

cecimo

magazine

SUSTAINABLE MANUFACTURING IN THE DIGITAL AGE



Industry 5.0: human-centric, sustainable and resilient manufacturing for the Digital Age

Seán O'Reagain, European Commission



Enabling Innovation: The successful uptake of AI in the manufacturing sector

Eva Maydell, European Parliament



Startups can be key drivers in the green and digital transformation of industry

Johanna Stiernstedt and Abir Hossain, EIT Manufacturing North



EMO

H A N N O V E R

18-23/09/2023

SUSTAINABLE MANUFACTURING IN THE DIGITAL AGE

Foreword 04

Introductory statement by CECIMO
Director General

Future Trends 05

Future Trends and Sustainable Business
Models

*By Marco Taisch, Federica Acerbi, Marco Spaltini,
PoliMi SoM Manufacturing Group*

Industry 5.0: human-centric, sustainable
and resilient manufacturing for the Digital
Age

By Seán O'Reagain, European Commission

How can the EU stay ahead in the advanced
manufacturing race?

By Vincenzo Belletti, CECIMO

Testimonials on the Twin Transition
CECIMO Member Companies

Skills of Tomorrow 13

A new workforce landscape

By Menno Bart, The Adecco Group

The future of work is here – it's time to
start the skills revolution

By Jasper van Loo, Cedefop

The metaverse and its implications on
the manufacturing sector

By Diana Anichitoei, CECIMO

The first campus in the metaverse

By Thomas Schneider, TRUMPF

Transformation of SMEs 21

Supporting small and medium-sized
enterprises for sustainable and resilient
supply chains

By Stefan Pahl, UNIDO

Startups can be key drivers in the green
and digital transformation of industry

*By Johanna Stiernsted and Abir Hossain, EIT
Manufacturing North*

CECIMO Factsheet on Sustainable Manufacturing 25

Digital and Sustainable Policies 27

Building more resilient value chains for the EU
industrial ecosystem

By Barbara Bonvissuto, European Commission

Data Sharing & Data Spaces: the future of
interconnected value chains

By Gabriele Favarò, CECIMO

Policy Overview on Cybersecurity for the
Machine Tool Sector

By Gabriele Favarò, CECIMO

Cybersecurity and Trust in the Manufacturing
sector – What do companies need to know?

By Iva Tasheva, CyEn

How the AI act intends to support the digital
transition in the manufacturing

By Brando Benifei, European Parliament

Enabling Innovation: The successful uptake of
AI in the manufacturing sector

By Eva Maydell, European Parliament

Industry View on the Artificial Intelligence Act

By Stefano Ramundo Orlando, CECIMO

Digital transformation and knowledge sharing:
the keys for a more sustainable world

By Alessandro Liani, Video Systems Srl

The role of standardisation in supporting
Europe's digital transition

By Andrea Gulasci, CEN and CENELEC

Funding Opportunities 44

CECIMO Projects – State of Play

By Olha Hunchak, CECIMO

CECIMO Figures and Outlook 48

The European MT Industry in light of new
challenges

By Anto Jerkovic, CECIMO

News and Insights 51

National Association under the spotlight

*Interview with Xabier Ortueta, Advanced
Manufacturing Technologies (AFM)*

Meet a CECIMO Delegate

Interview with Norbert Jungreithmayr, WFL

Hello, EMO Hannover 2023!

By Sylke Becker, VDW

Making Innovation Happen Through
Collaboration

By Christian Bölling, EIT Manufacturing Central

Visit our Members' Exhibitions in 2023

FOREWORD

Dear readers,

Over the past decades, the manufacturing sector has faced changes on multiple fronts due to the rapid rate of advancements in technology.

CECIMO responds to this exigence by keeping up with these fast-changing times and working with policymakers and different industry representatives to strengthen our industries' growth and global leadership, maximise contribution to Europe's sustainable economy, and foster innovation and technological change.

Hence, 16th edition of the CECIMO Magazine is dedicated to the topic of Sustainable Manufacturing in the Digital Age, taking on board different topics to promote our vision towards future-oriented manufacturing and business continuity.

In order to overcome the current geopolitical challenges and disruptions caused by the global pandemic, while ensuring industry competitiveness, it is critical to invest in innovative solutions and adopt advanced manufacturing technologies.

Therefore, this magazine highlights different initiatives and policies relevant to the industry sector. This issue covers a variety of themes that are considered as the main drivers of sustainable and digital development, such as skills, data sharing, artificial intelligence, cybersecurity and standards.

To this end, this edition puts the spotlight on technology-driven skills, along with different issues that companies are facing in the process of adopting new technologies and ensuring that their workforce and businesses are ready for the green and digital transition.



Moreover, we bring to you the latest updates on the EU-funded projects that CECIMO is currently involved in.

We would like to thank all contributors for their efforts in making this magazine possible. We hope you will enjoy reading all the articles and that you will find it informative and valuable to keep your business models on track for the future challenges.

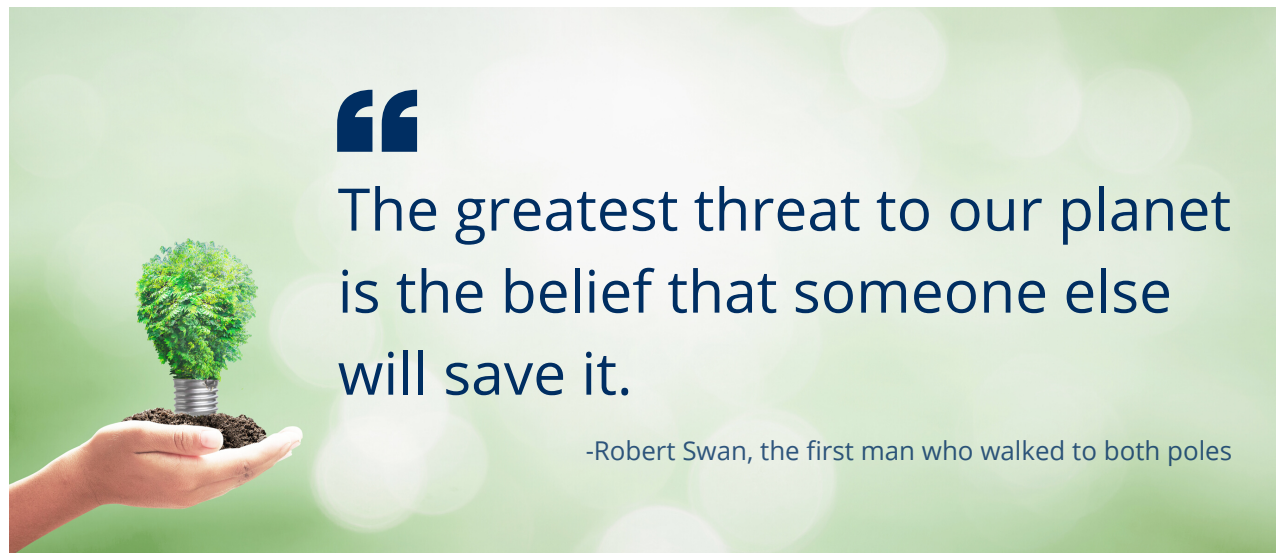
A handwritten signature in blue ink, which appears to read 'F. Geerts'. The signature is stylized with long, sweeping strokes.

Filip Geerts,
CECIMO Director General

FUTURE TRENDS

FUTURE TRENDS AND SUSTAINABLE BUSINESS MODELS

By Marco Taisch, Federica Acerbi, Marco Spaltini, PoliMi SoM Manufacturing Group



This quote has perfectly represented our society for decades and hopefully, today, people and industry have recognised the consequences that this belief is bringing. Sustainability indeed, is probably the most game-changing trend that business is experiencing and is now led by circular economy principles. In practice, Circular Economy is shaping manufacturing sector through the spread of 5 main goals (Figure 1): the redesign of product and material selection; the conservation and recovery of resources; the development of new ways of production; the implementation of service-based model and the shift to renewable raw materials, energy included.



Redesign Products & Materials Selection



Conserve & Recover Resources



Develop New Ways of Production



Implement Service-based Model



Shift to Renewable Raw Materials

The principles characterising circular economy were studied as part of those exogenous factors supported by the technological advancements leading to innovation in our society. More precisely, the current technological trend is named Industry 4.0 and we are witnessing a digital transition trying to follow the 5 goals mentioned above while keeping under control the possible rebound effects with the help of new policies and regulations. Therefore, technology, with the advent of Industry 4.0, plays more than ever a major role in the definition of consumer habits, business models and even manufacturing processes.

Companies are becoming able to rapidly produce a personalised product with minimum consumption of resources, an approach that appears to become a standard in the future. At the same time, other companies are moving to the 'as-a-service' paradigm in which products just become a mean to experience a service.

Sustainability, and more specifically circular economy principles, started gaining momentum during the COVID-19 pandemic. Indeed, due to the need for an increased level of resilience, the re-design of several supply chains has been put in practice and the capability of companies to rely on already used resources was considered one of the main advantages to cope with the constant requests from customers. It is more than evident that we are experiencing a huge problem worldwide, affecting the possibility to use the natural resources as we used to do in the past and for this reason, the capability to exploit the maximum value from resources is fundamental. The blocking of transports from one country to another limited the already established global supply chains, leading to a localization trend which gave rise to several country specific supply chains.



Sustainability shapes our future society and goals, while technology and innovation can be considered the elements helping to define how those goals will be achieved.

Digitalisation, sustainability, and pandemic are key elements to describe the main manufacturing trends but, unfortunately, in recent times do not allow to accurately depict the scenario of tomorrow. The Russia-Ukraine war, as well as China-Taiwan frictions are redefining and strengthening geo-political alliances and, consequently, are bringing huge repercussions on global economic activities. In this sense, it is crucial to look at these geopolitical dynamics, since they still contributing to reshape manufacturing from its core.

Concretely, we can summarise the outcomes that we are already experiencing into three main effects, namely, scarcity of raw materials, change in nations' energy strategies and inflation.

If we look at the first two with a constructive approach, we notice how a transition toward circular business models represents not only an imperative for future generations but also, in a shorter-term perspective, an opportunistic lever for companies to keep costs lower and under control. To overconsume raw and virgin materials, as well as energy would be a mistake now more than ever. Society, governments, and business must work together to foster technological development and ensure better ways to reintroduce waste in new cycles, facilitating the usage of secondary material. Moreover, they should operate to design models able to diminish resource consumption.

To close the loop, if nobody acts today, there will be no one to save the planet tomorrow.



INDUSTRY 5.0: HUMAN-CENTRIC, SUSTAINABLE AND RESILIENT MANUFACTURING FOR THE DIGITAL AGE

By Seán O'Reagain, Head of Unit, Industry 5.0, DG RTD, European Commission

The digital transformation is increasing reliance on complex technologies. To maximise the opportunity of these technologies, the manufacturing industry must capitalise on the potential for increased collaboration between smart systems and appropriately skilled humans. This calls for merging the greater accuracy of industrial automation with the unique cognitive abilities of humans and, in particular, their capacity for creativity and critical thinking. Hence, it is necessary to look beyond purely technology-driven digitalisation. A human-centric approach is required that capitalises on new technologies to realise workers' capacities and maximise their creativity in the workplace. This is where Industry 5.0 comes in. It sees workers as an investment, rather than a cost.

This means using technology in manufacturing to harness the diverse skills and capacities of industrial workers, rather than requiring workers to adapt to ever-changing technology. In this way, workers become more empowered, leading to enhanced productivity. Such an approach is also the key for manufacturing industry to attract and hold onto the best talents. The generation currently entering employment is the first that is "digitally literate". These Generation Z workers possess scarce skillsets. Research by Accenture, Deloitte and others shows that Generation Z wants to work for employers that share their values. As the "Great Resignation" in the US shows, these workers will leave their jobs if their qualitative values are not respected, irrespective of the level of salary offered.

At the same time, the manufacturing industry faces the challenge of sustainability. This requires it to reinforce its role in respecting planetary boundaries. A human-centric approach to the adoption of digital technologies can support industry in enhancing its contribution to sustainability while, at the same time, boosting companies' bottom-line. This is because technologies are taken up in a way that facilitates greater resource efficiency by implementing processes that do 'more with less'. This also supports adoption of circular processes that reuse, repair and recycle resources to reduce waste and limit environmental impact.



Seán O'Reagain

The advent of the Digital Age has facilitated the emergence of more globalised value chains and markets. As impacts of the COVID pandemic and the war in Ukraine have demonstrated, such global value chains are vulnerable to unexpected disruptions that can undermine the resilience of industry. Hence the need to develop a higher degree of robustness in manufacturing production. The resilience dimension of Industry 5.0 focuses on balancing the trend towards globalised production by appropriate application of digital technologies to achieve more adaptable production capacity. This enables industry to develop sufficiently resilient strategic value chains by implementing business processes with the flexibility to respond to disruptions.

Digitalisation often poses a particular challenge for SMEs due to the need for high investments in technology, insufficient absorptive capacity and inadequate access to skills. Industry 5.0 provides a useful framework for SMEs in undertaking their digitalisation journey: it embraces a broad range of areas related to the digital transition, including worker engagement, skills and training, production processes and supply chains.


At an Industry 5.0 Roundtable in April 2022, European industry leaders highlighted how the application of Industry 5.0 changes the nature of digitalisation. Rather than seeing it purely as a means of increasing efficiency, Industry 5.0-driven companies seek to leverage digitalisation as a way of fulfilling the company's purpose. Such 'purpose-driven' companies capitalise on the capacities of their workforce to drive performance and deliver a distinct competitive advantage. These 'purpose-driven' companies have proved particularly resilient against COVID-related disruptions.

While companies are at the forefront of Industry 5.0 implementation, policy-makers also have a key role in providing directionality, coherence and appropriate incentives. In this regard, the European Commission's Directorate-General for Research and Innovation is organising Calls and supporting projects related to Industry 5.0 under Horizon Europe. It is also engaging with EIT-Manufacturing in the development of Industry 5.0 curricula. Most recently, and in conjunction with manufacturing industry partners, it has put in place the first-ever Industry 5.0 Award.



Technological innovation brings us to the next phase of industrial development, where emerging technologies help us improve our innovation capacities and product competitiveness.

Michael Merkle, CEO & President, Agathon AG and Chairman of the Communication and Advocacy Committee, CECIMO



HOW CAN THE EU STAY AHEAD IN THE ADVANCED MANUFACTURING RACE?

