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Issue #10

cecimo

Where manufacturing begins

magazine

DIGITISATION

Is Europe ready for the
future of manufacturing?



Meet CECIMO new president - Luigi Galdabini speaks about his objectives for the next two years



Trade:
New markets emerge
for European machine
tool builders



Skills:
CECIMO launches
METALS to tackle the
skills challenge in the
machine tool industry





EMO

Hannover

18-23·9·2017

The world of metalworking

Connecting systems for intelligent production!

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Digitization: driving manufacturing to the next level



Dear readers,

Digital technologies are present in all segments of the manufacturing industry. By making use of the data available along the value chain, manufacturers optimize their operations, increase the quality of products and manage their after-sale services on the market. On the whole, the manufacturing industry is experiencing an unprecedented level of connectivity at transnational level and European policy-makers have already made considerable efforts underpinning Europe's continuous digital transformation.

Various initiatives pertaining to digitisation have been launched by governments to help businesses generate manufacturing solutions for the next generation. Yet, Europe needs to pool its resources and act in a coordinated manner to cope with the increasing pressures from competitors across the world. The business models in the manufacturing industry are evolving fast, making it necessary for our policy-makers to explore new measures providing manufacturers with the right framework conditions. New collaboration avenues must also be developed for manufacturers and ICT actors, ensuring Europe is a centre of excellence for digital manufacturing. Manufacturers need to master the use of data available in the industrial context, because that data is the new oil for the economy. For these strategic reasons, we have chosen digitisation as the theme of this CECIMO magazine edition. We hope to provide our readers with different views on policy and the business aspects of digitisation.

Other key developments in the European machine tool industry are covered by the CECIMO magazine. With the EU removing sanctions on Iran, a large and untapped market opens up for European machine tool builders. Concerning skills, CECIMO, together with its member associations, has recently launched the European Machine Tools Alliance for Skills improving the delivery of vocational training in the sector vis-à-vis new technologies. Regarding energy-efficiency, the industry is now looking for the best ecodesign instrument.

All things considered, the European machine tool industry is going through an unparalleled time of change. Our companies need to be ready for the future and rise up to new challenges to maintain Europe's global leadership in manufacturing. This can be achieved only if all stakeholders of the manufacturing industry work together reaching European common goals.

Filip Geerts
Director General

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CECIMO bring stakeholders together to raise up to the skills challenge

As new technologies emerge, the skills gap widens.

During CECIMO's 2015 Fall Meetings, light was shed on the interaction between emerging technologies in the machine tool sector and the competences held by the industry's workforce. The correlation between these two aspects was tackled in the frame of a CECIMO-held panel debate which gathered together EU policy-makers and industrialists from the sector. Entitled "Raising Europe's competitiveness through new skills", the debate aimed to deepen the understanding of the skills gap issue facing the sector through the exchange of opinions between the policy and the practitioner's side, and contribute to the decision-making process on the topic.

CECIMO's delegates in the panel stressed the role of work-based learning and vocational education and training (VET) in providing the skills needed in the European machine tool sector. Yet, VET provision across the continent is today struggling to keep up with the pace of emerging technologies' developments, in additive manufacturing technologies, for example, as lack of knowledge and up-to-date equipment has rendered VET courses obsolete. Consequently, VET graduates are only in part equipped to deal with new technology-driven practices and machines on the factory floor.

Against this backdrop, large manufacturing firms possess a pool of knowledge resources, financial or other, which enables them to cope somehow with the problem. On the contrary, resource-limited machine tool SMEs are set to shoulder a heavier burden, with potential risks for their competitive and sustainable model. Fittingly, the European Commission recognises that skills imbalances are besetting the advanced manufacturing sector and provides the industry with EU-wide programmes promoting education-industry partnerships at European-level to improve the provision of VET across Europe.

CECIMO launches the Machine Tool Alliance for Skills – METALS

Making use of the framework provided by the EU's Sector Skills Alliance initiative, the European machine tool industry has launched a new initiative "METALS – Machine Tool Alliance for Skills" to influence the curriculum delivered in Europe and to supply the industry with the skills actually needed with a long-term strategy. Inaugurated in November 2015, this EU-funded initiative will improve the existing machine tool labour market intelligence by detecting the most demanded skills in the sector over the 2015-2025 period. Starting from the skills panorama obtained, a sector-wide curriculum will then be drawn, and a relevant e-learning platform and other teaching materials will be created. To prepare these, METALS will capitalize on a consortium including CECIMO itself as well as its German, Italian and Spanish national associations (respectively VDW, UCIMU and AFM), VET regulatory bodies and VET providers from the three countries listed.

Europe-wide effective measures to increase the quality of skills supply is a necessity in the present context, given that digital-driven developments in advanced manufacturing take up a larger share of industrial practices in the sector, and their benefits for time-to-market and energy efficiency are in full display. The initial stage of the project, identifying the predominant emerging technologies adopted by machine tool firms in the next decade, has been completed. This market intelligence exercise, conducted through a questionnaire submitted to experts in this area, will allow METALS partners to later focus on the skills required to reap these technologies yield. Though the process is still ongoing, the first results show survey participants expecting to see more digitally-connected factory floors as well as a greater emphasis on energy efficiency across machine tool industrial practices as two notable trends in the next future of the industry. ■



The panelists, from left: Jean-Camille Uring, Board Member of CECIMO and Fives Group, Roberto Zecchino, Vice-President Human Resources and Organization at Bosch Italy and South Europe, Martina Dlabajova, Member of the European Parliament, Joao Santos, Acting Head of Unit at DG Employment, Laurent Zibell, Policy Advisor at IndustryAll and Roger de Keersmaecker from IMEC and RDK Consulting and Coaching

What was said:

“In this era of rapid technological change, learning programmes need to be designed with the involvement of business actors to supply the industry with the skills actually needed. In this regard, vocational education underpinned by apprenticeship programmes generate outstanding opportunities by providing schools and learners with the latest innovations from the industry and by developing new channels for companies to influence the curriculum delivered by education providers.”

Martina Dlabajová, Member of the European Parliament (ALDE/ANO)



“Bridging the skills gap in manufacturing is essential for the future viability of the sector. Fostering joint public-private initiatives in the educational and training field will be crucial in tackling this issue. The set of competences acquired by VET learners will gain considerably from a greater involvement of firms in the design of curricula, as businesses can bring the sort of added value which is derived from market intelligence and profound observation of current manufacturing trends.”

Roger de Keersmaecker, IMEC, RDK Consulting & Training, Emeritus Professor of the KU Leuven



“The mismatch between skills acquired by VET learners and the skills required in the manufacturing industry is a matter of concern for Europe. The pace at which technology advances and influences manufacturing requires a rapid response from the education and training institutions to continuously update their curricula to respond to labour market needs. We need to build close partnerships between employers and VET providers (both at secondary and higher education levels), to better support the continuing up-skilling of our workforce and contribute to the competitiveness of our industry. We also need to improve our mechanisms to better anticipate future skills needs, and equip people with the key transversal competencies that will allow them to manage transitions throughout their lives. The Riga Conclusions agreed by the Ministers responsible for VET on 22 June 2015, set an ambitious agenda for VET reforms for the period 2015-2020. The Commission is also preparing the New Skills Agenda aiming to address these challenges.”

Joao Santos, Acting Head of Unit at DG Employment of the European Commission



METALS *at a glance*

Machine Tool Alliance for Skills



Challenges

Mismatch between skills gained by VET learners and skills needed in the machine tool sector

Scarce cooperation between VET providers and industry at European level

Scarce consideration of Open Educational Resources (OER) in teaching programmes

Low cross-border workforce mobility due to lack of qualifications' recognition

Public policies that are not aligned with the needs of VET providers and the MT industry

Solution offered

→ Creation of a new curriculum supporting the competences required in machine tool sector over the 2015-2025 period

→ Development of the METALS consortium with the involvement of VET providers and national MT associations from Spain, Italy, Germany as well as CECIMO as the European association representing the sector

→ Accelerating the use of new education technologies in the machine tool industry by developing an e-learning platform, publicly accessible by learners and workers

→ Development of Memorandum of Understanding to be signed up by machine tool stakeholders calling for soft harmonization of VET policies across Europe

→ Contribution to policy making processes at European and national levels by providing decision-makers with insights from the MT industry based on METALS research findings

→ For more information about METALS, contact Emir Demircan, CECIMO EU Public Affairs Manager: emir.demircan@cecimo.eu



EMO Hannover

18-23·9·2017

The world of metalworking

Connecting systems for intelligent production

is the motto of the EMO Hannover 2017. The world's premier trade fair for the metalworking sector will thus, from 18 to 23 September 2017, be intensifying its focus on the mega-trend of digitisation within the context of Industry 4.0.

"Entrepreneurs all over the world are progressing in the digitisation and networking process of their products, their production operations and their logistical chains, because they see this as the next quantum leap forward in development, with concomitant gains in competitiveness," explains the EMO's General Commissioner Carl Martin Welcker. "As the key technology for industrial production operations, the machine tool and the production process are particularly crucial to the networked factory," he adds.

EMO is the international window for production technology, and the best platform for users to find solutions for their increasingly multifaceted requirements.

What to expect at EMO Hannover 2017:

Customers are demanding holistic production and automation solutions

Smaller batch sizes, more complex parts, increased part diversity, and a combination of processes are just some of the ongoing challenges for industrial production operations. Customers need intensive support in ensuring that their machines' capacities are utilised to maximised efficiency, in optimising the material flow, and in very largely automating the increasingly elaborate administration-related non-productive times, from drawing up quotations to issuing invoices. But once these processes have been mastered, major gains in productivity can be achieved by the customers concerned.

Networking the value creation chain and service capabilities

Progress is being driven by complete-coverage networking of the value creation chain. This includes the companies' own agents, subsidiaries, vendors and customers and requires openness in terms of both systems and thinking. Comprehensive IT expertise is taking hold in the machine tool industry.

Services, consultancy and customer support from the machine tool manufacturers are also gaining in perceived importance thanks to the increase digitisation of products and processes, and will secure a competitive lead in the years ahead as well, since their share of total turnover is rising.

"Users want holistic solutions that can be coherently viewed in a single system. These require thorough comprehension firstly of the processes in place at our customers' facilities, which can be highly disparate, and secondly of the complex technologies featured in our machines," is how Carl Martin Welcker describes the ongoing discussion. EMO is the international window for production technology, and the best platform for users to find solutions for their increasingly multifaceted requirements. In 2017, the EMO Hannover will once again be the meeting point for the global world of the machine tool industry," to quote the EMO's General Commissioner.

See you there!



Carl Martin Welcker,
EMO's General Commissioner

Meet Luigi Galdabini, new CECIMO President

Interview by Vincenzo Renda, Project Coordinator, CECIMO

During its meeting held on 3 December 2015 in Brussels, the CECIMO General Assembly elected Mr. Luigi Galdabini as its President for a period of two years. CECIMO has conducted an interview with him to learn more about the goals he has set for his presidency.

CECIMO has been busy on several fronts throughout the last two years. What are in your opinion the achievements over this period of time?

I can certainly recall CECIMO's achievements in terms of engagement with policy-makers, investment opportunities and visibility. Firstly, the association brought renewed focus on investment, providing inputs to the Commission and the European Investment Bank for mobilizing public and private funds to the benefit of manufacturers. It also maintained policy-driven dialogue through the EU Task Force on advanced manufacturing technologies. Indeed, the positive outcome of CECIMO's efforts are seen in the recommendation that this Task Force drafted for directing capital to investments in productive equipment on the demand side.

Then, while emphasizing the intersection between innovation and access to finance and capital, the association progressed on the innovation side of Europe's machine tool industry. Emerging technologies such as additive manufacturing can be a real boon for the sector, which is why CECIMO organized in 2015 a specific conference on this topic. A clear message emerged: a "European strategy for additive manufacturing", able to pool together complementary capabilities and resources across Member States, is needed at EU level.

