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ENTERPRISE AND INDUSTRY DIRECTORATE-GENERAL

Sustainable Growth and EU 2020
Innovation Policy for Growth

Task Force for Advanced Manufacturing for Clean Production Public Hearing, Brussels, 19 March 2013

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10:00 Opening and welcome address

The chairman of the Task Force for Advanced Manufacturing for Clean Production, **Bonifacio Garcia-Porrás**, welcomed well over one hundred participants to the public hearing. The mandate of the task force, he explained, is to assess barriers which negatively affect advanced manufacturing for clean production in Europe, and to propose actions for implementation which could improve the framework conditions of advanced manufacturing in Europe. The Task Force focuses primarily on actions that may be implemented within a short to medium timeframe, and through which significant effects could be achieved.

The Task Force will be concentrating on three following areas:

- Acceleration of dissemination and commercialisation of advanced manufacturing technologies for clean production
- Support to demand for manufacturing technologies for clean production
- Reduction of skills shortages and competence deficits.

Garcia-Porrás said the purpose of the public hearing was to encourage industry, Member States and other stakeholders to contribute with their innovative ideas and concrete suggestions. The next step along the road will be to consolidate all of the ideas in the forthcoming workshops, scheduled for the 27th and 28th of May this year (to be confirmed). There will be another public hearing on 19 September to validate the findings, and a final report will be published shortly thereafter. The results of the Task Force will also be submitted to the Competitiveness Council in the autumn.

In his opening statement, **Director General Daniel Calleja**, stressed that the Industrial Policy Communication update of October last year was launched with the purpose of boosting industry in Europe. The crisis has shown that countries with a strong manufacturing base have been less affected. We cannot neglect manufacturing if we want to come out of crisis, he argued.

The Commission has set an ambitious target: to raise the contribution of the industrial sector from today's 16 percent to 20 percent of GDP. The Commission has identified six priority areas for immediate action with a huge potential for growth and jobs in Europe.

The six priority areas are Key Enabling Technologies, Bio-based products, Clean Vehicles, Smart Grids, Sustainable Construction and Production, and Advanced Manufacturing Technologies for Clean Production.

Calleja held out that the Task Force aims at fostering the development and speeding up the uptake of advanced manufacturing technologies by European industry.

It is the first time that EU efforts in advanced manufacturing are brought together, providing an opportunity to tackle the issues in a more holistic manner, Calleja said. He also informed that the 15 March EU Council decided to set up a meeting in the course of 2014 which will be devoted exclusively to industrial matters. Calleja concluded his speech by encouraging all stakeholders to contribute to the work of the Task Force at the public hearing, but also through the feedback form, available at the Task Force website (click [here](#) for more information).

Financial Times Manufacturing Editor **Peter Marsh** highlighted that manufacturing employs about 300 million people around the world, roughly five percent of the global population. Manufacturing also accounts for roughly 16 percent of the world economy, which is the same figure for Europe's share. All of this enables the world to produce ten billion different products every year. He showed several graphs which told the story of how rich countries, and Europe's share in particular, of the world manufacturing output has steadily declined since the 1970s – from about 50 to today's 25 percent.

He argued that the Commission's 20 percent target would be challenging to accomplish by 2020. Yet he was happy to see the Commission put industry and manufacturing high on the agenda. Marsh highlighted six areas where Europe has its strengths and where it must continue to focus its attention to boost its industry: Technological leadership, mass personalisation, niche focus, global networking, cluster dynamics, and the service dimension.

The way forward, Marsh argued, was to showcase the best companies to tell the stories of what is really possible; support good businesses with promising prospects, e.g. with finance, research support; encourage the take-up of new technologies; promote engineering (in its broadest form); and help the development of new skills.

11: 15 First panel discussion – How can we accelerate the dissemination and commercialisation of advanced manufacturing technologies?

