 | High power electric motor rotated at a speed 31 –33 r.p.m. Revolution counter Automatic stop at end of cycle Steel tray for speci | 1 |
| | | Verification certificate | An accredited laboratory (EA member, EA-MLA for calibration signed) | 1 |
| | | Accessories: Set of Abrasive chargers | 46 mm nominal diameter and approx. weight 400 g ASTM compl. | 1 |
| | | Set of Abrasive chargers | EN 1097-2 – 48 mm nominal diameter and approx weight 440 g | 1 |
| 2 | 3300 | WATER IMPERMEABILITY APPARATUS | | |
| | | WATER IMPERMEABILITY APPARATUS ISO 7031 | Determine of impermeability of concrete to water with manometer for water pressure and air compressor (10 bar) Tree place model | 1 |
| | | Calibration certificate | An accredited laboratory (EA member, EA-MLA for calibration signed) | 1 |
| 3 | 66000 | X-RAY FLUORESCENCE SPECTROMETER SYSTEM FOR MULTIELEMENT ANALYSIS | | |

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| | | <p><i>X-ray Fluorescence Spectrometer system for multi-element analysis</i> EN 196-2 EN 13043</p> | <p>Base spectrometer X-ray and window tube with Rh or Pd anode Air cooling Max power 50 W Optional target available X-ray generator Voltage 1 to 50 kV /approx/ Adjustable in 1 kV step Filters Automated position filter selection Detector – Si drift with Peltier-cooled /PCD/ Energy resolution- Better 170 eV for MnKα Sample Types-Solids, powders Sample Types - 30 to 50 mm dia. For sample trays Operation modes Vacuum system with integrated pump and Air/He gas system Automated and manual tray changer of position sample Up to 12</p> | <i>1</i> |
| | | <p><i>Calibration certificate</i></p> | <p>An accredited laboratory (EA member, EA-MLA for calibration signed)</p> | <i>1</i> |
| | | <p>Instrument control unit - PC</p> | <p>Processor CPU 2.4 GHz Memory size 512 MB RAM HDD 80 GB Floppy - FDD 1,44 MB CD – R/W Interfaces printer - RS23 17 “ Flat Screen Color Monitor 1280x1024 resolution and 0.25 dot</p> | <i>1</i> |

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|-----------|--------------|---|---|---|
| | | <p>Software:</p> <p>1. for control of spektrometer function</p> <p>2. turboquant application for the matrix independent analysis of completelyun samples</p> <p>3. fundamental parameters method</p> | <p>pitch Printer – Color Laser MS Windows</p> <p>Analytical basic with following functions: Qualitative analysis; Standardless multi element analysis; Quantitative analysis with matrix correction and overlap correction; Flexible input of preparation data and any available chemical information; Integrated data base for comprehensive handling of sample specific data; Instrument calibration.</p> | |
| 4. | 30000 | DERIVATOGRAPH | | |
| | | <p>DERIVATOGRAPH - determination of mineral composition EN 480-12</p> | <p>Heating possibilities: -Linear -Isothermal - TG-DTA -Timed quasi isothermal Electronic balance with measuring range 0-10 g controlled by PC Furnaces: Max 1200 °C up to 1600 °C /in inert gas/ Heating rates – between 0.5 and 20 °C/min Balance resolution – 2 µg</p> | <p>1</p> <p>2</p> <p>1</p> |
| | | Calibration certificate | An accredited laboratory (EA member, EA-MLA for calibration signed) | 1 |
| | | Instrument control unit - PC | <p>Processor CPU 2.4 GHz Memory size 512 MB RAM HDD 80 GB Floppy - FDD 1,44 MB</p> | 1 |