Thirdly, CECIMO continued to occupy a prominent place in the discussions about the EU Ecodesign Directive and the energy-aspect of products it addresses, and we will continue our close cooperation with the European Commission and other stakeholders in the ecodesign dossier. Lastly, CECIMO improved its business environment by continuing to make the voice of European machine tool firms heard globally. The successful EMO 2015 in Milano, drawing 155,362 registered visits over the six exhibition days and visitors from 120 countries, confirmed the exhibition to be the international innovation showcase for manufacturing technologies.

Your Presidency appears to come at a time of change for Europe's MT industry. What will be the dominating challenges for the years ahead?

Technology, skills and shifting trade patterns should characterize the years ahead for our sector. The line between digital technologies and manufacturing is certainly getting more blurred, and machine tool firms already use emerging technologies in their production processes. As the trend will become more intense, Europe's machine tool companies will need the right regulatory framework as well as public support to take full advantage of the digital world. This of course implies paying special attention to our sector's workforce. If its well-known expertise is to be preserved, efforts will also be needed to equip workers with the right skills to handle more digitized industrial practices. METALS, the CECIMO-led project on skills, is an interesting initiative advancing on the digital skills front and has just been endorsed by the EU as good practice example (see pages 4-5). Yet, more funds on developing competences should be mobilized at European level to fill the skills gap in manufacturing.



Luigi Galdabini, CECIMO President and Managing Director of Cesare Galdabini S.p.A.

Technology, skills and shifting trade patterns should characterize the years ahead for our sector.

Another challenge will come from trade internationalization. As emerging markets' trade weight rises, European machine tool producers are looking more and more considering these as new export opportunities. Yet, as the vast majority of MT companies are SMEs, going global is a difficult task and the support of public incentives will be needed to help reshaping their business model.



In this context, how can CECIMO best preserve the leading competitive position of European MT firms?

If the reindustrializing Europe is to be effectively achieved, as EU decision-makers pledged, I believe a comprehensive strategy based on three key measures will be necessary: engaging with policy-makers, building industry coalitions and promoting the underlying importance of our sector. First, CECIMO will continue to cultivate a meaningful dialogue with EU policy-makers, drawing their attention on the crucial importance of stepping up public incentives for the machine tool industry and collaborating with national authorities to tackle the looming skills gap in the sector. It will also highlight the importance of designing the appropriate regulatory framework for European machine tool firms to thrive. Second, the association will look at the broad manufacturing stakeholder scene and will pursue a coalition-building exercise with industry actors, when useful. These efforts will be based on a shared interest: boosting the EU's industrial policy.

Engaging with policy-makers, building industry coalitions and promoting the underlying importance of our sector will help maintain the leading competitive position of European MT companies.

Third, in complement of this work on the policy side, CECIMO will take actions to highlight our sector's role in the manufacturing industry through its participation in trade fairs and exhibitions around the world, especially our own exhibition EMO. Continuing to showcase our latest manufacturing solutions can only strengthen the important supplier-customer relationship the industry enjoys.

Can you give us few examples of practical changes that disrupting technologies have brought into the factory floor?

Advanced manufacturing technologies are profoundly influencing several production aspects of the machine tool sector. We can indeed affirm the industry is undergoing a period of transformation, on the back of forces such as the Internet of Things, big data management, automation and additive manufacturing. Factory floors are embracing the installation of advanced sensors on machines, from which a wealth of data is derived and analysed with a view to assess and, when needed, improve performance. Additive manufacturing techniques play a similarly positive role in boosting productivity, as their layer-by-layer production minimizes the number of operations and therefore drastically cuts time and costs as well as reduces time-to-market. Emerging technologies are not only making a mark on productivity. The disruptive force of digital-led innovation is also seen in the relationship between firms and customers: additive manufacturing offers unique advantages for customizing design production while maintaining the core high-quality standardized features that characterize machine tool products. Remarkably, these customization and flexibility aspects come at no additional costs for the customer.

What priorities will top your agenda in your new capacity as President of CECIMO?

Raising the awareness of EU decision makers around five pillars will guide my actions during my time at the head of CECIMO. First, I will work on sensitising the EU institutions' to the risks for the continent of falling into a low investment – low productivity – low growth trap caused by enduring economic uncertainties and problems to access finance. In some cases,



Luigi Galdabini, center, taking part in the roundtable " Market Surveillance Package and Product Safety – Preserving a Competitive Machinery Industry in Europe " at the European Parliament in March 2013

underinvestment is making industrial assets obsolete, all to the detriment of productivity growth. I will make the case for higher amounts of direct equity and loan guarantees for SMEs, to help them overcome capital shortages limiting productive capital investments.

This is linked to the second pillar, which is to ensure that EU decision-makers earmark more investments in advanced manufacturing capabilities so as to boost our sector's productivity. Such investments help Europe to optimize resource use, unlock the innovation potential of companies, compensate for high labour costs, and encourage value-chain cooperation in the transfer to the market of new manufacturing technologies.

Third, I will keep the focus on the necessity to devote further efforts to advance the skills of our workforce. The nature of the advanced manufacturing technologies I just mentioned implies our workforce on factory floors will need to be equipped with new competences.

Fourth, reflecting an evolving economic landscape, I will advocate for the EU to pursue free-trade deals with our trade partners while ensuring a real global level playing field for European manufacturers. In such context, CECIMO will continue to pay attention to the existing trade deal negotiations conducted by the EU, in particular with US and India.

The last pillar will concern the discussions over EU's ecodesign legislation. It is essential for market acceptance, technology readiness, industry standards and global competitiveness to be considered with care by decision-makers in this dossier.



What is your most important message to readers?

The machine tool sector has traditionally been one of Europe's strengths. Quality-driven, innovative and resource-efficient, it is also an important player on the international scene, accounting for 36% of world-wide machine tools' production. CECIMO makes sure the voice and concerns of the industry reach the right fora. Its role is now more relevant than ever, as machine tool builders are considerably affected by two mega-trends: the reshaping of trade patterns globally and the advent of disruptive technologies on the factory floor. It is clear that the innovation opportunities created by these two phenomena must be seized by European machine tool builders, and that coherent policies should be established to support them. For this

reason, CECIMO will go on underlining that the reindustrialization of Europe, an objective set out by the EU, can only become reality through a thriving, innovative, and technologically competitive machine tool industry. ■

The reindustrialization of Europe can only become reality through a thriving, innovative, and technologically competitive machine tool industry.

The European machine tool industry in 2015: figures and outlook

The recovering European economy drives the performance of the machine tool industry. Nevertheless, political disturbances and a global slowdown increase the uncertainty regarding a possible significant upswing in investment activity.

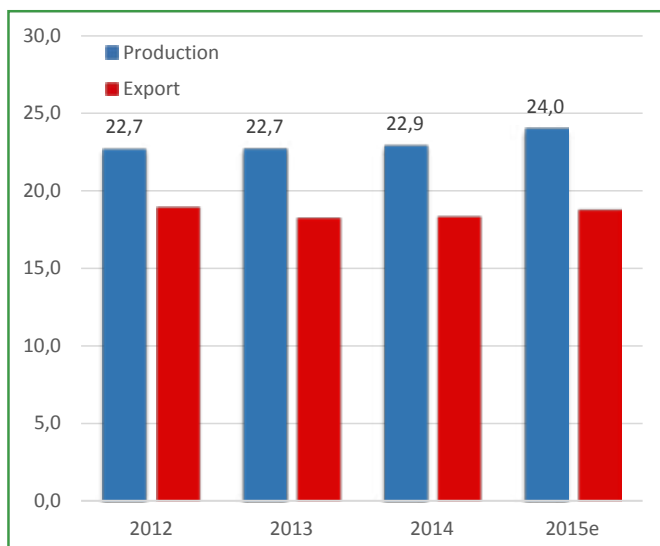
After couple of years of flat trend, the European machine tool industry gathered pace in 2015. Its production is estimated to have grown by 5%, from 22.9 billion euro in 2014 to 24.0 billion euro. However, the business climate has become less favourable over the last year and this is reflected in the sector's outlook. Several emerging markets are constrained by the raw materials' low prices, including Russia suffering from the low oil price and its weak currency, and Brazil going through a deep recession. The economic rebalancing in China has in effect cut the investment in the main machine tool customer sectors.

On the other hand, European machine tool orders showed solid increase in the fourth quarter of 2015, forecasting the machine tool production to grow in the medium term. The CECIMO8 orders increased of 19% in the fourth quarter of 2015 compared to the previous quarter. The economy's relatively good state in Europe compared to the rest of the world is also confirmed by the domestic order intake growing 36% on quarterly basis.

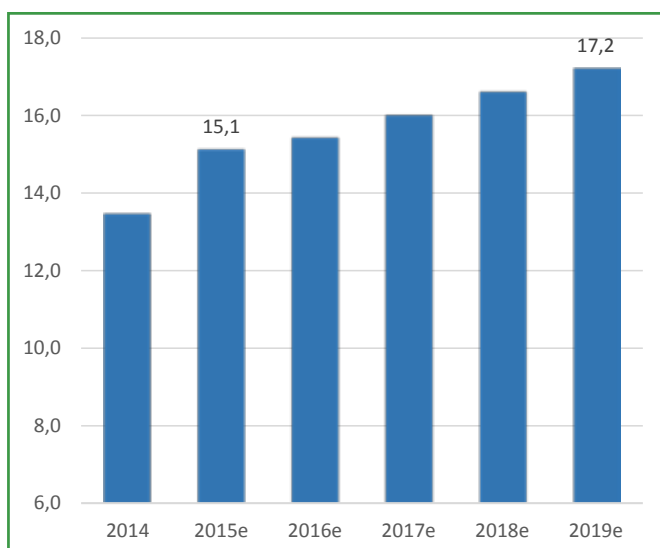
Taking into account that CECIMO exports about 40% of its production outside the EU, slowing growth in emerging markets has an effect on the trend in machine tool shipments abroad. As a counterbalance, the weak euro helps to outweigh the declining demand and increases the competitiveness of European machine tool builders. While modestly declining from the 2012 best result of 18.9 billion euro, European machine tool builders still exported machines in value of 18.8 billion euro in 2015.

According to the recent forecasts, the European economy's modest recovery is continuing. This is also reflected in machine tool consumption: European machine tool market is expected to increase of 12% to 15.1 billion euro in 2015 after growing 6% in 2014. This strong domestic demand will also drive growth in the next years. Nevertheless, the global risks to European growth are increasing and bring down machine tool consumption. We forecast the European machine tool sales to grow on average 3% annually for the next four years, at global growth's same level. ■

CECIMO machine tool production and exports, billion euro



European machine tool consumption, billion euro



Under the spotlight: unfair trading practices

Many of the commercial relationships between machine tool builders and their clients are imbalanced because one trading partner has significantly greater bargaining power than its counterpart. As a result of this situation unfair trading practices (UTPs) were brought to CECIMO's attention. UTPs are defined as practices that grossly deviate from good commercial conduct, are contrary to good faith and fair dealing and are unilaterally imposed by one trading partner to another.

While fully supporting market competition and freedom of agreements, the European machine tool industry would like to underline the negative impact of UTPs on the general sustainability and future of the European industry:

- UTPs have a negative impact on SME financing and innovation.
- UTPs harm the functioning of the EU Single Market, legal uncertainty prevents companies from selling cross border.
- There is a need to strike a deal between freedom of contract and fair dealing.
- A rules-based environment and legal certainty must be guaranteed via preventive rules across the EU.

CECIMO stressed those considerations during the recent meetings with the Cabinet of Commissioner Elżbieta Bienkowska (Internal Market, Industry, Entrepreneurship and SMEs) and Cabinet of Jyrki Katainen (Vice President for Jobs, Growth, Investment and Competitiveness).

What was said:

"European economic growth has finally resumed. While the pace remains moderate, the economic growth is more evenly distributed between European countries and not relying only on German performance. So far, the growth is driven by the private consumption which has got a boost from low oil prices and declining unemployment. There are still overcapacities in the European economy but the trend is downward. This should also improve the outlook for capital expenditure."