Key messages:

- *The Commission should focus more on dialogue with industry about research priorities which will lead to commercialisation, and increase its R&D&I spending to retain Europe's industrial leadership.*
- *It is not enough to invest in new technologies in Europe; we must also invest in the ability to exploit in a sustainable way those new technologies for manufacture innovative product-service in Europe.*

- *We should to improve Europe’s ecosystem of big and small companies by promoting broad collaboration.*

The first panel discussion was moderated by **Andrea Gentili**, (Deputy Head of Unit) DG Research and Innovation, who asked the panellists: “*How can Europe accelerate the dissemination and commercialisation of advanced manufacturing technologies?*”

Massimo Mattucci, the chairman of the *European Factories of the Future Research Association* (EFFRA), explained how the Factories of the Future public-private partnership under the 7th Framework Programme is promoting job creation, growth and industrial leadership by focusing on four different domains: sustainable manufacturing, ICT-enabled intelligent manufacturing, high-performance manufacturing, and by exploiting new materials through manufacturing. There are more than 700 organisations across Europe participating in the calls, industry participation is over 50 percent, and SMEs account for about 30 percent.

In this context, EFFRA had put forward a new strategic research roadmap 2014-2020 for the continuation of the “Factories of the Future” PPP under Horizon 2020, which had been consulted with industry. The roadmap has six different research and innovation priorities: advanced manufacturing processes; adapting smart manufacturing systems; digital, virtual and resources efficient factories; collaborative and mobile enterprises; human-centred manufacturing; and customer-focused manufacturing.

Mattucci answered the moderator’s main question by arguing that Europe has to spend more on R&D&I to create more jobs and foster higher growth. “It is the only way that we can retain our industrial leadership, and that must be the focus”, he said.

Gernot Klotz, representing the *Sustainable Process Industry through Resource and Energy Efficiency* (SPIRE), explained how the SPIRE initiative involves eight sectors that are working together – chemical, steel, engineering, minerals, non-ferrous metals, cement, ceramics and water. In sum these sectors combine 450,000 enterprises all over Europe, employ 6.8 million people, and make up to 20 percent of Europe’s GDP.

Klotz continued his presentation by reflecting on Europe’s strengths vis-à-vis Asia and America: Whereas Asia is characterised by significant growth, large investments and “one-policy direction”, and America is renowned for its entrepreneurial spirit, we should remind ourselves that Europe has an excellent research base, an ecosystem of SMEs, the proximity of value chains, the skills to deal with complex products and also demanding consumers who want only the highest quality products and services, he said.

Klotz suggested the following course of action for a successful European manufacturing industry:

- Advance innovative ways for the public and private to work together; the PPP model is a good example.

- Prepare multiplication/dissemination now (beyond 2014) of new manufacturing technologies by reviewing existing barriers, within and beyond the current sectorial approaches.
- Speed up the market uptake of new technologies by taking into account the whole production value chain when designing policies and projects, and by driving innovation both ways, up and down the value chain, simultaneously.
- Improve the ecosystem of big and small companies by promoting collaboration and guidance.
- Define a common language and understanding between stakeholders; i.e. the Technology Readiness Levels (TRL).
- Provide evidence through global benchmarking.
- Develop Key Performance Indicators (KPIs) for output on innovation
- And by teaming up research and innovation programmes with skills development.

Claude Stoufs, a Senior Investment Manager at Capricorn Venture Partners, explained how this company invests in early-stage technology-based investment opportunities. The company is always aiming for significant shareholding position, because impact on company strategy is a requirement, he said. Investments are made across Europe, but also in Asia and America.

According to Stoufs, roughly 95 percent of all investment opportunities presented to any venture capitalist are declined, yet close to 50 percent are (very often insufficiently) financed, one way or another. Stoufs presented what he called the “the five Ms parameters of a successful investment”, which included: *management, mode of action, market, mind, and money*.

As an answer to the moderator’s key question, Stoufs highlighted that it is not enough to invest in new technologies in Europe, we must also invest in the ability to *exploit in a sustainable way those new technologies for manufacture innovative product-service in Europe*.

He suggested eight points as a course of action:

- Create a continuum of capital access, from start-up to scale-up.
- Europe must increase its R&D funding in top cross-cutting technologies.
- Enhance industry-university collaboration in advanced manufacturing research.
- Correct public misconceptions about manufacturing – it is the future, not the past.
- We need to expand our pool of talents, because we need more students to pick engineering as their future profession.

- We also need keep people with vast experience to work longer before they retire, to “tap the talent pool of returning veterans”.
- Invest in scientific engineering in our schools and institutions of higher education.
- Streamline regulatory policies and maybe implement a set of targeted tax reforms.