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|----------|-------------|--|--|-----------|
| | | Software | CD – R/W Interfaces printer - RS32 17 “ Flat Screen Colour Monitor 1280x1024 resolution and 0.25 dot pitch Printer – Colour Laser MS Windows For complete control of measurements, calibration, and checking of apparatuses condition. | |
| | | Accessories | | |
| | | Crucibles | | 20 |
| | | Parallel Pt x 2 numbers | In 4 sizes | 8 |
| | | Conic Pt x 2 numbers | In 2 sizes | 4 |
| | | Parallel ceramic x 5 - numbers | In 4 sizes | 20 |
| | | Labyrinth Pt | | 2 |
| | | | Spearthermo cople | 2 |
| 5 | 3700 | VICAT APPARATUS | | |
| | | Automatic Vicat apparatus Used to determinate the quantity of water required to produce a cement paste of standard consistence EN 196-3 | Automatic test cycle Output-RS232 or USB The timed cycle of events should be operator selectable and penetrations to be selected at intervals of 30sec, 1, 5, 15 or 30 min. 2 penetration needles, glass plate, 2 moulds. | 1 |
| | | Calibration certificate | An accredited laboratory (EA member, EA-MLA for calibration signed) | 1 |
| | | Software | For complete control of measurements, calibration, and checking of apparatuses condition. | 1 |
| | | Accessories: | | |
| | | Initial set needle | 1.13 mm | 1 |
| | | Final set needle | 1.13 mm | 1 |
| | | Initial set needle | 1.00 mm | 1 |

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| | | Consistency plunger | 10.00 mm dia. | <i>I</i> |
| | | Cone shaped needle | 8.00 mm dia., 50.00 mm long for test on gypsum | <i>I</i> |
| 6 | 7200 | FLEXURAL/TENSILE MACHINE | | |
| | | Flexural/Tensile machine EN 196-1 BS 1881-118 | 10 kN Flexural/Tensile machine Automatically stops max.10 kN Designed for flexural and tensile machine on prisms and briquettes | <i>I</i> |
| | | Calibration certificate | An accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| | | Accessories | | |
| | | Flexural Jaws | For 40 x 40 x 160 mm prism | <i>I</i> |
| | | Tensile Jaws | For briquettes | <i>I</i> |
| 7 | 16100 | LIME AND MORTAR COMPRESSION TESTING MACHINE | | |
| | | Lime and mortar compression testing machine EN 196 ISO 679 | Compression machine 250 /25 kN capacity /approx./ - auto test Automatic loading application Two load frames –250 kN and 25 kN Micro-processor Control: -Accuracy better then ± 1 % -Display -Maximum load – held until reset Output – serial RS232 C Min. vertical clearance: 230 mm-250 kN; 230 mm-25 kN Min. horizontal clearance: 220 mm- 250 kN; 160mm-25 kN Platen dimensions : 150 mm dia. 250 kN and 25 kN Min ram travel - 15 mm | <i>I</i> |

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| | | | | |
| | | Calibration certificate | An accredited laboratory (EA member, EA-MLA for calibration signed) | 1 |
| | | Accessories | | |
| | | Compression Frame Jig Assembly | | 1 |
| | | Flexure Jig Assembly | For 40x40x160 mm mortar prism | 1 |
| | | Distance | For 40 mm samples | 1 |
| | | Distance | For 50 mm samples | 1 |
| | | Distance | For 70.7 mm samples | 1 |
| 8 | 7300 | MOULDING FOR PRISM, CUBES AND BRIQUETTE | | |
| | | <i>Moulding of prism</i> 40.1 x 40 x 160 mm Jolting table <i>EN 196-1</i> EN 413; EN 459-2; ISO 679 Three gang mould Glass plate Feeding Hopper Scraper Mortar sand | Rotating at 60 revolutions per minute Automatic stop control at end of test For 210 x 185 x 6 mm Min 1350 g | 1 1 1 1 1 |
| | | <i>Moulding of Cubes 70.7 mm</i> Vibrating machine EN 196 Cube mould 70.7 mm Replacement drive Belt Set of Springs Spares kit | Time switch and starter control Frequency 12000 cycles per minute 70.7 mm 50 mm | 1 1 1 1 |