By Vincenzo Belletti, Director of EU Public Affairs, CECIMO

The manufacturing sector is one of Europe's main drivers of employment and prosperity. Unfortunately, the importance of this sector is often being overlooked when it comes to strategic investments, competitiveness, and economic growth in Europe. Europe has a leading position in numerous industrial manufacturing sectors, such as machine tools and pharmaceuticals. Thanks to the strength and stability of the manufacturing industry, the EU annually achieves a significant surplus in the trade of manufacturing goods that allows the EU to finance the purchase of other goods and services, such as raw materials, energy, and services. Following the 2020 economic disruptions, caused by the COVID-19 pandemic, the European manufacturing industry has started to look at the innovative solutions offered by the advanced manufacturing sector to overcome new challenges and ensure its competitiveness.

Innovative technologies will continue to be a critical factor when it comes to long-term success and business growth. In that respect, we can certainly say that European companies are providing the most innovative and leading solutions when it comes to automation, predictive maintenance, robotics, and additive manufacturing. Such technologies can help various industries improve their products and other aspects of their production chain (e.g. quantity of material or energy used). Although the benefits of advanced manufacturing technologies and processes may be well understood across different industries, there are many challenges that this technology needs to overcome in order to accelerate its adoption. Lack of access to capital, technologies and a skilled workforce are only some of limitations to the uptake of advanced manufacturing solutions across sectors and companies of any size.



Investment in advanced technology is rather expensive, so it is not surprising that many companies need support in testing these solutions without committing to any initial investment. In that context, technology centers or pan-European initiatives such as the Vanguard Initiative can play an important role, by providing companies with free test phases and expert support to integrate a certain solution within their production line, thus saving time and costs.

Another aspect that could improve the development and use of advanced manufacturing technologies in Europe is data sharing to optimise asset performance (e.g. by increasing machine uptime and product quality). However, while some pioneering companies are already experimenting with industrial data sharing, B2B data sharing has yet to achieve real scale in Europe. The main barriers to data sharing collaboration are associated with trust issues and technical barriers. To respond to these challenges and unlock a unique opportunity for the entire advanced manufacturing sector, collaboration and a structured approach between policy and industry representatives are essential. .

Following ambitious programmes by China and the United States to become worldwide industry market leaders, EU policymakers must significantly increase their efforts to ensure that the EU industrial sector can effectively compete on the global stage, while growing economically and innovating technologically.

European policymakers must keep this topic high on the EU agenda, developing innovation-friendly regulations. The European policy should aim to foster the fast industrial uptake of these solutions by accelerating commercialisation and the demand of advanced manufacturing technologies and processes.

The decision taken by the European Commission to launch a dedicated task force on Advanced Manufacturing is a step in the right direction.

As co-chair of this task force, CECIMO worked on developing policy recommendations for speeding up the uptake of advanced manufacturing technologies and processes by the EU industry and increasing the overall sector competitiveness.

The task force identified six relevant themes for the advanced manufacturing sector: EU sustainability goals, Access to capital, Access to raw materials, EU single market and standardization, Data opportunities and challenges, Skills.

In the report, each of these policy themes describes a context and rationale of a specific enabler or obstacle for accelerating advanced manufacturing, which is further then enriched by specific and ready-to-implement policy proposals.

With the report's publication in December 2022, the task force's work will focus mainly on disseminating the results to national policymakers and monitoring that the European policymakers will use the report for future policy initiatives.

Finally, by promoting coordinated action between public and private stakeholders, we can ensure that Europe remains a leading technology and process provider at the global level and that our industry base continues to grow competitive and innovative in the next year.



Europe's Advanced Manufacturing sector sees increasing competition from Asia and the US, jeopardising it's world leading position. The EU needs to respond through innovation driven policy proposals that drive investments in technology development and up-skilling of the European workforce.

Stewart Lane, Head of Business Development EMEA, Renishaw plc and Chairman of the CECIMO Additive Manufacturing Committee

THE TWIN TRANSITION

CECIMO MEMBER COMPANIES TESTIMONIALS



Joël Duprat, Director General, Escofier

In Escofier, the twin transition started a decade ago with the creation of our “Green line” machine: full electric machine without hydraulic system. We finalised this year the development of the last application where hydraulic solution was required; all the machine we produce are now fully electric and connected. The next steps for us is to develop robotic solution for our machines and work with our AI PhD student to use the data collected by our IoT sensors in predictive maintenance and process control.

Today, the acceleration of the twin transition in the market is bringing us growth from two aspects. The increasing use of cold rolling process for existing products is one of them. With the need of reducing their footprint and cost, more and more manufacturers are moving to cold rolling process as it is a sustainable process with a low footprint: no chips, less energy consumption, very long tooling lifetime. We have several ongoing innovation projects with our customers to develop solutions to roll parts that are now produced with other machining process.

The second aspect is the emergence of totally new products or product with more stringent requirements coming from the twin transition on the market. For example, we observe an increasing demand for ball screw solutions to replace hydraulic cylinders. We are also working on innovation projects to push the limit of rolling process to reach stringent requirements on automotive components to reduce the noise in electrical vehicles. Twin transition is also generating new challenges such as manpower shortage for technical profiles and critical degradation of component cost and lead time. To sum up, it is a great opportunity but challenging for the company.

There is no doubt that the twin transitions play important role in composing business strategies and company's ability to keep and evolve its competitiveness and sustainability. The need to digitize business processes, data collection, processing and analysis is already a part of our daily work. The amount of this data that we are able to obtain is growing exponentially. It is therefore necessary to come up with effective tools for their processing and evaluation. This places demands not only on new technologies, but also on the knowledge and skills of our employees. At TOS VARNSDORF, we have been developing our own add-on system for several years called TOS Control. It ensures better communication between an operator and the machine through unified machine tool interface and allows to include special applications and also communication with external devices and other systems. The result is not only an improvement in the efficiency of the production process, but also the possibility of interconnecting several different machines into one production system, its monitoring and control, including connection to the ERP system of the company.



Jan Rydl, Member of the Board, TOS VARNSDORF



Vincent Affolter, Managing Director
Affolter Group

We have been manufacturing gear trains for the watch industry for over 100 years and have been developing and producing gear cutting machines for over 20 years. Originally, the engineers employed in the family business were exclusively concerned with improving the existing equipment. In the 1980s and 1990s, this meant integrating electronics and software into mechanical machines. It was essential to do things differently from the market, and so the company developed its first numerical controls. The performance of the production workshops quickly defied the competition, and the company grew. Now, Affolter Group integrates its 5th generation of numerical controls, Pegasus, which is installed on the Industrial PCs of the specialized company Beckhoff. In addition to Affolter, Esco SA's high-performance escomatic turning machines also work with Pegasus. The software solution, developed in-house, not only manages the axes and functions of the machines, but also makes all machine data available and usable. This data, which characterizes the physical machine, can be easily transferred to the Pegasus Simulator tool, which is installed on a conventional computer. Pegasus Simulator becomes the digital reproduction of the physical machine. From there, it is possible to analyse the machine's conditions, plan maintenance or updates, or even simulate an exact machining cycle to optimise its output without using a physical machine. Traceability, modularity and connectivity are now integral parts of our factory floor and machines.



Mauro Biglia, Commercial and Sales Manager,
Officine Meccaniche Biglia

At Officine Meccaniche Biglia, we have already been manufacturing 4.0-ready machines for several years. This means that these machines are designed to be interconnected with the company systems of our customers. In this way, they are able to observe, manage and plan production processing in their factories. Moreover, thanks to these systems, we can provide our customers with a remote-assistance service on request, offering support from off-site in case of emergencies. With regard to the Green Transition, today, our machines are equipped with state-of-the-art components: actuating devices, motors, hydraulic power units and inverter cooling pumps that are definitely less energy-consuming than those used in the past. Therefore, our lathes ensure higher energy saving for end users.

On the other hand, if we look at our factory, Officine Meccaniche Biglia, I can tell you that all our production machines have long been interconnected to enable planning, monitoring and management of our different lines.

After all, we consider the attention to the environment and energy saving as an extremely important issue. For example, we are very careful about the problem of coolant-lubricant fluids. Therefore, we have adopted a series of measures to ensure the utmost safety for our workers. As regards energy, in 2011 we equipped our factory with photovoltaic panels that allow us to cover about 50% of the energy we consume.

Due to the twin green and digital transitions, we have transacted a major reformation of our business strategy; how we construct, build and sell our MT. When working with identify and distinguish the environmental impact in all part of the production, we realized how big percentage our solid beds constitutes of the total impact.

To produce our SMT heavy duty production machines and to maintain the high precision our customer demands, the key feature is the solid and proven bed construction. Together with our construction firm we choosed to see this as an opportunity instead. During the years we have delivered over 5000 machines worldwide, and now we work with souching back "veteran" machines to build an in-house-stock. Today we fully see our machines as a part of the circular economy, because to be able to create green products we must walk a different road, but we can still reach the same goal.

Our new product range will consist of 3 machines, where the new construction is a hybrid. The launch will be during EMO 2023. It can be built on a newly produced bed, or on an existing. The customer will decide. We all need to prioritize to minimize the environmental footprint of all of our activities, and as MT producers we need to have a clear concept so that the customer easy can choose the better option.



Victor Backman, CEO, SMT Group



Mikko Nyman, CEO, FASTEMS

At Fastems we have made it our mission to build sustainable, strong and profitable manufacturing through intelligent automation and digital solutions. In this role we have been working for a long time already to help customers automate and digitally transform their high-mix, low-volume machining operations. The developments of digital technologies and the IT/OT convergence have enabled us to create new solutions that rely on increasingly connecting manufacturing equipment and information systems for manufacturing intelligence that further boosts the productivity our customers and offers attractive growth opportunities for Fastems.

Sustainability has also increasingly become a focus area for manufacturers. Fastems has worked to create a plan to reduce carbon emissions from our own operations and products with the ultimate aim to be carbon neutral. We have also created offering for carbon neutral automation solutions that is gaining increased customer interest. There is still much work to be done to calculate emissions, not only for our operations but also to understand, how we can help our customers reduce theirs.

The twin transition requires new skills from our personnel. For the digital transformation, a broad knowledge of cloud technologies, machine learning and cybersecurity are required. The green transition also calls for new skills for calculating and reducing carbon emissions. These skills are of short supply which means investments into employer branding have been crucial to attract these talents.

SKILLS OF TOMORROW

A NEW WORKFORCE LANDSCAPE

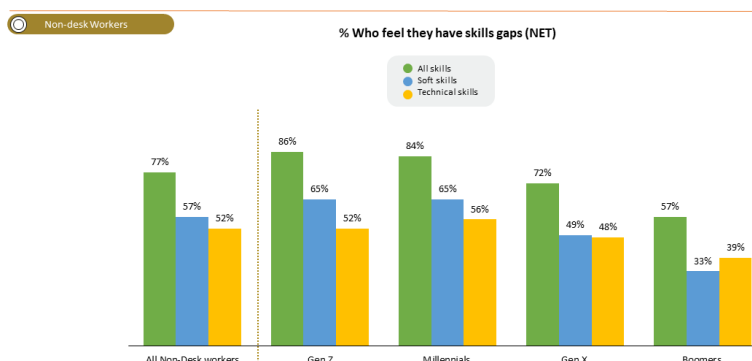
By Menno Bart, Senior Public Affairs Manager, The Adecco Group



Labor markets have not had the easiest of years recently. Perhaps more importantly, real people, both workers as well as employers, have had to face the brunt of what some have started calling a “poly-crisis”. Rather than experiencing a rapid succession of various crises, we are now seeing that these are not only happening simultaneously, but that they actually interact with each other, further exacerbating the scale and impact of the individual components. Luckily there is a silver lining: there is no need to reinvent the wheel to deal with each crisis. The current labour market challenges are a mixture of structural developments and ad hoc emergencies. Together, they lead to both a qualitative (not the right skills) and quantitative (not enough people in the right place) skills shortage that will be all too familiar to the members of CECIMO.

On the structural side, there is the simple fact of demographics. As the workforce is ageing, we see experienced professionals retire who cannot always be easily replaced by new labour market entrants. Add to that the fact that there is a structural mismatch between the world of education and the world of work. Those entering the labour market may not only lack the experience, but even the specific (hard and soft) skills required in some entry level jobs. According to our third annual global workforce study “Global Workforce of the Future” that looks at workers’ perspectives on key topics that impact the future of work. 77% of workers say they have a skills gap.

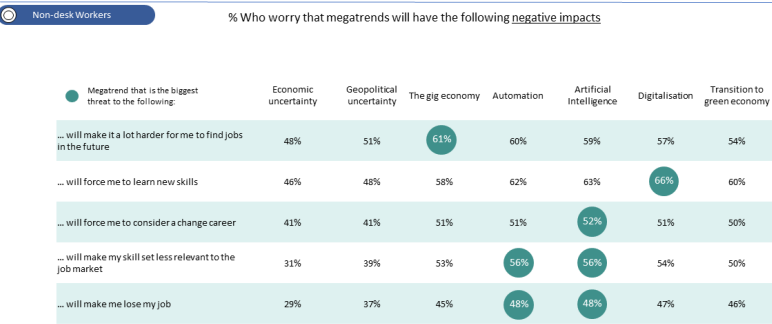
Skills gaps (especially soft skills) are more likely to be reported by younger generations



Q2.11. Where do you feel you have gaps in the skill set you need in relation to your current field of work? (None of the above) Weighted base: All Non-desk Workers (n=15,000); see detailed sub group bases at front of report

Further structural developments are the changing skills requirements that industries, including the machine tool industry, face due to the digital and green transitions. Indeed, six in 10 workers believe that the transition to the green economy will force them to learn new skills, while 57% of non-desk workers are worried that economic uncertainty will negatively impact their job, and 39% of non-desk workers are worried that Artificial Intelligence and Automation will have a negative impact on their job.

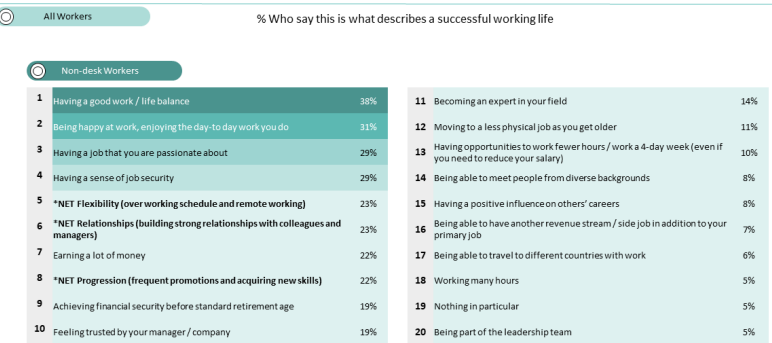
Workers fear that the gig economy will make it harder to find jobs in the future, while digital innovations at work will force them to learn new skills



In addition to the structural factors, we have all seen the labour market impact of the covid pandemic, which prompted new ways of working for many, and which simultaneously saw entire sectors plummet in crisis while others blossomed. Meanwhile, workers have yearned for more autonomy for years, as the rise of the platform economy has shown.