Despite a more positive European perspective, companies should keep in mind the following risks:

- **Hard landing in China and emerging markets,**
- **Geopolitical instability (in Syria, Russia)**
- **Grexit and Brexit - less Europe**
- **Simultaneously occurring risks may create strong psychological risk aversion driving to volatility and self-fulfilling scenarios."**

Dr Geert Gielens, Chief Economist of Belfius



"The recovering European economy has a positive influence on the machine tool builders' order books. The European machine tool consumption has shown growing trend over the last three years. Still, global uncertainties make companies careful in undertaking investment, especially big projects."

Dr Frank Brinken, Chairman of CECIMO Economic Committee and Vice-Chairman of Starrag Holding AG



EU trade issues: new markets emerge for machine tool builders

by Maret Veiner, Head of Market Intelligence Department, CECIMO

From the EU lifting its economic sanctions on Iran to the ongoing negotiations with the US on the Trans-Atlantic Trade and Investment Partnership, the extension of the sanctions on Russia and the EU export control policy review expected soon, the trade landscape is evolving. How can the European machine tool industry make the most of it?

1 Iran: EU lifts economic sanctions - what's in it for the European machine tool sector?

The European Union has put an end to its nuclear-related economic sanctions on Iran, including restrictions on Iranian trade, shipping and insurance. The country is now all set to become an important market for European machine tool builders, but some challenges first need to be addressed. The biggest bottleneck would be banks because even if the country will reconnect to the global financial system, how many banks will re-engage in Iranian business is unknown.

Iran - basic facts	2014	2015	2016
Population, million	77.8	78.6	79.5
Economic growth, %	4.3	0.8	4.4
Gross domestic product in current prices, bn €	350.6	375.4	368.3
Average consumer prices, annual % change	15.5	15.1	11.5
Total investment, % of GDP	31.0	30.8	30.7
Current account balance, % of GDP	3.8	0.4	1.3
Unemployment rate, %	10.6	11.7	12.3

Source: IMF

A market full of promises

On 16 January 2016 the International Atomic Energy Agency (IAEA) verified that Iran has

Despite the sanctions, the machine tool imports increased to 174 million euro in 2015.

fulfilled its nuclear-related commitments and that the UN, the EU and the US lifted their

nuclear-related economic and financial sanctions. This means that several sectors of the economy are now open to the EU trade and investment.

Iran is the second largest economy in the Middle East after Saudi Arabia with an estimated nominal GDP of 375 billion euro in 2015. It has the second largest population in the Middle East, almost 80 million people. The population is young, over 60% are estimated to be under 30 years old. The workforce is highly educated.

Iran's economy is currently reliant on the oil and gas sector, though the country is looking to diversify its economy. Iran also possesses significant agricultural, industrial and service sectors. The main imports to Iran are non-electrical machinery, iron and steel, chemicals and related products, transport vehicles, electrical machinery, tools and appliances.

Iran's increasing demand for industrial equipment is also reflected in machine tool imports. The government seeks ways to strengthen the industry. Despite the sanctions, the machine tool imports increased to 174 million euro in 2015.

In 2010, before sanctions were extended to include dual-use items, CECIMO exported machine tools to Iran in value of up to 157 million euro. The restrictive measures curbed the export flow to 29 million euro in 2013. However, the first relief on sanctions in 2015 have also increased machine tool exports of about 80%. The EU expects its exports of 6.4 billion euro to quadruple in the next 2 years and, if this scenario materialises for the European MT sector, Iran will rank among the Top20 export destinations for CECIMO.

An automotive sector to (re-)conquer
Iran is the biggest car producer in the Middle East and, before the economic sanctions were imposed, it ranked the 11th biggest car producer globally. The automotive sector is the country's

second-largest industry after oil and it employs more than 700,000 people reports the Al-Monitor, a news platform covering the Middle East. Under the sanctions, the output dropped from 1.5 million cars per year to less than 700,000.

The Iranian car market shows strong demand. Iranian companies are trying to improve their technical levels and manufacturing quality by collaborating with Western companies, because the years of isolation and restrictions to trade have created technical obsolescence, and they are looking for foreign investments. PSA Peugeot Citroen made a deal for a joint venture with the Iranian vehicle manufacturer Khodro to modernise a car factory near Tehran. The new factory will produce 100,000 vehicles a year starting in late 2017. Daimler's trucks division also will re-enter the Iranian market following the lifting of international sanctions. Before the sanctions, in 2010 Daimler sold up to 10,000 vehicles per year in Iran.

The country's aviation infrastructure is in urgent need of investment. This profits not only business in Iran, but also in Europe. For example Iran Air has ordered 118 commercial passenger planes from Airbus, including 12 Airbus A380s, the world's largest jet airliner. Iran has also its own aerospace company, Iranian Aircraft Manufacturing Company (HESA) that manufactures aviation equipment and civil airplanes.

Iran's substantial agricultural sector forms an increasing demand for special purpose machinery sector. The notable local producer is Iran Tractor Manufacturing Company. Rich natural resources are the basis for metal products and machinery sector. The Italian metal industry firm Danieli has already signed a contract to supply heavy machinery and equipment to Iran in value of 5.7 billion euro.

In conclusion, according to British Foreign and Commonwealth Office, over a trillion dollars of investment in infrastructure is likely to be needed over the next 10 years. Key opportunities will include the energy sector, automotive and airline manufacturing sectors. There may be an increased demand for consumer goods such as electronics and clothing.

Exporting to Iran – easier said than done

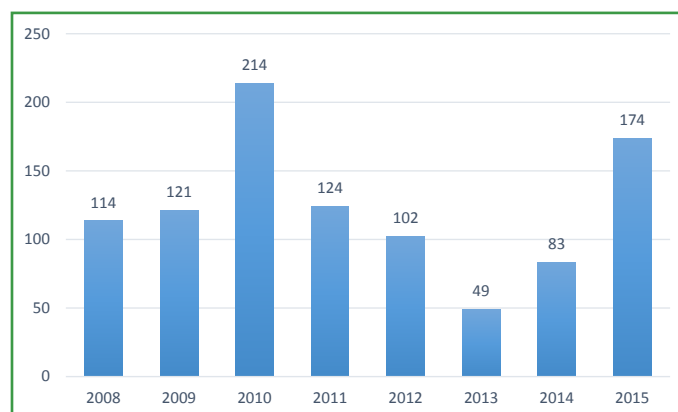
Despite high potential Iran will not be probably an easy place to do business. Firstly, financing remains a big issue as major European banks remain reluctant to handle Iranian payments, because of previous fines from the US treasury and restrictions preventing U.S. banks dealing with the country will remain in place.

Since 16 January 2016 European companies can trade again goods previously listed in the sanctions list and prohibited from exports. However, European machine tool builders still have to get an export license for their dual-use machines.

Businesses should also take into account that the Iranian security services have big influence on many Iranian companies, directly or indirectly. The country faces also double-digit inflation, price controls and government subsidies. Iran is also not a member of the WTO.

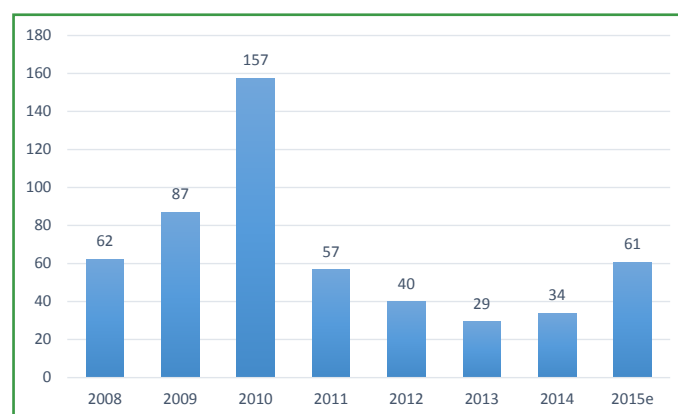
European machine tool builders still have to get an export licence for their dual-use machines.

Some sanctions on Iran remain in place. Restrictive measures not related to nuclear issues or proliferation, such as those related to human rights and support for terrorism, are still valid and they are not covered by the Joint Comprehensive Plan of Action that stipulates guidelines for lifting restrictive measures on Iran.



Machine tool imports of Iran, million euro

Source: ITC



Machine tool exports to Iran, million euro

Source: ITC

next: TTIP and the machine tool industry ►►

2 The TTIP: Only benefits for the European machine tool industry

The United States and the European Union have held negotiations on a Transatlantic Trade and Investment Partnership (TTIP) since July 2013. The machine tool industry on both sides of the Atlantic considers this a unique opportunity to improve the internationalisation of their SME-dominated sector. To support the work of the negotiators, the Association for Manufacturing Technologies (AMT) and CECIMO published a common statement on the TTIP to outline the important areas for machine tool builders.

The tariffs for machine tools run from 1.7 to 4.5% and are not the main obstacle for the transatlantic trade. Therefore, for maximum effect, the TTIP should not only aim at abolishing tariffs, but also to achieve a higher degree of regulatory alignment and harmonisation of technical requirements.

Differences between the EU and the US regulations create different technical

requirements, specifications, standards, conformity assessment procedures and licensing procedures. Often, the use of different legal tools for the same public policy choices is the source of these differences. A comprehensive and ambitious trade agreement should enhance cooperation between the EU and the US to ensure that existing and new regulations are complementary and minimise the burden on companies.

Navigating between two different regulatory systems is especially hard for SMEs who lack of resources and know how to access to relevant information. At the same time, SMEs are the backbone of economy. In the EU, companies with fewer than 250 employees represent 90% of businesses and employ 66% of the workforce. In the US, companies with fewer than 500 employees represent 99% of businesses and about half of the total employment. Hence access to information and markets is essential to improve the trade opportunities of SMEs.



"The convergence in technical requirements for machine tools can result in significant economic benefits. For example, the neutral wire in European electric circuits is blue, and in the United States it is white or light grey. This means that machine tool builders make basically two different machines keeping in mind respective markets. Cutting the duplication can profit companies via warehousing costs and economies of scale."

Carl Martin Welcker, President and CEO of Alfred H. Schütte GmbH

3 The EU sanctions on Russia: Long-term effects to be expected

Since Russia's annexation of Crimea in March 2014, the EU and the US have increased sanctions several times, restrictions were tightened for major Russian state banks and corporations.

The EU sanctions announced in September 2014 targeted Russia's state finances, energy and arms sectors. Russian state banks are excluded from raising long-term loans in the EU, exports of dual-use equipment for military use in Russia are banned, no new EU-Russia arm deals can be concluded and the EU will not export a wide range of oil industry technology. The sanctions are extended until September 2016.

Sanctions on Russia affect the European industry, which loses clients and faces declining business confidence. The European machine tool industry

is concentrated on high-end machines that are often found on the dual-use list. CECIMO exports to Russia have declined by 31% to 736 million euro in 2015 compared to 1,069 billion euro in 2013. In Russia, the machine tool business highly relies on personal contacts and long-term relations with buyers. Therefore, the impact of the sanctions will be felt over a long period and even after the possible abolition of the sanctions.

Machine tool builders are also affected by the financial sanctions. The few possible transactions are now jeopardized by extremely delayed payments from the Russian side. European banks have heavily reduced their availability of credits and guarantees for export to Russia. Therefore, machine tool exports even outside the dual-use category have been considerably reduced.

4 The EU export policy review

New regulation on dual-use items on its way

Regulation No. 428/2009, regulating the European export of dual-use items, has been under review by the European Commission since 2011. The European Commission has set out to review export control policy in Europe as a means to "ensuring security and competitiveness in a changing world".

The review targets changing security environments, trading patterns and technology through a broad range of legal and practical measures. The draft regulation is scheduled for the first half of 2016 and concrete proposals are not known yet. However the potential amendments very likely include:

- Extending controls on cyber-surveillance technologies and shifting towards a "human security" approach in export licensing
- Further harmonizing of national implementation
- Enhancing information exchange between EU governments
- Training and capacity building for licensing and enforcement officers both within the EU and globally
- Adopting a range of measures aimed to facilitate trade.