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|-----------|--------------|---|--|----------|
| | | Cube mould 50 mm | | <i>1</i> |
| | | <i>Briquette Mould</i> | Complete with base plate | <i>1</i> |
| | | <i>Calibration certificate</i> | Accredited laboratory (EA member, EA-MLA for calibration) | <i>3</i> |
| 9 | 400 | BLAIN FINENESS APPARATUS | | |
| | | Blain Fineness Apparatus EN 196-6 | Determination the fineness of Portland cement | <i>1</i> |
| | | <i>Calibration certificate</i> | An accredited laboratory (EA member, EA-MLA for calibration signed) | <i>1</i> |
| | include d | <i>Accessories</i> Manometer liquid | 50 ml | <i>1</i> |
| | | Calibration certificate | An accredited laboratory (EA member, EA-MLA for calibration signed) | <i>1</i> |
| | | <i>Filter disks</i> | | <i>1</i> |
| | | Glass manometric tube | | <i>1</i> |
| | | Reference cement | | <i>1</i> |
| | | Blain Air permeability cell | | <i>1</i> |
| | | Standard Sand Sample | 125 g | <i>2</i> |
| 10 | 1990 | MUFFLE FURNACES | | |
| | | Muffle Furnaces EN 196-2 | Min T 1100 °C Digital temperature display Ceramic fibber heat insulation Sliding door for ease and safe to the inside chamber Shielded resistors Inside dimension min 180 x 100 x | <i>1</i> |

| | | | | |
|-----------|-------------|--|--|----------|
| | | | 280 mm /w, h, d / approx | |
| | | Calibration certificate | An accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| 11 | 4100 | MORTAR MIXER | | |
| | | Automatic Mortar Mixer EN 196-1; | With-microprocessor control Choice of automatic mixing cycles Send and water dispenser options Min 5 l capacity | <i>I</i> |
| | | Calibration certificate | An accredited laboratory (EA member, EA-MLA for calibration signed) | <i>I</i> |
| | | Accessories Water dispenser | Accuracy ±1ml | <i>I</i> |
| | | Bowl Cover | | <i>I</i> |
| | | Scraper | Plastic 200mm long | <i>I</i> |
| | | Paddle stainless steel | | <i>I</i> |
| | | Bowl stainless steel | Min 5 l | <i>I</i> |
| | | Automatic Sand dispenser | | <i>I</i> |
| 12 | 3200 | ABRASION TESTER | | |
| | | Abrasion tester EN 1344 | For determine the resistance to deep abrasion of composite stone and unglazed ceramic tiles An accredited laboratory (EA member, EA-MLA for calibration signed) | |
| | | Calibration certificate | | |
| | | Accessories Tile for calibration purposes | | |
| | | Corundum | 1kg | |
| | | Disc | 200mm | |

TOTAL 200 000 EURO

ANNEX 7: Reference list of relevant laws and regulations

- Law on Measurements, adopted 24 April 2002 (State Gazette, issue 46/07.05.2002). The Law entered into force on 8 November 2002;
- Law amending the Law on Technical Requirements for Products, adopted in 2002 (State Gazette, issue 63/28.06.2002, as last amended State Gazette, issue 93/01.10.2002). The Law entered into force as from 3 December 2002;
- Ordinance on units of measurement allowed for use in the Republic of Bulgaria, transposing Directive 80/181/EEC, Decree of the Council of Ministers № 275 of 29 November 2002 (State Gazette, issue 115/10.12.2002). The Ordinance entered into force on 13.12.2002;
- Ordinance on the order for authorization of persons for verification of measuring instruments that are subject to metrological control, Decree of the Council of Ministers № 31 of 2003 (State Gazette, issue 17/21.02.2003). The Ordinance entered into force on 24.02.2003;
- Ordinance on the order for approval of national measurement standards of the Republic of Bulgaria and the way of use and keeping of the measurement standards, Decree of the Council of Ministers № 74 of 2003 (State Gazette, issue 33/11.04.2003). The Ordinance entered into force on 14.04.2003;
- Ordinance on the conditions and order for carrying out market surveillance, Decree of the Council of Ministers № 110 of 20 May 2003 (State Gazette, issue 49/27.05.2003). The Ordinance entered into force on 23.05.2003;
- Ordinance on the order and way of carrying out metrological supervision, Decree of the Council of Ministers № 218 of 30 September 2003 (State Gazette, issue 88/07.10.2003). The Ordinance entered into force on 10.10.2003;
- Ordinance on the essential requirements and conformity assessment of appliances burning gaseous fuels, transposing Directive 90/396/EEC, (State Gazette, issue 100/14.11.2003). The Ordinance entered into force on 17.11.2003;
- Ordinance on the essential requirements and conformity assessment of construction products, transposing Directive 89/106/EEC (State Gazette, issue 93/14.11.2000; amendment, State Gazette, issue 75/28.08.2001; as last amended, issue 109/16.12.2003, in force from 01.01.2004). The Ordinance entered into force on 15.11.2001;
- Ordinance on the essential requirements and conformity assessment of electrical equipment designed for use within certain voltage limits, transposing Directive 73/23/EEC (State Gazette, issue 62/13.07.2001; amendment, State Gazette, issue 74/22.08.2003). The Ordinance entered into force on 14.01.2003;
- Ordinance on the essential requirements and conformity assessment for electromagnetic compatibility, transposing Directive 89/336/EEC (State Gazette, issue 78/11.09.2001; amendment, State Gazette, issue 13/11.02.2003, amendment, State Gazette, issue 65/27.07.2004). The Ordinance entered into force on 12.09.2002;
- Ordinance on the essential requirements and conformity assessment of equipment and protective systems intended for use in potentially explosive atmosphere, transposing Directive 94/9/EC (State Gazette, issue 81/21.09.2001; corrigendum, State Gazette, issue 90/19.10.2001; amendment, State Gazette, issue 13/11.02.2003). The Ordinance entered into force on 01.07.2003;
- Ordinance on the essential requirements and conformity assessment of simple pressure vessels, transposing Directive 87/404/EEC (State Gazette, issue 85/02.10.2001; amendment, State Gazette, issue 87/13.09.2002, in force from 03.08.2002). The Ordinance entered into force on 03.10.2002;
- Ordinance on the essential requirements and conformity assessment of machinery, transposing Directive 98/37/EC (State Gazette, issue 91/23.10.2001; amendment, State Gazette, issue 13/11.02.2003). The Ordinance entered into force on 27.04.2003;

