

Background document 3

List of sectors suggested as candidates for inclusion in MID

N°	Authoring WELMEC-wg ¹ or DG	Place in MID	Subject	Details of Proposal in Background Document 3	Decisions notified under MRR ² (= trade barriers)
27	WG-11	MI-003	Reactive electrical energy meters* and precision electricity meters	2-9	0
28	WG-8	MI-009	New length measuring instruments	10-12	0
29	WG-8	New Annex	Equipment for the measurement of the speed of vehicles*	13-16	0
30	WG-8	New Annex	Alcohol breath analysers*	17-20	0
31	ENTR	New Annex	Electrical vehicle chargers*	21-25	0
32	MOVE	New Annex	Energy measurement system for use on board railway vehicles*	26-27	0
33	WG-2	New Annex	Automatic weighing of road vehicles*	28-32	0
34	WG-8	MI-010	Enlarge scope of exhaust gas analyser*	33	0
35	WG-10	New Annex	Measuring systems for compressed natural gas (CNG)	34	0
36	WG-10	New Annex	Level gauge on tank trucks and fixed storage tanks	35-42	0
37	WG-8	MI-001	Irrigation water meters*	43-46	0
38	WG-8	MI-001	Waste water meters*	43-46	0
39	WG-8	MI-001	Large scale water meters*	43-46	0
40	WG-8	New Annex	Alcoholmeters, alcohol hydrometers and associated thermometers*	47-50	0
41	WG-2	New Annex	Weights*	51-54	0
42	WG-8	New Annex	Tyre pressure meters*	55-58	0
43	WG-8	New Annex	EC standard mass per storage volume of grain*	59-61	0
44	WG-8	New Annex	Ships' tanks	62-63	0

*** For the 13 sectors marked with an asterix, Appraisal Summary Tables (AST) concerning the impact assessment of the sector are available in Background Document 4.**

¹ WELMEC, is the organisation of national authorities in legal metrology at which meetings some stakeholders participate. Suggestions for the text changes are from the following WELMEC working groups:
 WG-2 : weighing instruments (MID, Annex MI-006)
 WG-8 : horizontal MID issues and Annex MI-007, Annex MI-008, Annex MI-009 and Annex MI-010
 WG-10 : measuring systems fro continuous and dynamic measurement of other liquids than water (MID, Annex MI-005)
 WG-11 : utility meters (MID, Annex MI-001, Annex MI-002, Annex MI-003 and Annex MI-004)

² Regulation (EC) No 764/2008; OJ L 218 of 13.8.2008, pp. 21-29 – See Annex 2 above for details

Proposal

11.14 Include class 0,2 S meters respectively introduction of class D beside existing classes A, B, C

11.15 Include additional functions in respect to “power”

11.16 Include reactive energy

in respect to electricity meters

Aim

Extension of MI 003 in respect to precision meters, meters for reactive energy and measurement of power related figures.

Reasons:

The extension is reasonable because modern electronic type meters can provide all these additional functions beside the pure active energy measurement which are currently within the scope of MID. The extension of the scope will lead harmonized requirements for the additional functions in a single European market and harmonized assessment procedures with the notified bodies.

- Improved billing and consumer protection for commercial and light industry
- avoidance of national regulation/ approvals
- reduction of barriers on trade
- improvement of legal certainty for manufacturers and utilities.
- development of harmonized standards will be possible based on the amendments

Text proposal for ammendment of MI003

This version is based on MI 003 including the amendments for a registration device.

(see document concerning the proposals WG11_3-6_15_WG8_25_MI003)

Amendments are marked underlined for proposal 11.14,

Amendments are marked underlined and italic for proposal 11.15,

Amendments are marked double underlined for proposal 11.16

ANNEX MI-003

ACTIVE ELECTRICAL ENERGY METERS MEASURING EQUIPMENT FOR ELECTRICITY

This Annex deals with measuring equipment for electricity. The term summarizes

- Electrical energy meters
- Registration devices
- Instrument transformers (*see separate document*)

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex apply comprehensively for measuring equipment for electricity intended for residential, commercial and industrial use.

Note: ~~Electrical energy meters may be used in combination with external instrument transformers, depending upon the measurement technique applied. However, this Annex covers only electrical energy meters and registration devices but not instrument transformers.~~

DEFINITIONS

An electrical energy meter is a device which measures the active electrical energy consumed in a circuit and optionally electrical power (demand).

A registration device is a device fitted to an electrical energy meter (as an integral part or separate device) in order to register the amount of electrical energy measured by the energy meter in registers during periods depending on conditions.

A register is a component of a registration device which counts the electrical energy if activated and memorises the result.

An interval register belongs to a set of registers used for the registration of electrical energy during consecutive time intervals.

Note: To each measuring interval belongs a single interval value.

The demand represents the quotient of the electrical energy divided by the time in which the active electrical energy was registered.

Note: The demand can be considered as a mean value of electrical power.

- I = the electrical current flowing through the meter;
- I_n = the specified reference current for which the transformer operated meter has been designed;
- I_{st} = the lowest declared value of I at which the meter registers active electrical energy at unity power factor (polyphase meters with balanced load);
- I_{min} = the value of I above which the error lies within maximum permissible errors (MPEs) (polyphase meters with balanced load);
- I_{tr} = the value of I above which the error lies within the smallest MPE corresponding to the class index of the meter;
- I_{max} = the maximum value of I for which the error lies within the MPEs;
- U = the voltage of the electricity supplied to the meter;
- U_n = the specified reference voltage;
- f = the frequency of the voltage supplied to the meter;
- f_n = the specified reference frequency;

For active energy and active power:

PF_a = power factor = $\cos \varphi$ = the cosine of the phase difference φ between I and U .,
reactive energy and reactive power:

PF_r = power factor = $\sin \varphi$ = the sine of the phase difference φ between I and U .

PART I - SPECIFIC REQUIREMENTS – ~~ACTIVE~~ ELECTRICAL ENERGY METER

1. Accuracy

The manufacturer shall specify the class index of the meter. The class indices are defined as: Class A, B C **and D**. Figures which are given in the following tables 1, 2 and 3 apply to energy as well as to power (demand).

2. Rated operating conditions

The manufacturer shall specify the rated operating conditions of the meter; in particular:

The values of f_n , U_n , I_n , I_{st} , I_{min} , I_{tr} and I_{max} that apply to the meter. For the current values specified, the meter shall satisfy the conditions given in Table 1;

	<i>Class A</i>	<i>Class B</i>	<i>Class C</i>	<i>Class D</i>
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For direct-connected meters

I_{st}	$\leq 0.05 \cdot I_{tr}$	$\leq 0.04 \cdot I_{tr}$	$\leq 0.04 \cdot I_{tr}$	<u>not applicable</u>
I_{min}	$\leq 0.5 \cdot I_{tr}$	$\leq 0.5 \cdot I_{tr}$	$\leq 0.3 \cdot I_{tr}$	<u>not applicable</u>
I_{max}	$\geq 50 \cdot I_{tr}$	$\geq 50 \cdot I_{tr}$	$\geq 50 \cdot I_{tr}$	<u>not applicable</u>

For transformer-operated meters

I_{st}	$\leq 0.06 \cdot I_{tr}$	$\leq 0.04 \cdot I_{tr}$	$\leq 0.02 \cdot I_{tr}$	<u>$\leq 0.01 \cdot I_{tr}$</u>
I_{min}	$\leq 0.4 \cdot I_{tr}$	$\leq 0.2 \cdot I_{tr}^{*)}$	$\leq 0.2 \cdot I_{tr}$	<u>$\leq 0.1 \cdot I_{tr}$</u>
I_n	$= 20 \cdot I_{tr}$	$= 20 \cdot I_{tr}$	$= 20 \cdot I_{tr}$	<u>$= 20 \cdot I_{tr}$</u>
I_{max}	$\geq 1.2 \cdot I_n$	$\geq 1.2 \cdot I_n$	$\geq 1.2 \cdot I_n$	<u>$\geq 1.2 \cdot I_n$</u>

**) For Class B electromechanical meters $I_{min} \leq 0.4 \cdot I_{tr}$ shall apply.*

Table 1

The voltage, frequency and power factor ranges within which the meter shall satisfy the MPE requirements are specified in Table 2. These ranges shall recognise the typical characteristics of electricity supplied by public distribution systems.

The voltage and frequency ranges shall be at least:

$$0.9 \cdot U_n \leq U \leq 1.1 \cdot U_n$$

$$0.98 \cdot f_n \leq f \leq 1.02 \cdot f_n$$

power factor range at least from $\cos\phi$ **PF** = 0.5 inductive to $\cos\phi$ **PF** = 0.8 capacitive.

3. MPEs

The effects of the various measurands and influence quantities (a,b,c,...) are evaluated separately, all other measurands and influence quantities being kept relatively constant

at their reference values. The error of measurement, that shall not exceed the MPE stated in Table 2, is calculated as:

$$\text{Error of measurement} = \sqrt{a^2 + b^2 + c^2} \dots$$

When the meter is operating under varying-load current, the percentage errors shall not exceed the limits given in Table 2.

	Operating temperatures				Operating temperatures				Operating temperatures				Operating temperatures			
	+5°C ... +30°C				-10°C ... +5°C or +30°C ... +40°C				-25°C ... -10°C or +40°C ... +55°C				-40°C ... -25°C or +55°C ... +70°C			
Meter class	A	B	C	<u>D</u>	A	B	C	<u>D</u>	A	B	C	<u>D</u>	A	B	C	<u>D</u>

Single phase meter; polyphase meter if operating with balanced loads

$I_{\min} \leq I < I_{tr}$	3.5	2	1	<u>0.5</u>	5	2.5	1.3	<u>0.7</u>	7	3.5	1.7	<u>0.9</u>	9	4	2	<u>1</u>
$I_{tr} \leq I \leq I_{\max}$	3.5	2	0.7	<u>0.3</u>	4.5	2.5	1	<u>0.5</u>	7	3.5	1.3	<u>0.6</u>	9	4	1.5	<u>0.7</u>

Polyphase meter if operating with single phase load

$I_{tr} \leq I \leq I_{\max}$, see exception below	4	2.5	1	<u>0.5</u>	5	3	1.3	<u>0.6</u>	7	4	1.7	<u>0.8</u>	9	4.5	2	<u>1</u>
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Remark 1: For electromechanical polyphase meters the current range for single-phase load is limited to $5I_{tr} \leq I \leq I_{\max}$

Table 2 – MPEs in percent at rated operating conditions and defined load current levels and operating temperature. When a meter operates in different temperature ranges the relevant MPE values shall apply.

4. Permissible effect of disturbances

4.1. General

As electrical energy meters are directly connected to the mains supply and as mains current is also one of the measurands, a special electromagnetic environment is used for electricity meters.

The meter shall comply with the electromagnetic environment E2 and the additional requirements in 4.2. and 4.3.

The electromagnetic environment and permissible effects reflect the situation that there are disturbances of long duration which shall not affect the accuracy beyond the critical change values and transient disturbances, which may cause a temporary degradation or loss of function or performance but from which the meter shall recover and shall not affect the accuracy beyond the critical change values.

When there is a foreseeable high risk due to lightning or where overhead supply networks are predominant, the metrological characteristics of the meter shall be protected.

4.2. Effect of disturbances of long duration

Disturbance	Critical change values in percent for meters of class
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	A	B	C	<u>D</u>
Reversed phase sequence	1.5	1.5	0.3	<u>0.2</u>
Voltage unbalance (only applicable to polyphase meters)	4	2	1	<u>0.5</u>
Harmonic contents in the current circuits, *	1	0.8	0.5	<u>0.3</u>
DC and harmonics in the current circuit, *	6	3	1.5	<u>n.a.</u>
Fast transient bursts	6	4	2	<u>1</u>
Magnetic fields; HF (radiated RF) electromagnetic field; Conducted disturbances introduced by radio-frequency fields; and Oscillatory waves immunity <u>including the frequency range between 3kHz an 150 kHz</u>	3	2	1	<u>0.5</u>

- *) In the case of electromechanical electricity meters, no critical change values are defined for harmonic contents in the current circuits and for DC and harmonics in the current circuit

Table 3 – Critical change values for disturbances of long duration

4.3. Permissible effect of transient electromagnetic phenomena

4.3.1. The effect of an electromagnetic disturbance on an electrical energy meter shall be such that during and immediately after a disturbance

- any output intended for testing the accuracy of the meter does not produce pulses or signals corresponding to an energy of more than the critical change value

and in reasonable time after the disturbance the meter shall

- recover to operate within the MPE limits, and
- have all measurement functions safeguarded, and
- allow recovery of all measurement data present prior to the disturbance, and
- not indicate a change in the registered energy of more than the critical change value.

The critical change value in kWh is $m \cdot U_n \cdot I_{max} \cdot 10^{-6}$
(m being the number of measuring elements of the meter, U_n in Volts and I_{max} in Amps).