The Covid pandemic suddenly illustrated that flexibility and autonomy were a possibility in more situations than previously thought. 23% of non-desk workers say that flexibility over remote working is what describes a successful working life, whereas 37% of desk workers say the same. Today, we can already see how the invasion in Ukraine, the subsequent economic sanctions, and the resulting energy crisis are will again change labour market dynamics.

Good work/life balance, happiness at work and being passionate about your job are the top three important factors for non-desk workers



Q10: Which of the following best describes a successful working life for you? Weighted. Base: All Workers (n=55,000). *These are Net, the individual statements are indicated between brackets.
The Adecco Group

The question many will be asking is: how should employers deal with these crises if they are looking to remain competitive on the talent market? The answer to that, in my view, is that every company should invest in becoming a sustainable workplace. In other words, companies should consider their entire talent journey, and ensure that they have a grasp of each element to attract and retain talent, in order to be an attractive employer.

This is not a matter of some fancy benefits, but a comprehensive strategy that starts during the recruitment phase, and runs via onboarding, remuneration, decent working conditions, investing in employability, all the way to supporting a sustainable exit strategy for employees. All of this needs to be underpinned by principles of non-discrimination, as well as responsible leadership and the right company culture. And of course, it should be based on a solid skills mapping and gap analysis. To illustrate: only 50% of workers say their company is regularly assessing their skills. This drops to 38% for non-managers, clearly putting the talent pipeline in danger.

Our research shows that there are four retention levers that workers truly appreciate. The first is still salary, although this works mainly for attraction, less for retention. For retention, it is important to invest in having true flexibility. True flexibility means that employers and employees have an open conversation on how best to match each other's needs, rather than a prescriptive one-size-fits-all approach. Additionally, career progression fueled by re- and upskilling is a key lever. And finally, mental health and wellbeing have come to the fore increasingly and can no longer be ignored as lever for retention. A quarter of all workers say their mental health has become worse over the past year and only 45% of all workers consider that their employer well addresses problems of mental health and well-being, leaving considerable space for improvement.

A poly-crisis needs a comprehensive workforce answer. But maybe, building sustainable workplaces was long overdue anyway.

THE FUTURE OF WORK IS HERE – IT’S TIME TO START THE SKILLS REVOLUTION

By Jasper van Loo, Coordinator Department for VET and Skills, European Centre for the Development of Vocational Training (Cedefop)

We live in times where the intensity, diversity and complexity of trends and challenges impacting the world of work and societies more broadly is unprecedented. The COVID-19 pandemic put the entire world at a standstill. As Europe was still recovering from the health crisis, it was confronted with war in Ukraine and its economic and social fall-out. Millions of Ukrainians fled the conflict and sought refuge in EU countries and a major energy crisis emerged. Alongside structural trends such as population ageing and accelerating digitalisation, disruption in global supply chains, stagflation, social turmoil and the unfolding climate emergency make ‘permacrisis’ the new normal, increasing uncertainty among governments, business and citizens.

The future of work is no longer in the future – it is here. Digitalisation is accelerating fast and there are few jobs left where digital skills are optional. Disruption and change set in motion by the pandemic have accelerated the need for massive up- and reskilling of adults, much of which will be about strengthening digital skills. New Cedefop evidence shows how fast digital technologies have spread in almost all workplaces in Europe, how they are transforming skills needs, work and learning and why digital skills should remain a top priority:¹

- A digital device is needed to do the job in about 87% of EU+ jobs;
- In 2020–21, new digital technologies were introduced in the workplaces of 44% of workers; 35% of adult workers had to digitally upskill to continue performing their work;
- 52% of adult workers need to develop their digital skills further to do their job better;
- Two in three workers affected by technological change have a digital skill gap;
- Compared to before the COVID-19 pandemic, 39% of workers more often use digital technologies to perform some of their job tasks and 36% do more online learning for job-related purposes.



Accelerating the green transition is much more than inventing, innovating and mainstreaming Greentech solutions in industry and beyond. It also means ‘greening’ employment and stepping up investment in green transition skills.



Jasper van Loo

While technology-driven job and work transformation will continue, implementing the European Green Deal will be driving employment growth in the coming decade. Pushed by the energy crisis, EU energy efficiency and renewable energy targets have become more ambitious in 2022.² Accelerating the green transition is much more than inventing, innovating and mainstreaming Greentech solutions in industry and beyond. It also means ‘greening’ employment and stepping up investment in green transition skills.

The green economy will provide job opportunities at every skill level. Beyond “typical” green jobs (solar panel installers, building retrofitters) also employment in the supply chain of green sectors and more generally service type jobs will be on the rise.

The idea that people and their skills drive the twin transition to digital and green economies and societies is at the heart of the EU’s digital and skills agendas, the recovery plan and new priorities set for Vocational Education and Training (VET). Skills are centre stage in dealing in many challenges we face, and this will become even more visible in 2023, which has been designated the European Year of Skills. While Europe’s skills development potential is enormous, so are opportunities to make better use of the skills, talent, creativity and wisdom European workers already have.

To be effective in transformative times, skills strategies, policies and measures needs to blend skills development and utilisation – they go hand in hand. Complementing skills formation and training with workplace opportunities to use the full range of skills is key to keeping staff motivated and supports their learning. Skills intelligence, skill-ecosystem-driven governance and strong partnerships between social partners, NGOs, education providers, regions and other key players, will help the skills revolution take off.



In order to have competitive European manufacturing, it is important to have a qualified and highly skilled manufacturing workforce. Having said that synergy between industry and educational institutions is critical in order to reinforce the current and future manufacturing workforce.

Monika Šimánková, CEO, HESTEGO a.s

[1] Cedefop (2022) Challenging digital myths, Policy brief. <https://www.cedefop.europa.eu/en/publications/9173>

[2] <https://www.consilium.europa.eu/en/press/press-releases/2022/06/27/fit-for-55-council-agrees-on-higher-targets-for-renewables-and-energy-efficiency/>

THE IMPACT OF THE METaverse ON THE MANUFACTURING INDUSTRY

By Diana Anichitoaei, Communications Manager, CECIMO



The metaverse is a network of 3D virtual worlds, built on convergence of Virtual Reality (VR) and Augmented Reality (AR) technologies, that enable multimodal interactions with virtual environments, digital tools, and people. The first use of the term ‘metaverse’ was in the 1992 science fiction novel “Snow Crash”, by Neal Stephenson, which described a single virtual world separate from the physical world. In recent years, the term has become increasingly popular, as predictions about the metaverse and its impact on society have started to dominate the media landscape.

The term has gained even more popularity after Facebook’s rebrand into ‘Meta’. Its CEO, Mark Zuckerberg, envisions that “the metaverse will reach a billion people, host hundreds of billions of dollars of digital commerce, and support jobs for millions of creators and developers.” Forecasts of its usage range from medical applications to marketing, entertainment and even tourism.

When it comes to manufacturing, the metaverse has the potential to transform an industry that is already considered an early adopter of new, revolutionary technologies. An existing example in this sense is the digital twin, which simply put, is a digital copy of a physical object. In the case of machine tools, digital twins are particularly useful, as they provide numerous benefits, including lowering maintenance costs, speeding up production time and facilitating testing. In the industrial metaverse, this could be taken to a whole new level with factory visualisation, virtual investigation and easy optimisation of all production aspects.

Simulations in the metaverse provide the ability to test numerous scenarios for different ecosystems, hence making it easy to choose the best strategy for the organization in question. Continuous simulations would offer manufacturers access to real-time data to understand current situations and environments and how they may affect operations, supply chains, and potential resource needs. In addition, metaverse simulations would enable companies to further optimise and automate their facilities by easily generating contingency plans and alternative processes.

These digital tools could also facilitate collaboration in the product development phase for sustainable solutions that reduce waste. Moreover, the metaverse could be an asset when it comes to training workers, by enhancing efficiency and safety; on the other hand, it could also significantly upgrade the customer experience.

The metaverse will certainly have a significant impact across the manufacturing spectrum, but a few industries are already exploring its potential, namely aerospace and automotive. For instance, JetBlue developed a VR solution to train its technicians, reducing expenses and risks that could occur in physical environments. In 2018, Airbus announced it was working on a project called “Factory of the Future” which would use a digital twin of the factory to help manage production. The company is using the Unity game engine to create a realistic 3D environment that can be used for training, planning, and simulation purposes.

BMW used simulation for six months at one of their new factories, building virtual cars within the metaverse, before deploying the final layout for the factory. As a result, the company changed about 30% of the initial design, based on the results of this simulation. Siemens and NVIDIA plan to pair digital twin models with real-time AI to create what the two companies are calling an industrial metaverse. These are just a few examples of how the metaverse is already impacting manufacturing.

POTENTIAL OBSTACLES AND CHALLENGES

While the benefits of the industrial metaverse are obvious, obstacles and challenges are also expected on the way. Low awareness about the metaverse, an under-developed infrastructure, lack of technical knowledge among staff, and insufficient funds are only a few of the challenges that need to be taken into account.

Middle market manufacturers will need to keep up with larger players by updating their technology infrastructure and incorporating digital capabilities. Companies should start investing in technologies that will help them prepare for a future in which the metaverse becomes more mainstream. New, advanced digital technologies such as virtual reality headsets or haptics will require companies to make significant investments going forward.



The popularity of Web3 is growing due to the recent acceleration caused by the global pandemic and adoption of technologies such as blockchain, cloud computing, augmented and virtual Reality (AR/VR) and 5G. Manufacturers need to adapt and tap into the potential of the industrial metaverse, as it could take digital transformation and industry 4.0 to a whole new level.

Natalie Nicolas, Senior Business Group Leader Manufacturing, AGORIA

The ability of employees to interact with these complex systems will be crucial in adopting the metaverse; specialized skills will be required to manage and operate them. Companies in the manufacturing sector will have to upskill their workforce to adapt to the metaverse ecosystem. Moreover, executives will need to train their employees to overcome the mental digital divide they might experience given that the metaverse is generally a new concept.

To conclude, the industrial metaverse has the potential to offer real added value to manufacturing companies. From enhancing the safety of workers and robots to improving predictive maintenance, metaverse brings a great deal of benefits to the factory floor. However, only time will tell if the adoption of this new technology will prove to be seamless or challenging.



THE FIRST CAMPUS IN THE

By Dr.-Ing. Thomas Schneider, Managing Director Research and Development, TRUMPF



METAVVERSE

In order to solve the greatest challenges of our time– CO2 neutrality, digitalisation, the mobility transition– innovative technological solutions and particularly people who can shape this change are needed. However, fewer and fewer young people are enrolling in technically orientated University courses (for example mechanical or electrical engineering). Educational institutions and the mechanical and plant engineering sector must take a new approach to attract young people to this industry, and actively integrate topics such as AI and metaverses.

Young talents require a wealth of knowledge and must utilise it purposefully in order to tackle the challenges the future holds. The focus of educational institutions lies particularly on teaching. The application of what has been learned is often neglected. The passion for the chosen profession later arises primarily through the application of this knowledge. Consequently, engineering courses lack an important motivational and educational element: the practical experience of the previously designed construction.

To meet these requirements, engineering education can be extended to include the production of student designs. As a result of new manufacturing technologies, such small-scale production can also take place at universities.

In consequence, a Learning and Application Centre for Mechatronics (LAZ) is being built at the Karlsruhe Institute of Technology (KIT), where students can develop, manufacture and test systems in a professional environment. Project workrooms and a professionally equipped workshop will be provided for this purpose. The KIT and the high-tech company TRUMPF are cooperating to achieve this, and TRUMPF is providing the KIT with professional manufacturing equipment for sheet metal production. The laser cutting machine and the bending machine from TRUMPF enables 1000 students each year to implement their designs and manufacture them to industrial standard. In order to expand their competences in sheet metal design, the students are given access to a digital assistance system in which strategies for optimising sheet metal design are proposed on the basis of CAD designs.



In addition to the students, TRUMPF also benefits from this cooperation. While the students applying the assistance system, TRUMPF gains data about the challenges and solution approaches in the design process. Supported by this data, the company can optimise the assistance system.

On the one hand the LAZ serves as a new evaluation platform for new TRUMPF solutions in terms of hardware and software development. For this purpose, data are collected along the entire value chain and solutions can be optimised at an early stage with future customers.

Furthermore, almost 1000 students per year are working with TRUMPF machines and learn about the advantages of sheet metal construction. The strong presence of the company and the experience of the beneficial cooperation is carried by the students into all industries post-graduation, therefore increasing both, the market awareness and leading to TRUMPF becoming more attractive as a potential employer.

In the current set-up, TRUMPF and KIT are addressing flexible sheet metal production applications. The end-to-end process and an open data ecosystem enables students across Europe to experience different manufacturing technologies. From design to production in an industrial setting students can evaluate and experience their ideas in form of competitions.

To achieve this, the first global metaverse based on European values for mechanical and plant engineering will be launched. The various university production sites will be mapped in a virtual campus. Thereby the students will be given the opportunity to experience technologies virtually at other sites and network across Europe.

Experts and students will create co-innovations together in expert communities. In this way, the Metaverse forms an innovation and data ecosystem with a direct link to educational institutions.

With this article we would like to invite you to transfer this idea together with us to other production technologies in cooperation with other educational institutions. We are open to share our insights, processes, technologies, and data with you in a franchise model. As a machine and plant manufacturer you can benefit from having unparalleled access to young talents, a dataset that covers the entire value chain, an evaluation platform for new solutions and a practical laboratory for aspiring as well as young leaders.



Become a digital Pioneer in the first global Metaverse Campus in the heart of Europe and don't miss the opportunity to attract up-and-coming talents in the job market of the future. We look forward to receiving an abstract of your ideas and kindly ask you to submit it to Sven.Matthiesen@KIT.edu or Thomas.Schneider@TRUMPF.com

TRANSFORMATION OF SMEs

SUPPORTING SMALL AND MEDIUM-SIZED ENTERPRISES FOR SUSTAINABLE AND RESILIENT SUPPLY CHAINS

By Stefan Pahl, Economist, United Nations Industrial Development Organization (UNIDO)



These SMEs face two main challenges in this context.

First, they struggle to implement new standards and technologies that would allow them to meet new criteria related to resilience and sustainability. Recent work in UNIDO's Industrial Development Report 2022, for example, shows that SMEs are much less likely than large firms to adopt advanced digital technologies and that many are still using analog approaches.

This relates to lacking (financial) space to experiment with new approaches and the need for technical capacity. Second, even if implementation is feasible, SMEs face a patchwork of heterogeneous requirements. These requirements, in turn, depend on the specific brand SMEs are producing for or the specific consumer market to which the final product is ultimately delivered.

New regulations in European countries, for example, requests MNEs delivering to Europe to trace and address social and environmental sustainability along their supply chains, i.e. also in SMEs that supply intermediate goods to these MNEs.