CECIMO estimates is that more than 80% of the European cutting machine tool production is classified as dual use based on the fact,

that European machine tool producers are concentrated on precise, high-end machines. Therefore the review process affects the industry deeply. It is essential that the technological advancement will be taken into account in estimating risks and threats to security and setting dual-use criteria. The dual use products definition should keep the pace of technological progress.

European machine tool industry supports further harmonisation of the implementation of the export controls across the EU. The requirements should be applied uniformly among Member States to guarantee a level playing field for machine tool companies. The competitiveness of the industry could also get positive boost from general export licences for spare parts of licensable machines that have been exported. The application process for an export licence could be also speed up by common requirements for internal compliance programs. Most of the machine tool companies have an internal compliance programme in place within the quality control system. The number of machine tool properties that need to be considered is fairly low (accuracy) and evaluated in ordinary on-site testing therefore the recognition by export control authorities would help companies to control costs. ■



Ecodesign: Finding the best path for the MT industry

by Kamila Slupek, Manager Technical Regulations, CECIMO

Ecodesign is again high on the European institutions' agenda, for many reasons. The debate has been recently dominated by the revision of the Energy Labelling Directive with more than 700 amendments proposed by the European Parliament. The 3rd Ecodesign Working Plan and Voluntary Agreement Guidelines have not yet left the Commission's desks even though they are ready. Meanwhile, there is an increasing interest in Brussels and in the Member States for "large and complex product" groups and regulating them via the Ecodesign Directive, and the associated market surveillance. To close the list, there are many ecodesign dossiers that are still pending.

The machine tool dossier – progress or...?

Based on the Impact Assessment Report finalised by BIO Intelligence in March 2015, the European Commission (DG GROW) is still in the process of writing their own Impact Assessment, which is the most important document that will present all available solutions for the Lot 5 on machine tools, welding equipment and related machinery. From the latest contacts with DG GROW, it is apparent that they are still thinking of proposing the implementing measures for the machine tools and welding equipment. However, before the Impact Assessment sees daylight, the Commission will first publish an "ecodesign package" bundling the pending ecodesign relevant documents (i.e. 3rd Ecodesign Working Plan, Voluntary Agreements Guidelines, etc.) and individual implementation activities for various product groups (i.e. machine tools and welding equipment, enterprise servers, taps or shower heads). According to the latest announcement, the package should be ready in autumn.

Point system study

In the meantime, the Commission has also launched the announced point system study for complex industrial products. Two products groups will be primarily under investigation: machine tools as well as enterprise servers and

data storage devices. If time and budget allows, consultants may also look at industrial washing machines. The study is run by a consortium of five consultants (VITO as a leader, Waide Strategic Efficiency, Fraunhofer, Viegand Maagøe and VHK - Van Holstelijs en Kemna) who are expected to finish their work by February 2017. The objective is to develop and verify one or more methodologies that could be used to set ecodesign requirements for complex products. At first, the consultants will look into available literature related to existing point schemes. They will see if any of the solutions could suit the purpose. If yes, the best methodology/(-ies) will be developed and tested on the respective product groups.

The idea was already explored by Fraunhofer at the moment of preparing the Impact Assessment Report that was discussed during the Ecodesign Consultation Forum for machine tools and related machinery (May 2014). At that time, it was concluded that the "point system" approach should be refined, and revisited, before it may be considered for use - in general - in ecodesign.

ISO 14955 series

Everyone, including the European Commission, is looking with a great degree of hope to the ISO process which continues gradually. The main novelty is that wood-working MTs stepped in, which will involve an update of the standard's already published Part 1. In the same time, works on Part 2 (methods for measuring energy supplied to MTs and its components) as well as Part 3 (principles for testing metal cutting MTs with respect to energy efficiency) are advancing in view of the next meeting in October this year in Japan.

What's next?

Following written exchanges between the Commission and CECIMO at the end of 2015, the General Assembly (December 2015) decided that CECIMO will contribute to the study for complex

What was said:

"The difficulties behind setting up a successful SRM include achieving the expected market coverage (80%), which would require the inclusion of non-European machine tool builders and importers. With no sanctions foreseen for not joining the SRM and a lack of market surveillance, creation of a successful initiative faces a serious obstacle."

Juha Mäkitalo, Chairman of CECIMO Technical Committee





products under ecodesign in cooperation with other concerned sectors. In addition, the Self-Regulatory Measure (SRM)'s setup will be put on hold.

Freezing SRM doesn't mean losing what has been worked out until now. The CECIMO Energy Efficiency Working Group will keep close track of the new developments in this dossier.

There is of course a probability that the Commission decides to go for implementing measures. If that is the case, the first ones would be expected to be rather 'soft,' meaning imposing information requirements. However, the detailed discussion would start only after the publication of the autumn ecodesign package and it would include a debate in the Consultation Forum possibly at the beginning of 2017.

In a much later stage (at the moment of the implementing measures revision which takes place after a defined period of time) the initial information request can be expanded with some additional elements under the condition that other developments (ISO 14955 standard or findings from the point scheme study) will be proven to be good and developed enough. There is a lot of hope put in the fact that the ISO standard can establish a good base.

Following the regulatory path, it would still take some time before the official requirements are put in force (the preparation of the measures, their approval and a transition period are to be foreseen) and obligatory to every actor who will put a machine tool on the European market. However, would they be general enough to encompass the complexity of the sector?

There is clearly no silver bullet available at the moment. However, the already well established cooperation between all stakeholders (MT industry, standardisers and the European Commission) should bring a satisfactory solution.

The second option, the Voluntary Agreements, would be potentially able to address this. However, as that would be a voluntary scheme with no sanctions for avoiding it, there is an important risk that the required market coverage (set up at 80%) would not be reached. There is clearly no silver bullet available at the moment. However, the already well established cooperation between all stakeholders (MT industry, standardisers and the European Commission) should bring a satisfactory solution.



The Investment Plan for Europe and the European Investment Bank's contribution to advanced manufacturing

by Gunnar Münt, Director Innovation and Competitiveness, European Investment Bank (EIB)

Investments in modern manufacturing equipment are key to improve productivity, and efficiency. Nevertheless, lack of investment in Europe in modern manufacturing technologies is a crucial obstacle against the shift towards European smart and connected factories and hampers EU's competitiveness. EIB with its financing tools helps European advanced manufacturers upgrade production technologies.



Gunnar Münt

Europe seems to be stuck in a low growth trap. Although growth has picked up recently, the pace at which GDP, employment and investment have been expanding remains stubbornly low.

The most worrying sign of all, however, is that productivity growth appears to be declining further. No matter what indicator you look at, Europe trails the world in terms of its ability to increase the efficiency of our economy. It is clear that without a reversal of this trend, growth is unlikely to return to sustainable rates.

There are a couple of reasons why growth has been so sluggish. One is adverse demographics – Europe's population is stagnating at best, and it is getting older. Another is low investment. While there is hardly anything we can do about the first one – at least not in the short-term – there is a lot more that could be done about investment. Actually, a lot needs to be done – quickly.

Europe has a track record of “underinvestment”. The investment and innovation gaps that have emerged between Europe and the rest of the world are enormous: our estimate puts it at about 600 billion Euro per year across the EU, almost equally divided between capital expenditure and lower spending on innovation.

The investment and innovation gaps that have emerged between Europe and the rest of the world are enormous.

The private sector accounts for more than half of this gap – with the manufacturing sector standing out as the by far most important part.

Therefore, Europe's economic revival rests to a large extent on the shoulders of the manufacturing sectors and their willingness to lift investment back to sustainable levels. The modernisation of the capital stock as well as higher investments in technology and products are obvious examples.

Recognising higher demand for finance from manufacturing companies throughout the EU, the European Investment Bank (EIB) has begun to broaden the range of investments it can finance. In a first phase since early 2015, the EIB has widened its scope in three areas: innovation, digitalisation, and skills.

Today, the EIB finances not only the development and deployment of advanced manufacturing technology, but also entire investment programmes of smaller businesses and companies of up to 3000 employees. Moreover, all investments to do with digitalisation – processes as well as products (including both hard- and software) – can now be financed.

The biggest change, however, was the launch of the Investment Plan for Europe (IPE), better known as the “Juncker Plan”.



A case study from the machine tool industry:

As one of three pillars of the IPE, the European Fund for Strategic Investments (EFSI) – alongside a regulatory reform package and the European Investment Advisory Hub (EIAH) – provides risk capital of the order of 21 billion Euro – 5 billion Euro in cash from the EIB and 16 billion Euro in the form of a guarantee from the EU budget. With this additional risk capital, the EIB is able to increase the financing of innovative firms and riskier infrastructure projects by a factor of almost five.

Since its launch in July last year, the financing activity under the IPE has quickly gained pace. While the majority of investments supported so far included infrastructure and energy efficiency, the financing of innovative companies is ramping up fast.

Following a further refinement of the EIB's financial products, we are now in a position to directly support investments with financing of between 7.5 million Euro and 500 Million Euro through senior, subordinated and quasi-equity (i.e. non-dilutive, equity-type) loans. In parallel, the European Investment Fund (EIF) has strongly expanded its support to small and mid-sized companies through guarantees to commercial banks and equity investments in venture and growth funds throughout the EU.

Leaving all financial jargon aside, the distinctive feature of EFSI financing is that we share the technological as well as commercial risk with companies by way of a silent partnership. Taken together, we believe that this is a very attractive proposal for many engineering companies in Europe. ■



The European Investment Bank (EIB) has signed a EUR 10 million agreement with Danobat S. Coop., a cooperative integrated in DANOBATGROUP, for its RDI activities in the field of machine tools. This loan supports the innovation strategy of the group in the field of machine tools; a bet that the Basque industrial group considers essential to improve its competitiveness and the competitiveness of its customers.

The EIB loan will support investments linked to three types of products: grinding, turning and equipment for manufacturing composite structural parts, in order to develop new solutions in these fields.

DANOBATGROUP, the first Spanish machine tool manufacturer, is a group associated with the MONDRAGON Corporation, which employs 1,300 workers. The EIB loan supports the group's strategy for sustained RDI, whose research focuses on high added value advanced manufacturing, and who spends 8% of its turnover for innovation purposes. More than half of its workforce is highly qualified, and 32% is dedicated specifically to research activities.

The project is supported by "InnovFin – EU Finance for Innovators", a new range of EIB Group products which benefit from the financial support of the European Union under Horizon 2020 Financial Instruments and are designed to facilitate access to finance for innovative businesses. The RDI investments will be carried out in Spain and will be implemented until 2017.



The finance contract has been signed during the "Apoyo a la Innovación en España" event, organized by the EIB Group in Bilbao, by the CEO of DANOBATGROUP, Iñigo Ucin Azcue, and the Vice-President of the EIB, Román Escolano and will finance RDI activities during 2015, 2016 and 2017.

The European Energy Union pushes for e-mobility: what does it imply for European machine tool builders?

by Ralf Kalmbach, Partner, A.T. Kearney

The European Commission takes further steps to decarbonize the transport sector by shifting to electro-mobility, and legislation to that end will be put forward in 2017. The replacement of traditional mechanical parts in cars by less machining-intensive components will be a game changer for the machine tool builders. CECIMO asked Ralf Kalmbach, Partner at A.T. Kearney for his view on the development of e-mobility.



Ralf Kalmbach

E-mobility – Evolution not revolution

The machine tool industry is a key supplier of production technologies and equipment in major industries. New developments in user industries such as the automotive industry may change the demand for machine tools in the near future. For instance, e-mobility is dominating the strategic discussions within automotive OEMs and suppliers for years. We saw early and courageous projects with limited success on the markets so far, such as the GM Volt or also the BMW i3, but at the same time the surprisingly successful Tesla Model S, demonstrating that there is obviously a way for generating more than just acceptance for this new technology: Tesla buyers are fascinated by the comfort, driving dynamics and range provided. Limited sales volumes of e-vehicles cannot be explained with an infantile stage of technological development. There must be more.

Between 2011 and 2015 Norway was able to multiply the share of newly registered e-vehicles by 12.5.