4.3.2. For overcurrent the critical change value is 1,5%.

5. Suitability

5.1. Below the rated operating voltage the positive error of the meter shall not exceed 10%.

- 5.2. The display of the total energy shall have a sufficient number of digits to ensure that when the meter is operated for 4 000 hours at full load ($I = I_{max}$, $U = U_n$ and $PF = 1$) the indication does not return to its initial value and shall not be able to be reset during use.
- 5.3. In the event of loss of electricity in the circuit, the amounts of electrical energy measured shall remain available for reading during a period of at least 4 months.
- 5.4. If a meter is designed to determine the electrical energy for both directions (import/export), the meter shall be fitted with
- two registers or displays respectively (one for each direction),
 - a display of the total energy adding the energy of both directions under consideration of the sign or
 - a display of the total energy adding the energy of both directions as absolute sum.
- The name plate shall include information about the applied solution

The meter shall fulfil the requirements of this annex for both directions of energy flow.

5.5. Running with no load

When the voltage is applied with no current flowing in the current circuit (current circuit shall be open circuit), the meter shall not register energy at any voltage between $0.8 \cdot U_n$ and $1.1 \cdot U_n$.

5.6. Starting

The meter shall start and continue to register at U_n , $PF = 1$ (polyphase meter with balanced loads) and a current which is equal to I_{st} .

6. Units

The [active](#) electrical energy measured shall be displayed in kilowatt-hours or in megawatt-hours.

[The active power measured shall be displayed in kilowatt or in megawatt.](#)

[The reactive energy measured shall be displayed in kilovar-hours or in megavar-hours.](#)

[The reactive power measured shall be displayed in kilovar or in megavar.](#)

PART II — SPECIFIC REQUIREMENTS — REGISTRATION DEVICES

A registration device constitutes a sub-assembly according to Article 4, definition (b), second indent.

For a registration device, the requirements for the meter according to Part I shall apply, if applicable. In addition, the following requirements shall apply.

7. Rated operated conditions:

Taking into account the internal resolution of the meter and the properties of the used interface, the manufacturer shall specify the rated operating conditions, in particular the minimum length of intervals, in order to avoid inadmissible errors for the intended measurement task.

8. MPE
8.1 Clock

1 s /day

8.2 Demand

Depending on the class of electricity meter used the values given in Table 2.

8.3 MPE of quantities used for threshold indication (see 9.2)

Depending on the class of electricity meter used

the values given in Table 2	for I
2 times the values given in Table 2	for <i>PF</i>
the values given in Table 2	for demand
the values given in Table 2	for frequency

For influences raised by the interface between the electrical energy meter and registration device an additional increase of one third of the MPE is permitted

9. Suitability

9.1. The accumulation in the active register shall have the same progress as the total electrical energy measured by the meter.

9.2. The registration device shall register energy in different registers activated by

- signals of an internal time switch,
- signals of an internal quantity dependent threshold indication and/ or
- remote control signals at peripheral interface terminals.

9.3. A registration device shall be designed to provide

- one or several non-resettable registers counting the electrical energy after activation, starting with the value registered at the last deactivation and/or
- a set of interval registers.

9.4. A registration device shall be able to provide the time and date at which an interval value has been registered and the related error status.

9.5. An interval value shall be marked as invalid if the clock was set by more than 30s.

9.6. The number of interval registers shall be sufficient to cover a sufficient time, if a new interval value is memorized the oldest value shall be deleted

9.7. Demands shall be determined on the basis of discrete interval values.

Maximum demands shall be determined for separate periods as a day; a week; a month or a year and stored in particular registers.

9.8. In addition to the interval values a registration device can register average values of quantities, if measured by the electric energy meter.

10. Indication

The registration device shall provide on a legally controlled display

- the information which register is currently activated,
- values of registers and/ or interval registers,
- the unit of values,
- identifiers which are assigned to the displayed values

and if applicable

- information identifying the direction of energy flow belonging to import/export value,
- the time,
- the time of use program (schedule) for registers,
- the threshold values of the quantities used for activating registers,
- parameters and information important for the correct working of the registration device and the inability of changing legally parameters in use.

The description of identifiers shall be on the nameplate or in the documentation accompanying the instrument.

11. The registration device itself or an appropriate associated software for use by the consumer shall allow to verify the correct assignment of single interval values or sums of interval values to rates (like the maximum consumption or the sum of consumption during daily periods), if such processed values serves as basis for the price to pay.

PART III — PUTTING INTO USE AND CONFORMITY ASSESSMENT

~~7.12~~ **Putting into use**

~~(a) Where a Member State imposes measurement of residential use, it shall allow such measurement to be performed by means of any Class A meter. For specified purposes the Member State is authorised to require any Class B meter.~~

~~(b) Where a Member State imposes measurement of commercial and/or light industrial use, it shall allow such measurement to be performed by any Class B meter. For specified purposes the Member State is authorised to require any Class C meter.~~

~~(c)~~

The Member State shall ensure that the current range and accuracy class be determined by the distributor or the person legally designated for installing the meter, so that the meter is appropriate for the accurate measurement of consumption that is foreseen or foreseeable.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 9 that the manufacturer can choose between are:

B + F or B + D or H1.

Proposal :

Extend the MID to the following measuring instruments : length measuring instruments not yet covered by MID (instrument moving instead of product moving)

Aim :

- Keep the principle of harmonized requirement in a field covered up to now by national regulation
- Fix appropriate level of performance for consumer protection and enforcement in the format of essential requirements independent of technologies and provide with modern evaluation procedures of evaluation of conformity

Reasons for the development

Include for consistency of legislation length measuring instruments not yet covered by MID but very similar : instrument moving instead of product moving and add electronic length measuring instrument (especially used in real estate to calculate the price of a piece of land , house or flat; or for expertise) and road measuring wheels which are under national regulation.

For electronic length measuring instrument: to be consistent with the existing annex

Less cost for manufacturers to obtain approvals and free circulation.

Less trouble for member state as the requirements will be harmonized

Text of the amendment

Two modifications of MID are needed :

- amendment of article 1 to include these instruments in the list of instruments covered by MID
- modification of anew MI 009 (see basis for a proposal below)

Modified text of annex ANNEX MI-009

DIMENSIONAL MEASURING INSTRUMENTS

The relevant essential requirements of Annex I, the specific requirements of this Annex and the conformity assessment

Procedures listed in this Annex, apply to dimensional measuring instruments of the types defined below.

DEFINITIONS

Length measuring instrument

instrument (other than length measures) which determines the length of a line, wire, cable, tape, piece of cloth, strip, sheet or any other developable piece and manual instruments for measuring the length of tracks or roads (road measuring wheels)

Area Measuring Instruments

An area measuring instrument serves for the determination of the area of irregular shaped objects, e.g. for leather.

Multi-dimensional Measuring Instruments

A multi-dimensional measuring instrument serves for the determination of the edge length (length, height, width) of the smallest enclosing rectangular parallelepiped of a product.

CHAPTER I — Equirements common to all dimensional measuring instruments

Electromagnetic immunity

1. The effect of an electromagnetic disturbance on a dimensional measuring instrument shall be such that:

- the change in measurement result is no greater than the critical change value as defined in paragraph 2.3; or
- it is impossible to perform any measurement; or

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— there are momentary variations in the measurement result that cannot be interpreted, memorised or transmitted as a measuring result; or
— there are variations in the measurement result severe enough to be noticed by all those interested in the measurement result.

2. The critical change value is equal to one scale interval.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 9 that the manufacturer can choose between are:

For mechanical or electromechanical instruments:

F1 or E1 or D1 or B + F or B + E or B + D or H or H1 or G.

For electronic instruments or instruments containing software:

B + F or B + D or H1 or G.

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CHAPTER II — Length measuring instruments

Two types of instruments :

— continuous measuring instruments, the indications of which are proportional to the rotation of a wheel or a roller.

— discontinuous measuring instruments, the indications of which are multiples of a given reference length.

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Characteristics of the product to be measured

1. Textiles are characterised by the characteristic factor K. This factor takes the stretchability and force per unit area of the product measured into account and is defined by the following formula:

$K = \epsilon \cdot (GA + 2,2 \text{ N/m}^2)$, where ϵ is the relative elongation of a cloth specimen 1 m wide at a tensile force of 10 N, GA is the weight force per unit area of a cloth specimen in N/m².

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Operating conditions

2.1. Range

Dimensions and K-factor, where applicable, within the range specified by the manufacturer for the instrument. The

ranges of K-factor are given in Table 1:

Table 1

Group Range of K Product

I $0 < K < 2 \times 10^{-2} \text{ N/m}^2$ low stretchability

II $2 \times 10^{-2} \text{ N/m}^2 < K < 8 \times 10^{-2} \text{ N/m}^2$ medium stretchability

III $8 \times 10^{-2} \text{ N/m}^2 < K < 24 \times 10^{-2} \text{ N/m}^2$ high stretchability

IV $24 \times 10^{-2} \text{ N/m}^2 < K$ very high stretchability

2.2. Where the measured object is not transported by the measuring instrument, its speed must be within the range specified by the manufacturer for the instrument.

2.3. If the measurement result depends on the thickness, the surface condition and the kind of delivery (e.g. from a big roll or from a pile), corresponding limitations are specified by the manufacturer.

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Alternative Suggestion/draft for including “Distance measuring instruments not based on material measures” into the MID

Annex MI-009

Definitions

Add behind “Length measuring instruments” the definition:

“Distance measuring instruments not based on material measures

A distance measuring instrument serves to measure and indicate the distance between a specified mark on the instrument and a surface perpendicular aligned to the measuring direction.”

Chapter I of Annex MI-009 is including the allowed conformity assessment procedures applicable for "Distance measuring instruments" without changes

Chapter II should become: "Length- and distance measuring instruments"

Chapter II should be divided into two parts:

Part I - Length measuring instruments This part is the earlier Chapter II.

The new part II to be included is:

Part II - Distance measuring instruments

1. General conditions

1.1 The target of measurement must be clearly marked by the measuring procedure.

1.2 The instrument shall verify the necessary conditions for a correct measurement. There shall be no indication for distances outside the measuring range declared by the manufacturer.

1.3 If parameters(e.g. the scale or additive constants) can be altered, the values for these parameters shall be displayed with every measurement and described in the documentation.

2. Rated Operating conditions

2.1 The climatic environment for the temperature shall be at least cover the range from -10 °C to 40 °C.

2.2 The manufacturer shall specify whether the instrument is designed for condensing or non condensing humidity and the intended location for the instrument, open or closed.

2.3 The mechanical environment is class M2 or class M3 and shall be specified by the manufacturer.

2.4 The electromagnetic environment is at least E2.

3. Maximum permissible errors

Maximum permissible errors shall be as follows:

For Class I: 0.005 mm/m of the measured length, but not less than 1 mm;

For Class II: 0.03 mm/m of the measured length, but not less than 2 mm;

For Class III: 0.1 mm/m of the measured length, but not less than 2 mm.

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4. Critical change value

The critical change value is twice the MPE.

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5. Suitability:

1. Zero setting mechanisms or self calibration mechanisms shall be indicated by the instrument.

Necessary devices for these purposes are part of the instrument. The correct use shall be controlled by the instrument.

2. During the measurement there shall be a clear allocation of the mark on the instrument and the target of measurement, recognisable by the user.

Draft text proposal "Report on MID", WG 8 item 8-07-1 for speed meters

Proposal :

Extend the MID to the following measuring instruments : speed meters which are instruments used to measure the speed of vehicles for enforcement of road safety regulation (maximum speed limit) Technologies used are mainly radar and laser.

Aim :

In a period where road safety is a major issue for Europe, the aim is to define appropriate level of performance for citizens protection and enforcement in the format of essential requirements independent of technologies and provide with modern evaluation procedures of evaluation of conformity

Reasons for the development

In the recent years road safety has become an important issue at national level in many member states and the development of a European policy of road safety has started.

Thousands of speed meters are in use for the same purpose and in each member state a national approval is required with non fully harmonised requirements. In some state legal metrology requirement are fixed by the ministry in charge of legal metrology and in some others by the ministry in charge of transport or safety in general. In a few states because of the use for evidential purposes there could be requirements developed on the basis of national judiciary decisions concerning the necessary procedures and the precision of measurements.

The reason for the development of this proposal is mainly to fix appropriate and harmonised metrological and technical requirements.

The expected benefit for citizens is that they will be equally protected while they travel through Europe.

The expected benefit for manufacturers is EC evaluation valid in all MS so less cost to obtain approval and free circulation.

There will also be less trouble for member states authorities as the requirements will be harmonized

In this field there is an OIML recommendation OIML R 91 Edition 1990 (E) Radar equipment for the measurement of the speed of vehicles (limited in technology and too old document to be used for modern instruments). The issue of speed meters is under planned revision at OIML and the future recommendation could serve as a normative document bringing presumption of conformity to the essential requirements.

Draft for the amendment

Two modifications of MID are needed :

- amendment of article 1 to include these instruments in the list of instruments covered by MID
- addition of a supplementary specific annex (see basis for a proposal below)

ANNEX MI-0XX
Speed meters

The relevant essential requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex, apply to speedmeters.

DEFINITIONS**Speed meter**

Draft text proposal "Report on MID", WG 8 item 8-07-1 for speed meters

An instrument designed to measure the speed of vehicles from a fixed place of installation or from a vehicle in movement where it is installed, and which may be connected to complementary devices intended to print or record the measuring results

Device for taking pictures

A device designed to create on demand from the speed meter one or more pictures representing unambiguously the vehicle whose speed is measured when it exceeds a predetermined level.