This calls for at least two points of entry to support SMEs. First, multilateral institutions and global policy actors need to find agreement and harmonise existing regimes governing new standards and requirements. In the best case, this topic makes its way into global standard-setting fora and organizations, such as the World Trade Organization (WTO). The WTO has clear criteria how technical standards need to be developed to avoid them being technical trade barriers.

Resilience and sustainability are increasingly becoming key elements in strategies for future manufacturing competitiveness. Many of these strategies cater to large multi-national enterprises (MNEs) that can diversify their supplier and buyer base, that can easily adopt new digital technologies, allowing them to be more responsive to shocks, or that can make large investments in sustainable production methods that only pay off in the long term.

Yet, typically further upstream in their supply chains, such as in the provision of raw materials or in the assembly of manufactured products, large MNEs cooperate with small- and medium-sized enterprises (SMEs).



Multilateral institutions and global policy actors need to find agreement and harmonise existing regimes governing new standards and requirements.

Two criteria stand out. Standards need to be effective and relevant, that is, a discussion has to be held on whether the newly demanded standards effectively respond to market needs (and whether sustainability and resilience are market needs) without distorting the global market, having adverse effects on fair competition, or stifling innovation and technological development. Standards' development should further be inclusive to the inputs by developing countries. In particular sustainability requirements are to date championed by governments in the developed world, and would strongly benefit from a global, inclusive discussion on the matter.

In the meantime, direct support can be delivered by raising awareness about existing standards and a better understanding of how these (voluntary) standards map to new regulation, providing guidance and certainty for SMEs which standards to embrace. Importantly, such information needs to be communicated in an intuitive way and reach the relevant stakeholders.



Second, access to finance remains important to make implementation feasible. Yet beyond that, it is imperative to demonstrate a sustainable business case of implementation to incentivize long-term uptake, as also maintaining new approaches is costly (such as auditing, technical maintenance, or continuous staff training). This can be supported by both public actors and MNEs. MNEs can support initial uptake by financial and technical support either as a grant, as a loan or through direct capacity building. To ensure long-term uptake, MNEs could further commit to a price premium and long-term contracts, which allows for accurate cost-benefit analyses and provide a clear signal to SMEs. The public sector, on the other hand, needs to develop new policy approaches that subsidise uptake and incentivise long-term compliance.

This requires demonstration and possibly support of the business case. For example, public actors may use evidence-based predictions to indicate the additional sales in new markets stemming from the implementation of new standards and technologies. Yet beyond that, the public sector may guarantee the predicted sales, conditional on performance and compliance indicators. This is similar to paying subsidies but tied to long-term transformations of businesses. The role of international and financial development cooperation is to support these processes financially and in building the widely needed capacities.



Despite market volume or business growth opportunities, most SMEs keep lagging behind in new technology adoption. Therefore, Member States should focus on providing support to SMEs to introduce the data-driven business and operational models and implement digital solutions.

Barbara Colombo, CEO, FICEP Spa and President, UCIMU-SISTEMI PER PRODURRE



STARTUPS CAN BE KEY DRIVERS IN THE GREEN AND DIGITAL TRANSFORMATION OF INDUSTRY. HERE'S HOW.

By Dr Johanna Stiernstedt, Director, EIT Manufacturing North and Abir Hossain, Business Creation Manager, EIT Manufacturing North

Transformative digital solutions are critical to the future competitiveness of industry and can even be key enablers of sustainability. But can a digital and green industrial transformation be driven by startups? Only if startups fully understand key industrial challenges, and the right structures are in place for success, according to Dr Johanna Stiernstedt and Abir Hossain at EIT Manufacturing.



During the past few decades, we have all seen the transformational energy that startups can bring to society and the economy. But when it comes to manufacturing, the power of digital startups has yet to be fully leveraged. One of the objectives at EIT Manufacturing, a public-private partnership founded in 2019, is to address this challenge. How do we get there? Here are three approaches to help unleash the potential for startups to further the digital transformation of industry:

Ensuring an eco-system approach to innovation. When it comes to a major transition like the green and digital transformation, no industrial player will solve all the problems on their own. Yet too often members of industry tackle issues big and small relying primarily on their own people and resources. Meanwhile, startups, universities and research and technology organisations, and public-private funding actors often operate several steps removed from the day-to-day work of industry.

This divide in the European manufacturing sector needs more bridges, especially now, when industry is challenged by the demands of transitioning toward more sustainable manufacturing and lowering CO2 emissions to tackle climate change. It means that corporates need to operate outside of their traditional core competence areas, and they need to find partners who can help by providing competence and solutions.

This is why EIT Manufacturing has made it a mission to bring together manufacturing actors – including top-tier industrial players and leading academic and research institutions from across the region – to connect them with innovative startups, scaleups and SMEs. The connections enable industrial companies to leverage a much wider range of vetted solution providers. In just one such example, EIT Manufacturing paired ChainTraced, a Swedish startup, with voestalpine, a major Austrian and steel technology firm, to better measure and model CO2 emissions.

Another key consideration is ensuring a focus on the “right” challenges. Digital transformation touches on so many different elements, from new production technologies to new products, to ensuring the right skills in the workforce. With so much at stake and many areas undergoing change, it is important that we concentrate on especially high-value challenges.

To ensure collaboration on strategic areas with strong innovation potential, EIT Manufacturing has selected a few focus “flagship” areas, including flexible production systems, digital and collaborative solutions, low-environmental footprint systems, green manufacturing and the circular economy, as well as human machine co-working. Defining these challenges offers a roadmap to the factory of the future – and allows for a clear focus on key tasks in a busy and cluttered innovation landscape.

Right now, startups with industry 5.0 solutions often lack understanding and access to their potential customers. Getting behind the physical and conceptual walls of major industrial players is tough. Of course, manufacturing sites are closed off spaces by necessity, for safety and security reasons. Furthermore, larger industrial players often work with much longer timescales, and key decisions can require sign-off from a myriad of key stakeholders. Thankfully, that is changing. Forward-thinking industrial players are inviting startups and scaleups into their business through accelerator programmes, in-house labs and co-working spaces, with open innovation agendas. Examples here in Sweden are, for example, the Volvo Group CampX programme, or THINGS Stockholm, which connects corporates and startups by bringing startups and scaleups inside the “walled garden” of major manufacturers. But what is often missing is the legal framework for that collaboration to happen in a low-risk way. This is where an organisation such as EIT Manufacturing can make a difference, by allowing corporates and startups simple collaborative frameworks and structures, to try things out as they seek solutions for key digital and sustainability challenges. This is important because, as an industry, we need to apply a collaborative approach to succeed.

Could your current digital challenge be solved in collaboration with a startup?



CECIMO FACTSHEET ON SUSTAINABLE MANUFACTURING



What is a Machine Tool?

According to **ISO standard 14955-1:2017**, a machine tool is a mechanical device which is fixed (i.e. not mobile) and powered (typically by electricity and compressed air), typically used to process workpieces by selective removal/addition of material or mechanical deformation. Machine tools operation can be mechanical, controlled by humans or by computers.

There are two major categories of machine tool processes:

- ▶ **Cutting processes** (milling, grinding or boring) using a tool with one or more cutting edges.

- ▶ **Forming processes** (stamping, bending or punching) applying force with specially shaped tools.

Machine tools are a key enabling technology since they are the starting point of almost every industrial value chain, and thus can have a direct impact on the production processes of most industrial sectors, namely including automotive, aerospace, medical and energy sectors.

Enabling the Green Transition

In recent years the environmental factor has gained more and more traction among the European Union's policymakers, leading to an unprecedented political momentum towards achieving a green transition at the European level.

This historic transition will require European industries to undertake fundamental shifts throughout their value chains, ranging from product design and production to waste management and the use of raw materials.

Given its critical position in the European industrial ecosystem, the machine tool manufacturing sector can effectively lead and support this transition by providing technologies that enable sustainable manufacturing processes in other sectors, and it is already rising to the challenge.



Sustainable Best Practices

According to a CECIMO Survey (2022), numerous actors are embracing sustainable solutions, as more than half of manufacturers actively engage in at least one sustainable best practice, mainly including:



DESIGN processes that facilitate disassembly, repairing and remanufacturing to extend machines' lifetimes and to improve energy efficiency during their use phase.



PREDICTIVE MAINTENANCE techniques designed to determine real-time conditions of machines and provide early detection mechanisms for technical failures, embraced by 80% of machine tool manufacturers.



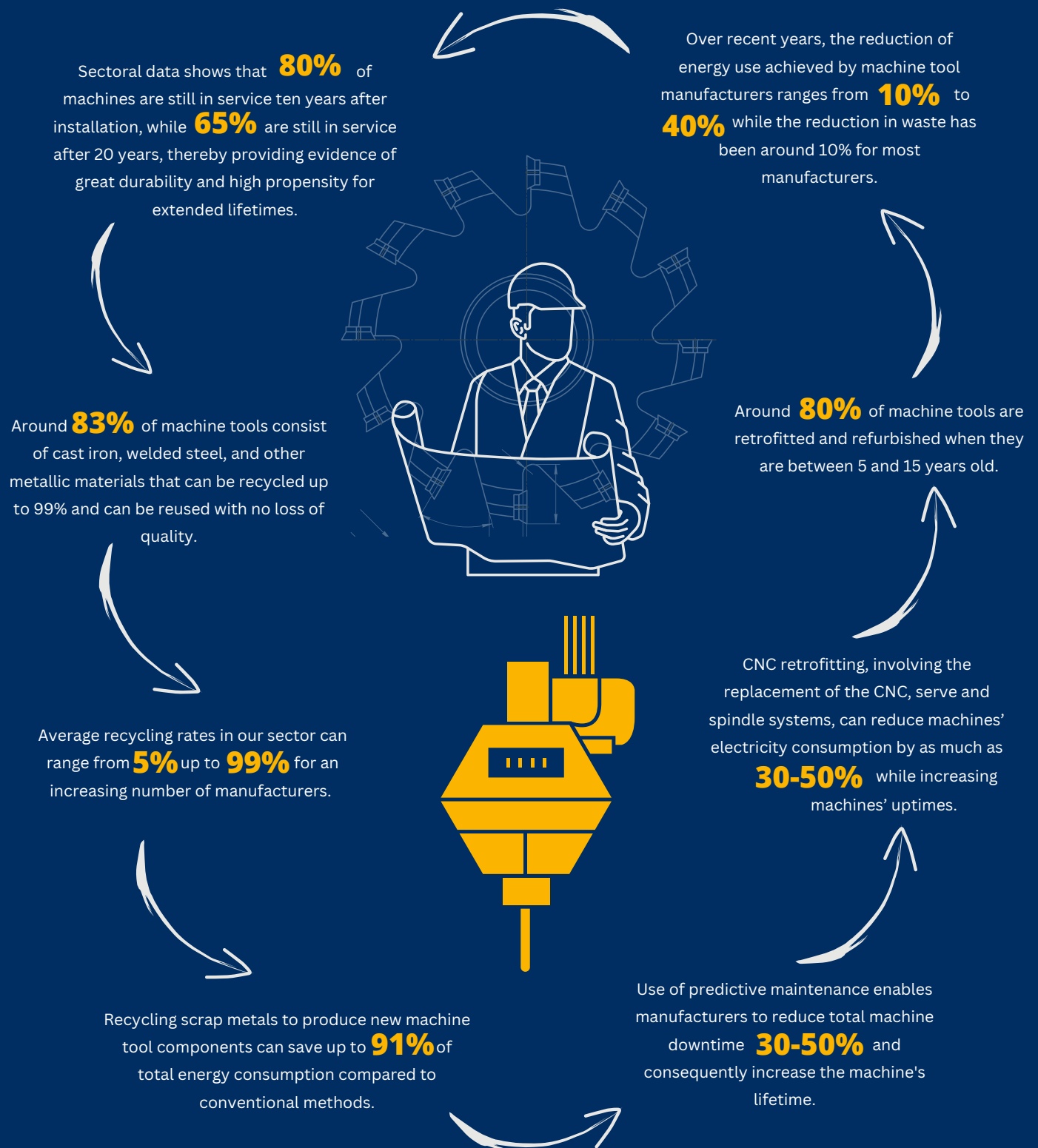
RETROFITTING process to restore or improve a machine's original specifications by replacing components, modules or integrating additional technologies, embraced by 80% of machine tool manufacturers.



REMANUFACTURING methods to rebuild a machine tool using a mix of recycled, reused and new parts" following the repair or replacement of obsolete components, embraced by 50% of machine tool manufacturers.

Key Statistical Evidence from the Machine Tool Manufacturing Sector

All the statistical evidence presented in this document has been retrieved from a CECIMO Survey (2022) and two previous CECIMO publications – “The Lifetime of Machine Tools” (2022) and “The European Machine Tool Sector and the Circular Economy” (2019).



DIGITAL AND SUSTAINABLE POLICIES

BUILDING MORE RESILIENT VALUE CHAINS FOR THE EU INDUSTRIAL ECOSYSTEM

By Barbara Bonvissuto, Head of Unit, International Value Chains, DG GROW, European Commission



The COVID pandemic and the Russian invasion of Ukraine have heavily disrupted the supply chains our industries rely on and pushed the EU into a new economic paradigm. This new situation brings important challenges that must be faced by the EU, its businesses, and its citizens. Shortages and inflation sparked by the pandemic and the Russian invasion have driven down economic growth in the first half of 2022. The machinery sector in particular has been heavily affected by rises in the price of energy and inputs such as steel or semiconductors, and the loss of markets due to sanctions on Russia. In this new paradigm, EU businesses are facing new challenges sourcing supplies and operating abroad and we cannot exclude further global volatility disrupting value chains in the future. As a result, companies will need to diversify their supply chains and their end markets to avoid being affected by a health, economic or geopolitical shock in a country. In our view, building up more resilient value chains for EU businesses must take two forms:

- We need to increase domestic production for inputs critical for our industries, for instance semiconductors.
- At the same time, we must reinforce our cooperation with international partners, both to address shared dependencies and to source supplies that would be impossible or prohibitively expensive to produce in Europe.

The Commission is actively working in collaboration with EU businesses to reduce regional dependencies in critical supply chains, notably those necessary for the EU's green and digital transitions. For instance, the European Chips Act will mobilise more than €43 billion to increase the EU's semiconductor production. Our European Battery Alliance and Important Projects of Common European Interests on batteries have allowed over €20 billion to be invested in batteries' value chains in Europe, with strong results: by 2019, the EU's share of global battery production rose to 5.9% of global production and is expected to reach 16% by 2029.



The EU must take an active role in strengthening our supply chains if we wish to avoid disruptions that could affect the EU's economy and our green and digital transitions. The European Commission is committed to support efforts to increase supply chain resilience for EU businesses.