Stoufs also presented an industrial example explaining that, for instance, the huge EU import duty on fructose syrup – imported from, for instance, North America – has a collateral damage in the sense that a major innovation in the field of advanced polymers, fully developed in Europe, will very likely be scaled up in North America and not in the EU. This EU import duty more than double the price of the raw material/feedstock if the production unit would be in the EU, as this raw material is indeed a significant component of the full production cost.

13:30 Second panel discussion – How can we boost the market uptake of advanced manufacturing technologies?

Key messages:

- *Legal certainty and predictability for industry in Europe and a joint policy making on European and national levels should be ensured. These are the essential pre-conditions for manufacturers to be able to make investments.*
- *Improvements in (clean) production processes are not always perceived as a priority; many companies would rather opt to make investments in their end products*
- *European Research and Innovation Programmes should support final stages of technology development in the form of industrial-scale demonstration projects.*

The second panel was moderated by **Bonifacio Garcia Porras**, Head of Unit, DG Enterprise and Industry and chairman of the Task Force for Advanced Manufacturing for Clean Production. He started the discussion by highlighting the importance of linking the topic of commercialisation of advanced manufacturing technologies with demand side issues. How can we boost the market uptake of advanced manufacturing technology, and what are the obstacles?

Garcia Porras explained that the objective of this panel was to assess whether action is needed on the side of demand, which can stimulate the uptake of advanced manufacturing technologies in production. Apart from efforts made in research and skills, it is of key importance that the market is receptive to available innovations, and that the demand of advanced technologies and goods is not burdened by unjustified obstacles, Garcia Porras argued.

Demand-side measures may be undertaken by the European Commission to speed up investments in, and uptake of, advanced manufacturing technologies. The European Commission aims to use its toolkit to stimulate demand of advanced manufacturing technologies for clean production; for example regulation, standards, access to finance and to world markets.

The first speaker was **Adrian Harris**, the Director General of Orgalime, the European Engineering Industries Association. “If we look at the share of engineering in Europe’s industrial production we can be delighted, because it looks as if it is becoming progressively more important, but overall manufacturing output is rather flat”, he said at the outset. To correct what he described as “flat output” he suggested measures which the EU could launch to support the market uptake of advanced manufacturing technologies.

He went on to underline the importance of legislative predictability for Europe’s industry. “If rules are changed, investments might be lost, and without predictability you will see less investment”, he maintained. “Some pieces of legislation in force could theoretically be galvanising the demand for advanced manufacturing products, for example the Energy Performance in Building Directive and the Energy Efficiency Directive, but they are not yet playing their full role in this regard as the implementation is not completed yet, e.g. in smart meters”, Harris continued.

He also stressed the need for joint policy making in terms of better coordination and cohesion of national and European legislation, while also arguing that standardisation could play a driving role, for example in the case of plugs for electric cars.

Andrea Reinhardt, Board Member of *microTEC*, noted that the earlier end-users, industry and SMEs are involved in common projects, the higher the impact of new technologies will be.

She went on to explain what should be done to obtain better application of technological project results: each public co-funded applied research project should provide more information about their project and what it offers compared to existing technology, she argued. “The first thing is to understand what a technology project is about. If everyone who is running a new project had a two-pager on their company website to explain clearly why their presented approach was more cost-efficient and more environmental-friendly, it would be easier for customers to understand it and use it”, she said.

Hence, clean production projects ought to communicate better, and in a user-oriented way, the clear benefits of the new technology, while keeping in mind the lifetime of the products and the full value chain; e.g. low energy costs, low costs for recycling, easy-to-manage-and-monitor production, and easy to handle licensing agreements. This would also bring about less safety risks for employees, higher workplace attractiveness, which in turn would make it easier to attract people with high skills, Reinhardt argued.

The second issue she stressed was the need for open access to publications of new technology projects and their results (through technology magazines for instance) which should be ensured inter alia to universities and students.

Bernhard Kohl, who represented voestalpine, stated that investment in greener production is not only good for the environment, it could also be very good business. Yet to achieve both, better business and cleaner production, European companies need the right incentives to modernise their production processes, he argued.