REQUIREMENTS

1. Rated operating conditions

The mechanical environment class that applies to speed meters designed to be used onboard vehicles is M3

The electromagnetic environment class that applied to speed meters designed to be used onboard vehicles is E3.

Formatted

The manufacturer shall specify the rated operating conditions for the instrument, in particular:

- a minimum temperature range of 80 °C for the climatic environment;
- the limits of the power supply for which the instrument has been designed.

Instruments designed to be used along the roads without being installed in a waterproof cabinet shall continue to function correctly after an appropriate test representing conditions of aspersion with water.

The manufacturer shall specify if the instrument is designed to measure an instantaneous speed or a mean speed .

2. Allowable Errors

The maximum permissible errors are the following :

- for instruments measuring from a fixed place of installation
 - o plus or minus 3 km/h for a speed smaller than 100 km/h
 - o plus or minus 3 % for a speed equal or greater than 100 km/h
- for instruments measuring from a vehicle in movement
 - o plus or minus 7 km/h for a speed smaller than 100 km/h
 - o plus or minus 7 % for a speed equal or greater than 100 km/h

3. Maximum permissible effect of disturbances

The effect of an electromagnetic disturbance on a speed meter shall be one of the following;

- the change in the measurement result is not greater than the MPE
- or the presentation and transfer of the measurement result shall not be possible.

4. Suitability

The instrument shall be designed so that no result is delivered when an event in the flow of circulation is likely to make the measure non significant.

If the instrument is designed to measure the speed of vehicle approaching the instrument or moving away, it shall indicate without ambiguity the sense of displacement for each measured speed. When a

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device for taking pictures is connected to the speed meter, this information shall also be added to the measured values indicated on the picture.

If the instrument is designed to be used in a moving vehicle the speed of this vehicle shall be measured at the same time as the one of the controlled vehicle.

The indicating device shall allow safe and non ambiguous reading of the measured speed.

Speed meters shall indicate the speed of the controlled vehicle. In addition for instruments installed in a moving vehicle they shall indicate the speed of the vehicle where they are installed .
Conditions of correct installation shall be defined by the manufacturer and the instrument shall be equipped with a permanent device allowing the adjustment and the control of its correct installation. The design of the speed meter shall be such that no measure is possible when the correct installation is not ensured.

For instruments designed to measure a mean speed over a fixed distance the manufacturer shall define the correct installation of the cells in order to meet the maximum permissible errors.

A speed meter shall be equipped with a device for selecting the speed above a predetermined value.

A speed meter shall be equipped with a control device allowing the simulation of one or more speeds representing usual values and testing the functionalities of the instrument.

A speed result equal or greater than the predetermined value shall remain displayed until an action by the user. Unless there is an automatic recording of the value a minimum delay fixed by the manufacturer between two measures is required. Speed meters with device for taking pictures may be equipped with a zero device.

If the instrument is connected to a printing device or a picture device they shall repeat exactly the value displayed by the instrument

If the instrument is connected to a picture device the coherence between the controlled vehicle and the one on the picture shall be ensured at any time.

If the instrument is intended to be used with further processing of data it shall be able to record the place of use, the date, the direction of circulation in addition to the speed measured and the speed limit. These indications shall all be repeated on pictures or printouts.

5. Protection against corruption

Evidence of an intervention on the software that is critical for metrological characteristics shall be available for a period of 2 years.

6. Information to be borne by and to accompany the instrument

If an instrument is designed to measure only up to a certain distance, it shall bear the inscription of this value.

7. Indication of result

Indication of the result shall be by mean of a display even if the speed meter is connected to a printer or a picture device

The maximum value of the scale interval is 1 km/h. However a complementary indication with a scale division of 0,1 km/h shall be available for evaluation procedures including verification in service.

The values of distance travelled and time elapsed, when displayed or printed in accordance with this Directive, shall use the following units:

Measured speed :

- in the United Kingdom and Ireland: until the date which will be fixed by these Member States according to Article (1)(b) of Directive 80/181/EEC: kilometres or miles per hour;
- in all other Member States: kilometres per hour.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 9 that the manufacturer can choose between are:

B + F or B + D or G.

Proposal :

Extend the MID to the following measuring instruments : evidential breath analyzers which are instruments used to measure the concentration of alcohol in expired air for enforcement of road safety regulation as an alternative to the blood analysis as legally possible in some countries (for the purpose of establishing compliance with national policy and fighting against alcohol abuse and driving under the effect of alcohol)

Aim :

- In a period where road safety is a major issue for Europe, the aim is to define appropriate and harmonised level of performance for citizens protection and enforcement in the format of essential requirements independent of technologies and provide with modern evaluation procedures of evaluation of conformity

Reasons for the development

In the recent years road safety has become an important issue at national level in member state and the development of a European policy of road safety has started.

Thousands of these instruments are in use for the same purpose and in member states where there are used for evidence a national approval is required on the basis of non harmonised requirements. In some state legal metrology the requirements are fixed by the ministry in charge of legal metrology and in some others by the ministry in charge of transport or safety in general. In a few states because of the use for evidential purposes there could be requirements developed on the basis of national judiciary decisions concerning the necessary procedures and the precision of measurements.

The reason for the development of this proposal is mainly to fix appropriate and harmonised metrological and technical requirements.

The expected benefit for citizens is that they will be equally protected while they travel through Europe.

The expected benefit for manufacturers is EC evaluation valid in all MS so less cost to obtain approval and free circulation.

There will also be less trouble for member states authorities as the requirements will be harmonized

Existence of an OIML recommendation

In this field there is a draft revision of an OIML recommendation R 126 Evidential breath analysers.

The future recommendation could serve as a normative document bringing presumption of conformity to the essential requirements.

Draft for the amendment

Two modifications of MID are needed :

- amendment of article 1 to include these instruments in the list of instruments covered by MID
- addition of a supplementary specific annex (see basis for a proposal below)

ANNEX MI-010

Breath Alcohol Analyzers

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex apply to breath alcohol analyzers defined below.

Definitions

Instrument that measures and display the breath alcohol mass concentration of exhaled human breath within specified limits.

SPECIFIC REQUIREMENTS

Rated operating conditions

1. The rated values of the operating conditions shall be specified by the manufacturer as follows:
 - 1.1 For the measurand:
 - The measuring range, subject to the following constraint:
 - The measuring range shall extend from 0 mg/l to at least 2.0 mg/l.
 - 1.2 For the condition of the exhaled air:
 - Exhaled volume equal or greater than 1,2 l ;
 - Duration of exhalation equal or greater than 5 s.
 - 1.3 For the climatic and mechanical influence quantities:
 - For a stationary instrument, the environment class that applies is class E; +5 °C to + 30 °C
 - For a portable or mobile instrument, the environment class that applies is class I. – 10 °C to + 40 °C
 - 1.4 For the electrical supply influence quantities:
 - In case of AC voltage supply: The voltage range, subject to the following constraints:
 - The minimum value of the voltage range shall be \leq nominal value - 15%;
 - The maximum value of the voltage range shall be \geq nominal value + 10 %.
 - In case of DC voltage supply:
 - The limits of the DC voltage supply specified by the manufacturer
 - 1.5 For the ambient pressure:
 - The minimum and maximum values of the ambient pressure, subject to the following restrictions:
 - Min \leq 860 hPa
 - Max \geq 1060 hPa

Maximum permissible error

2. The maximum error values permitted under rated operating conditions according to requirement 3.1 of Annex I are as shown in Table 1. Percentage values are percent of the true value.

True value (mg/l)	Maximum permitted error
≤ 2.0	± 0.02 mg/l or ± 5% of the reference value of mass concentration, whichever the greater
> 2	± 50 % of the reference value - 0.9 mg/l for all mass concentration greater than 2 mg/l

Table 1

3. The verification scale interval = 0.001 mg/l. This interval is used for the metrological test. The scale interval in the measuring mode is at least 0,01 mg/l. A measured value with 3 digits has to be rounded down to two digits

PERMISSIBLE EFFECT OF DISTURBANCES

Electromagnetic immunity

4. The manufacturer shall specify the electromagnetic environment E1 or E2 in which the measuring instrument is intended to be used in accordance with requirement 1.3.2 of Annex I.
5. The effect of an electromagnetic disturbance shall be such that:
 - (a) the change in measurement result is no greater than the maximum permissible error of the measurement result, or
 - (b) the measurement result presented cannot be interpreted as a valid result in that:
 - the carrying out of any measurement is impossible, or
 - there are momentary variations in the measurement result that cannot be interpreted, memorised or transmitted as a measurement result, or
 - there are variations in the measurement result severe enough to be noticed by all those interested in the measurement result.

Durability

6. An breath alcohol analyzer shall be designed so that it can respect 1.5 times the maximum permissible error without adjustment during a period of 2 years after its first putting into use.

Other requirements

7. An breath alcohol analyzer shall indicate the measurement result in mg/l.
8. The experimental standard deviation for all mass concentration shall be less than or equal to one third of the MPE
9. An breath alcohol analyzer shall only carry out a measurement if the sample taken is recognised as being representative of the alveolar air. It shall in particular inhibit a measurement if the exhalation was discontinuous, or if the exhaled air contained breath from the upper respiratory tracts.
10. Before each measurement operation, the breath alcohol analyzer shall verify automatically that it is capable of carrying out a correct measurement, and shall in particular carry out an automatic adjustment. In case this automatic verification shows that not all conditions for correct operation are fulfilled, any measurement shall be automatically inhibited.
11. It shall be possible for the user to pre-set a numerical value in the breath alcohol analyzer. After each measurement with a result greater than this pre-set value, the analyzer shall automatically, and before presenting the measurement result, repeat the verification referred

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to in requirement 10. In case this second verification shows that not all conditions for correct operation are fulfilled, no measurement result shall be presented.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 7 are:

B+F, H1, G.

ELECTRICAL VEHICLE CHARGERS

MOTIVATION

There may be reasons to adapt the MID to include (public) chargers for electrical vehicles.

Such installations would function like petrol pump for current vehicles, not deliver electricity.

Rather than regulation, it may be opportune to issue standards mandates possibly in conjunction with other measures.

Recently the Commission has issued mandate 486 to the European standards organisations, see the following page.



Brussels, June 2010
M/468 EN

STANDARDISATION MANDATE TO CEN, CENELEC AND ETSI CONCERNING THE CHARGING OF ELECTRIC VEHICLES

1. PURPOSE-SCOPE

To develop or review existing standards in order to:

- Ensure interoperability and connectivity between the electricity supply point and the charger of electric vehicles, including the charger of their removable batteries, so that this charger can be connected and be interoperable in all EU States¹.
- Ensure interoperability and connectivity between the charger of electric vehicle- if the charger is not on board- and the electric vehicle and its removable battery, so that a charger can be connected, can be interoperable and re-charge all types of electric vehicles and their batteries.
- Appropriately consider any smart-charging issue with respect to the charging of electric vehicles.
- Appropriately consider safety risks and electromagnetic compatibility of the charger of electric vehicles in the field of Directive 2006/95/EC (LVD) and Directive 2004/108/EC (EMC)².

For the purposes of this Mandate:

‘electric vehicle’ includes the electric vehicle (EV) and the plug-in hybrid electric vehicle (PHEV), as well as the electric scooters and electric bicycles; for the issues of interoperability, the priority should be for the four-wheel electric vehicles.

¹ Considering that domestic sockets are not harmonised in the EU, existing adaptors should be used for domestic charging.

² The Guides or Decisions of the relevant WPs clarify the legal framework applicable to electric vehicle chargers.

2. RATIONALE

Given the importance of reducing carbon emissions from road transport and the long run price of oil and security of oil supply, there is increased interest in the potential of electric vehicles. More and more companies are developing electric vehicles.

With respect to the applicable EU legal framework for electric vehicles, working documents were prepared by the European Commission which were discussed and approved by the relevant WPs (the LVD WP and TCMV – Technical Committee Motor Vehicles). These Working Documents define the legal framework applicable to electric vehicles by specifying that Directive 2007/46/EC (the Framework Directive on Motor Vehicles) is applicable to electric vehicles (including the electric power train of vehicles) when placed on the EU market while chargers of the batteries of electric vehicles shall be always considered as electrical equipment falling within the scope of application of the LVD. In the near future the legal framework applicable to on board chargers will be discussed and clarified in the relevant WPs.

Recently, meetings took place between the European Commission, industry, CEN and CENELEC to assess the need for common EU standards for the charger of electrical vehicles as regards safety, interoperability and performance. The conclusion that can be drawn from these brainstorming meetings is that various solutions and alternatives are discussed at international level (IEC) both for safety and interoperability. Although for safety, IEC is heading towards one single solution, for interoperability there is a danger that IEC will not reach a single and harmonised approach. If this happens a fragmentation of the market would be inevitable. For example, at least three different models of plugs are currently under consideration. Also various propositions with respect to the power levels for charging are considered and lastly three different modes for the charging are proposed.