Likewise, the new REPowerEU plan will increase domestic affordable and renewable energy production with notably the creation of a Solar Industrial Alliance to redevelop the photovoltaic panel industry in the EU. The REPowerEU plan also announced intensification of work on the supply of critical raw materials and preparation of a legislative proposal on that topic. This initiative will identify mineral resources and critical raw materials projects in the European strategic interest, while ensuring a high level of environmental protection.

At the same time, the EU is reinforcing its links with like-minded partners: during the EU – US Trade and Technology Council's Ministerial meeting on 16 May, the EU and the US agreed to cooperate more closely to increase supply chains' resilience for semiconductors, neodymium magnets and photovoltaic panels. Furthermore, the EU signed with Japan its first Digital Partnership on 12 May with the objective of strengthening the semiconductor supply chain and sharing information on digital supply chains. In April, President von der Leyen and the Prime Minister of India, Narendra Modi, agreed to launch the EU – India Trade and Technology Council to allow both partners to tackle challenges at the nexus of trade, trusted technology and security, and thus deepen cooperation in these fields between the EU and India. To reinforce access to raw materials abroad, the EU has negotiated strategic raw materials partnerships with Canada and Ukraine and is negotiating additional ones with several European and African countries.

The machinery industry is an important part of the EU's economy, with many European companies among the best worldwide in the sector of advanced manufacturing. The Commission has provided and will keep providing support to the industry to allow it to remain at the cutting edge of its field.

Notably, the Industrial Forum, as part of the EU Industrial Strategy, established a dedicated task force to support the continued uptake of advanced manufacturing in the single market.

CECIMO has been co-leading the task force to establish concrete guidelines to assist businesses in transforming to digital, sustainable, and resilient solutions. The machine tool sector is also key in supporting manufacturing across industrial ecosystems. We look forward to continuing the cooperation ensuring CECIMO members have access to reliable and resilient supply chains, increasingly market confidence and European business competitiveness.



By Gabriele Favarò, Policy and Projects Officer, CECIMO

By Gabriele Favarò, Policy and Projects Officer, CECIMO



From a policy perspective, the European Commission has already approved the Data Governance Act and has published a proposal for a Data Act in the first quarter of 2022.

The objective of the Commission is to exploit the potential of the data economy, making the value chains more and more interconnected, while safeguarding each player involved and their business-sensitive data. Another positive implication of the European initiatives on data is the harmonisation at the European level, avoiding legal barriers linked to significant variation among all national legislations on this matter. Ideally, European manufacturers will improve their performance in terms of efficiency and information flow through an environment that will favour those actors that decide to share data when it comes to business and governmental relationships.

CECIMO Magazine | 29 |

Furthermore, they would enable improvements in existing processes, the development of new products, and the testing of innovative business models. Moreover, it gives the opportunities to share and exchange data in an ecosystem, thus improving supply chain execution and production operations.

Finally, in the European strategy for data, a fundamental role is played by the implementation of sectoral data spaces with the objective to foster data-sharing practices in strategic fields. The Manufacturing Data Space, which is currently under development, will be the facilitator of enhanced data interoperability through data pools, making several actors interact, whilst avoiding the technical barriers many times underlined as hindering factors to the mentioned practices. By pooling data, the manufacturing sector can benefit from shared infrastructures, systems and processes for the development and continuous improvement

of Industrial IoT, as well as artificial intelligence systems that aim for zero-defect production. The actual implementation of the data space will take place in 2023, after a testing phase including two sub-spaces. The European Commission believes that this could lead to more flexible and resilient supply chains, further encourage data sharing among SMEs, enhance access to privately held data, and generate more collaboration among Digital Innovation Hubs across Europe.

To conclude, it is undeniable that the European Commission has spent the last couple of years to accelerate the transition towards the exploitation of the data economy with important achievements. However, the large ecosystem of SMEs that constitutes the backbone of the European manufacturing sector is still partially prepared. Therefore, we need to continue the path of collaboration and integration among small and big actors, institutions, and facilitators to make the European industry competitive in the decades to come.



Data is the soil of the digital transition. Large data sets are the enabler of new key technologies such as Artificial Intelligence and Industrial IoT. CECIMO will strive to facilitate the diffusion of data-sharing practices among machine tool companies while safeguarding the value of the data generated by our companies.

Stephan Nell, CEO, UNITED GRINDING Group





Policy Overview of **CYBERSECURITY** for the Machine Tool Sector

By Gabriele Favaro, Policy and Projects Officer, CECIMO

The first European initiative regarding cybersecurity dates to 2020 with the Network and Information System Directive, better known as NIS Directive. Before this initiative, most of the European Commission's actions were focused on raising awareness about the need to respond to a significant increase in cyber threats and cyber-attacks on strategic sectors and companies as well as on a growing number of small and medium-sized businesses.

For this reason, the proposal and the implementation of the NIS Directive have been crucial turning point in the digital legislative history of the EU. From a soft power strategy, the European Commission decided to deploy an assertive approach building on the existing institutions and legislations already established at the national level. However, this initiative proved to be flawed in the implementation phase. In particular, because of the lack of consistency in the national regulations, oversight bodies, and security measures foreseen by each Member State.

To complement and improve the provisions of the NIS Directive, the European Commission proposed an update of the legislation with the NIS2 Directive, which still lacks comprehensive harmonisation but

covers way more entities than the previous NIS. The Machine Tool (MT) sector as part of the manufacturing sector is one of the biggest targets of cyber-attacks. Just to give an idea, in the last two years manufacturing companies became the second most hit ones after the businesses and entities operating in the medical sector. The interconnected nature of this industry, with linked value chains, makes a single company's data and infrastructures more exposed to cyber criminals.

In particular, the most common attacks are in the form of phishing or ransomware attacks. The first one can limit specific devices or machine operativity, the second one could compromise sensitive data. This generally happens when employees use outdated operating systems.

However, to understand better what the risks at stake for the MT sector are and the danger coming from cyberattacks, it is important to differentiate between IT security and safeguarding of Operational Technology and hardware machines in the factory (the so-called OT security). Indeed, all the digitised industrial control systems that operate directly in the plant fall into the OT category and their impairment undermines the entire factory's operativity.

In this regard, for an MT company, foreseeing a cyber-protection strategy that safeguards only the IT office environment is particularly hazardous because it does not envisage crucial actions to protect machines e.g., assets inventory, role-based access control, and so on.

All SMEs, except for strategic sectors like telecommunications, are excluded from the NIS2 Directive. However, some aspects of the provisions could be helpful to lower the risks of a cyber-attack. As we all know, the majority of European MT companies are small and medium enterprises, and on several occasions, they are interconnected with big players in long value chains. This makes them a target for cyber-criminals that want to exploit weak points to attack entire industrial ecosystems.

In this regard, SMEs are undertaking measures aimed at strengthening IT and OT security at a fast pace, especially after Covid-19.

In this historical moment, it is crucial for small players to undertake targeted actions to safeguard themselves even without spending excessively. They should have a consolidated strategy for cyber that includes training for employees, they need to have a prompt disaster recovery strategy in case of attack, and they should regularly update their technologies. In practice, some easy-to-implement measures are password management, role-based access control, inventory, recurring patching, and secure backups of their data.

There will not be an effective and efficient digital transition without an appropriate and diffused degree of cybersecurity. At the same time, policymakers at the European and national levels should put in place new measures and strategies to have a functioning punishment and sanction system for cyber criminals and unlawful governmental actions from outside the EU.



Cybersecurity and Trust in the Manufacturing sector - What do companies need to know?

By Iva Tasheva, Co-founder and Cybersecurity Lead, CyEn



You either care about cybersecurity, or it will carry your business away.

Manufacturing is increasingly digital for several good reasons, well described in this Magazine. However, digitalisation is only sustainable if it is secure. According to the the European Union Agency for Cybersecurity (ENISA) survey (SME Guide, 2021), 60% of SMEs would go out of business in the six months following a data breach or cyber-attack. Manufacturing is no exception.

The manufacturing sector is the most popular target of cyber-attacks, suffering 32% of all cyber-attacks in 2021 (IBM X-Force Threat Intelligence index). This is due to its importance for the global supply chain and the growing number of exploited vulnerabilities, phishing campaigns and compromised credentials. An excellent example of the simplicity and impact of cyber-attacks in the sector is the Austrian aerospace component manufacturer (FACC AG) 2016 attack: penetrating the network, impersonating the CEO, and tricking the accounting department into transferring \$55.8 million for an acquisition. The result: money lost, CEO and CFO fired.

Another infamous example of the cybersecurity impact on business continuity and supply chain is Wannacry. It launched a ransomware pandemic, encrypted 230 000 computers and costed \$4 billion.

We have not yet found a way to deal with massive ransomware deployment, and it was also a sobering realisation of the software patching/update backlog issue in a variety of organisations.

While the threat is ever evolving, there are measures manufacturers should implement to take care of cybersecurity. No silver bullet or complete security exists, but cybersecurity risk management is necessary. We can identify the below as the manufacturing sector's high cybersecurity risks (high impact and probability) and mitigating measures:

- 80% of all data breaches are due to human error (Verizon Data Breach Investigations Report 2021). Manufacturers should implement secure development, maintenance and decommissioning policies to secure the human. In addition, cybersecurity training and awareness of employees should become part of the safety protocol.
- 50% of attacks on manufacturing begin with leveraging user credentials. Implementing string assess control: strong (e.g. multi-factor) authentication, good password hygiene (strong and unique passwords) and granting only need-to-know/use access for employees to company assets/data will go a long way preventing this treat.

- 47% of 2021 attacks on manufacturing exploited software vulnerabilities. In addition, three out of five data breaches started with a vulnerability in a supply chain partner. Manufacturers must implement robust vulnerability management processes, including vulnerability awareness, scanning, and patching. While traditional machines and tools are built with security and safety in mind and operate in a stable environment, the software does not always match the level of protection of the machine. As such, software vulnerability management is necessary for secure operations.
- 36% of manufacturing and production organisations were hit by ransomware in 2020, with a \$1.52 million average cost of the ransomware attack in the sector (Sophos, The state of ransomware of manufacturing and production, 2021). Priority measures to prevent and respond to ransomware attacks include people security and vulnerability management (prevent) and up-to-date incident reaction plan and secure data backup to recover quickly in the event of an attack (respond). Multiple government initiatives aimed at supporting the industry to prevent and recover from ransomware attacks, including Europol's EC3 cybersecurity centre, where valuable resources are shared.

Another aspect relevant for companies is that cybersecurity is becoming a regulatory requirement for access to the EU market. Starting with personal data security requirements in the EU General Data Protection Regulation, since 2020, cybersecurity requirements have been introduced in the

Machinery Directive, The Radio Equipment Directive (RED Delegated Act), and the Artificial Intelligence (AI) Act. In addition, the EU Network and Information Security Directive (NIS2) revision included the manufacturing sector as an essential sector. Furthermore, in September 2022, the European Commission proposed a devoted IoT cybersecurity horizontal legislation (the EU Cyber Resilience Act, CRA). Information Security Risk Management & Policy, Specific Security Measures in the design and production of products and delivery of services, and Vulnerability & Incident management and notification are the cornerstones of the current EU cybersecurity legislation.

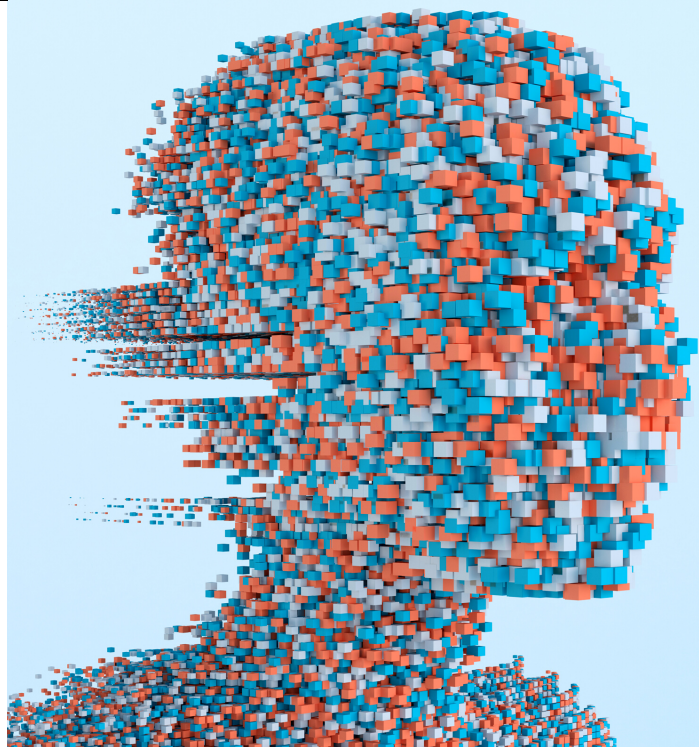
Manufacturing sector in general has mature quality assurance and control frameworks. These frameworks could be used as the backbone of a new cybersecurity programme, implementing industry standards as an efficient and effective continuous improvement method. Indeed, quality assurance and control should integrate cybersecurity, resulting in an integrated approach to delivering business and consumers' added value.

In conclusion, the growing threat and vulnerabilities make the manufacturing sector a key priority in improving the cybersecurity of the EU economy and supply chain. To secure the operations and comply with EU regulations, manufacturers should take a risk-based approach to cybersecurity, implementing robust vulnerabilities and incident management processes, integrating cybersecurity in their quality systems, securing their people through awareness and training programmes, and securely backing up data.



Cyber-attacks are spiking after the pandemic and companies are struggling with energy prices and raw materials shortages. Today, implementing cybersecurity measures is a compelling priority that, if overlooked, could undermine the stability of a business. Only collaboration among policymakers, cybersecurity experts, and industry actors could safeguard our sector and protect it in the long term.

José Pérez Berdud, CEO, Fagor Automation S.Coop.



How the AI act intends to support the digital transition in the manufacturing

By Brando Benifei, Member of the European Parliament

The manufacturing sector is already and will increasingly benefit from digital transformation and the use of machine learning and artificial intelligence. The ability to analyse productivity and waste in real time means improving the former and decreasing the latter much faster than in the past. But it also means improving product quality and analysing customer demands and changing market trends better and faster.

At this time of fierce competition with foreign markets such as China, some might think that the AI Act could become, especially for start-ups and SMEs, a burden rather than an opportunity, acting to the detriment of innovation. This is certainly not the legislator's intention, but it is also true that leaving SMEs more room for manoeuvre by lowering protection would not be the best way forward either.

How then to balance the interests of companies with those of individuals? What we continue to work on is strengthening stakeholder involvement, including civil society organisations or sectors such as manufacturing, SMEs, academia and social partners. We want stakeholders to be involved at various stages, from the standardisation process to sandboxes and regular consultations with the Board. We believe that they can provide important information on developments in the market and society, as well as point out possible problems.