Mr Kohl urged authorities and politicians to set the framework for growth, and for companies to make innovation one of their strategic core values. The only potent driver for technology pick-up is a company's economic growth. "It is through growth that a company can afford to invest in new technologies", he said, and elaborated: "If examined on a rather abstract level, the growth of a company is fostered by a growth-oriented policy framework, and an innovation-oriented company strategy." Growth oriented policies could cover a wide range of issues, such as cost of labour, infrastructure, administration, education levels, market access rules or environment protection obligations. Against this background it is easy to see why and under which conditions investing in a greener production may indeed be a good business investment" Kohl explained.

He went on saying that no circular reasoning is involved in this argument, because the growth-oriented framework would have to apply to the whole of the economy and so spur its growth, which will propagate through the value-adding chains and so in turn allows companies to invest in new production technologies. Establishing demand measures only for new production technologies alone will have no or no lasting effect, because it fails to raise economic activity in general. However, successfully induced growth cannot take place without modern production technology and in this sense it is also an enabling precondition for the materialisation of growth-potentials, which may be established by a growth-oriented framework.

According to Kohl, European Research and Innovation Programmes should support final stages of technology development in the form of large industrial-scale demonstration projects. First, the existence of a successful operation of industrial-scale equipment even at only one site will serve as a technology show-case. Second, if such support schemes are designed in a way, which allows involvement along value adding chains the time-to-market will be significantly shortened. In this respect voestalpine has some expectations for the Public Private Partnership SPIRE, which in theory would be designed to allow for this approach, he concluded.

Matteo Fusari, who represented the European Investment Bank, explained how the EIB has been tasked to provide long term financing for EU projects, with the overall target of furthering European integration. The EIB supports projects that make a significant contribution to growth, employment, economic and social cohesion and environmental sustainability in Europe and beyond. Fusari said that the development of new technologies with long lead times – such as advanced manufacturing – are in principle covered by the EIB's lending policy. He also mentioned the EIB's recent capital increase of the 10 billion euros. Fusari explained what the EIB understands as "project" (duration, eligible cost items, etc) for research and for innovation projects, including first market launch, demonstrators and pilots.

Holger Kunze, Director of the VDMA European Office, stated that according to recent VDMA studies efficiency gains could be increased by 60 percent if available efficiency technologies would be put to use. Improvements in production processes are not always a priority; many companies would rather opt to make investments in the end product.

According to Kunze, it has also been observed that in average ten times more employees are involved in innovation of a product than in innovation of a production process.

For many technologies, companies cannot provide sufficient references and evidence that the new technology actually works, he said. Another reason for the slow uptake of innovations, which could potentially increase the efficiency of the production process, had to do with payback periods: “VDMA members have made the observation that investments in energy efficiency are made only if the payback period is less than two years, but very rarely will you find energy efficiency investments paying off in less than two years”, he said. “We are talking about good economically reasonable investments, but other investments are priorities because they have shorter payback periods”, Kunze argued.

To overcome this particular challenge, VDMA had suggested a credit model based on the idea to realise future efficiency returns already at the time of investment. The idea was to give companies a loan for the investment plus an advance on the efficiency gains to be realised during the time of the usage of the technology. The loan would therefore amount to 130-140 percent of the value of the investment, depending on the circumstances of each individual case. With the remaining efficiency gains the annuities for the loan are paid. With this concept the loan does not only pay for the investment but provides also additional liquidity which could be used for other investments, he said.

In Germany, private banks had so far not been interested in implementing such credit model. Public financiers are cautiously interested. The idea is now to “Europeanise” the idea, and investigate whether the EIB could be interested, he concluded.

15:00 Third panel discussion – How can we reduce skills shortages and competence deficits?

Key messages:

- *University-Business cooperation is very important, including in terms of curricula development, so as to ensure that skills better match what the industry needs.*
- *Research and innovation projects should be better disseminated to make it more attractive for educators and students. This could further support the development of innovation and entrepreneurial skills among young people.*
- *More emphasis should be put on workers' lifelong training.*

The third panel was moderated by **Peter Baur** (Deputy Head of Unit, DG Education and Culture) who asked the panellists: “How can we reduce skills shortages and competence deficits in manufacturing?”