In order to promote the development of the internal market for electrical vehicles and to discourage the imposition of market barriers, it is imperative that plugs, chargers and electric vehicles be inter-operable. This will allow users to use the same charger for a range of electric vehicles. It would also allow consumers to charge their vehicles easily if they are driving across borders or when travelling within their own Member State. It would also facilitate charging at public access points and would facilitate the roll-out of charging infrastructures. Finally it would dissuade member states from taking action individually because this might lead to overlapping solutions.

For the European Commission, it is important that a joint EU solution on interoperability is ensured in order to avoid a fragmentation of the market for these products from the beginning (for example different plugs for the electric interface of these vehicles). A number of Member States have started, individually, action to get electrical vehicles on the market.

The target is to adopt a European harmonised approach for the interoperability of the charger of electric vehicles with all types of electric vehicles and the interoperability of the charger of electric vehicles (including their removable batteries) with the electricity supply point. This harmonisation would allow users to use the same charger for a range of electric vehicles and it would ensure that chargers of electric vehicles can be connected and operated in all EU States.

As part of the harmonisation, any other related issue, with respect to the charging of electric vehicles which can ensure safety, electromagnetic compatibility and better use,

should be considered. Especially for better use, smart-charging issues should be addressed so that users of a charger are in the position to measure the amount of electrical energy thereby making it easier for them to save energy and money. Smart-charging can take advantage of “off-peak” hours of low energy demand late at night and so avoid peak loads. In some areas, the electric rates are higher during certain times of day to encourage reduction in use and so smart-charging can help the user to know these times. In summary, smart-charging would be the mode for determining the best and cheapest time to recharge electric vehicles.

This harmonisation can be addressed by European standard(s).

3. DESCRIPTION OF THE WORK TO BE MANDATED

CEN, CENELEC and ETSI are requested to develop European standards or to review existing standards in order to:

- a) Ensure interoperability and connectivity between the electricity supply point and the charger of electric vehicles, including the charger of their removable batteries, so that this charger can be connected and be interoperable in all EU States³.
- b) Ensure interoperability and connectivity between the charger of electric vehicle- if the charger is not on board- and the electric vehicle and its removable battery, so that a charger can be connected, can be interoperable and re-charge all types of electric vehicles and their batteries.
- c) Appropriately consider any smart-charging issue with respect to the charging of electric vehicles.
- d) Appropriately consider safety risks and electromagnetic compatibility of the charger of electric vehicles in the field of Directive 2006/95/EC (LVD) and Directive 2004/108/EC (EMC)⁴.

4. EXECUTION OF THE MANDATE⁵

2 months after acceptance	Time schedule for the execution of the mandate
8 months after acceptance	Presentation of a full work programme of standard(s) to be developed
18 months after acceptance	Adoption of standard(s).

³ Considering that domestic sockets are not harmonised in the EU, existing adaptors should be used for domestic charging.

⁴ The Guides or Decisions of the relevant WPs clarify the legal framework applicable to electric vehicle chargers

⁵ For smart-charging, the responsible standardisation organisations may discuss with the Commission the possibility to extend these periods.

Where appropriate, alignment with equivalent activities planned and already undertaken in IEC and ISO should be ensured.

Due account should be taken of initiatives taken in other economies so as to ensure a global market for equipment.

Acceptance of this mandate by the responsible standardisation organisations starts the standstill period referred to in Article 7 of Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998

European standards (EN) shall be adopted by the target dates specified. On these dates the three linguistic versions (English, French and German) shall be available. For the purposes of paragraph 3(d), the correct titles in all the other European Union languages shall be available.

5. ORGANISATIONS TO BE INVOLVED

As appropriate, CEN, CENELEC and ETSI will invite the representative organisations of consumers' interests (ANEC), environmental protection (ECOS), workers (ETUI-REHS), small and medium-size enterprises (NORMAPME), electrical industry (ORGALIME), automotive manufacturers and suppliers and market surveillance authorities to take part in the standardisation work.

RAIL ON-BOARD ENERGY MEASURING INSTRUMENTS

Motivation:

The railway on-board energy measuring system (EMS) function is the measurement of electric energy taken from or returned (during regenerative braking) to the contact line (CL) by the traction unit, supplied from the external electric traction system. The knowledge of the energy consumption of rail vehicles is necessary both for billing purposes and to increase energy efficiency.

The EMS is within the scope of two directives:

- MID, it aims to facilitate the trade of measuring instruments across the EU and to provide common rules for the use of these instruments.
- Rail Interoperability directive - The development of the railway market, supported by the separation of the railway infrastructure from independent railway undertakings operating in different Member States creates the necessity for transparent and harmonised technical specifications for interoperability (TSI) drafted by the European Railway Agency (ERA) in accordance with Directive 2008/57/EC.

One of the aspects to be harmonised is the on-board energy measuring system. This is to allow the use of one on-board meter when train runs over networks managed by different operators. And to ensure that this on-board meter when authorised for use in a EU Member State is then accepted in all other EU Member States.

When this system is used for billing purposes, it should be checked by a metrological recognised entity in order to guarantee its accuracy. The requirements relating to the accuracy are given in the locomotive and passenger carriages TSI; however, the bodies which are notified under Directive 2008/57/EC in order to perform the conformity assessment are not entitled (under that Directive) to perform the legal metrological control. According to the current version of the MID, the assessment of accuracy has to be done by metrological institutions but according to national regulations. This situation creates a serious problem to interoperability and, consequently, to opening of the railway market.

The issue is becoming even more crucial when data delivered by EMS has to be used and accepted for billing purposes outside the railway sector, in application of the Third Party Access rule (the right to choose an independent energy supplier).

The approach which is proposed in order to solve the problem and to avoid any overlap between MID and Directive 2008/57/EC is to include the EMS on-board trains in the scope of the MID in such a way that generic essential requirements apply, but to keep those meters under Directive 2008/57/EC for the application of specific requirements and conformity assessment procedures (set out in TSI). In this approach, compliance with the essential requirements of MID shall be checked under the conformity assessment procedure of Directive 2008/57/EC. This means that the EMS would be checked only by one Notified Body under Directive 2008/57/EC, this one shall call upon another NoBo notified under MID to carry on the verifications of MID, unless the NoBo is notified for both MID and Directive 2008/57/EC. This approach will allow reduction of costs for the applicant while meeting the requirements of both directives.

As a summary, the inclusion of EMS in the revised Measuring Instrument Directive will help solving the abovementioned problems and give following advantages:

- Recognition of the measurement instrument across different market sectors (including railway and electricity),
- Mutual recognition of legal metrological controls done by Member states
- Access in all Member States to EU recognised, designated bodies to perform legal metrological controls,
- Clarification of the condition to receive EU recognised metrological marking

Proposal: Add the following two notes to Annex MI-003.

Note 1:

Energy measuring systems (EMS) for use on-board railway vehicles are in the scope of Directive 2008/57/EC as part of the Energy subsystem specified in Annex II of that Directive. As such, they are submitted to the essential requirements and the conformity assessments procedures of that Directive.

As far as this Directive is concerned, the relevant requirements of Annex I apply to EMS except those including temperature limits, environmental and EMC requirements which are specified in the TSI under Directive 2008/57/EC. In addition, the classification E1, E2, E3 and M1, M2, M3 of Annex I of this Directive does not apply to EMS.

The specific requirements and procedures listed in this Annex shall not apply to EMS. The specific requirements and conformity assessment procedures for EMS are set out in the TSI under Directive 2008/57/EC.

For conformity assessment procedures derogation to Article 9 of this Directive is granted to EMS. The compliance with the essential requirements set out in Annex I of this Directive, considering the exceptions mentioned in this note, shall be assessed in the context of the conformity assessment procedures set out by Directive 2008/57/EC.

Note 2:

Electrical energy meters may be used in combination with external instrument transformers, depending upon the measurement technique applied.

Item 2.2

Version 4.1

Amendment

Include OIML R134 (automatic weighing of road vehicles) in the MID.

Chapter of MID

New chapter in MI-006.

Text of the amendments

See pages 2 to 5

Reason of the amendment

At the time of drafting of the MID the recommendation OIML R134 was not ready and these instruments fell in many countries under national regulation. The actual version is ready to be integrated in the MID, whereas this category of instruments has two ways of use:

- a) The weighing of the total weight of the vehicle for commercial applications, for example tolling.
- b) The weighing of the individual axles of the vehicle could be used to calculate a toll or tax on passed maximum axle weights.

It concerns instruments which are installed in a controlled weighing area where the vehicle speed is controlled.

Total amount of pages, including this cover

5 pages

Amendment to MID Annex MI-006

(add as last definition on first page of MI-006:)

Automatic instruments for weighing road vehicles in motion with optional measuring of axle loads

Automatic weighing instrument, having a load receptor and aprons, that determines the mass and optionally the axle loads and, if applicable, the axle-group loads of road vehicles.

CHAPTER VII — Automatic instruments for weighing road vehicles in motion with optional measuring of axle loads

DEFINITIONS

Axle load

Fraction of the vehicle mass that is supported via the axle on the load receptor at the time of weighing

Single axle load

Axle load other than axle-group load.

Note: If no criteria for defining various axle-groups have been specified all axle loads shall be considered as single-axle loads

Axle-group load

Sum of the loads of two or more axles included in a defined group and their respective inter-spaces (or axle spacing).

Note: The criteria for defining an axle-group may be set by national regulations.

Corrected axle-load

Axle load corrected with the systematic error of the reference vehicle mass

Reference vehicle

Vehicle having a known conventional true value of:

- mass and single-axle load in case of a two-axle rigid vehicle and;
- mass of other vehicles used.

Controlled weighing area

Place specified for the operation of instruments for weighing road vehicles in motion, which are installed in conformity with the requirements.

1 Application

Weighing in motion instruments are covered

- which are installed in a controlled weighing area;
- which are used for determining and indicating the vehicle mass, the single-axle loads, and if
- applicable the axle-group loads of a road vehicle in motion; and
- which are installed where the vehicle speed is controlled

Not applicable are Weighing in motion instruments that

- determine individual axle loads by multiplying a single wheel load of an axle by two; or

- are installed on-board vehicles to measure axle load.

2 Accuracy classes

2.1 Vehicle mass

For determining the vehicle mass, instruments are divided into four accuracy classes as follows:

0.2 0.5 1 2

2.2 Single-axle load and axle-group load

For determining single-axle load and, if required axle-group load, instruments are divided into four accuracy classes as shown follows:

A B C D

Note: instruments may have different accuracy classes for single-axle load and axle-group load.

2.3 Relationship between accuracy classes

The relationship between the accuracy classes for single-axle load and, if required, axle-group load and the accuracy classes for vehicle mass are as specified in Table 12 below.

Table 12

Accuracy class single-axle load and axle-group load	Accuracy class for vehicle mass			
	0.2	0.5	1	2
A	✓	✓		
B	✓	✓	✓	
C		✓	✓	✓
D			✓	✓

3 MPE

3.1 Vehicle mass

The maximum permissible error for the vehicle mass determined by in-motion weighing, shall be one of the following values, whichever is greater:

- the value calculated according to Table 13, rounded to the nearest scale interval;
- $1 d \times$ the number of axles in the totalization.

Table 13

Accuracy class for vehicle mass	Percentage of conventional value of the vehicle mass
0.2	$\pm 0.10 \%$

0.5	±0.25 %
1	±0.50 %
2	±1.00 %

3.2 Single-axle load and axle-group load

For all reference vehicle types, the maximum permissible error between any indicated single-axle load or, if required, any axle-group load and the corrected mean single-axle load or the corrected mean axle-group load, respectively, shall be one of the following values, whichever is the greater:

- a) The value from Table 15 rounded to the nearest scale interval;
- b) $1 d \times n$,
Where n is the number of axles in the group, with $n = 1$ for single axles.

Table 15

Accuracy class for single-axle load and axle-group load	Percentage of the corrected mean single-axle load or corrected mean axle-group load
A	±0.50 %
B	±1.00 %
C	±1.50 %
D	±2.00 %

4 Scale interval, d

For a particular method of weighing-in-motion and combination of load receptors, all load indicating and printing devices on an instrument shall have the same scale interval.

The relationship among the accuracy class, the value of the scale interval and the number of scale intervals for the maximum capacity of the instrument shall be as specified in Table 17.

Table 17

Accuracy class for vehicle mass	d (kg)	Minimum number of scale intervals	Maximum number of scale intervals
0.2	≤ 5	500	5 000
0.5	≤ 10		
1	≤ 20		
2	≤ 50	50	1 000

5 *Minimum capacity*

The minimum capacity shall not be less than the load, expressed in scale intervals, specified in Table 18.

Table 18

Accuracy class for vehicle mass			Minimum capacity in scale intervals
0.2	0.5	1	50
2			10

6 *Installation of instruments*

For the installation of the instrument, the following effects must be taken into account:

- Lateral forces due to interactions of the instrument with the vehicle;
- Forces on part of the vehicle by different transient behaviour and friction within the axle suspensions;
- Forces on part of the ramps if there are different levels between the instrument and ramp that could lead to varying distribution of the axle load.

7 *Operating speed*

Instruments must comply with the appropriate metrological and technical requirements at vehicle speeds within the operating speed range given by the operating speed interlock.