For instance, Norway obviously has found a way to push e-mobility as an important item on governments' political agenda successfully. Between 2011 and 2015 Norway was able to multiply the share of newly registered e-vehicles by 12.5. Today the market share of e-vehicles

is close to 20%. Norway by topographical and climate conditions is not best situated for such a break-through, but there is no other country that has implemented such a comprehensive and attractive incentive program. Some measures include tax and fee exemptions such as VAT, import and CO2 tax, toll and road fees; additional reductions for commercial e-fleets and incentives up to 60% for investment in residential charging infrastructure. The e-mobility discussions has also started picking up pace in other parts of the world where there are mega cities, especially in China. Given the large size of these markets and the vast availability of national resources, these countries could have a transformative impact on the industrial agenda worldwide.

As we can see with the Norway example, a lot more than just the provision of e-vehicles is needed to break through with e-mobility. Given these interdependencies A.T. Kearney is forecasting Battery Electric Vehicles (BEV) volume to rise up to 1.7 m BEVs sold in 2025 globally. For sure there are players with a much more bullish view – only Tesla is intending to sell 500k BEVs already in 2020, coming from 27k in 2015 – but given the hurdles, we think it will need a comprehensive set of political and infrastructural measures, better battery technology with lower cost and larger range etc. before BEVs broadly



replace conventional propulsion systems. By 2025, we see approx. 1.5 % pure BEVs, 2.4% plug-in Hybrids, 4.2% fuel cell Hybrids and still over 90% conventional internal combustion engines out of a global sales volume of approx. 113 m cars. So e-mobility is more an evolution not a revolution. However, there is no reason to relax. As soon as fundamental economics are changed by innovative storage at attractive cost/capacity ratio, e-mobility will rocket.

E-mobility would be a game change for machine tool builders

The shift to e-mobility will imply that some of the traditional mechanical parts in cars will be replaced. The machining intense components in particular, e.g. internal combustion engine (cylinder block, head, pistons, camshaft, valve, and crankshaft), turbocharger, transmission and clutch etc. will be replaced by less machining intensive components, e.g. electric engine, high voltage batteries, battery manager, power electronics etc.

Given this challenge, it is now essential for European MT companies to closely monitor industrial, technological and political developments globally over time and prepare themselves for the upcoming changes. After 2025/2030, machining volumes in the automotive industry will melt down, and the transfer towards other industries like green power generation (turbines), aircrafts or rails systems should be timely driven by European machine tool builders. ■

What was said:

“Attempts to make the European transportation sector greener are done in many ways. Besides different down-sizing activities, one of them is to increase share of electric cars on the market. In effect, traditional mechanical car parts will be supplemented by hydrogen fuel cells or high voltage batteries. The European machine tool industry must build an innovative alliance with industries that are closer to e-mobility in order to respond to the change appearing in the automotive sector.”

Bruno Cathomen, CEO Mikon Group,
Mikron SA Agno



New initiatives to foster access of SMEs to Key Enabling Technologies

Kirsi Ekroth-Manssila, Head of the "KETs, Digital Manufacturing and Interoperability" Unit in the European Commission's DG for Internal Market, Industry, Entrepreneurship and SMEs

With the launch of a new web tool and follow-up initiatives, the European Commission is making it easier for SMEs to access state-of-the-art technological services across Europe.

Key Enabling Technologies are crucial for securing EU's industrial base

Advanced manufacturing and materials, industrial biotechnology, micro/nanoelectronics, nanotechnology and photonics, the six Key Enabling Technologies (KETs), are crucial for Europe and for triggering innovation in processes, products and services. They are key drivers for growth, jobs and societal benefits. Products strongly dependent on these technologies represent 19% of total EU production. Altogether, they enable 3.3 million European jobs. KETs are crucial to secure a robust industrial base for Europe. Their growth potential offers huge opportunities for businesses and new services to consumers.

For all KETs, global competition is very high.

As regards advanced manufacturing, Europe is still ahead, leading in terms of share of patents (40 %) and shares in total export (43%) (source: KETs Observatory). But despite Europe's good patenting and trade performance, the uptake of advanced manufacturing solutions by European companies remains a challenge. Following a recent survey, almost half of European manufacturing companies have not used advanced manufacturing technologies in the past and do not plan to use them in the coming years.

New initiatives to foster SMEs' access to Key Enabling Technologies

New initiatives are therefore needed to ensure that European companies, especially SMEs, embrace the opportunities offered by advanced



Kirsi Ekroth-Manssila

Machine tool builders go digital.

Can European policy-makers play a role?

by Emir Demircan, EU Public Affairs Manager, CECIMO

Europe, with its strong manufacturing base, taps into new business opportunities in the era of digital transformation. Yet, the EU has been slow to adapt to new business models in the advanced manufacturing industry. Also, since digitisation brings transnational challenges that a single EU Member State cannot resolve alone, joining forces is needed more than ever.

New digital ecosystems increasingly transform all segments of the advanced manufacturing sector including design, production, sales and maintenance, generating new opportunities for the European machine tool industry. Many European machine tool builders, in particular large enterprises, already use digital manufacturing technologies which optimize business operations, increase product quality and maximize energy-efficiency.

Yet, the potential of digital technologies is not fully exploited by the European machine tool industry. With the right framework conditions, connectivity among components, machines and factories can create more business opportunities for advanced manufacturers. Technically speaking, machines equipped with smart sensors can now make the use of data obtained during production processes, improving all the phases from design to maintenance and decreasing costs by reducing scrapping or reworking products. Connected factories can also improve the capacity of responding to changing customer demands by sharing and using the data available along the value chain. To make the most of such technical capabilities, Europe needs a new and forward-looking policy approach underpinning the digital transformation of its manufacturing sector.

Data ownership along the manufacturing value chain

The European Commission has already recognized the necessity to maintain Europe's leadership in advanced manufacturing technologies by providing political support and further investment tools for the uptake of new technologies such as big data, internet of things and cyber-physical systems. Nevertheless, existing EU regulation on data ownership has mainly focused on personal information protection relevant for B2C sectors and does not address the complexities of advanced manufacturers in B2B sectors. Given that, in the manufacturing sector, the right to own and use data has mainly defined by individual contracts between companies. However, with the help of new technologies, the amount and type of data available are increasing which develop new business models and partnerships between stakeholders. In this rapidly changing business

environment, industrial actors need to know who will have the right to use different types of data generated along the value chain to tap into new business opportunities.

With the right framework conditions, connectivity among components, machines and factories can create more business opportunities for advanced manufacturers.

As the manufacturing business and technical capabilities are rapidly transforming, having a short-sighted strict regulatory approach will not be supporting European business growth and competitiveness in the long run. Future regulations should propose a new approach to data ownership, removing the complexity of varying national regulations and providing a flexible framework that supports business needs in constant evolution along the manufacturing value chain. Manufacturers also need to be confident that their data will not be used directly by their competitors or through their suppliers in a way they are not aware of. Issues surrounding data leakage are indeed serious threats to European manufacturers' competitiveness and considered as rigid barriers against the use of big data technologies by the industry. An important prerequisite for digitally connected factories and



machines is therefore cyberspace security which assures company data is stored safely in the cloud and only pre-defined user can access the available data. Furthermore, any future regulation having an impact on digital manufacturing should not be prematurely introduced as it may put severe barriers against innovative business models in the advanced manufacturing sector, where innovation cycles are getting shorter as an answer to changing customer demands.

Smart Regulation for Smart Industry by the European Commission

Taking into account the above-mentioned needs, the European Commission foresees the Smart Regulation for Smart Industry action aiming at generating a regulatory system enabling digital transformation of manufacturing companies. The planned action also touches on the ownership and use of industrial data as well as the functioning of the Digital Single Market for industrial internet. Nevertheless, measures ensuring the creation and use of digital technologies by advanced manufacturers need be developed and implemented without any delay to narrow the digitisation deficit between European manufacturers and their competitors.

Some cross-border issues brought by digitisation in the manufacturing industry cannot be tackled by a single EU Member State.

Pooling European resources and know-how

In parallel, the EU needs to pool its manufacturing capabilities and act in a coordinated manner. Various European public authorities at national and regional levels have developed and implemented policies and initiatives aiming at increasing the digital maturity and connectivity of manufacturers along the value chain. For instance, at national level, many Member States have launched initiatives pertaining to the digital manufacturing including Germany's Industrie 4.0, Italy's Fabbrica Intelligente,



Rather than regulation, industry prefers standards

Given the rigid framework that can come from new regulations, the industry would prefer working on new data ownership and protection standards. Indeed, open standards have proved to be effective tools to develop the manufacturing industry both in Europe and in export countries. However, building openly-developed standards in the field of digital manufacturing needs a considerable amount of preparatory work and collaboration by industrial stakeholders so that it facilitates the interoperability between components, machines and systems along the value chain at transnational level. While developing new standards, specific attention should be paid to the fact that the manufacturing value chain has become extremely global and therefore new standards should be globally applicable as well.

the UK's High Value Manufacturing, France's Usine du Futur, and so on. In addition, at European level, there are similar initiatives under Horizon 2020, such as I4MS – ICT Innovation for Manufacturing SMEs, and other research and innovation funding schemes bringing stakeholders from the industry and academia to collaborate on the development of digital manufacturing technologies. Yet, with its value chain including both SMEs and global players widely distributed across Europe's regions, some cross-border issues brought by digitisation in the manufacturing industry cannot be tackled by a single EU Member State.



A pan-European action with several access points to boost framework conditions

Given that need for pan-European resources, a collective action removing duplications occurring at national and European levels and combining capabilities, resources and funding is becoming a top priority for Europe to cope with the increasing competitive pressures. China aims at extending the country-wide use of industrial internet with its Made in China 2025 initiative. In the USA, stakeholders also combine resources under several country-wide initiatives such as the National Network for Manufacturing Innovation or the Industrial Internet Consortium, initiated by industry itself to tap into opportunities of digitization. In Europe, similar initiatives remain at national level, far from reaching the wider European manufacturing ecosystem, and produce highly varying digitisation performances.

All things considered, there is the increasing need for pan-European action with simple rules and several access points that federates manufacturing stakeholders to pool diverse resources and know-how under common goals. SMEs are the cornerstone of European industry but their limited resources make them more vulnerable to the complexities, costs and risks of digital transformation. For that reason, the priority should be to give them access to high-performance infrastructure. Such joint-action should in particular aim at improving the existing digital infrastructure needed to carry data to factories and machines at transnational level. ■

What was said:

“Big data provides great business opportunities for machine tool builders. We can improve our production systems, excel in our operations and develop new business models together with our suppliers and customers. It is precisely because of these promising opportunities that we need a new, flexible regulatory approach allowing for a widespread share of big data benefits. A large innovation playing field becomes possible when the regulatory framework in place is not restrictive.”

Tomas Hedenborg, Group CEO,
Fastems OY AB



The workplace of the future: Factory 2050

by Professor Keith Ridgway CBE, research director, Advanced Manufacturing Research Center, University of Sheffield

In December 2015 the University of Sheffield, Advanced Manufacturing Research Centre and Boeing (AMRC) took possession of the latest and flagship building 'Factory 2050'. The building was constructed in response to a foresight study sponsored by the UK Department of Innovation and Skills (BIS) to examine future trends in manufacturing. The aim was to identify the drivers for change, identify challenges and opportunities and advise how government policy could be refocused to support the growth of manufacturing in the UK.

Although focused on the UK, evidence taken from companies based in the USA, Europe and the Far East demonstrated that the UK was not alone in considering the future direction of manufacturing and the implications for the workplace of the future. The findings are relevant throughout Europe and not just the UK.

So what will the factory of the future "Factory 2050" look like?

Well it will be more responsive and able to quickly change to meet customer requirements. It will be highly reconfigurable and although

highly automated, the automation will be highly flexible. Knowledge will be embedded in machines and systems, and machines and equipment will be equipped with greater levels of sensing, monitoring, self-learning and capable of adapting to changing products and the environment. But the highly reconfigurable factory cannot stand alone, it must be part of an integrated value chain with data shared across factory and company boundaries. The factories of the future will be exciting, interesting places to work where innovation and multi-skilling are encouraged.