Augusta Maria Paci of the Italian National Research Council said that there are three main messages, relevant for this pillar area, which could be derived from the past decade

about skills and competences in Europe:

First, we have already a generic model of industry-academia collaboration in place in Europe. There are high-skilled people in European the industry, based on a strong partnership between academia and industry, reporting on best practices.

Second, key skills development is decided in accordance with new forms of production, and to match the continuous development of advanced manufacturing technologies. A pre-condition for success is the existence of basic education systems which offer the development of competences in sciences.

Third, development of students' competencies in the digital environment is very important. We must enable students to be ready for the modern workplace, she said.

Is there a mismatch between how students are taught and trained on the one hand, and industry needs on the other? According to Paci this is a general problem in industrialised countries – and now also in the United States, there is a broad dialogue on this topic.

Paci also said that technology development is central but it will not be possible without qualified and skilled people.

Sue Fleet, representing SusChem ETP, the European Technology Platform for Sustainable Chemistry, argued that university-business cooperation has, for too long, been limited to research activities. The partnerships should target educators and involve them in the discussion in the way education is provided.

There is the need to put more emphasis on the dissemination of research and innovation project results, making these attractive for educators and students. This would support the development of innovation and entrepreneurial skills among young people, she said.

According to **Uwe Combüchen**, Director General Council of European Employers of the Metal, Engineering and Technology-based Industries, there is no doubt a link between right skills and competitiveness, innovation, growth. Right skills equally contribute to the employability of the individual – whether it is a young or an older worker, he said. Education and training systems and skills are in the first line a national and a company issue.

Combüchen mentioned the 2010 CEEMET iVET study, which was based on members' input and dedicated to improving cooperation between industry and providers of training. "More flexible curricula and teaching methods are needed as well as a shift to a learning outcome approach", he said. One possible way identified was the promotion of a culture of practical learning in primary and lower secondary to introduce pupils to science, technology, engineering, and mathematics (STEM). Via cooperation we would achieve excellence in vocational education and training (VET) and increase attractiveness of VET in metal, engineering and technology-based (MET) industries. And industry itself must continuously communicate its competence needs, he argued.

But training should also take place in the workplace. There seems to be a gap between

industry needs and students' qualifications, so the emphasis should be laid on making academic curricula more flexible, and industry should improve their feedback in terms of competences they need. Industry should also be more involved in the development of curricula, so that skills better match what the industry needs.

Combüchen concluded with two key messages:

- The EU should support dissemination of good national examples (“pooling for training” – and in particular for SMEs), increase mutual understanding, and the EU should also seek dialogue with industry – CEEMET is interested and prepared.
- Advance the Knowledge and Innovation Community (KIC) on added value manufacturing well before 2018, as this KIC would represent a real chance to enhance innovation and educate a highly skilled workforce with practical experience of industry and R&D.

Ulrich Eckelmann, General Secretary of industriAll Europe, mentioned that advanced manufacturing industry will not work properly without well-trained and educated workers. This should go along with well-paid workers, and the workers' involvement in the decision-making processes. The development of competences, education and training needs to be discussed together with management and works councils.

We should support lifelong learning, he said. In this context an emphasis should be put on more effective workshop trainings. It has been observed that less educated workers do not participate in education and training activities. We need more and better structured occupational trainings as a preparation for a job. If we talk about competitiveness and needs of advanced manufacturing technology, we should not forget about workers and works councils. This is the precondition to get any results, he reminded the audience.

Professor George Chryssolouris of the University of Patras presented the concept of 'Teaching Factories' and underlined the need to bring the classroom to the factory, and the factory to the classroom. The idea of the Teaching factory is being partially supported via the pilot EU Knowledge Alliances initiative. The project implements several pilot actions that actively involve industrial and academic partners as Volvo, Festo, the University of Patras, Politecnico di Milano or the Technical University of Darmstadt. The idea is to, on the one hand, involve students with creative and innovative ideas into the world of the factory, and on the other, bring the experienced engineers from the factory to the classroom. This is a way to get the best out of the knowledge triangle – education, innovation and research, he concluded.

Comments from the audience:

- Europe does not lack ideas; it lacks entrepreneurs and a risk-taking mind-set. We should assemble a critical mass of entrepreneurs for sharing the knowledge those people acquired in different regions of the world. We need to learn from successes and failures of others.
- Standards are not relevant only to technologies, but also to education. We should develop a common model of qualifications on the European level.
- We should improve workplaces and make them more productive. It has also an impact on the way we attract and retain skills.