This involvement makes the process more collaborative, which will help develop a more inclusive model for AI in Europe.



Undoubtedly, we must try to give SMEs a fast track to sandboxes, and lower compliance costs to prevent them from giving up on an innovation path before they even start. Sandboxes are still one of the hottest topics in discussions with colleagues.

EDUCATION, UP-SKILLING AND RESKILLING

It is therefore of paramount importance that we arrive prepared for the challenges that the technological revolution is putting in front of us. Today, we can use Next Generation EU funds to train students and workers to consciously govern the change driven by artificial intelligence.

If we do not want many people to lose their jobs with this new digital revolution, we should think about how to redeploy them in time.

Artificial Intelligence should not be thought of as something that will replace humans but facilitate their work. The Artificial Intelligence that Europe has in mind always sees the **human being at the centre.**

It will therefore be appropriate to train employees using these technologies so that they can respond appropriately to customer requests and be able to promptly detect anomalies in systems using artificial intelligence.

We do not want the idea to pass that employees are taken off the hook when systems provide output that clearly needs revision. Only with appropriate training and adequate knowledge of the technologies in use, when customers ask for an explanation for a denied request will it be possible to provide adequate answers and not undermine the necessary trust in innovative companies adopting artificial intelligence tools. Training implies on the one hand, from the angle of accountability, demonstrating that the company masters the technology it uses; on the other hand, it means not letting workers be overwhelmed by innovation and thus laid off, but being protagonists of it.

Technology and innovation only work if they have the **human being at the centre.**

Of course, Europe cannot only be rules, but must first bring innovation to the market with its companies, and its successful companies can also become ambassadors of those rules.



The potential for the European manufacturing industries to reap the significant benefits of artificial intelligence will rely on a legislative framework that allows manufacturers to further research, develop and test AI technologies in their production processes, thereby eliminating the need for third-party certifications that lead to additional costs and administrative burdens, especially for SMEs.

Massimo Carboniero, Managing Director, Omera S.r.l. and Chairman of the Technical Committee, CECIMO



ENABLING INNOVATION: THE SUCCESSFUL UPTAKE OF AI IN THE MANUFACTURING SECTOR

By Eva Maydell, Member of the European Parliament

Faced with increased pressure on global supply chains and rising energy costs, it is safe to say the manufacturing sector is under pressure. With the New Industrial Strategy for Europe and strategic digital legislation like the AI Act and the Chips Act, our aim should be to promote innovation and bolster our companies' competitiveness on a global scale. The key to European companies' success will be their ability to keep up and invest in the latest technological developments, such as AI-based analysis and optimisation solutions. As one of the Rapporteurs on the AI Act, I will continue to work towards a regulation that enables innovation by providing a clear and predictable environment for low-risk industrial solutions.

The AI Act is the first-ever general law on Artificial Intelligence – a horizontal law covering all sectors with differing requirements based on the level of risk that the AI system poses. With the AI Act, the EU has decided to regulate an industry, which is still quite early in its development, especially when compared to the United States or China. Our approach to AI – as with previous digital legislation – stems from a belief that AI design is crucial to defending our values and setting a global democratic standard for future technological development. Of course, there are merits to this approach given our longstanding history as defenders of democracy, freedom and peace.

Nevertheless, in this geopolitical race, which is getting hotter by the minute, we risk blocking the development of AI in Europe before it has gotten off the ground. We must find the right balance between establishing AI in the image of our own democratic norms and values, and enabling our researchers, governments and businesses to innovate and win the most important technological battle in history.

That is why part of my approach, as the Rapporteur on the AI Act in the Industry Committee, is to make the regulations feasible and realistic for businesses and encourage AI deployment while at the same time protecting users. My report was adopted in the ITRE committee in June 2022 with 61 votes in favour and only 2 against, with broad backing from all political groups. On scope, we call for a research exemption for AI systems, which is key to the development of new AI applications, especially in areas in which European companies are global leaders.

On the definition, we call "AI System" to be defined in a similar way to the OECD, with a special emphasis on "autonomy" – this is key to making sure traditional software does not fall into the scope.

On the requirements, we call for them to be realistic and achievable when it comes to cybersecurity, robustness, accuracy and data.

Overall, we put forward an opinion that re-focuses the conversation on innovation, competitiveness and AI uptake – a narrative that I will continue defending in the negotiations with the lead committees.

Looking ahead, there are a few points in the ongoing negotiations that will be key to the successful uptake of AI in manufacturing. The first would be getting the classification of high-risk systems right, with an approach that focuses more on specific targeted use cases rather than broad sectors. The second would be ensuring that sectors that are already covered by Union harmonisation legislation could incorporate their AI risk management processes into their existing internal risk-management processes. Finally, adequate stakeholder involvement of SMEs, start-ups, industry and other relevant experts should be ensured when it comes to classifying high-risk AI systems or the techniques and approaches related to them.

While these points may seem more technical – and less politically controversial than the ones currently taking over the debate in Brussels – they are the real backbone to ensuring a thriving industrial AI ecosystem. It is not a question of having a strong industry or protecting our fundamental rights. It is a question of accurately distinguishing between those low-risk industrial uses, which pose no significant harms to fundamental rights, and the high-risk uses where risk mitigation is needed and beneficial to long-term social trust. It is only by harnessing the power of both that our manufacturing industries will be able to take full advantage of the opportunities Artificial Intelligence offers to remain globally competitive in the long-run.

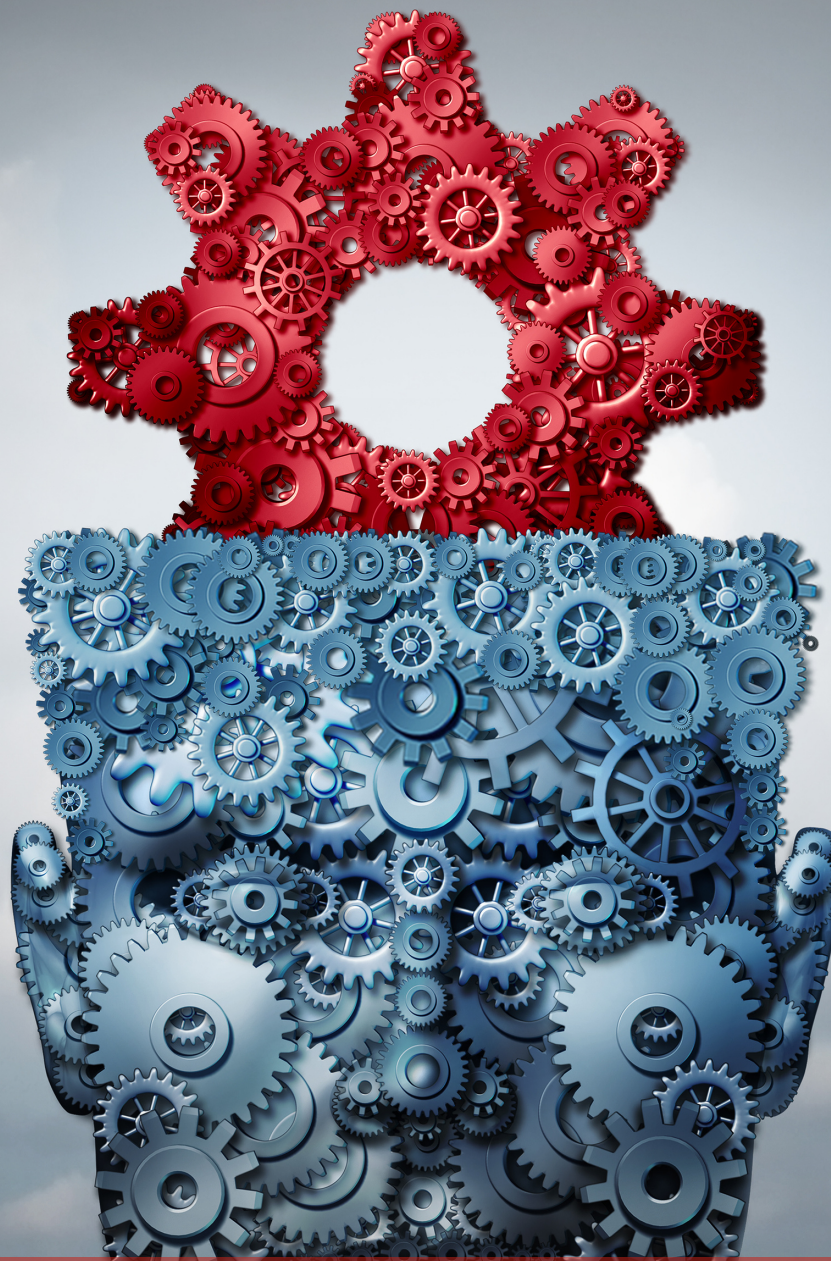


Adequate stakeholder involvement of SMEs, start-ups, industry and other relevant experts should be ensured when it comes to classifying high-risk AI systems or the techniques and approaches related to them.



In the sphere of machine tool manufacturing, the application of industrial AI has become a door opener over recent years, particularly with the advent of Industry 4.0, as machine connectivity, machine learning and automation have become fundamental elements of our production processes.

Christoph Blättler, Secretary General, Swissmem



INDUSTRY VIEW ON THE ARTIFICIAL INTELLIGENCE ACT

By Stefano Ramundo Orlando, Technical Regulations Officer, CECIMO

Artificial Intelligence is a game changer, and it has already significantly transformed the world we live in, including the business landscape. AI applications are opening numerous opportunities that will have a dramatic impact on entrepreneurship, productivity, and the competitiveness of the European industry.

In the sphere of machine tool manufacturing, the application of industrial AI has steadily increased over recent years, particularly with the advent of Industry 4.0, as machine connectivity, machine learning and industrial automation, among others, have become fundamental elements of our production processes.

Notwithstanding this rapid evolution, the capabilities of industrial AI in our sector remain at a relatively early development stage, compared to general AI

within the domain of frontier academic research, where development efforts are geared towards building computerized systems that can perform tasks requiring human-level intelligence.

As a matter of fact, industrial AI is mostly concerned with the implementation of specific tasks that require only a limited form of intelligence, inevitably subject to a narrow set of constraints and limitations established through man-made programs and algorithms. To this end, the increasing application of industrial AI has provided machine tool manufacturers with a highly effective tool to optimise factory operations, enhance productivity of machines and services, while significantly improving energy efficiency and resource utilisation.



AI is at the top of the EU industrial agenda, but ultimately, the potential for the European manufacturing industries to reap these benefits rely on a legislative framework that allows manufacturers to further research, develop and test AI technologies in their production processes, while guaranteeing safety, lawfulness and a full respect of fundamental rights. In this context, the Artificial Intelligence Act (AI Act), which is bound to set the global standard in AI adoption, represents an important piece of legislation for our sector. Therefore, we see it as fundamental to highlight certain concerns that it might pose.

In that regard, there is a broad agreement among industry actors that of the current definition of “AI system” is too wide. The AI-techniques listed that classify a software, are exclusively limited to Narrow or Weak Artificial Intelligence (“Narrow AI”), a form of AI that implements specific tasks requiring only a limited form of intelligence, which has been safely and effectively deployed in the manufacturing sector for many years.

We must also be sensitive to the proposed classification rules for high-risk AI applications that could lead to legal uncertainty and likely limit the uptake of innovative and beneficial AI-techniques, particularly in the manufacturing sphere.

In addition, it is important to adjust and clarify the balance of responsibilities between the different actors present in the value chains of AI systems (particularly with regards to the obligations of product manufacturers vs AI system providers). In most cases, product manufacturers do not necessarily possess a detailed technical knowledge of the AI system in place and thus they should be exempted from obligations that can realistically only be fulfilled by the provider of the embedded AI system, particularly regarding the requirement to prepare technical documentation.





Digital transformation & knowledge-sharing: the keys for a more sustainable world

By Alessandro Liani, Founder and CEO, Video Systems Srl

In this era of digital transformation and green economy transition, there are many opportunities of growing, not only for large companies but also for SMEs. Embracing the digital transformation is a big challenge and for SMEs is facilitated by the democratisation of knowledge through access to content.

Debates and discussions are facilitated by new digital platforms that have removed many obstacles that in the past gave these growth opportunities mainly to large companies. Technologies have seen a steady reduction in the cost of access to their use and implementation in production processes and this allows SMEs to have the tools for growth that they did not have in the past.

In the context of the green economy and the digital transformation, we know that the world of manufacturing is very complex, and as in all complex systems, the solution to problems is not given by a single element, but things are solved through the synergy of many factors.

Technologies such as IoT, AI, robotics opens today new landscapes for the European manufacturing sector and for the everyday life.

Thanks to the integration of IoT in industry, we are able to govern processes and make forecasts based on real data and their analysis and this approach allows a new pragmatic process management.

Picking up on Dante Alighieri who said 'Saetta prevista vien più lenta', i.e. a predicted event arrives more slowly; IoT infrastructures that collect data from the field efficiently combined with new AI technologies that analyse the data, companies have forecasting and decision support tools that we have never had available before.

In the machine tool sector, the use of IoT is becoming more and more established and thanks to a history of collected data, predictive, condition monitoring and maintenance systems based on AI and big-data analysis allows the development of increasingly advanced and accurate digital production support tools.

Other technologies such as robotics and machine vision allow us to optimise processes and move ever closer to the Zero-Defect Manufacturing approach that, thanks to the integration of circular economy models, will bring us ever closer to a Zero Waste Manufacturing paradigm, thanks to the fact that we will be able to give new life to waste with optimised processes, this thanks again to digital technologies that support conscious decision-making.

Underpinning this technological progress is an increasing sharing of knowledge facilitated by new digital technologies capable of removing many of the barriers of the past. The establishment of places for dialogue such as round tables, national and international associations, enable growth through knowledge sharing.

Associations such as AIOTI, IEEE, ACM from the scientific point of view, CECIMO and all the other reference associations in the manufacturing world must be the places where we can talk each other in order to find the best solutions for the great challenge of sustainability supported by the digital transition of processes.

We have big challenges ahead of us in terms of sustainability and social inclusiveness, and I think that are challenges we can win only if we will work all together sharing our knowledges and shaping the future for new generations.



THE ROLE OF STANDARDISATION IN SUPPORTING EUROPE'S DIGITAL TRANSITION

By Andreea Gulacsi, Director Policy and Partnerships, CEN and CENELEC

Europe is preparing for the future. In the framework of the “twin transition”, the European Commission has set the vision to make our continent more sustainable, digital and resilient.

To transform these ambitions into reality, powering the digitalisation of European industry is of strategic relevance. After all, new technologies fuel economic growth, but also raise concerns related to safety, security, and privacy. Addressing these issues is key to ensure the twin transition fully deploys its intended benefits.