- Ordinance on the essential requirements and conformity assessment of toys, transposing Directive 88/378/EEC (State Gazette, issue 62/13.07.2001; amendment, State Gazette, issue 13/11.02.2003; issue 104/28.11.2003). The Ordinance entered into force on 14.07.2002;
- Ordinance on the essential requirements and conformity assessment of lifts, transposing Directive 95/16/EC (State Gazette, issue 94/02.11.2001, as last amended State Gazette, issue 100/14.11.2003). The Ordinance entered into force on 14.11.2003;
- Ordinance on the essential requirements and conformity assessment of recreational craft, transposing Directive 94/25/EC (State Gazette, issue 96/09.11.2001; corrigendum, State Gazette, issue 11/31.01.2002, amendment, State Gazette, issue 13/11.02.2003). The Ordinance entered into force on 10.05.2003;
- Ordinance on the essential requirements and conformity assessment of explosives for civil uses, transposing Directive 93/15/EEC (State Gazette, issue 26/12.03.2002; amendment, State Gazette, issue 13/11.02.2003). The Ordinance entered into force on 31.12.2002;
- Ordinance on the essential requirements and conformity assessment of personal protective equipment, transposing Directive 89/686/EEC (State Gazette, issue 48/14.05.2002; amendment, State Gazette, issue 13/11.02.2003). The Ordinance entered into force on 16.11.2003;
- Ordinance on the essential requirements and conformity assessment of radio and telecommunications terminal equipment, transposing Directive 99/5/EC (State Gazette, issue 79/16.08.2002; amendment, State Gazette, issue 13/11.02.2003). The Ordinance entered into force on 12.09.2002;
- Ordinance on the essential requirements and conformity assessment of pressure equipment, transposing Directive 97/23/EC (State Gazette, issue 87/13.09.2002). The Ordinance will enter into force on 13.03.2004. As regards the part for designated bodies it is in force as from 17.09.2002;
- Ordinance on the essential requirements and conformity assessment of household electric refrigerators, freezers and combinations thereof, transposing Directive 96/57/EC (State Gazette, issue 84/03.09.2002). The Ordinance will enter into force on 05.03.2004;
- Ordinance on the essential requirements and conformity assessment of non-automatic weighing instruments, transposing Directive 90/384/EEC (State Gazette, issue 52/06.06.2003). The Ordinance will enter into force on 01.01.2005;
- Ordinance on the essential requirements and conformity assessment of machinery and equipment for use outdoors with respect to the noise emission in the environment, transposing Directive 2000/14/EC (State Gazette, issue 11/10.02.2004). The Ordinance will enter into force on 12.02.2005;
- Ordinance on the essential requirements and conformity assessment of hot-water boilers fired with liquid or gaseous fuels with respect to the efficiency requirements, transposing Directive 92/42/EEC (State Gazette, issue 56/29.06.2004). The Ordinance will enter into force on 29.06.2005, except from the provisions of chapter four, which enter into force on 29.12.2004;
- Ordinance on the essential requirements for cableway installations designed to carry persons and conformity assessment of their safety components and subsystems, transposing Directive 2000/9/EEC (State Gazette, issue 64/23.07.2004). The Ordinance will enter into force on 01.01.2006, except from the provisions of chapter four, which enter into force on 26.07.2004;
- Ordinance on the essential requirements and conformity assessment on energy efficiency requirements for ballast for fluorescent lighting (State Gazette, issue 77/03.09.2004). The Ordinance will enter into force on 01.02.2005 except from article 7, paragraph 2, point 2, which enters into force from 21.11.2005 Article 7, paragraph 2, point 1 in force till 20.11.2005.