Average Operating speed of the vehicle must be indicated and/or printed only after the entire vehicle has been weighed in motion.

channels

Proposal : Modification of the exhaust gas analyser definition

Aim : Extend the MID to gas exhaust analyzer for the exhaust of motorbikes requiring measuring instruments, which measure only CO or maybe CO and CO2.

Reason of the amendment

There is a need for gas analysers with less than 4 channels

From the definition of an exhaust gas analyser in MID, the instrument has to have four channels for the four components mentioned.

However, in some countries national regulation for the exhaust of motorbikes require measuring instruments, which measure only CO or maybe CO and CO2. These instruments could be certified according to MID if the definition would be modified. The existing normative document based on OIML R 99 could be used.

Draft for the amendment

In Annex MI 010 include a few words opening the possibility to have less than 4 channels

“An exhaust gas analyzer is an instrument with up to 4 channels that serves to determine the volume
.....”

10.2.: Measuring systems for compressed natural gas (CNG)

Measuring systems intended for the continuous measurement of flowing quantities (volumes or masses) of compressed natural gas (CNG). Also see OIML International Recommendation R139.

An increasing number of car manufacturers produce cars and trucks that can run on compressed (high pressure) natural gas. As an engine fuel it more environmentally friendly than conventional fuels.

Including CNG Dispensers in MID serves two purposes:

- 1) Refuelling cars / trucks is metrologically regulated, regardless of the type of fuel, thereby offering consistent Consumer / user protection.
- 2) Regulating it on a European level prevents the possibility of differences between national legislation of Member States.

Although the operation of a CNG Dispenser is at first glance very similar to that of a conventional fuel dispenser, there are differences:

- 1) The actual measurement process is more complex.
- 2) The medium is not a liquid, but high pressure natural gas.

Therefore CNG Dispensers do not easily fit in Annex MI-005.

MI-002 covers gasmeters. However, these operate under fairly constant process conditions and in continuous operation, which differs greatly from the CNG Dispenser application (varying process pressures and flowrates, in batch operation).

Proposed is a new Instrument Annex based on OIML Interantional Recommendation R139, thereby connecting European legislation to the international world.

10.3a: Level gauge on tank trucks and fixed storage tanks

Measuring systems intended for the discontinuous measurement of quantities (volumes or masses) of liquids other than water in fixed or mobile storage tanks. Also see OIML International Recommendation R85. Note: OIML R80 covers rail and road tankers.

An increasing number of road tankers is fitted with level gauges, rather than the type of measuring instruments covered by MI-005.

Measurements by level gauges on fixed storage tanks are often tax related.

Including level gauges in MID serves two purposes:

- 1) Fuel transactions to homes or petrol stations by tank truck is metrologically regulated, regardless of the type of the measurement principle, thereby offering consistent Consumer / user protection.
- 2) Regulating it on a European level prevents the possibility of differences between national legislation of Member States.

Level gauges on fixed or mobile tanks operate by determining the level of liquid prior to and after the delivery or reception of liquid in the tank. The difference in level combined with the known contents of the tank as a function of level, allow for the determination of the amount of liquid delivered or received.

Inherently the measurement operation (level determination) takes place when the liquid is stationary, in contrast to MI-005 measuring instruments which measure only when the liquid is being transferred. This difference between static and dynamic measurement, makes it difficult to fit level gauges into MI-005.

Proposed is a new Instrument Annex based on OIML International Recommendation R85, thereby connecting European legislation to the international world.

Draft Annex is attached.

10.3 b

ANNEX MI-00X

**STATIC MEASURING SYSTEMS FOR VOLUME OF LIQUIDS
USED FOR THE TRANSPORT OF LIQUID PRODUCTS BY ROAD AND RAIL**

The relevant essential requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex, apply to static measuring systems of quantities of liquids and level sensors, mounted on tankers for the transport of liquid products by road and rail.

DEFINITIONS

Static measuring systems of quantities of liquids

A static measuring system of quantities of liquids is either a complete instrument or a combined instrument consisting of the sub-assemblies, measuring tank and level sensor.

Measuring tank

Container, suitable for use as a volume measuring device for liquids, fixed on a truck (or on a railcar) or detachably connected to it, which may be subdivided into several measuring compartments.

Level sensor

Measuring device for the level of a liquid in a tank or compartment. The measuring device can be based on a manual or visual gauging method, or an electronic gauging method. The manual or visual gauging method may be based on a length measuring instrument as defined in the annex MI-009.

Calculator

A part of the measuring system that receives the output signals from the level sensor(s) and possibly, from associated measuring instruments and displays the measurement results.

Associated measuring instrument

An instrument connected to the calculator for measuring certain quantities which are characteristic of the liquid, with a view to make a correction and/or conversion.

Conversion Device

A part of the calculator which by taking account of the characteristics of the liquid (temperature, density, etc.) measured using associated measuring instruments, or stored in a memory, automatically converts the volume of the liquid measured at metering conditions into a volume at base conditions and/or into mass

Note: A conversion device includes the relevant associated measuring instruments.

Base conditions

The specified conditions to which the measured quantity of liquid at metering conditions is converted.

Reference position

Position for the discharge (or loading) of the measuring tank.

Tank capacity table

Table which shows the relation between the liquid level and the volume contained in the tank (compartment) at that level under reference conditions.

Minimum measured quantity (MMQ)

Smallest volume of liquid for which the measurement is metrologically acceptable for the tank or individually for each of its compartments.

Sensitivity of a measuring tank

Change in the level of liquid Δh divided by the corresponding relative change in volume $\Delta V/V$ for the contained volume V at the level h .

Reference point top

Reference point in the upper part of the measuring tank, under normal operating conditions above the liquid level.

Reference point bottom

Reference point in the lower part of the measuring tank, under normal operating conditions below the liquid level.

Reference height (H)

Distance, measured along the vertical measurement axis, between the reference point top and the reference point bottom.

SPECIFIC REQUIREMENTS – General requirements

1. Rated operating conditions

The manufacturer shall specify the rated operating conditions for the instrument, in particular;

1.1. The properties of the liquid to be measured by the instrument by specifying the name or type of the liquid or its relevant characteristics, for example:

- Temperature range;
- Pressure range;
- Density range;
- Viscosity range.

1.2. The nominal value of the AC voltage supply and/or limits of the DC voltage supply.

1.3. The reference position

1.4. The base conditions for converted values.

Note: Paragraph 1.4 is without prejudice to the Member States' obligations to require use of a temperature of either 15 °C in accordance with Article 3(1) of Council Directive 92/81/EEC of 19 October 1992 on the harmonization of the structures of excise duties on mineral oils or, for heavy fuel oils, LPG and methane, another temperature pursuant to Article 3(2) of that Directive.

2. Accuracy classification and maximum permissible errors (MPEs)

Depending on the field of application the static measuring systems mounted on the road or rail tankers are classified into four accuracy classes according to Table 1. The corresponding maximum permissible errors on quantity indications are specified in Table 2.

Table 1

Accuracy class	Type of measuring system
0.5	<ul style="list-style-type: none"> § Measuring systems for liquids of which the viscosity does not exceed 20 mPa.s at working temperature; § Measuring systems for milk, beer, and other foaming liquids; § Measuring systems for refuelling aircraft.
1.0	<ul style="list-style-type: none"> § Measuring systems for liquefied gases under pressure measured at a temperature equal or above -10 °C.
1.5	<ul style="list-style-type: none"> § Measuring systems for liquefied carbon dioxide; § Measuring systems for liquefied gases under pressure measured at a temperature below -10 °C.
2.5	<ul style="list-style-type: none"> § Measuring systems for cryogenic liquids.

Table 2

	Accuracy classes			
	0,5	1,0	1,5	2,5
Maximum permissible errors (A)	0,5 %	1,0 %	1,5 %	2,5 %
Measuring tank (B)	0,3 %	0,5 %	1,0 %	1,5

For measured volumes greater than the minimum measured quantity up to twice the minimum measured quantity, the absolute value of the maximum permissible error shall not be less than the minimum specified volume deviation (E_{min}). E_{min} being twice the absolute value of the maximum permissible error for the minimum measured quantity of a tank or compartment.

3. Sensitivity

3.1 For measuring tanks that are used for full compartment delivery, the sensitivity of the measuring tank shall be equal to or greater than the values given in table 3.

Table 3

	Accuracy class

	0,5	1,0	1,5	2,5
Minimum sensitivity of tank • h per • V/V in mm / ‰ (i.e. in mm for 1/1000 of measured volume)	1,5	1	0,5	0,3

3.2 For measuring tanks that are used for partial delivery, the expanded uncertainty of the level measurement and the resolution of the level indication shall not exceed the values given in table 4.

Table 4

	Accuracy class			
	0,5	1,0	1,5	2,5
Level measurement uncertainty in mm	0,7	1,2	2	3,5
Maximum value of the resolution for the level indication in mm	0,1	0,2	0,5	1,0

PART I - SPECIFIC REQUIREMENTS - Measuring tank

A measuring tank constitutes a sub-assembly according to Article 4, definition (b), first indent.

4. Durability

4.1 Shapes, materials, reinforcing elements and methods of shaping or assembly shall be chosen so that the containers are sufficiently unaffected by atmospheric agents and the liquids they contain, and are practically not subject to distortion under rated operating conditions.

4.2 The reference height H of a tank or each compartment shall not vary during filling more than the greater of the two values given in Table 4.

Table 5 Maximum permissible variation of the reference height in dependence of the accuracy class

	Accuracy class			
	0,5	1,0	1,5	2,5
Maximum permissible variation of the reference height H (mm)	2 mm or H/1000		4 mm or H/500	

4.3 The capacity of a compartment shall not change by more than one-third (1/3) of the maximum permissible error specified in line B of Table 2 when the neighbouring compartment or compartments are filled or emptied.

4.4 The material of the tank shall be chosen so that the capacity of the tank shall not change more than one-third (1/3) of the maximum permissible error specified in line B of Table 2

when the temperature of the tank changes in the range of ± 10 °C from the reference temperature.

4.5 Tanks for liquids which are not measured at atmospheric pressure shall be designed in such a way that their capacity in the whole admissible pressure range does not change more than one-fifth (1/5) of the maximum permissible error specified in line B of Table 2.

5. Suitability

5.1 The tank capacity table shall be determined for each compartment of the measuring tank

5.2 Every tank or compartment shall be of such a shape that no air is trapped during the filling and no liquid is retained during the emptying in any admissible position of use of the equipment.

5.3 The complete drainage shall be ensured. The volume of liquid remaining in the tank or compartment after its complete draining shall not be greater than one-tenth (1/10) of the absolute value of the maximum permissible error given in line B of Table 2 applied to the capacity of the tank or compartment.

5.4 Volume effects of the inclination in the range specified for a given system (pitch and roll angles) shall not exceed the minimum specified volume deviation for partial delivery or the value given in line B of Table 2 of nominal compartment volume for full compartment delivery.

5.5 It shall be possible to check the interior of the measuring tank for inspection purposes.

PART II - SPECIFIC REQUIREMENTS – Level sensor

A level sensor constitutes a sub-assembly according to Article 4, definition (b), first indent.

6. Base conditions for converted quantities

The manufacturer shall specify the base conditions for converted quantities

7. MPE

The maximum permissible error for the conversion of the measured volume into a volume at base conditions or a mass is equal to $\pm (A - B)$, A and B being the values specified in Table 2. However, the magnitude of the maximum permissible error shall not be less than the greater of the two following values:

- one-half (1/2) scale interval of the indicating device for converted indications;
- half of the value corresponding to the minimum specified volume deviation E_{min} .

8. Maximum permissible effect of disturbances

8.1. The effect of an electromagnetic disturbance on a level sensor shall be one of the following;

- the change in the measurement result is not greater than the critical change value as defined in paragraph 8.2, or
- the indication of the measurement result shows a momentary variation that cannot be interpreted, memorised or transmitted as a measuring result, or
- the change in the measurement result is greater than the critical change value, in which case the level sensor shall permit the retrieval of the measuring result just before the critical change value occurred.

8.2. The critical change value is the greater of MPE/5 for a particular measured quantity or Emin.

9. Reproducibility

The level sensor shall perform a valid height measurement only when the liquid surface has calmed down so that the result is reproducible

10. Durability

After an appropriate test, taking into account the period of time estimated by the manufacturer, has been performed, the following criterion shall be satisfied:

The variation of the measurement result after the durability test, when compared with initial measurement result, shall not exceed the value for measuring tank specified in line B of table 2.

11. Suitability

The installation of the level sensor shall be such that it shall not influence the measurement.

12. Power supply failure

A level sensor shall either be provided with an emergency power supply device that will safeguard all measuring functions during the failure of the main power supply device or be equipped with means to save and display the data present in order to permit the conclusion of the transaction in progress.

13. Instruments for direct sales

Deleted: 0

13.1 A measuring system for direct sales shall be provided with means for resetting the display to zero. It shall not be possible to divert the measured quantity.

13.2 The display of the quantity on which the transaction is based shall be permanent until all parties in the transaction have accepted the measurement result.