16:15 Summary and conclusions

Director Carlo Pettinelli (DG Enterprise and Industry) summed up the discussion and reiterated that advanced manufacturing technologies are a priority in the Commission's new industrial policy to enable competitive and clean production in Europe. He thanked all panellists and participants for their active participation in the public hearing, and said that in order to succeed, the Task Force on Advanced Manufacturing Technologies for Clean Production will have to work closely with industry and Member States.

He also said that the forthcoming workshop scheduled for the 27-28 May, and the [online questionnaire](#), were important in order to collect ideas on how to improve the competitiveness of European industry.

A second public hearing is foreseen for 19 September 2013 with the aim of validating the proposed short-term actions. The Commission will report on the results of the Task Force in the autumn.

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Annex1: List of participants to the Public Hearing of March 19

First Name	Family Name	Country	Organisation
Marco	ABATE	Belgium	European Commission
Charlotte	ANDERSDOTTER	Belgium	European Commission
Annamalai	ARUNJUNAI	Netherlands	TNO
Lanfranco	BENEDETTI	Belgium	SEA Europe
Michael John	BENNETT	Belgium	European Commission
Francesco Giuseppe	BETTIOL	Italy	TENARIS
Fanny	BROKAMP	Germany	Senator für Wirtschaft, Arbeit und Häfen des Landes Bremen
Rikardo	BUENO	Spain	TECNALIA
Gordon	BUHAGIAR	Belgium	European Commission
Gelu	CALACEAN	Belgium	European Commission
José Carlos	CALDEIRA	Portugal	PRODUTECH / INESC PORTO
Pietro	CALOPRISCO	Belgium	EPIA
Jesus	CARBAJOSA	Spain	International Center for Numerical Methods in Engineering (C
Gilles	CASANOVA	France	STMicroelectronics
Peter	CHURCHILL	Belgium	European Commission
June	COOLS	Belgium	EC
Koen	COPPENHOLLE	Belgium	CEMBUREAU
Ronald	DE BRUIN	Belgium	European Commission
Timoteo	DE LA FUENTE GARCIA	Belgium	European Commission
Olivier	DEBANDE	Belgium	European Investment Bank
Chris	DECUBBER	Belgium	EFFRA

Raul Mario	DEL TORO MATAMOROS	Spain	Center for Automation and Robotics (UPM- CSIC)
Emir	DEMIRCAN	Belgium	CECIMO
Francesca	DORIA	Belgium	European Commission
Arnaud	DUVIELGUERBIGNY	Belgium	COGEN Europe
Caterine	EBAH MOUSSA	Belgium	European Commission
Pentti	EKLUND	Finland	VTT Technical Research Centre of Finland
Ivar	ENGAN	Belgium	European Commission
Caterina	EPIS	Italy	Tenaris
Marco	FALZETTI	Italy	Centro Sviluppo Materiali
Erastos	FILOS	Belgium	European Commission
Sue	FLEET	United Kingdom	Britest Limited
Maike	FRESE	Belgium	Representation of the Free Hanseatic City of Bremen
Laurent	FRIDERES	Luxembourg	PwC
Matteo	FUSARI	Luxembourg	EIB
Bonifacio	GARCIA PORRAS	Belgium	European Commission
Maurizio	GATTIGLIO	Italy	Prima Industrie SpA
Filip	GEERTS	Belgium	CECIMO
Volker	GENETZKY	Germany	Ministry of Economy and Technology
Ourania	GEORGOUTSAKOU	Belgium	SEMI
Johannes	GERNANDT	Germany	VDMA
Loredana	GHINEA	Belgium	ASPIRE
Justyna	GORZOCH	Poland	Ministry of Economy
Franki	GRILLI	Belgium	Ferrero
Jarl Lennart	GRUNDBERG	Belgium	European Commission
Joan	GUASCH	Spain	Ascamm
Andreea	GULACSI	Belgium	CEN - European Committee for Standardization
Gokalp	GUMUSDERE	Belgium	CECIMO