European Standards have a key role to play to achieve this vision. As recognised by the new European Standardisation Strategy, they are ideal tools to support security and safety, ensure interoperability and build trust in emerging technologies.

CEN and CENELEC, two of the official European Standardisation Organisations (ESOs), are on the frontline to help European industry navigate the digital transition. This commitment is at the core of our Strategy 2030, where we set the path to make our system strong, resilient and future proof. Our ambition is to deliver on our own digitalization, as well as mitigate the digital challenges for industry and society.

A topic of particular interest for the manufacturing industry is automation. In the field, CENELEC/TC 65X delivers standards for industrial process measurement, control and automation. Among the standards it is currently developing, the EN IEC 63278 series will be key to facilitate semantic interoperability across data ecosystems for manufacturing.



Andreea Gulasci

Another standard, EN IEC 61406, will establish a unique machine-readable method to identify physical devices through the format of a link. Standards dedicated to industrial facility energy management in IoT settings, EN IEC 62872-2 and EN IEC 63376:2022, will facilitate the provision of information on products and materials – thus helping monitor their carbon footprint.

A considerable share of standards in this domain are intended to be offered as Harmonised Standards (hENs) for example, to support the forthcoming Machinery Regulation. This will allow the industry to fully benefit from the European standardisation model, reducing compliance costs thanks to the presumption of conformity with EU legislation.

In addition, what needs to be taken into account when standardising for the digital sector is its distinctively horizontal, cross-sectoral character, which in turn calls for a horizontal approach. A valid example is the EN IEC 62443 series on security for industrial automation and control systems. It provides general security-related requirements that can be made applicable across different sectors and ecosystems.

Our work also focuses on topics such as cybersecurity or Artificial Intelligence, both prerequisites for the uptake of new technologies in a safe, trustworthy and human-centred way. To help confront cyberthreats, CEN and CENELEC have established the horizontal Joint Technical Committee 13, devoted to the development of standards for cybersecurity, privacy and data protection. On the other hand, the recent establishment of Joint Technical Committee 21 on AI shows the commitment of European stakeholders to offer solutions supporting the development of trustworthy and human-centred AI systems, in line with the AI Act.

For the digital transition to become reality, strict cooperation at the European level between CEN, CENELEC and ETSI is also key. The CEN-CENELEC-ETSI Coordination Group on Smart Manufacturing (SMa-CG) work on common topics, and as outcome of a joint Workshop on Industrial Data Value Chain held in September 2021, the Group created recently a Task Force on Industrial Data to coordinate technical work across the ESOs.

In parallel, at CEN and CENELEC we are currently working hard to make our own processes fit for the digital transition. We are involved in three projects to develop “standards of the future”, to ensure we can meet the industry’s needs in a digital world: Online Standards Development (OSD); Smart Standards, or machine-readable standards; and Open-Source Solutions.

Finally, engaging as many stakeholders as possible is fundamental to deliver market-based standards that are fit for purpose. The long-standing collaboration with CECIMO and its involvement in European and International standardisation as a CEN Liaison Organization showcases what we can achieve when we work together. We invite all those interested in the industry to do the same and engage with the CEN and CENELEC Members. Let’s work together to achieve a sustainable, digital and resilient Europe!



Industry remains a key stakeholder in standard-setting processes, bringing in competence and experience to ensure that standards are understandable, workable in everyday practice and fully aligned with the technical requirements of EU legislation.

Stefan Hansch, CEO, EMCO

FUNDING OPPORTUNITIES

CECIMO PROJECTS - STATE OF PLAY

By Olha Hunchak, Policy and Projects Officer, CECIMO

trinity

PROJECT AT ITS FINAL STAGE

In view of the age of Information Technology, robots are no longer used exclusively in the industrial base, yet they are here to stay with more complicated systems being now in demand. As we are getting closer to the end of the TRINITY project, funded by Horizon2020, it has achieved most of its deliverables, including the success stories of the second demonstration programme, a Digital Access Point (DAP) and a strong network of actors of innovation.

Given smaller enterprises have trouble recruiting skilled staff and deploying robotic systems, the project implements advanced Robotics, Information and Communications Technology and pioneering Cybersecurity Technologies to increase the production agility. Thereby, TRINITY's uniqueness lies in the DAP all-in-one networking and user-centric platform that brings together different stakeholder groups, enabling networking with other Digital Innovation Hubs (DIHs), research centres, universities, and innovation actors.

DISSEMINATION RESULTS

The project's technological innovations have been promoted via multiple in-person events this year, among which the most fruitful ones were the R-22 – largest Nordic Robotics, Automation and Drone Fair and the European Robotics Forum 2022 (ERF22). Throughout the Nordic R-22, we showcased TRINITY's multidisciplinary DIHs, its new demonstrations as well as the success story of our demonstrator, SpinRobotics, exhibiting the employee-robot collaboration in Screwdriving Assembly. The ERF22 is considered to be the most preeminent conference, promoting the innovation drive in robotics and AI to fit in agile manufacturing, where project's achievements were demonstrated via five different workshops.

TRINITY'S DEMONSTRATORS

All in all, TRINITY has successfully covered its two rounds of open calls. The first demonstration programme involved 19 SMEs while the second round of open calls 18 SMEs. Some of the second call success stories are:

1. SpinEye demonstration has developed a collaborative screwdriver with a teach-in interface that combines Artificial Intelligence (AI) and Human Intelligence (HI) to ensure a low-cost and immensely accurate Industry 4.0 solution. The manufacturing solution can support a fast changeover between tasks, and thanks to an embedded vision-guided system, the tool will improve quality as it detects failures and adjusts them. Since last year, the consortium leader of the project, Spin Robotics, automises the assembly tasks through employee-robot collaboration and the built-in safety sensor to protect workers from high-risk tasks that can cause injuries.

2. RECOPRODAS, a mobile Cobot Production Assistant (CPA) aims to automate repetitive and manual tasks by adopting a human-centric approach. The demonstrator, under the consortium leader Malmar and its partner Sirris envisions deploying cobots to assist technical operators in their work so that the operators may concentrate on value-adding activities (quality control, elaborate operations, etc.).

3. SHAFTS, under the consortium leader, Pick-it NV, has completed the predictable Robotic Bin Picking, the Bullet Picker, for shafts and axles producing companies. Its objective is to ensure predictable performance, a quick installation and a simple reconfiguration through the use of bin-picking cells. This new vision-gripper product consists of a 3D vision system, software and a modified gripper, automising the manufacturing process of shafts and axles.

Nevertheless, together with our partners, we intend to exploit the project's objectives to maintain different industrial players in the ecosystem of robotics, ICT and cybersecurity. For example, during the Deep Dives into advanced manufacturing at Jozef Stefan Institute in Ljubljana and at Budapest University of Technology and Economics, TRINITY presented compelling robotic research results, delving into the role of industry 4.0 and telemanipulation systems.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under GA 825196.

Concerning the increasing labour needs and the necessity for sustainable and advanced manufacturing, skills learning in Additive Manufacturing (AM) are the prerequisite for Europe's sustainable economic growth. On that note, the Sector Skills Strategy in Additive Manufacturing (SAM) project fosters innovative competitiveness of AM/3D printing to fill the gap in International Additive Manufacturing Qualification System (IAMQS) by providing Vocational Education and Training (VET), reskilling and upskilling the workforce in AM.

As we are coming closer to the end of the project in June 2023, the consortium revolves around tangible results that will keep the project operational in the long run such as deploying the IAMQS through a network of training providers and a wide range of industrial sectors in additive manufacturing.

RECENT DEVELOPMENTS

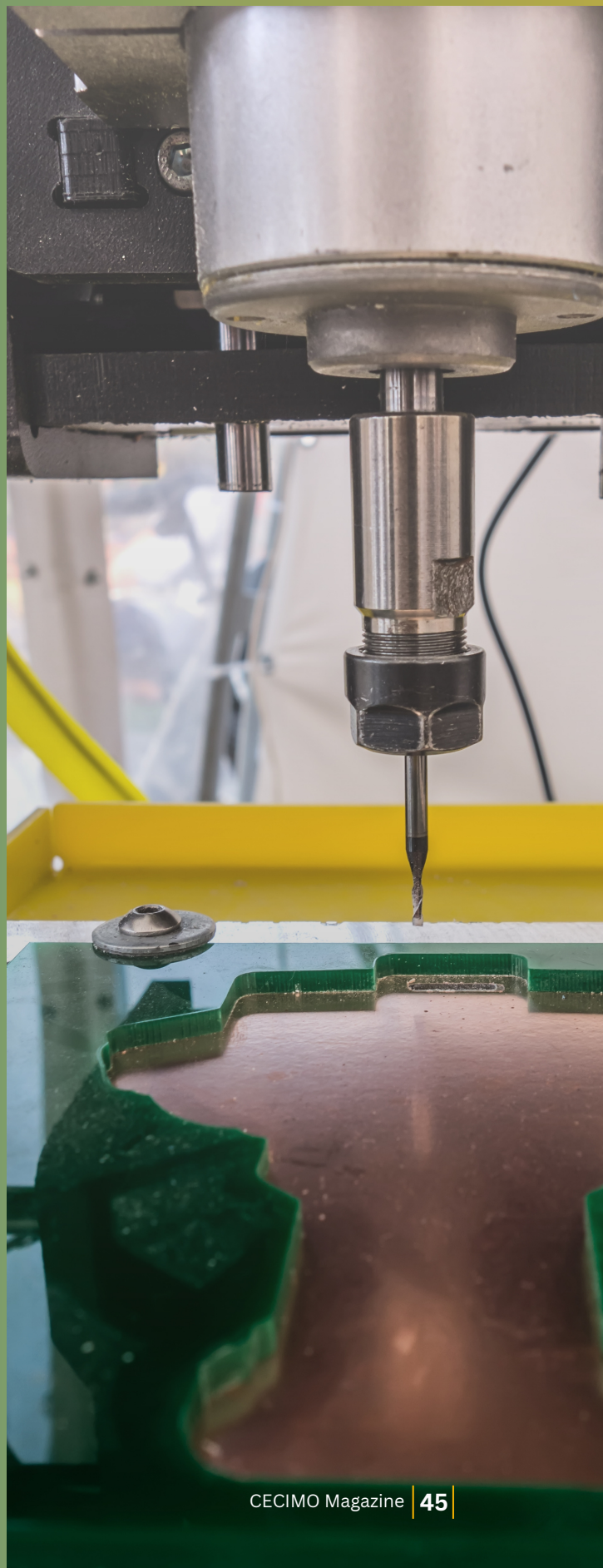
SAM has recently developed its last online course, "the European course for Metal AM Coordinator", which will start in October and finish in May next year. The advanced training course will include Additive manufacturing Process Overview, DED-Arc Process, DED-LB Process, PBF-LB Process, Post Processing, Process selection, Metal AM integration and Coordination activities. Those who hold an Engineering degree in Mechanical, Materials, Aeronautic, or equivalent and good English language skills can easily enrol for the course, which will be open to the wider public in the next few weeks.

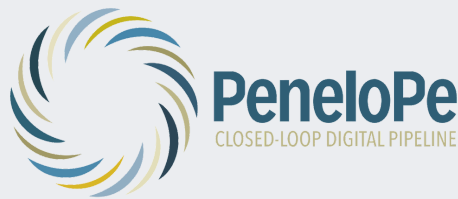
In addition, throughout the year, SAM has organised multiple webinars, events and podcasts about the latest developments in AM, challenges and new opportunities. Apart from that, SAM held a webinar on Bridging the Gap in Digital Skills in Europe, AM Sustainability and AM in the Medical Industry to raise awareness and improve the effectiveness of tools offered by its platform. Lastly, the project participated in the Conference on Industrial Technologies, the IndTech2022 in Grenoble, where it was part of the EFFRA Village, and in October, it held its last conference in Lisbon, organised by EWF to delve into post-project's sustainability.

As Ambroise Vandewynckele, head of Advanced Manufacturing Processes at Aimen, noted: "Collaborating with SAM project is a unique opportunity to define the learning outcomes that are needed by the workers involved in AM processes in the industry, in a harmonised way through a qualification system recognised by experts around Europe".



This project has received funding from the European Union's Erasmus+ programme.





Another successful project we have kicked off with other 30 partners is the PENELOPE, which started its operations in 2020 with the main scope was to increase efficiency and precision in the production of large-scale parts in strategic sectors.

Currently, PENELOPE's solutions are being deployed in three different Pilot Lines:

- Oil and Gas under the IDESA demonstrator, addressing the implementation of a more precise pressure vessel manufacturing.
- Aerospace under the FOKKER demonstrator, addressing the assembly of the lower part of the fuselage.
- Bus and Coach under the VDL demonstrator, addressing the manufacturing of bus modules.

Growing complexity in design and manufacturing setup, insufficient production effectiveness and shortages in raw materials constitute a decisive factor for high production costs and preservation of industry erudition. On that note, PENELOPE strives to construct a novel closed-loop digital pipeline, adopting simulation models, Digital Thread, Digital Twin, online control and inspection, data analytics and AI tools toward a flexible industry 4.0 that will be developed in Pilot Lines.

PENELOPE will revolutionise the EU industry by manufacturing large-scale components with high precision within the pan-European network of six Didactic Factories, offered for training of the workforce:

- SAM/XL focuses on hardware and software training packages
- IBA used for ICT and 4.0 technologies
- TECNALIA used in transport equipment manufacturing
- AIMEN Technology Centre used for metalworking companies and advanced 4.0 technologies,
- LMS covers Smart Manufacturing, Advanced Manufacturing Processes and Human-Robot Collaboration
- CEA Tech used for simulations in augmented, virtual or mixed realities



This project has received funding from the European Union's Horizon 2020 research and innovation programme under GA 958303.

DIMOFAC - FROM AN ERA OF MASS PRODUCTION TO MASS CUSTOMISATION



DIMOFAC

Digital and Intelligent Modular Factories (DIMOFAC) coordinated by the French Alternative Energies and Atomic Energy Commission (CEA), started their activities in 2019 under the Horizon2020 to reinforce reconfigurable production lines. Given that the demand is growing, manufacturers are compelled to produce differentiated goods at the same speed. On this account, the core mission of DIMOFAC is to transform the assembly lines into more flexible to swift and abrupt shifts in demand. DIMOFAC is developing a Modular Factory Solution which will create more jobs in the future, lowering the environmental impact to enable industries to reduce time-production, automate flexible production, decrease the resources use (raw materials, energy, human capital) and reduce the production costs.

LATEST DEVELOPMENTS

So far, DIMOFAC has designed an array of 18 production modules covering various manufacturing processes (welding, assembling, inspection, etc.), which are rested on plug-and-produce technology. Moreover, the project has participated in a webinar related to sustainable manufacturing that reflected upon the benefits not only for the community but also for companies.