12. Units of measurement

Deleted: 1

The measured quantity shall be displayed in litres or cubic metres.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 9 that the manufacturer can choose between are:
B + F or B + D or H1 or G .

Proposal :

Extend the MID to the following measuring instruments : water meters measuring water other than clean water

Aim :

- Keep the principle of harmonized requirement in a field covered up to now by an old approach directive.
- Fix appropriate level of performance for consumer protection and enforcement in the format of essential requirements independent of technologies and provide with modern evaluation procedures of evaluation of conformity

Reasons for the development

Harmonisation exists already as this category of measuring instrument is for the time being still covered by an old approach European directive and national regulations. The intention of the Commission is to repeal the old approach directives 75/33/EEC on Cold Water Meters for Non-Clean Water. However several members states have declared that they will maintain their national regulation even if the old approach directive is repealed which could lead to new barriers to trade in a field which was previously harmonised. Furthermore there are existing national legislation for instruments of the same category but using modern technologies (not covered by the old approach directives).

The proposal brings harmonisation of requirements and EC evaluation valid in all member states for this category of measuring instruments independently of the technology :

- for old approach instrument it brings modernization of the existing legislation and possibility of quality assurance evaluation procedure
- for all other instruments and especially recent technology instruments it provides harmonisation of the requirements in different member states.

The requirements are coherent with the requirements applicable to other measuring instruments as they are based on Annex 1 of MID which is common and Annex MI 001 on water meters (clean water)

This proposal brings the possibility of CE marking of instruments by manufacturers and market surveillance by members states. This would not be possible if as an alternative to the repeal of old approach directive a simple conformity to an OIML recommendation or a standard is foreseen.

If these instruments are not covered by an European directive harmonising the requirements, there will be extra cost for member states who regulate this field as they will need demonstrate that an instrument is not in conformity with their national legislation or is unduly declared in conformity with the international standard.

If this category is included in MID there will be less cost for manufacturers to obtain approvals and free circulation and less trouble for member states as the requirements will be harmonized. Manufacturers who have existing EEC approval will keep the same benefit for new production.

Existence of an OIML recommendation

In this field there is an OIML recommendation R 49 which is already use as normative document as it covers "potable" water . As there is no new requirement it could be used as far as possible.

Draft for the amendment

There is no need of an amendment of article 1 to include these instruments in the list of instruments covered by MID as there is no reference to the quality of water at the level of article 1

Modification of Annex Mi 001 to change the definition and some of the requirements to include non clean water (see text below with addition of "cold water in several places)

ANNEX MI-001

WATER METERS

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex, apply to water meters intended for the measurement of volumes of clean and cold or clean and heated water in residential, commercial and light industrial use, as well as for cold water meters.

DEFINITIONS

Water Meter

An instrument designed to measure, memorise and display the volume at metering conditions of water passing through the measurement transducer.

Clean water

Potable water which may contain solid additives (particles) or additives in solution only, which will not affect the right functioning of the mechanical volume or flow rate sensor of a water meter. These influences do neither affect the flow rate range and the error of indication of the meter, nor stop or destroy the meter.

Minimum Flowrate (Q1)

The lowest flowrate at which the water meter provides indications that satisfy the requirements concerning the maximum permissible errors (MPEs.)

Transitional Flowrate (Q2)

The transitional flowrate is the flowrate value occurring between the permanent and minimum flowrates, at which the flowrate range is divided into two zones, the "upper zone" and the "lower zone". Each zone has a characteristic MPE.

Permanent Flowrate (Q3)

The highest flowrate at which the water meter operates in a satisfactory manner under normal conditions of use, i.e. under steady or intermittent flow conditions.

Overload Flowrate (Q4)

The overload flowrate is the highest flowrate at which the meter operates in a satisfactory manner for a short period of time without deteriorating.

Specific requirements

Rated Operating Conditions

The manufacturer shall specify the rated operating conditions for the instrument, in particular;

1. The flowrate range of the water.

The values for the flowrate range shall fulfil the following conditions:

$$Q3/Q1 \geq 10$$

$$Q2/Q1 = 1,6$$

$$Q4/Q3 = 1,25$$

2. The temperature range of the water

The values for the temperature range shall fulfil the following conditions depending on the 3 distinguished media being measured (water types):

- for clean and cold water 0,1 °C to at least 30 °C
- for clean and heated water 30 °C to at least 90 °C

The meter for clean water may be designed to operate over both ranges.

- for cold water 0,1 °C to at least 30 °C

3. The relative pressure range of the water, the range being 0,3 bar to at least 10 bar at Q3.

4. For the power supply: the nominal value of the AC voltage supply and/or the limits of DC supply.

MPE

5. The MPE, positive or negative, on volumes delivered at flowrates between the transitional flowrate (Q2) (included) and the overload flowrate (Q4) is:

- 2 % for clean and cold or cold water having a temperature ≤ 30 °C,
- 3 % for clean and heated water having a temperature > 30 °C

6. The MPE, positive or negative, on volumes delivered at flowrates between the minimum flowrate (Q1) and the transitional flowrate (Q2) (excluded) is 5 % for water having any temperature.

Permissible Effect of Disturbances

7.1. Electromagnetic immunity

7.1.1. The effect of an electromagnetic disturbance on a water meter shall be such that:

- the change in the measurement result is no greater than the critical change value as defined in 8.1.4, or
- the indication of the measurement result is such that it cannot be interpreted as a valid result, such as a momentary variation that cannot be interpreted, memorised or transmitted as a measuring result.

7.1.2. After undergoing an electromagnetic disturbance the water meter shall:

- recover to operate within MPE, and
- have all measurement functions safeguarded, and
- allow recovery of all measurement data present just before the disturbance.

7.1.3. The critical change value is the smaller of the two following values:

- the volume corresponding to half of the magnitude of the MPE in the upper zone on the measured volume;
- the volume corresponding to the MPE on the volume corresponding to one minute at flowrate Q3.

7.2. Durability

After an appropriate test, taking into account the period of time estimated by the manufacturer, has been performed, the following criteria shall be satisfied:

7.2.1. The variation of the measurement result after the durability test, when compared with the initial measurement result, shall not exceed:

- 3 % of the metered volume between Q1 included and Q2 excluded;
- 1,5 % of the metered volume between Q2 included and Q4 included.

7.2.2. The error of indication for the volume metered after the durability test shall not exceed:

- ± 6 % of the metered volume between Q1 included and Q2 excluded;
- $\pm 2,5$ % of the metered volume between Q2 included and Q4 included for water meters intended to meter water with a temperature between 0,1 °C and 30 °C,
- $\pm 3,5$ % of the metered volume between Q2 included and Q4 included for water meters intended to meter water with a temperature between 30 °C and 90 °C.

Suitability

8.1. The meter shall be able to be installed to operate in any position unless clearly marked otherwise.

8.2. The manufacturer shall specify whether the meter is designed to measure reverse flow. In such a case, the reverse flow volume shall either be subtracted from the cumulated volume or shall be separately recorded. The same MPE shall apply to both forward and reverse flow.

Water meters not designed to measure reverse flow shall either prevent reverse flow or shall withstand an accidental reverse flow without any deterioration or change in metrological properties.

Draft text proposal “Report on MID”, WG item 8-02-5 for “all water” meters

8.3 Water meters not designed for residential, commercial and light industrial use are not subject to utility meter requirements.

Units of Measurement

9. Metered volume shall be displayed in cubic metres.

Putting into Use

10. The Member State shall ensure that the requirements under 1, 2 and 3 are determined by the distributor or the person legally designated for installing the meter, so that the meter is appropriate for the accurate measurement of consumption that is foreseen or foreseeable.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 9 that the manufacturer can choose between are:

B + F or B + D or H1.

Proposal :

Extend the MID to the following measuring instruments : alcohol meters and alcohol hydro meters which are used for the determination of the alcohol strength of mixtures of water and ethanol mainly for tax determination.

Aim :

- Keep the principle of harmonized requirement in a field covered up to now by an old approach directive.
- Fix appropriate level of performance for consumer protection and enforcement in the format of essential requirements independent of technologies and provide with modern evaluation procedures of evaluation of conformity

Reasons for the development

Harmonisation exists already as this category of measuring instrument is for the time being still covered by an old approach European directive and national regulations. The intention of the Commission is to repeal the old approach directives n° 76/765/CEE. However several member states have declared that they will maintain their national regulation even if the old approach directive is repealed which could lead to new barriers to trade in a field which was previously harmonised. Furthermore there are existing national legislation for instruments of the same category but using modern technologies (not covered by the old approach directives).

The proposal brings harmonisation of requirements and EC evaluation valid in all member states for this category of measuring instruments independently of the technology :

- for old approach instrument it brings modernization of the existing legislation and possibility of quality assurance evaluation procedure
- for all other instruments and especially recent technology instruments it provides harmonisation of the requirements in different member states.

The requirements are coherent with the requirements applicable to other measuring instruments as they are based on Annex 1 of MID which is common.

This proposal brings the possibility of CE marking of instruments by manufacturers and market surveillance by member states. This would not be possible if as an alternative to the repeal of old approach directive a simple conformity to an OIML recommendation or a standard is foreseen.

If these instruments are not covered by an European directive harmonising the requirements, there will be extra cost for member states who regulate this field as they will need demonstrate that an instrument is not in conformity with their national legislation or is unduly declared in conformity with the international standard.

If this category is included in MID there will be less cost for manufacturers to obtain approvals and free circulation and less trouble for member states as the requirements will be harmonized. Manufacturers who have existing EEC approval will keep the same benefit for new production.

Existence of an OIML recommendation

In this field there is an OIML recommendation **OIML R 44** which could serve as a normative document bringing presumption of conformity to the essential requirements.

Draft for the amendment

Two modifications of MID are needed :

- amendment of article 1 to include these instruments in the list of instruments covered by MID
- addition of a supplementary specific annex (see basis for a proposal below)

ALCOHOLOMETERS, ALCOHOL HYDROMETERS AND ASSOCIATED THERMOMETERS

The relevant requirements of annex I, the specific requirements of this annex and the conformity assessment procedures listed in this annex apply to alcoholometers and alcohol hydrometers used for the determination of the alcohol strength of mixtures of water and ethanol, measuring at the reference temperature of 20 °C, in accordance with the International alcoholic tables published by the International organisation of legal metrology, and to thermometers used in alcoholometry.

DEFINITIONS

Alcoholometer

An instrument designed to measure the percentage of alcoholic strength of mixtures:

- either by mass, referred to “mass alcoholometers”,
- or by volume, referred to “volume alcoholometers”.

Alcohol hydrometer

An instrument designed to measure the density of the mixtures in kilogram per cubic meters.

SPECIFIC REQUIREMENTS

CHAPTER I GENERAL SPECIFIC REQUIREMENTS

1 Rated Operating Conditions

The manufacturer shall specify the rated operating conditions for the instrument, in particular:

1.1 The measuring range

1.2 For electronic instruments, the power supply: the nominal value of the AC voltage supply and/or the limits of DC supply

2 Permissible effect of disturbances

2.1 The effect of an electromagnetic disturbance on an instrument shall be such that:

- the change in the measurement result is no greater than the critical change value as defined in 2.2, or
- the indication of the measurement result is such that it cannot be interpreted as a valid result, such as a momentary variation that cannot be interpreted, memorised or transmitted as a measuring result.

2.2 The critical change value is equal to the maximum permissible error for the instrument concerned.

3. Conformity assessment

The conformity assessment procedures referred to in Article 7 that the manufacturer can choose between are :

For glass measuring instruments:

B+D or B+E or B+F or D1 or F1 or G or H1. + H + E1 to be discussed

For electronic instruments or instruments containing software:
B+D or B+F or G or H1.

2 Permissible effect of disturbances

- 2.1 The effect of an electromagnetic disturbance on an instrument shall be such that:
- the change in the measurement result is no greater than the critical change value as defined in 2.2, or
 - the indication of the measurement result is such that it cannot be interpreted as a valid result, such as a momentary variation that cannot be interpreted, memorised or transmitted as a measuring result.
- 2.2 The critical change value is equal to the maximum permissible error for the instrument concerned.

3. Conformity assessment

The conformity assessment procedures referred to in Article 7 that the manufacturer can choose between are :

For glass measuring instruments:

B+D or B+E or B+F or D1 or F1 or G or H1. + H + E1 to be discussed

For electronic instruments or instruments containing software:

B+D or B+F or G or H1.

CHAPTER II ALCOHOLOMETERS AND ALCOHOL HYDROMETERS

4 Accuracy classification and maximum permissible errors

The alcoholometers and alcohol hydrometers belong to one of the three accuracy classes, class I, class II or class III, for which maximum permissible errors, positive or negative, are:

Class I instruments:

- 0,05 % for mass or volume alcoholometers;
- 0,1 kg/m³ for alcohol hydrometers.

Class II or class III instruments: twice the values for class I.

For mechanical instruments the class depends on the dimension and scale spacing.

5 Suitability

5.1 The scale interval for a mass or volume alcoholometer shall be:

- for instruments with continuous indication: 0,1 %;
- for instruments with digital indication: 0,01 % or 0,02 %.