This description of the 'Factory of the Future' closely matches the definition of the Industrie 4.0 initiative which, although initiated in Germany, is now creating interest throughout manufacturing industry as the 4th industrial revolution. It enhances manufacturing technology to incorporate concepts such as smart machines, the internet of things and cloud computing. The requirements of the digital factory bring together technologies and expertise from manufacturing technology, machine design and information technology. ►►



Keith Ridgway

Although ambitious in its aims, these concepts are difficult to envisage and a huge undertaking for companies and in particular SMEs. While universities and research institutions are working in areas that will make this vision a reality, there is much work left to do on artificial intelligence, self-learning, adaptive control, the sensors, actuators and software tools to make this vision a reality. But there are few large scale examples and demonstrations sites.

The factories of the future will be exciting, interesting places to work where innovation and multi-skilling are encouraged.

European automation companies such as Bosch, Siemens and Festo are leading the way but the integration with the traditional machine tool industry does not appear to have been achieved. But there is a need for real demonstrations sites and large integrated projects that can be used to enthuse and encourage would be users.

In a conference held at the AMRC in Sheffield in April 2015 major concern voiced by many companies:

- How do we maintain security in the digitized factory and is security and cloud manufacturing compatible?

- Where do people fit into this digitized factory and how do we get people with adequate skills?
- Where do we get the talented leaders of the future, who can implement these changes and how do we capture their interest at an early age?

At the AMRC we are attempting to address these issues by building a transparent, glass walled factory "Factory 2050" where young people can look onto the factory floor and see "Factory 2050" in action. Working with major machine tool builders, robot and automation suppliers, the AMRC will explore the techniques and technologies that are vital to achieving the mass customisation of products now being demanded by companies and their customers.

The technologies developed will help manufacturers respond to increasing requirements to rapidly change product designs and switch between making high-value components and one-off parts for customers from diverse sectors. Initial projects include a programme to take aerospace manufacturing technology into the construction industry, explore future digital factory technologies for building commercial aeroplanes and investigate digitally assisted assembly technologies which could help to fill a skills gap in the aerospace sector. ■



AMRC: Factory 2050



What was said:

"It is absolutely clear that new technology will have a dramatic impact on the way products will be made in the future. If manufacturers are to seize all the opportunities that lie ahead, cultivating a culture of closer collaboration between research institutes and industry will be crucial."

Marcus Burton, European Group Managing Director, Yamazaki Mazak UK Ltd

Digital infrastructure: necessary for the development of additive manufacturing

by Giorgio Magistrelli, Additive Manufacturing Project Manager, CECIMO

The Initiative "Industry 4.0" puts digitisation at the centre of present and future industrial development. The fourth industrial revolution is considered to be driven by connectivity and data flow, and specifically by that specific combination of virtual and real worlds, which is also called "Internet of Things" (IoT). IoT seeks to merge physical and virtual worlds, creating so called "smart environments" to develop a market which, according to a recent European Commission study, is expected to exceed a value of 1 trillion euro in 2020.

Industry 4.0 covers manufacturing, services and industrial design, including some specific characteristics of AM. In the future, industrial production will be characterized by a strong customization of products with large series production, extensive integration of customers and business partners in business and value-adding processes. There will be more links between production and high-quality services, leading to hybrid products, and the development of production research.

Cyber-physical systems are therefore becoming increasingly important, having a direct impact on the optimization of production and logistics.

The key relevance of ICT for the development of additive manufacturing

Along the additive manufacturing value chain, information and communication technology (ICT) play a crucial role.

The additive manufacturing workflow kicks off from the usage of digitized three-dimensional designs of a product by advanced 3D computer-aided design (CAD) software. These CAD files are transmitted electronically, instead of physical parts. At a later stage, layers of material are laid down through additive processes under computer control using thin cross sections from the 3D models. Designing a new product in the proximity of the manufacturing system or manufacturing a product near to the client/end-user are consequently the two key direct impacts of additive manufacturing on traditional production systems. However, while a strong ICT infrastructure is fundamental for the development of AM value chains, the present European network still faces crucial challenges in terms of speed, quality and security. In particular, the roll-out of broadband network across Europe's regions is becoming a top priority for providing SMEs, that are usually located remotely and far from cities, with the e-infrastructure needed for data-driven manufacturing. Reliable high-performance e-infrastructures are also needed for machine to machine communication at transnational level.

Besides, information security across the EU is essential to ensure consumers' confidence and to protect the transmission of sensitive AM related data, while keeping the online economy running, preserving the well-functioning of the internal market and boosting growth and jobs (see article p. 23). ■

What was said:

"Additive manufacturing can satisfy Europe's appetite for innovation and can boost the added value of industrial production. AM is still a relatively young technology which needs to be further developed so that its full potential can be unleashed."

Jean-Camille Uring, Executive Board Member, Fives Group - CECIMO Past President



"Advanced metal additive manufacturing systems fulfill a range of industry applications where durability, customisation and complexity are key. It serves medical, automotive and aerospace industries to name just a few."

Stewart Lane, General Manager - Group Business Development and UK Sales, Renishaw PLC



Industry 4.0's implications for the European machine tool industry:

An Interview with Markus Lorenz, Partner and Managing Director, The Boston Consulting Group



Markus Lorenz

Dr.-Ing. Markus Lorenz is a Partner and Managing Director in the Munich office of The Boston Consulting Group (BCG), a global management consulting firm. He is a core member of the firm's Industrial Goods and Operations practices, focusing on machinery and automation components. In recent years, BCG has applied its extensive research on Industry 4.0 to helping clients understand the many ways in which this manufacturing revolution will affect the economy and their businesses. CECIMO asked Dr. Lorenz to share his insights on the implications of Industry 4.0 for the European machine tool industry.

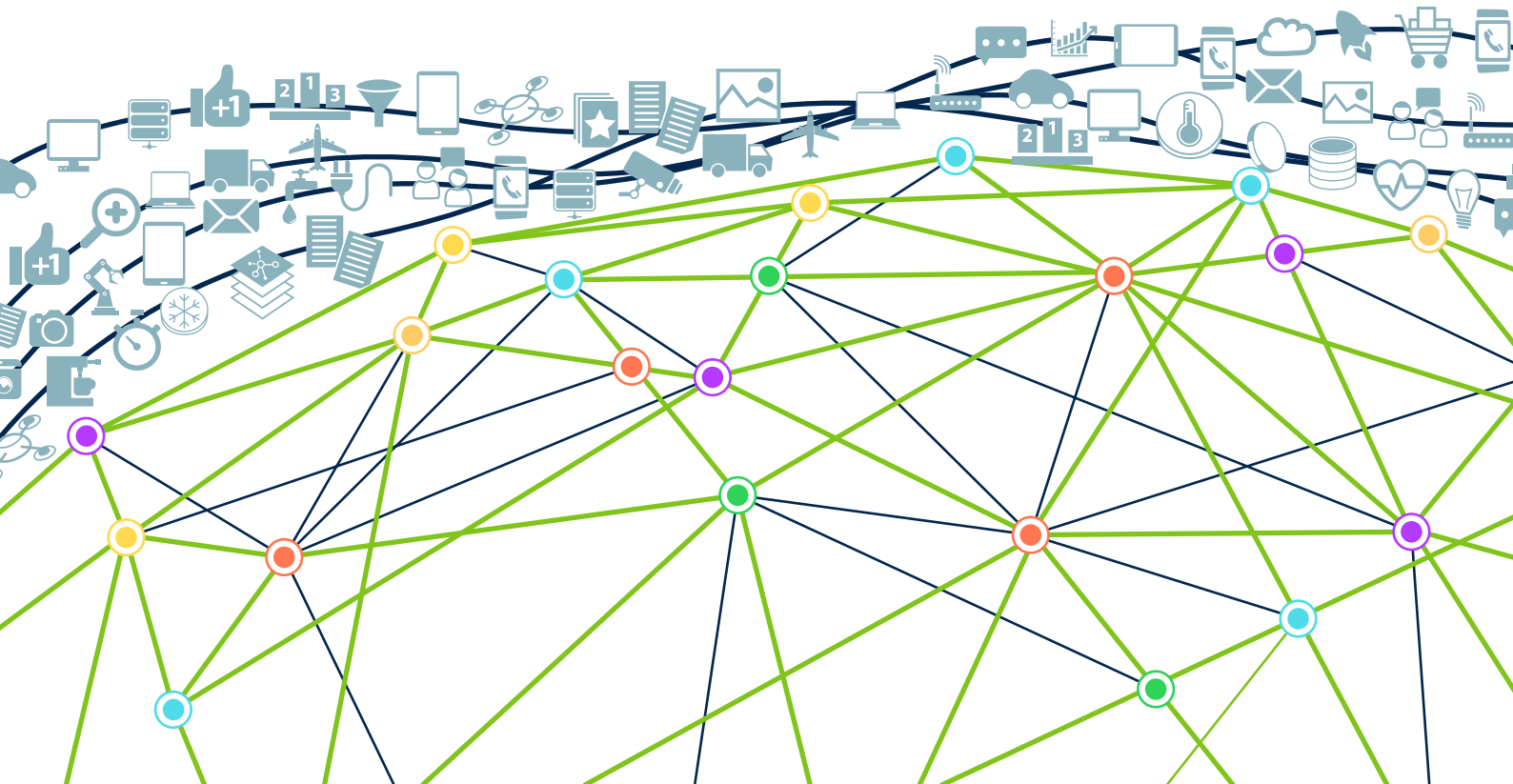
What does Industry 4.0 mean for the machine tool industry?

Industry 4.0 holds both opportunities and threats for the machine tool industry. On one hand, technological advances like additive manufacturing (including 3-D printing, laser sintering, and related methods), robotics, and machine-to-machine (M2M) and machine-to-parts (M2P) communication offer new growth opportunities for the industry and its customers. On the other hand, the same technologies threaten to make some aspects of machine tool manufacturers' traditional offering obsolete.

However, machine tool manufacturers should recognize that their domain know-how and deep customer relationships give them a strong head start over technology players that seek to disrupt their industry. With the appropriate preparation, they can build on this starting advantage to grow their businesses. And the value at stake is tremendous. Our research on the impact of Industry 4.0 in Germany indicates that machine tool manufacturers stand to achieve productivity improvements of 20 to 30 percent on conversion costs over ten years, totaling more than €100 billion.

What impact will digitisation have on machine tool manufacturers' business models?

Manufacturers and their customers have an opportunity to take an entirely new perspective on the economics of machine tools. One of the more intriguing options enabled by M2M and M2P communication is a pay-per-output model. Rather than paying up front for, say, a transfer line, a customer would pay the manufacturer based on the output enabled by the machine. This would be similar to the



“power by the hour” model used to pay for aircraft engines. Manufacturers and their customers should also explore new models for sharing the value of insights and efficiency gains enabled by analysis of big data.

What are the biggest obstacles that machine tool manufacturers must overcome in transitioning to Industry 4.0?

To fully embrace Industry 4.0, manufacturers must complement their current strengths with new capabilities in data management. They also need to think differently about how best to help customers meet their own objectives in Industry 4.0. While “bigger and faster” has, to some extent, been the goal in designing next-generation equipment, machine tool manufacturers should be pursuing innovations that enable greater flexibility and productivity for their customers. For example, innovations in additive manufacturing allow customers to produce small lot sizes economically.

How does the European machine tool industry stack up against its competitors from other regions?

The game is wide open to competitors from all regions. The European industry is well positioned as the recognized leader in

advanced applications for the automotive industry, general machinery, and agile systems. However, U.S. companies have gained a partial advantage in additive manufacturing and Japanese companies excel in robotics.

Industry 4.0 holds the promise of being a win-win game for machine tool manufacturers and their customers.

How can European machine tool manufacturers maintain their competitive advantage going forward?