ANNEX 8: Reference list of relevant strategic plans and studies

1. Middle-term Strategic Planning
2. Long-term Strategic Orientation Plan
3. Long-term programme for development of the national measurement standards of the Republic of Bulgaria
4. Strategy for enhancement of the quality policy through development of national policies on standardisation, metrology and accreditation, national conformity assessment and market surveillance of industrial products systems

ANNEX 9: LIST OF ACRONYMS AND ABBREVIATIONS

AP – Accession Partnership
ATEX – Directive concerning equipment and protective systems intended for use in potentially explosive atmospheres
BAS – Executive Agency “Bulgarian Accreditation Service”
BIPM – Bureau International des Poids et Mesures
CA – Conformity Assessment
CABs – Conformity Assessment Bodies
CEOC – European Confederation of Organisations for Testing, Inspection, Certification and Prevention of Accidents
CFCU - Central Finance and Contracts Unit
CIPM – Comité International des Poids et Mesures
CIVEX – Civil Explosives Directive
CMC – Calibration and Measurement Capabilities
DG "NCM" – Directorate General "National Center of Metrology"
DG "MMI" – Directorate General "Measures and Measuring Instruments"
DG "MSv" – Directorate General "Metrological Supervision"
DG "MS" – Directorate General "Market Surveillance"
DG "DCABs" – Directorate "Designation of Conformity Assessment Bodies"
DG "TI" – Directorate General "Metrological Supervision"
EA – European Co-operation for Accreditation
EA MLA – EA Multilateral Agreements
EC – European Commission
EC Delegation – Delegation of the European Commission to Bulgaria
EMAS - Eco-Management and Audit Scheme
EMC – Electromagnetic Compatibility
EU – European Union
EUROMET European collaboration I measurement standards
FQMS Fuel Quality Monitoring System
GLP – Good Laboratory Practice
HRE – High-risk equipment
I – Investment
IB – Institutional Building
IT – Information Technology
KMS – Knowledge Management System
LTP – Long-term program for development of the national measurement standards of the Republic of Bulgaria
LTRP – Law on Technical Requirements for Products
LVD – Low Voltage Directive
MID – Measuring Instruments Directive
MLAs – Multilateral Agreements in the field of Accreditation
MRA – Mutual recognition of national measurement standards and of calibration and measurement certificates issued by a national metrology institute
NA – New Approach
NPAA – National Programme for the Adoption of the Acquis
PECA – Protocols to the Europe Agreement on Conformity Assessment and Acceptance of Industrial Products

PED – Pressure Equipment Directive
PTs - Proficiency Testing Schemes
RMO – Regional Metrological Organisation
SASM - State Agency for Standardisation and Metrology
SAMTS – State Agency for Metrology and Technical Surveillance
TA – Technical Assistance
TAIEX office – Technical Assistance Information Exchange Office
ToRs – Terms of Reference
TS – Technical Specifications
WELMEC – Western European Legal Metrology Co-operation