The scale interval for an alcohol hydrometer shall be:

- for instruments with continuous indication: 0,2 kg/m³;
- for instruments with digital indication: 0,01 kg/m³, 0,02 kg/m³ or 0,05 kg/m³.

5.2 Only one quantity (mass or volume percentage or density) shall be available at a time and the unit of measurement shall be visible together with it without ambiguity.

Draft text proposal "Report on MID", WG item 8-02-1 for alcoholometers

5.3 The parts that are likely to be in contact with the liquid in normal operation shall be designed in order to ensure an appropriate accuracy.

Where the mass of these parts is given, it shall be expressed in milligrams and marked on the external parts of them.

5.4 In addition, for instruments in glass:

5.4.1 The graduation is designed for readings taken at the level of the free horizontal surface of the liquid;

5.4.2 The glass shall have a coefficient of cubic expansion of $(25 \pm 2) 10^{-6} \text{ }^{\circ}\text{C}^{-1}$. ;

5.4.3 The instrument shall float with its stem in an approximately vertical position, the maximum permissible angle between the stem and the vertical being $1,5^{\circ}$;

5.4.4 The support of the scale support shall be adequately durable and be held rigidly ; means shall be provided in order to allow detection of any significant displacement of it.

6 Inscriptions

6.1 The specific information to be born by the instruments is:

- the accuracy class;
- the unit of measurement;
- the value of the reference temperature: 20°C ;
- ethanol.

6.2 Where the size of the instrument justifies it, the information born by the instrument may be limited to necessary wording so that it remains understandable.

CHAPTER III THERMOMETERS USED FOR THE DETERMINATION OF THE ALCOHOLIC STRENGTH

7 Accuracy classification and maximum permissible errors

The maximum permissible errors, positive or negative, for thermometers used together with alcoholometers or alcohol hydrometers are:

- $0,10^{\circ}\text{C}$ if the thermometer is graduated to $0,1^{\circ}\text{C}$ or a smaller value;
- $0,20^{\circ}\text{C}$ if the thermometer is graduated to $0,2^{\circ}\text{C}$ or $0,5^{\circ}\text{C}$. No larger scale interval is authorised.

In the case of a digital indication a suitable resolution shall be provided for the purpose of verification.

8 Suitability

The thermometer may be incorporated in the alcoholometer or the alcohol hydrometer, excepted for class I alcoholometers and alcohol hydrometers in glass.

Class I alcoholometers or alcohol hydrometers shall be used together with thermometers having a scale interval not greater than $0,1^{\circ}\text{C}$.

Item 2.1

Version 4.1

Amendment

Repeal Directives on Weights (71/317/EEC, 74/148/EEC), and include them in the MID based on the OIML R-111

Chapter of MID

New Annex

Text of the amendments

See pages 2 to 4

Reason of the amendment

Weights are used as counter mass on mechanical weighing instruments in trade and commerce. Weights are also used as reference for the verification of weighing instruments. As there is a direct impact in commerce and trade it is necessary that the manufacturing of weights is regulated.

By adding the annex on weights in the MID the Directives on weights 71/317/EEC and 74/148/EEC can be repealed

Total amount of pages, including this cover

4 pages

1 Draft 3 Annex MI xxxx (weights) (or new paragraph in the annex MI 008 for material measures)

Clean version 02 October 2008

The relevant essential requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this chapter apply to weights defined below. However the requirements for the supply of a copy of a declaration of conformity may be interpreted as applying to a batch, a consignment or a set of weights rather than to each individual instrument.

2 Definition

A weight is a material measure of mass, regulated in regard to its physical properties and metrological characteristics: shape, dimensions, material, surface quality, nominal value, density, magnetic properties and maximum permissible errors.

Set of weights

Series or group of weights of different sequences of nominal values or multiple weights of the same nominal value which have similar metrological characteristics and belong to the same accuracy class.

Conventional mass

For a weight taken at a reference temperature of 20 °C, the conventional mass is the mass of a reference weight of a density of 8 000 kg/m³ which it balances in air of a reference density of 1,2 kg/m³.

Reference conditions

The reference conditions applicable to the adjustment of standard weights are as follows:

- Standard reference density: 8 000 kg/m³;
- Ambient air density: 1,2 kg/m³ ; and
- Equilibrium in air at 20 °C, without correction for air buoyancy.

3 Requirements

Nominal value

The nominal value from 1 mg to 5 000 kg shall be in the form of 1×10^n , 2×10^n or 5×10^n where n is any integer or zero.

Maximum permissible errors (MPEs)

MPEs for individual weights are given in Table 1 and relate to conventional mass.

For each weight, the conventional mass, m_c (determined with an expanded uncertainty, U) shall not differ by more than the difference of the maximum permissible error, δm , minus expanded uncertainty, from the nominal value of the weight, m_0 :

$$m_0 - (\delta m - U) \leq m_c \leq m_0 + (\delta m - U)$$

For each weight, the expanded uncertainty, U , for $k = 2$ of the conventional mass, shall be less than or equal to one-third of the maximum permissible error in Table 1.

$$U \leq 1/3 \delta m$$

Table 1 Maximum permissible errors for weights ($\pm \delta m$ in mg)

Nominal value*1	Class E ₁	Class E ₂	Class F ₁	Class F ₂	Class M ₁	Class M ₁₋₂	Class M ₂	Class M ₂₋₃	Class M ₃
5 000 kg			25 000	80 000	800 000	250 000	500 000	1 600 000	2 500 000
2 000 kg			10 000	30 000	100 000	200 000	300 000	600 000	1 000 000
1 000 kg		1600	5 000	16 000	50 000	100 000	160 000	300 000	500 000
500 kg		800	2 500	8 000	25 000	50 000	80 000	160 000	250 000
200 kg		300	1 000	3 000	10 000	20 000	30 000	60 000	100 000
100 kg		160	500	1 600	5 000	10 000	16 000	30 000	50 000
50 kg	25	80	250	800	2 500	5 000	8 000	16 000	25 000
20 kg	10	30	100	300	1 000		3 000		10 000
10 kg	5	16	50	160	500		1 600		5 000
5 kg	2.5	80.	25	80	250		800		2 500
2 kg	1	3.0	10	30	100		300		1 000
1 kg	0.5	1.6	5.0	16	50		160		500
500 g	0.25	0.8	2.5	8.0	25		80		250
200 g	0.10	0.3	1.0	3.0	10		30		100
100 g	0.05	0.16	0.5	1.6	5.0		16		50
50 g	0.03	0.10	0.3	1.0	3.0		10		30
20 g	0.025	0.08	0.25	0.8	2.5		8.0		25
10 g	0.020	0.06	0.20	0.6	2.0		6.0		20
5 g	0.016	0.05	0.16	0.5	1.6		5.0		16
2 g	0.012	0.04	0.12	0.4	1.2		4.0		12
1 g	0.010	0.03	0.10	0.3	1.0		3.0		10
500 mg	0.008	0.025	0.08	0.25	0.8		2.5		
200 mg	0.006	0.020	0.06	0.20	0.6		2.0		
100 mg	0.005	0.016	0.05	0.16	0.5		1.6		
50 mg	0.004	0.012	0.04	0.12	0.4				
20 mg	0.003	0.010	0.03	0.10	0.3				
10 mg	0.003	0.008	0.025	0.08	0.25				
5 mg	0.003	0.006	0.020	0.06	0.20				
2 mg	0.003	0.006	0.020	0.06	0.20				
1 mg	0.003	0.006	0.020	0.06	0.20				

Construction

Class E weights from 1 mg to 50kg shall be solid and have no cavity open to the atmosphere. They shall consist in one piece only. Other weights shall be of appropriate construc-

¹ The nominal weight values in Table 1 specify the smallest and largest weight permitted in any class and the maximum permissible errors and denominations shall not be extrapolated to higher or lower values. For example, the smallest nominal value for a weight in class M2 is 100 mg while the largest is 5 000 kg. A 50 mg weight would not be accepted as an R 111 class M2 weight and instead should meet class M1 maximum permissible errors and other requirements (e.g. shape or markings) for that class of weight. Otherwise the weight cannot be described as complying with the [Directive](#).

tion and may be in more than one piece and where the structure is assembled from several pieces it must be closed airtight and watertight.

Depending on their class and their nominal value they may have an adjusting cavity of an appropriate size for future adjustment and permitting its secure closure.

Shape

Weights shall have a simple geometrical shape. They shall have no sharp edges or corners to prevent deterioration and no pronounced hollows to prevent deposits (i.e. of dust) on their surface.

Weights of a given set of weights shall have the same shape, except for weights of 1 g or less.

Material

The weights shall be corrosion resistant. The quality of the material shall be such that the change in the mass of the weights shall be negligible in relation to the MPEs in their accuracy class (see Table 1) under normal conditions of use and the purpose for which they are being used.

Surface quality

Under normal conditions of use, the surface qualities shall be such that any alteration of the mass of the weights is negligible with respect to the MPE.

The surface of the weights (including the base and corners) shall be smooth and the edges shall be rounded.

The surface shall not be porous.

Density

The density of the material used for weights shall be such that a deviation of 10 % from the reference air density (1.2 kg m^{-3}) does not produce an error exceeding one-quarter of the absolute value of the MPE given in Table 1.

Magnetic properties

The permanent magnetisation and magnetic susceptibility shall be limited so that uncertainty components due to magnetism of the weight are negligible.

Markings

Except class E weights and weights smaller than one gram identified by their shape, weights shall be marked clearly to indicate their nominal value accompanied by the unit of mass. This shall be designed and realised without damaging the quality and stability of the surface.

Class F_2 weights and those from lower classes shall be marked with an identification of the class.

For class E and F_1 weights the indication of the class shall be on the container.

Weights of the same value in a set shall be individually identified.

Presentation

Weights of a set shall be of the same accuracy class.

Weights shall be adequately protected against deterioration or damage.

Conformity assessment

The conformity assessment procedures referred to in Article 9 that the manufacturer can choose between are

F1 or D1 or B+D or H or G

Proposal :

Extend the MID to the following measuring instruments : tyre pressure gauges (instrument to measure the pressure of motor vehicle tyres)

Aim :

- Keep the principle of harmonized requirement in a field covered up to now by an old approach directive
- Fix appropriate level of performance for consumer protection and enforcement in the format of essential requirements independent of technologies which could replace the existing old approach directive and in addition be used as a basis for the development of the standard under the mandate M/457 – Tyre pressure gauges for motor vehicles and tyre pressure management system from the Commission to CEN
- Provide with modern procedures of evaluation of conformity

Reasons for the development

Harmonisation exists already for simple mechanical tyre pressure gauges which are for the time being still covered by an old approach European directive and national regulations. These instrument were used in inflating installation and in installation for safety control of tyre pressure. The intention of the Commission is to repeal the old approach directives. However several members states have declared that they will maintain their national regulation even if the old approach directive is repealed which could lead to new barriers to trade in a field which was previously harmonised. Furthermore there are existing national legislation for instruments of the same category but using electronic technologies (not covered by the old approach directive).

The commission has also delivered a mandate M/457 for Tyre pressure gauges for motor vehicles and tyre pressure management system with a reference to the future requirement for vehicles, road safety and energy saving.

The proposal brings harmonisation of requirements and EC evaluation valid in all member states for this category of measuring instruments independently of the technology :

- for old approach instrument it brings modernization of the existing legislation and possibility of quality assurance evaluation procedure
- for new instruments and especially those foreseen by the mandate it provides harmonisation of the requirements in different member states.

The requirements are coherent with the requirements applicable to other measuring instruments as they are based on Annex 1 of MID which is common.

This proposal brings the possibility of CE marking of instruments by manufacturers and market surveillance by members states.

If this category is included in MID there will be less cost for manufacturers to obtain approvals and free circulation and less trouble for member states as the requirements will be harmonized. Manufacturers who have existing EEC approval will keep the same benefit for new production.

In this field there is an OIML recommendation OIML R 23 Edition 1975 (E) Tyre pressure gauges for motor vehicles. It is under revision and should in principle follow the standardisation work. Under the mandate M/457 mentioned above CEN TC 301/TF2 "Tyre Pressure gauges" has just started to work

Draft for the amendment

Two modifications of MID are needed :

- amendment of article 1 to include these instruments in the list of instruments covered by MID

- addition of a supplementary specific annex with the introduction of 2 classes one corresponding to the old approach instruments and one for the new instruments foreseen in the mandate (see basis for a proposal below)

Annex MI-01x

Tyre pressure gauges

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex, apply to tyre pressure gauges, which are used to determine the inflation pressure of a motor vehicle tyre.

Definitions

Tyre pressure meters

Tyre pressure gauges are fixed or mobile instruments, which indicate the pressure difference (pressure p_e) between the inflation pressure in the tyre of a motor vehicle and the pressure of the ambient atmosphere. They also include all those parts between the tyre and the measuring element. The instruments may also include installations for adjusting the inflation pressure of the motor vehicle tyres. The instruments may be fitted with presetting devices.

Hysteresis

The difference between the indications of the instrument when the same pressure (except pressures at the lower and upper limits of the measuring range) is reached by increasing or decreasing the pressure.