The key for European manufacturers will be to embrace Industry 4.0 rather than fight against it. This means looking for ways to integrate transformative technologies into their already strong processes, products, and customer relationships. For example, machine tool companies can integrate additive manufacturing and robotics into their existing processes and apply big data to develop new product and service offerings. Industry 4.0 holds the promise of being a win-win game for machine tool manufacturers and their customers. To emerge on top, companies must identify the opportunities and build the capabilities to capture the value. ■



What was said:

“Production processes in the machine tool sector are entering a phase of evolution under Industry 4.0. Flexibility, innovation, customization and knowledge capital will be the cornerstones to successfully steer the sector in the right direction”.

Berndt-Thomas Krafft, General Manager, FMMI

EC's I4MS – ICT Innovation for Manufacturing SMEs supports the uptake of smart technologies in the European machine tool industry

INTEFIX Project - Intelligent Fixtures advance machining processes



What is the main purpose of the project?

The INTEFIX project aims to increase the performance of the machining processes by the use of intelligent fixture systems, allowing the monitoring, control and adaptation of the process to obtain suitable results according to precision, quality and cost requirements.

How does it translate to the manufacturing practice?

Normally, the main function of fixtures is to securely hold and accurately locate the workpiece considered as an undeformable body. Nowadays, the required high precision and the need for increasing the manufacturing process' performance make various characteristics of the fixtures important, taking into account aspects like deformations, vibrations and distortions in the workpiece during processing. Furthermore, the machining system (machine-fixture-workpiece) cannot be considered as a stable system due to its dynamic behaviour and geometrical shape variations along the process. In that context, adaptive fixtures can be used to control and adapt the machining system's behaviour in order to obtain adequate results in manufacturing precision, quality and cost.



Oscar Gonzalo
(Project Coordinator, TEKNIKER)

What can you say about development of intelligent fixtures and machining methodologies able to manufacture highly slender ribbed parts?

Manufacturing these parts usually involve high material elimination (up to 90-95%) by machining processes that, together to an unsymmetrical geometrical configuration of the part, can generate significant distortion on the part after the release of the clamps used during the machining process. Under the INTEFIX framework, we have been dealing with the development of specific fixtures addressing specific problems reported by one end-user concerning aeronautical structural parts made of aluminium alloys.

The developed solution's capabilities have been evaluated by comparing its results to the results obtained from the actual manufacturing process from the end-user, yielding the following:

- Improved part accuracy from 2 mm distortion to 0.3 mm distortion thanks to the application of the distortion minimization procedure.
- Reduced machine time from 4 days to 2 days due to the avoidance of chemical clamps.



Iñigo Llanos (IDEKO)



What was said:

" Digitalization is delineating new paths for manufacturers across the world. Its changes are already visible in a large number of industrial practices. As innovation stems from research, Europe must focus on this area and mobilize all research funds needed to sustain the digital evolution of one of the long-standing pillars of its economy, the machine tool industry. "

Xabier Ortueta, General Manager, AFM

This project is co-funded by
the European Union



Your research centre was involved in the development of a low time consuming workpiece clamping system with low requirements for the operator. What are your conclusions?

We have been developing and testing a comprehensive solution that makes the workpiece adjustment process automatic with the help of active fixture units. This approach is more effective than manual setting and also reduces the risk of errors. In addition, the developed solution allows the workpiece's automatic clamping in adjusted position and pre-deformation, if necessary.

The developed active fixture units can offer a stroke of 50 mm with a positioning accuracy of 0.006 mm and a maximum load of 5,000 N per unit. For better stiffness during machining and machining force compensation, units are equipped with a hydraulic brake implemented directly to the guide bars.

Leveling and clamping tests of the developed solution were performed with the demonstration part on the TYC FPPC 250/6 CNC machining center with a Heidenhain iTNC530 control system. This solution decreased the idle time for workpiece clamping by more than 70%.

Testing in TYC FPPC 250/6 CNC machine tool and a detail of the active fixture unit



Jiří Švéda
(Research Center
of Manufacturing
Technology at the
Czech Technical
University in Prague)

Moreover, technical and economic aspects were also compared on another industrial case study. It has been proven that solutions developed by INTEFIX decreases idle time, but the initial investment is higher. Nevertheless, the investment return period is 20 pieces in the case of the train side panel. In essence, the fixtures can be used as an intelligent universal clamping solution. It means that the investment return period is computed for specific parts, not only for the train side panel. The main advantage of the developed fixture system is its universality that enables us to easily use the fixture for a variety of applications. ■



Innovative, highly configurable, fast, accurate and durable fixture systems are a perfect solution for demanding advanced industries who need workpieces that can withstand a complicated shaping process with minimal distortion. The INTEFIX project results will hopefully reach the market to open new opportunities for sectors like aerospace or windmill as a start.



What was said:

"The strength of European manufacturing lies in its knowledge base spreading across multiple industrial fields. Yet, with new actors entering the global stage, Europe cannot have the luxury to be complacent. Investing in research to nurture the talent of Europe's workforce remains the key to hold success in such an evolving and fast-paced context."

Oldřich Paclík, General Manager, SST

An EU R&D programme supports the development of new materials in the advanced manufacturing industry:

THERMACO Project – opening ways for new materials with extremely high heat conductivity

THERMACO is a 3-year European funded project that started in September 2013. It focuses on the use of novel, extremely efficient, carbon based thermally conductive materials for heat evacuation applications in critical fields such as power micro-electronics, e-mobility and (renewable) energy generation as well as highest performance combustion engines.

THERMACO project looks specifically into the area of heat evacuation. Such applications are highly demanded because:

- Future advancements (downscaling, functional integration...) are currently limited by heat dissipation;
- Efficient cooling strategies are a must;
- Currently available materials are not efficient enough.

THERMACO studied the properties of thermally conductive carbon based materials, selecting graphene (and thermal pyrolytic graphite) as the main one to work with. Despite extremely high heat conductivity, graphene has too low structural stability, impeding at the same time stand-alone-solutions. That is why a solution was to embed it into an aluminium metal matrix to marry best features of both.

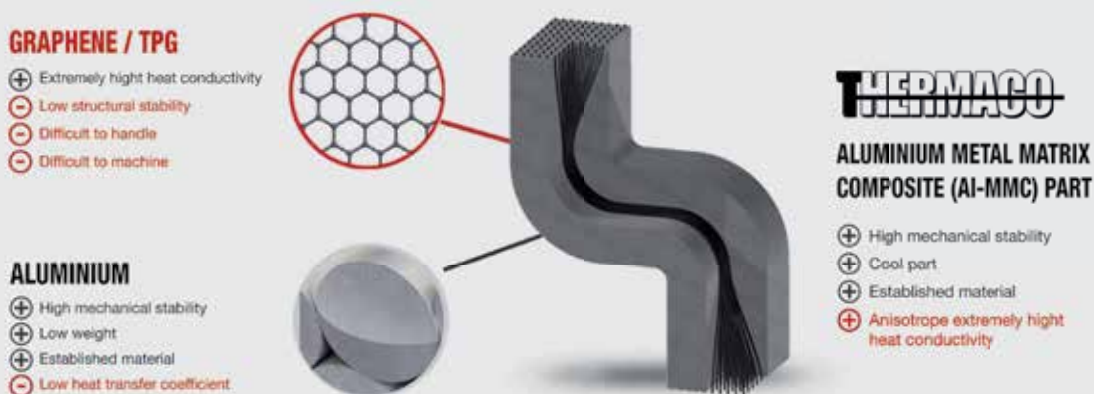
Such a solution allows:

- the dramatic enhancement of cooling efficiency;
- an increase in functional integration possibilities;
- the exploration of new component designs and manufacturing routes;
- the enhancement of composite materials use;
- cost and waste reduction;
- bolstering competitiveness and market strength through innovation and industrial leadership.

Composites (like AL MMC) are promising materials that can be used in several technologically advanced products where traditional metals or polymers don't deliver expected results. In this spirit, one of the project's biggest challenges was to develop adequate guidelines for design and production of highly efficient composite Al-MMC parts. This was followed by a development of production process for heat evacuation materials based on the composite in question. Lastly, the project team evaluated adequate manufacturing technologies and prepared specific industrial application (demonstrator).

■ OVERVIEW OF THERMACO'S APPROACH

THERMACO's approach for thermal highway integrated composite parts:



THERMACO

With regards to the manufacturing technologies, the THERMACO team took into account the following cutting and ablating technologies: micro milling, micro-EDM (Electro-Discharge Machining), jet-ECM (Electrochemical Machining).

As a specific industrial application, cooling inserts for a Lamborghini engine's crankcase was built. A demonstrator was in display in the CECIMO booth during the EMO Milano 2015 and attracted a wide interest from visitors from different sectors such as industry, academia, the European Commission, and so on.

The project will be finalized in September this year and there are still a few issues to be dealt with like:

- The optimisation of first-round demonstrators;
- Understanding and reduction of thermal resistivity issues in particle-based MMC;
- The addition of new heat highway concepts integrating copper-graphene inserts.

Overall, results achieved so far clearly show that various industries like automotive, nanoelectronic and lighting, to name just a few, can take advantage of completely new, integrated products design that were unthinkable up to now. ■

This project is co-funded by
the European Union



A Lamborghini V12 engine demonstrator was in display in the CECIMO booth during the EMO Milano 2015 and attracted a wide interest from visitors from various sectors, notably Andrea Gentili and José-Lorenzo Valles from the European Commission's DG Research & Innovation (center left and right).



What was said:

"As advancing technology will continue (re)shaping the manufacturing landscape, continued investment in research and innovation is crucial for the competitiveness of the machine tool firms in the years ahead. This creates a pressing need to equip people with the right skills to drive the digital evolution of the machine tool industry forward."

Jef Seghers, Business Development Manager, AGORIA





EU funded project 3DPRISM prepares the machine tool workforce for 3D printing technologies

The 3DPRISM project was launched in November 2015 by CECIMO and its project partners, a group of actors from the vocational education & training (VET) area, manufacturing, R&D training and the accreditation and certification sector.

Funded by the EU Erasmus+ programme, 3DPRISM aims to upgrade the quality of European VET provision by mainstreaming additive manufacturing in VET courses across the continent. The advantages of the additive manufacturing technologies are manifold for metalworking machine tool processes. For example, building of products one layer at a time allows to minimize waste production and improve time-to-market, since only the material that is needed is used and components' parts stem directly from CAD models. Nevertheless, training in Europe nowadays appears, in fact, less and less synchronized with the labour market needs despite the rise of these technologies.

While higher education institutes are able, to some degree, to re-align their courses with the rapid advance of additive manufacturing VET centres, instead, face difficulties in constantly updating their training offer. As a result, applied skills in additive manufacturing tend to fall outside the skillset of VET profiles such as technicians and operators. This has an ultimately negative impact on the employability potential of VET learners and is a leading factor explaining the skills mismatch in Europe.

The 3DPRISM project will improve VET provision by producing guidelines and a methodology for VET providers to properly align VET courses to the competences required by additive manufacturing in industrial practices. It will also offer VET learners direct access to materials such as Open Education Resources (OERs) and Massive Open Online Courses (MOOCs), covering work-based training and apprenticeship schemes. ■



What was said:

"Data show 46% of workers in manufacturing feel their skills will become obsolete. It is clear that Europe needs to breathe new life into its VET and education systems. A closer collaboration between VET providers and manufacturers would help to do so. Firms are the ultimate source of insight into market trends."

Chantal Baas, General Manager, VIMAG




 BLUECOMPETENCE

Machine Tools

operated by **cecimo**

New members strengthen the Blue Competence Machine Tools Initiative

With the adhesion of new Alliance Members, the objectives' relevance of the Blue Competence Machine Tools Initiative, operated by CECIMO is once more confirmed. Established in February 2012, the initiative is now a reference for machine tool companies adapting to the European energy-efficient and sustainable industrial environment. As a sign of Europe's global leadership in sustainable manufacturing, over 60 firms have decided to join the platform as Alliance Members since its creation. The initiative's membership also includes machine tool associations and different research organisations from across Europe.

As energy and climate challenges have grown in importance in Europe over the last decade, many organizations have increased efforts to propose coordinated actions in the energy-efficiency field. The cross-border character of these actions, which involve energy consumption optimization and the reduction of production's environmental impacts, have provided the main incentive for European manufacturers to work on a joint approach. Their will to achieve sustainability and environmental objectives while not hampering competitiveness has led to the approval of an array of sustainability actions at European level, corresponding to the transition towards a resource-efficient economy.