Sonja	HAERTEL	Belgium	Office of the Land Berlin to the EU
Korrina	HEGARTY	Belgium	CECED
Simon	HUNKIN	Belgium	Greenovate! Europe
Dusan	JAKOVLJEVIC	Belgium	Energy Efficiency in Industrial Processes (EEIP)
Peter	JOHANSSON	Sweden	Association of Swedish Engineering Industries
Francesco	JOVANE	Italy	Politecnico di Milano
Roderick	KEFFERPUTZ	Belgium	European Parliament
Patrick	KENNEDY	Belgium	EFFRA
Gernot	KLOTZ	Belgium	CEFIC
Uwe	KÖNIG	Germany	VECCO e.V. / CETS
Durk	KROL	Belgium	WssTP
Holger	KUNZE	Belgium	VDMA
Minna	LANZ	Finland	Tampere University of Technology
Christos	LIASKAS	Greece	Permanent Representation of Greece to the EU
James	LOGAN	United Kingdom	Rolls-Royce plc
Bernard	LOMBARD	Belgium	CEPI
Petros	MAMALIS	Belgium	European Commission
Sivasegaram	MANIMAARAN	Belgium	European Commission
Kristian	MARTINSEN	Norway	SINTEF Raufoss Manufacturing
Valerio	MAUSSIÉ	Italy	TENARIS
Heidi	MOENS	Belgium	European Commission
Erica	MONFARDINI	Luxembourg	PwC Luxembourg
Wim	MOONEN	Netherlands	Tata Steel R&D
Annie	MUTAMBA	Belgium	Cefic
Odd	MYKLEBUST	Norway	SINTEF
Henrikas	MYKOLAITIS	Lithuania	LINPRA, the Engineering Industries Association of Lithuania
Susanne	NEEB	Belgium	ASPIRE

Oscar	NIETO	Belgium	CEPMC
Augusta Maria	PACI	Italy	National Research Council
Sonja	PAJKOVSKA	Germany	Fraunhofer IPK
Paolo	PATRUNO	Belgium	Federalimentare
Zeljko	PAZIN	Belgium	European Factories of the Future Research Association-EFFRA
Joseba	PEREZ BILBATUA	Spain	MONDRAGON CORPORATION
Lothar	PFITZNER	Germany	Fraunhofer - IISB
Giulia	PICANO	Belgium	Confindustria
Lionel	PLATTEUW	Belgium	EUnited
Maila	PUOLAMAA	Belgium	European Commission
Melanie	RENSONNET	Belgium	Service Public de Wallonie
Tim	REYNOLDS	Belgium	Inta Communication Ltd
Christoph	RIEDMANN	Belgium	Orgalime
Felix	ROHN	Belgium	European Commission
Sven	SAMUELSEN	Norway	the Research council of Norway
Maria	SANDQVIST	Sweden	Swedish Engineering Industries
Aurela	SHTIZA	Belgium	European Industrial Minerals Association (IMA-Europe)
Andrew	SMALLEY	United Kingdom	Britest Limited
Osvaldas	ŠMITAS	Belgium	Permanent Representation of Lithuania to the EU
Marc	SOIGNET	Belgium	Platte Consult
Kåre	SØRENSEN	Denmark	DI
Michaela	STRAßMÜLLER	Germany	Bavarian State Ministry of economic affairs
Mischa	TERZYK	Belgium	IndsutriAll Europe
Hasan Burak	TIFTIK	Turkey	TUBITAK
Natascha	VAN BIJSTERVELD	Belgium	ACCÍÓ
Luc	VAN DEN BERGHE	Belgium	CEN-CENELEC Mangement Centre
Tanguy	VAN REGEMORTER	Belgium	Pole Mecatech

Paulo	VARIZ	Belgium	Permanent Representation of Portugal to the EU
Pedro	VITORIO	Portugal	EDP – Energias de Portugal SA
Lutz	WALTER	Belgium	Euratex - Textile ETP
Sophie	WILMET	Belgium	CEFIC
Murad	WISNIEWSKI	Belgium	European Commission
Timo	WÜRZ	Germany	VDMA German Engineering Federation
Lorenzo	ZITO	Belgium	Finmeccanica

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To read more about the task force for Advanced Manufacturing for Clean Technologies,
please visit our website: http://ec.europa.eu/enterprise/policies/industrial-competitiveness/amt/index_en.htm