Specific requirements

1. Rated operating conditions

The following rated operating conditions shall be specified by the manufacturer:

- 1.1. The measuring range of the pressure p_e in bar or kPa
- 1.2. Environmental conditions
 - 1.2.1. The values for the temperature range which shall be not less than -25 °C up to $+70\text{ °C}$ for class I instruments and -10 °C up to 40 °C for class II instruments
 - 1.2.2. The mechanical environment class that applies is M2.
 - 1.2.3. The electromagnetic environment class that applies is E2.
- 1.3. Where necessary, a sign indicating the operating position of the instrument shall be fixed.

2. Maximum permissible errors (MPEs)

- 2.1. The MPEs for the measured pressure p_e are defined as follows:

Table 1 for Class I instrument

measured gauge pressure p_e	MPEs for Class I instruments	
	environmental temperatures	
	from -10 °C to 40 °C	below -10 °C or above 40 °C
$\leq 4\text{ bar}$	0,02 bar	0,03 bar
$> 4\text{ bar to } \leq 10\text{ bar}$	0,03 bar	0,05 bar

> 10 bar	0,05 bar	0,08 bar
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(Note: The MPEs of tyre pressure gauges of class I are based on the requirements for Tyre Pressure Monitoring Systems, (TMPS) according to ISO 21750. MPE for TMPS is 2%FS (Full Scale) with a maximum of 10 kPa (0,01 bar). The Full Scale is meant to be maximum 375 kPa (3,75 bar), however tyre pressure gauges should also be suitable for tyres of trucks. MPE for tyre pressure meters (fit to communicate with TMPS) should be 1/5 of MPE of TMPS up to 3,75 bar (rounded to 4 bar) at least in the temperature range of -10 to + 40 degrees Celsius)

Table 2 for class II instruments

measured gauge pressure p_e	MPEs for class II instruments		
	environmental temperatures		
	from 15 °C to 25 °C	from -10 °C to 15°C and from 25 °C to 40 °C	below -10 °C or above 40 °C
≤ 4 bar	0,06 bar	0,2 bar	0,3 bar
> 4 bar to ≤ 10 bar	0,16 bar	0,3 bar	0,45 bar
> 10 bar	0,25 bar	0,5 bar	0,75 bar

(Note: The MPEs of tyre pressure gauges depend on the temperature. The temperature range is divided in three ranges: 1) from 15 °C to 25 °C, 2) the extended range from – 10°C to 15°C and 25°C to 40°C, as specified in the directive 86/217/EEC, and 3) temperatures outside the above given ranges. The MPEs in table II are comparable to those allowed by the directive 86/217/EEC and by the OIML R 23 as the maximal possible values. On this basis the metrological performance of EEC-type approved or OIML R 23 conform tyre pressure gauges satisfies the requirements of this annex.)

- 2.2. The hysteresis of a tyre pressure meter shall not exceed the absolute value of the MPEs in No 2.1.
- 2.3. Within a change of the operating position of ±10 degrees, instruments which require a label for the operating position, shall meet the 0,5-times of the MPEs according to 2.1.

3. Permissible influences of electromagnetic disturbances

- 3.1. With influence of an electromagnetic disturbance, the variation on the measurement result shall not exceed the critical change value as laid down in requirement 3.2 or it has to be well defined that the indication of the measurement result is not valid.
- 3.2. The critical change value is equal to the value of the MPEs for the measured gauge pressure p_e in No 2.1.

4. Suitability

- 4.1. The measuring elements shall not be connected with the pressure supply device as far as the durability of the measuring elements has not been proved by adequate durability tests.
- 4.2. The resolution of tyre pressure meters shall be at least 0,01 bar for class I instruments and 0,05 bar for class II instruments.
- 4.3. Tyre pressure gauges with presetting devices shall give specific notes and/or algorithms to prevent misuse or fraudulent use of devices (e.g. not for motor vehicle tyres)

5. Units of measurement

The indication of the measured gauge pressure p_e shall be in the unit bar or in kPa.

Conformity assessment

The conformity assessment procedures referred to in Article 9 that the manufacturer can choose between are:

B+D or B+F or H1 for class I instruments

F1 or B+D or B+E or B+F or H1 for class II instruments

grain

Proposal :

Extend the MID to the following measuring instruments : instruments used for the determination of standard mass of grain in the field of agriculture for transaction or tax reimbursement purposes.

Aim :

- Keep the principle of harmonized requirement in a field covered up to now by an old approach directive.
- Fix appropriate level of performance and enforcement in the format of essential requirements independent of technologies and provide with modern evaluation procedures of evaluation of conformity

Reasons for the development

Harmonisation exists already as this category of measuring instrument is for the time being still covered by an old approach European directive and national regulations. The intention of the Commission is to repeal the old approach directives 71/347/EEC on Standard Mass of Grain. However several members states have declared that they will maintain their national regulation even if the old approach directive is repealed which could lead to new barriers to trade in a field which was previously harmonised. Furthermore there are existing national legislation for instruments of the same category but using modern technologies (not covered by the old approach directives).

The proposal brings harmonisation of requirements and EC evaluation valid in all member states for this category of measuring instruments independently of the technology :

- for old approach instrument it brings modernization of the existing legislation and possibility of quality assurance evaluation procedure
- for all other instruments and especially recent technology instruments it provides harmonisation of the requirements in different member states.

The requirements are coherent with the requirements applicable to other measuring instruments as they are based on Annex 1 of MID which is common.

This proposal brings the possibility of CE marking of instruments by manufacturers and market surveillance by members states. This would not be possible if as an alternative to the repeal of old approach directive a simple conformity to an OIML recommendation or a standard is foreseen.

If these instruments are not covered by an European directive harmonising the requirements, there will be extra cost for member states who regulate this field as they will need demonstrate that an instrument is not in conformity with their national legislation or is unduly declared in conformity with the international standard.

If this category is included in MID there will be less cost for manufacturers to obtain approvals and free circulation and less trouble for member states as the requirements will be harmonized. Manufacturers who have existing EEC approval will keep the same benefit for new production.

In this field there is an OIML recommendation **OIML R 15** Edition 1974 (E) Instruments for measuring the hectolitre mass of cereals

Draft for the amendment

Two modifications of MID are needed :

- amendment of article 1 to include these instruments in the list of instruments covered by MID
- addition of a supplementary specific annex (see basis for a proposal below)

Draft proposal for a new annex of MID

Measuring instruments used to determine the EC standard mass per storage volume of grain

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex, apply to measuring instruments, which are used to determine the EC standard mass per storage volume of grain.

Definitions

Standard mass per storage volume

The standard mass per storage volume is the ratio of the mass expressed in kilograms to the volume expressed in hectolitres, as determined for any kind of grain.

Specific requirements of measuring instruments

1. Rated operating conditions

The rated operating conditions shall be specified by the manufacturer:

1.1. The measuring range of the standard mass per storage volume in kg/hl.

1.2. The kind(s) of grain for which the standard mass per storage volume is determined.

1.3. Environmental conditions

The values for the temperature range shall be not less than 5 °C up to 40 °C.

The control samples shall have a moisture content between 9 % and 14 %

2. Maximum permissible errors (MPEs)

2.1. The MPE of the EC standard mass per storage volume obtained as a mean value of duplicate determinations for a certain kind of grain shall be 0, 5 kg/hl from the result given by a standard instrument.

2.2. The amplitude between the highest and lowest value measured shall not exceed 0, 3 kg/hl.

3. Permissible influences of electromagnetic disturbances

With influence of an electromagnetic disturbance, the variation on the measurement result shall not exceed the critical change value as laid down in requirement 2.1 or it has to be well defined that the indication of the measurement result is not valid.

4. Units of measurement

The EC standard mass per storage volume shall be indicated in kilograms per hectolitre with one decimal place.

Conformity assessment

The conformity assessment procedures referred to in Article 9 that the manufacturer can choose between are:

For measuring instruments used to determine the EC standard mass per storage volume of grain of other kinds of grain or in variation in type:

B+F or B+D or H1.

Proposal :

Extend the MID to the following measuring instruments : ship's tanks

Aim :

- Keep the principle of harmonized requirement in a field covered up to now by an old approach directive.
- Fix appropriate level of accuracy of measurements used for determination of tax, transactions and enforcement in the format of essential requirements independent of technologies and provide with modern evaluation procedures of evaluation of conformity

Reasons for the development

Harmonisation exists already as this field is for the time being still covered by an old approach European directive and national regulations. The intention of the Commission is to repeal the old approach directives n° 71/349/EEC on Calibration of Ship Tanks.

However several member states have declared that they will maintain their national regulation even if the old approach directive is repealed which could lead to new barriers to trade in a field which was previously harmonised.

The proposal brings harmonisation of requirements and EC evaluation valid in all member states for this category of measuring instruments independently of the technology :

- for measurements covered by the old approach directives it brings modernization of the existing legislation and possibility of quality assurance evaluation procedure
- for all other instruments and especially recent technology instruments it provides harmonisation of the requirements in different member states.

The requirements are coherent with the requirements applicable to other measuring instruments as they are based on Annex 1 of MID which is common.

This proposal brings the possibility of CE marking of instruments by manufacturers and market surveillance by members states. This would not be possible if as an alternative to the repeal of old approach directive a simple conformity to an OIML recommendation or a standard is foreseen.

If these instruments are not covered by an European directive harmonising the requirements, there will be extra cost for member states who regulate this field as they will need demonstrate that an instrument is not in conformity with their national legislation or is unduly declared in conformity with the international standard.

If this category is included in MID there will be less cost for manufacturers to obtain approvals and free circulation and less trouble for member states as the requirements will be harmonized.

Existence of an OIML recommendation

In this field there is an OIML recommendation OIML R 95 Edition 1990 which could serve as a normative document bringing presumption of conformity to the essential requirements.

Draft for the amendment

Two modifications of MID are needed :

- amendment of article 1 to include these instruments in the list of instruments covered by MID
- addition of a supplementary specific annex (see basis for a proposal below)

ANNEX MI-xxx

SHIPS' TANKS

The relevant essential requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this chapter, apply to tanks of inland water vessels and of coasters.

DEFINITIONS

Tanks

Tanks are an integral part of the ship, used either for the transport and measurement of liquid products in bulk, or for the storage and measurement of the fuel oil used by the ship herself.

Dip

The vertical distance between the dipping datum point and the liquid level.

Note: The term "innage" is synonymous.

Ullage

The distance between the liquid level and the upper reference point, measured along the vertical measurement axis.

Note: The term "outage" is synonymous.

Upper reference point

A point clearly marked on the principal gauge hatch located along the vertical axis ascending from the dipping datum point to indicate the reference position to which ullage is measured.

Reference height H

The distance between the dipping datum point and the upper reference point, measured along the vertical measurement axis.

Basic rules for testing

1. The measuring instruments used to determine the level of the liquid in tanks calibrated in accordance with this Directive shall be specially adapted for this purpose.
2. A calibration operation shall be carried out in such a manner and with instruments of such an accuracy that the relative errors of the volumes stated in the certificate of calibration do not exceed:
 - a. plus or minus 0.3 % of the stated volume,
 - b. plus or minus 0.5 % of the stated volume for tanks of irregular shape.

Allowable errors

3. The allowable error for the volume measurements are the combination of the error from the tank calibration and the error from the measuring instrument used to determine the level of the liquid in the tank. Where article 2a applies these error shall not exceed plus or minus 0.5 % of the volume indicated in the table, and, where article 2b applies it shall not exceed plus or minus 0.8 % of that volume.

Suitability

4.
 - a. Tanks and their associated pipe work shall be designed, constructed and arranged in such a way that under the normal conditions of operation of the ship, the measurement of volume is performed accurately and reproducibly.
 - b. If any precautions have to be taken to ensure correct measurement, they shall be mentioned in the certificate of calibration.

5. 5.1 The vertical face of the measure of length at which the heights of the liquid are determined shall pass, as a general rule, approximately through the centre of gravity of the horizontal sections of the tank, in every part where a free surface of the liquid may occur when measurements are made under normal conditions of use.
- 5.2 If the above condition can not be met because of the construction characteristics of the tank, one of the two following solutions shall be adopted:
 - a. The level of the liquid in the tank shall only be determined when the vessel has zero trim and list or
 - b. Corrections, corresponding to the different angles for trim and list, shall be applied for each tank.

Information to be borne by and to accompany the instrument

6. The results of the calibration operations shall be recorded in a calibration certificate which is accompanied by diagrams and tables showing for each tank the volume of liquid either as a function of the level of the liquid or as a function of the distance between the liquid level and the upper reference point.
7. The calibration certificate shall indicate the minimum measurable height and the maximum relative error that may arise when the tanks are used to measure the volumes of the liquids they contain, taking into account:
 - a. the uncertainty of determination of the volumes indicated in the table, and
 - b. the accuracy of the instrument used to determine the position of the free surface of the liquid in the tank.
8. The calibration certificate shall furthermore contain information to
 - a. identify the vessel;
 - b. identify the tank;
 - c. verify the characteristics of the tank.
9. A calibration data plate shall be fixed on each tank near the gauge hatch. It shall bear the following markings:
 - a. identification of the tank,
 - b. reference height H,
 - c. identification of the calibration certificate.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 9 that the manufacturer can choose between are:

D1 or F1 or G or H1.