Under this light, with the CECIMO-operated Blue Competence Machine Tools Initiative, Alliance Members reach sustainability objectives and communicate their achievements effectively, in a flexible way aligned with their own innovation cycles. In practice, different sustainability criteria are presented to machine tool builders by the initiative. Firms that meet these environmental criteria join Blue Competence and enjoy the benefits from the membership just acquired. By this, the initiative shows companies a sustainable path forward, while remaining anchored to the overarching international energy and environmental trends. By promoting their Alliance Member status, companies show their customers and the wider public their social responsibility and emphasize the actions taken on a voluntary basis, with the goal of creating a better quality of life in the interest of people and the environment. Membership therefore also translates in increased business attractiveness. ■

The importance of the sustainability and environment-related challenges is also obvious at international level. The recent COP21 forum, in which Europe played a major role, highlighted the limited power of international institutions in the quest for sustainability, despite the national governments' understanding of the need to pool together expertise and competencies to reach more efficient measures in the sustainability area.

Flip the page to meet some new alliance members

What the new Alliance Members said:



"We are proud to fulfil the parameters required by the initiative, our Blue Competence membership is a further step forward for us in terms of scaling-up sustainable innovation in our business model."

Thomas Karlson, CEO of KMT Precision Grinding AB



"Sustainability is a top priority at our firm in both technical and economic aspects. Our aim is to impress customers while treating the environment and the economy as one unit, not as two opposing interests, and our products prove it."

Hans-Martin Schneeberger, President and CEO of Schneeberger Holding AG



"Several megatrends are in play in the grinding machine industry. One of these is certainly the reduction of energy consumption in the interests of ecological progress, mobility and individualization. In joining the Blue Competence initiative, we demonstrate we are in constant search of ways to improve production with less energy."

Philippe Selot, Manager Marketing-Communication, United Grinding Group AG



"Being sustainability-minded yields not only benefits for the environment, but pays off in terms of production costs too. Quality is our primary objective, and joining the CECIMO-operated Blue Competence initiative certainly gives a renewed confirmation of the fact we achieve it"

Hansruedi Wandfluh, Managing Director of Wandfluh AG

"Sustainability & Skills in Machine tools & Robotics sector" study:

Will the EU sustainability agenda have an impact on the advanced manufacturing workforce?

CECIMO took part in the "Sustainability & Skills in Machine tools & Robotics sector" study alongside Ceemet (the European Employers' organisation), EUnited (the European Engineering Industries Association), and IndustriAll Europe. This study aims to provide policy recommendations based on estimations of EU environmental and energy legislation's impact on employment in the European machine tools and robotic sectors. The legislative framework taken into consideration is composed by four main pillars: energy and climate policies (such as the EU Emission Trading Scheme), circular economy policies, ecodesign and eco-innovation policies as well as policies impacting on third sectors along the machine tool and robotics' value chains.

Findings of the study have already emerged, revealing that this set of policies is expected to generate little consequence on the share of workforce in the two industries. Regardless of whether this legislative package were to be implemented globally or just within the EU boundaries, the European workforce concerned would shrink just by up to 3%. The qualitative dimension of the study sheds light over the opportunities for job creation linked to sustainability concerns. Expert interviews* have indicated how extra jobs in the machine tool sector are set to be created as companies seek to investigate further light weighting and lower

consumption, as well as to focus more attentively on machine power management. It remains relevant to highlight that experts consider these trends are likely to be triggered by the firms' willingness to ensure productivity at lower costs to maintain competitiveness rather than by the EU recently-shaped energy and environmental legislation.

According to the study, the derived consequences in terms of skills could therefore lead machine tool and robotics companies to demand more competences in the areas of mechanical engineering, programming, energy management, materials sciences, environmental management, advanced sensors applications and analytics as well as green business management.

This study is funded by the European Union through the Employment and Social Innovation (EaSI) programme. ■

*Special thanks go to Patricia Tames (INVEMA), Davide Della Bella (ECOLE), Alessandro Marini (AFIL), Ambrogio Girotti (Politecnico of Milano), Dr. Patricia Wolny (Steinbeis-Europa-Zentrum), Juanjo Zulaika (TECNALIA), Gianni Campatelli (University of Florence), Dr Nikos Tsianos (Exelia), Alberto Fonseca (CATIM/AIMMAP), Dr. Panagiotis Stavropoulos (University of Patras)



An EU-funded study focuses on additive manufacturing application areas, value chains, and missing competences

The study, funded by the EU, aims at improving the current mapping of additive manufacturing/3D printing capabilities in the EU and at preparing the ground for future collaboration opportunities across EU regions, so that industrial value chains around new applications can emerge and develop.

In that context, quantitative analyses are being conducted at different levels (EU funded research and innovation projects, patents and scientific publication) as well as in-depth case studies of European companies from both the additive manufacturing supplier and user sectors.

The project is carried out by a dedicated team led by consultants from IDEA Consult in cooperation with the Technical Research Centre of Finland (VTT), the Austrian Institute of Technology (AIT), and CECIMO as subcontractor.

Generate a snapshot of the present European additive manufacturing technologies to improve its future competitiveness

As for other advanced manufacturing technologies, to have an impact on Europe's competitiveness, additive manufacturing must be integrated to other value chains because of its horizontal function in manufacturing processes. With multi-sectorial applications, AM is expected to enable the potential of key manufacturing sectors to optimize their performance and quality. Such issues have been explored in several occasions in previous EU projects investigating cross-cutting key enabling technologies but the link between different projects has not been established, blocking further synergies among stakeholders.

This study "Identifying current and future application areas, existing industrial value chains and missing competences in the EU, in the area of additive manufacturing (3D printing)" runs from 27 May 2015 to 31 August 2017.

One of the reasons behind this limitation is the fact that AM capabilities in Europe are scattered and therefore difficult to map, and a lack of integration can already be observed between suppliers and possible users. For example, the use of AM has been spreading to different application areas in the medical, automotive and aerospace sectors, but other applications (might) exist in other sectors such as construction.

Given that, the EU-funded study, will address several objectives in order to identify opportunities for connecting value chains to existing AM supply capabilities. Specifically, it will identify the most important current and future application areas and the main sectors of applications, as well as map and reconstruct the corresponding value chains and actors in EU regions for some specific existing applications. For some future applications, it will assess the current value chains and identify the missing elements or competencies that are hampering (or will hamper) their full deployment and provide specific information on collaboration opportunities between EU regions to overcome these gaps, for example by "connecting" specific actors to competencies. Once the study is finalized, the key insights on the European additive manufacturing technologies will be communicated to stakeholders, underpinning the establishment of a concrete transnational value chain. ■



The Manufacturing Technologies Association, MTA, exists to promote the interests of the manufacturing technologies sector in the UK.

MTA members design, create and supply the advanced machinery, equipment and intellectual property that enable the creation of the products we rely on from day to day and that drive the UK's manufacturing economy.

Established in 1919 the MTA has been at the core of the UK's engineering based manufacturing economy for almost a century.

The membership, currently at 320 and growing, covers a wide range of manufacturing technologies. These include; machine tools, cutting tools, metrology equipment, additive manufacturing (3D printing), surface finishing, robotics and computer aided design and manufacturing software.

We offer marketing support through our website and through the provision of email marketing campaigns targeted using one of the UK's most complete databases of manufacturing leaders. We support members in their relations with the technical press and offer additional support around the MACH exhibition.

Our networking opportunities include our prestigious Annual Dinner, regular member's meetings with guest speakers, a regular event for members at the UK Parliament and social occasions such as a Golf Day.

The MTA provides many opportunities for members to keep abreast of the latest technical information with seminars such as the highly successful series on Surface Finishing held in partnership with Cranfield University. We are also regular contributors to the Europe wide work of CECIMO and in other supranational bodies such as ISO.

Our Economic data service is valued by many members with data collected and disseminated monthly on the UK market. We supply the Oxford Economics Global Forecast to members and also commission the same team to produce a more detailed study for the UK market, which we present at seminars twice a year.

The MTA is recognised and respected by the UK Government with regular meetings with Ministers and MPs as well as regular inputs into Parliamentary reports. We have been heavily involved in National Strategies for developing manufacturing supply chains and the Additive Manufacturing industry this past year.

In terms of support to our exporters the MTA is represented at most of the major manufacturing technology trade shows and organises and funds (we receive little or no Government financial support) National Pavilions at exhibitions where it is appropriate, recent ones have been at CIMT in China and MAKTEK in Turkey. We also provide advice to companies on a range of export issues from finance to Export Licences.

The MTA has been involved in education and training for many decades and funds smaller member companies to take on apprentices. We fund a programme which provides fun engineering kits to schools and run a National Competition to uncover the engineering design stars of the future. We are also often involved in education reform in the UK, for instance we are currently helping to develop the standards for a new Apprenticeship Programme in Metrology. ■



"We recognise the need to be fully engaged with what is going on in Brussels and are very supportive of the work that CECIMO do on our behalf. Our message to European policy makers is to make Europe as competitive as possible. The MTA supports the UK remaining in the EU because we can see the benefits that cooperation across our continent bring. Europe has to maintain its lead in innovation. We have to develop the manufacturing technologies of the future and be the best at delivering them to our customers. That means bringing manufacturing and services together to create value. Only by uniting advanced technology and a truly user focussed business approach can we maintain and improve our position in the global race."

James Selka, CEO of the MTA

Joined CECIMO in 2015-2016:

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Roland Haas
General Manager
Framag Industrieanlagenbau
GmbH

CZECH DELEGATION



Miroslav Ostrý
Chairman of the Board
Kuličkové Šrouby Kuřim, a.s.

DANISH DELEGATION



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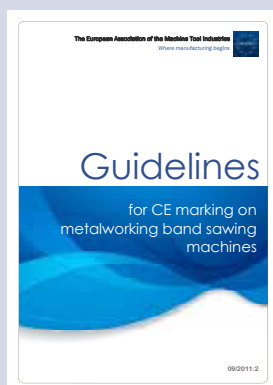
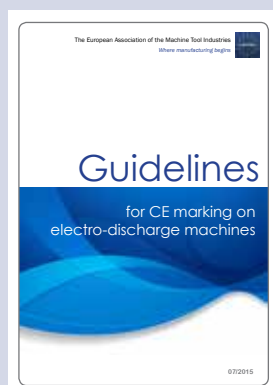
Upcoming Events:

CECIMO's 2016 Spring General Assembly
18-21 June 2016 - Fuschl am See, Austria

CECIMO's 2016 Fall General Assembly
25-26 November 2016 - Rome, Italy

Good practice, good sense!

Get your hands on these two CE marking guidelines published by CECIMO:



Download them on cecimo.eu/site/publications or
contact Kamila Slupek, CECIMO's Manager Technical Regulations at
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Associação dos Industriais
Metalúrgicos, Metalomecânicos e
Afins de Portugal

www.aimmap.pt

Spain: AFM - Advanced

Manufacturing Technologies
Asociación española de fabricantes
de máquinas-herramienta, accesorios,
componentes y herramientas

www.afm.es

Sweden: MTAS

Machine and Tool Association of
Sweden

www.mtas.se

Switzerland: SWISSMEM

Die Schweizer Maschinen-, Elektro-
und Metall-Industrie

www.swissmem.ch

Turkey: MIB

Makina Imalatçıları Birliği

www.mib.org.tr

United Kingdom: MTA

The Manufacturing Technologies
Association

www.mta.org.uk

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is the European Association representing the common interests of the Machine Tool Industries globally and at EU level. We bring together 15 National Associations of machine tool builders, which represent approximately 1500 industrial enterprises in Europe (EU + EFTA + Turkey), over 80% of which are SMEs. CECIMO covers more than 97% of total machine tool production in Europe and more than one third worldwide. CECIMO assumes a key role in determining the strategic direction of the European machine tool industry and promotes the development of the sector in the fields of economy, technology and science.