CECIMO's central role in this project is associated with the standardisation report. That means that we are responsible for ensuring that the solutions developed under the DIMOFAC project conform with the existing standardisation landscape in the scope of advanced production and with the standards currently under development at the European and International levels. In September 2022, we officially published the standardisation report, highlighting the various technical aspects of the innovative manufacturing solutions developed under the DIMOFAC project.



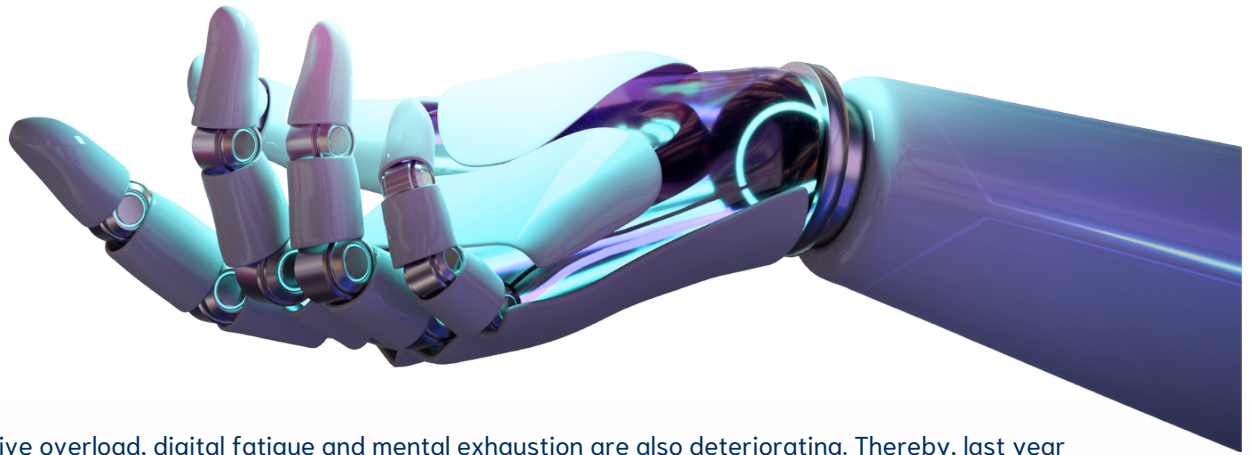
This project has received funding from the European Union's Horizon 2020 research and innovation programme under GA 870092.



EARASHI - EMBODIED AI/ROBOTICS APPLICATIONS FOR A SAFE, HUMAN ORIENTED INDUSTRY

We are pleased to announce that at the end of September of this year, we started the activities of our new project, EARASHI, which was approved in April 2022, together with other 12 partners. The Commission has allocated an overall budget of 4.999.866,00€ to successfully fulfil the project's deliverables by 2026. The two main scopes of EARASHI include support to Start-ups and SMEs in the uptake of AI, data and robotics in order to facilitate technical workshops and improve working conditions (safety, health and well-being). In this case, CECIMO is in charge of communicating and disseminating the EARASHI's achievements throughout the four years.

Production machines may provoke accidents in the workplace, leading to at least four days of absence from work, thus affecting the EU economy. Advanced technologies (robots, AI and remote work) are the key enabling factors of digital transformation as they reduce the risks of dangerous tasks and increase productivity.



However, cognitive overload, digital fatigue and mental exhaustion are also deteriorating. Thereby, last year the Commission proposed a new strategic framework for Health and Safety at Work (HSW) to guarantee a long-term working environment, brought about by the digital transitions and industry 5.0.

In a later stage, EARASHI will launch two rounds of open calls, out of which ten beneficiaries will be selected to support ethics, system integration, and user acceptance and will access cutting-edge technology and testing facilities. The selected projects will be responsible for improving working conditions and worker trust and embody collaborative AI in robotic systems for the production machine application field. Investing and sustaining competitive technologies, the project will act as an accelerator in the eco-responsible digital transition by 2030.

PROJECT OBJECTIVES

- Build the community and create awareness to facilitate the production and uptake of new AI, Data and Robotics technologies in the application field of production machines.
- Provide a variety of validated human-centric approaches to develop smooth interactions and great user experiences at complex workplaces through coaching.
- Decrease accidents and improve well-being at work using AI, Data, and Robotics in the application field of production machines.
- Improve trust and acceptance of collaborative embodied AI in robotic systems for the production machine application field.
- Strengthening circular economy based on market prediction and economic viability through AI.
- Invest early in – and sustain – competitive emerging enabling technologies fit for the Green Deal in AI, data and robotics at work with applications in the production machine sector.



This project has received funding from the European Union's Horizon Europe research and innovation programme under GA 101069994.

CECIMO FIGURES AND OUTLOOK

THE EUROPEAN MACHINE TOOL INDUSTRY IN LIGHT OF NEW CHALLENGES

By Anto Jerkovic, EU Public Affairs Economist, CECIMO



We are pleased to see a positive output growth in the European MT sector in 2022. While our industry faces many challenges tempering growth expectations, we remain confident that the global business climate will lead stable MT demand over the coming period.

Marcus Burton, Non-executive Director and Advisor, Yamazaki Mazak UK Ltd and Chairman of the CECIMO Economic Committee

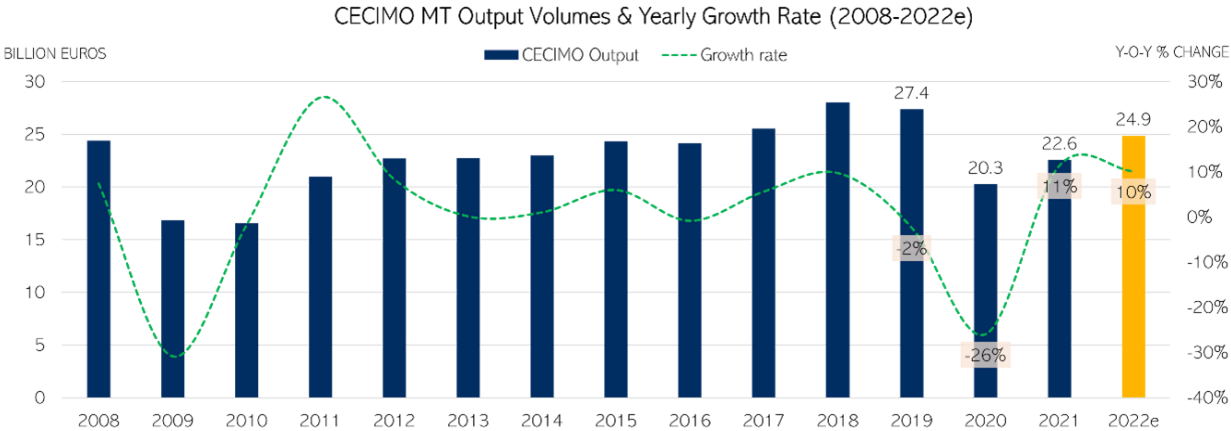
Looking at the European Machine Tool Industry, the beginning of 2022 was marked by record orders. Large order backlogs and improved demand were one of the main reasons for the improved business climate among our machine tool builders in the first quarter of 2022.

While strong growth expectations were evident at the beginning of the year, the latest period brings new challenges for the world economies and new concerns for European MT producers. The highest inflation in decades, tightening financial conditions in most regions, the Russian-Ukrainian war and the persistent COVID-19 pandemic are weighing heavily on the European and global financial state. Among other issues, China's lockdown measures in the second quarter had a negative impact on the already disrupted supply chains, while the European energy crisis has caused strong inflationary pressures and increased input costs. Even if there has been even a visible decrease in the prices of certain commodities during the recent period, European economies remain vulnerable to possible developments in energy markets due to their high dependence on Russian fossil fuels (notably gas).

In line with the latest developments regarding macroeconomic indicators and the geopolitical situation, most forecasting services have downgraded growth forecasts for the coming period. In line with that, the latest Oxford Economic Forecast (October 2022) presents less optimistic expectations for the coming period: Global growth is forecast to slow from 5.9% in 2021 to 2.8% in 2022 and 1.7% in 2023.

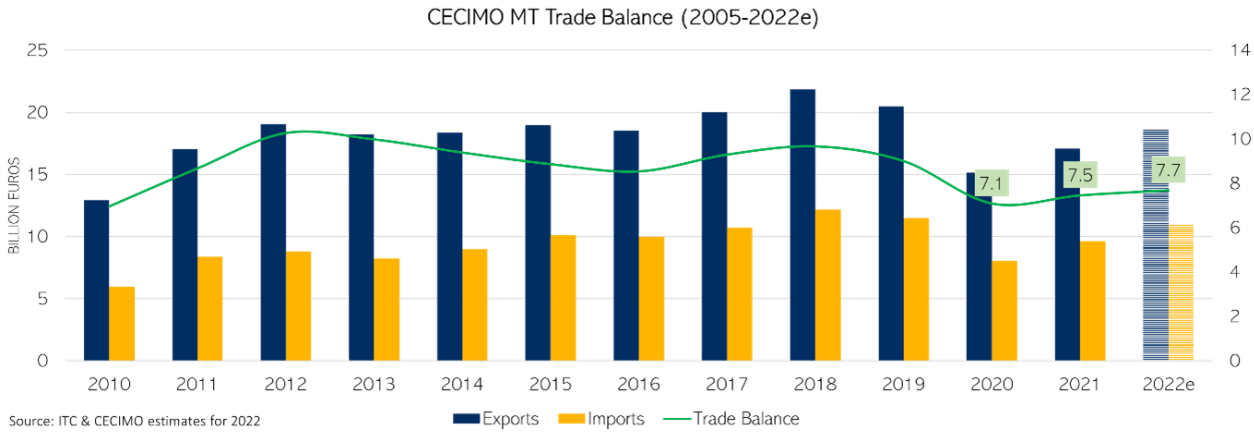
The Eurozone growth is expected to slow from 5.2% in 2021 to 3.0% in 2022 and stagnate (0%) in 2023. Also, Eurozone inflation is forecast to rise from 2.6% in 2021 to 8.1% in 2022 but to decline to 4.3% in 2023 and to 0.6 percent by 2024.

However, with a huge orders backlog and strong demand in the first half of the year, we have positive expectations for MT output for 2022 and beyond. Of course, with all the challenges, our expectations are now slightly lower than our initial estimates earlier this year. Our latest estimates (September 2022) show that CECIMO's output is expected to grow at an annual rate of about 10% to reach almost 25 billion euros in 2022.



Source: CECIMO & National Associations

Total MT exports from the CECIMO region are expected to increase by about 9 per cent in 2022, whilst total MT imports are forecast to increase by around 13%.



Source: ITC & CECIMO estimates for 2022

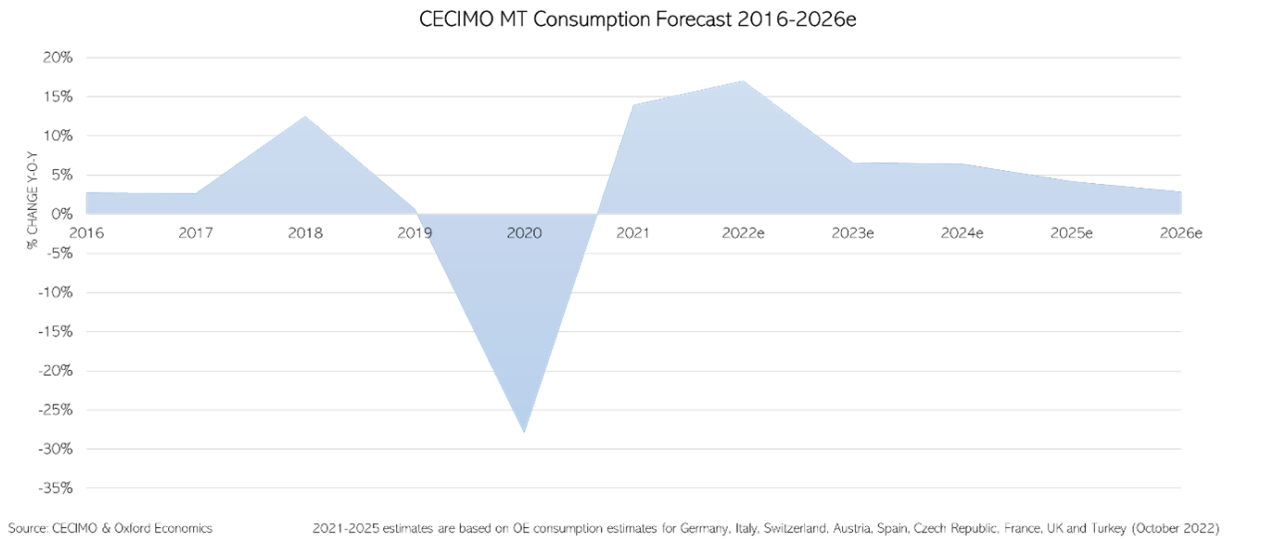
As in previous years, the two most important export destinations for European MT manufacturers remain China and the United States. Japan remains CECIMO's main MT supplying market.

As shown in the chart below, after peaking in the first quarter of 2022, CECIMO's total orders decreased by 13% in the second quarter. However, it is important to highlight that this level of the index is a 11% higher than in the same period last year and still above the historical average. It is important to keep in mind that, given the current geopolitical situation and macroeconomic challenges the CECIMO's total orders index for the second half of 2022 is expected to be lower than the average index for the first half of this year.



Source: CECIMO & National Associations

The latest Oxford Economics forecast (October 2022) predicts a lower MT consumption for CECIMO countries in 2022 and in the years to come. According to the latest estimates, CECIMO MT consumption will increase by around 17% in 2022 and 6.6% in 2022 (based on EUR levels). After a sharp decline in 2020 and a slow recovery in 2021, MT consumption in Europe is visibly catching up in 2022. Strong domestic orders and rising imports are among the strongest indicators of MT consumption growth this year. In this context, with MT consumption growing faster than in the rest of the world, CECIMO's share of global MT consumption will increase from 23% to 25%.



Regarding the main MT purchasing industries at the global level, the highest rate of output growth in 2022 is expected in the aerospace sector, while 2023 should be marked by the strongest output growth in the automotive (motor vehicles) sector. The automotive sector, for which supply issues are expected to decrease, is presumed to boost MT consumption in 2023 in Europe and around the world.

Looking at the latest developments (e.g the Purchasing Managers Index), it is evident that the overall business situation deteriorated in September compared with the previous month. The decline in domestic and foreign demand in European countries and the decrease in production levels were among the main causes of the decline in the PMI indexes.

The weakening business climate was also confirmed by the recent CECIMO Business Climate Barometer survey (August 2022). However, while the latest results show that CECIMO MT builders expect the business climate to deteriorate in the third quarter of 2022, expectations for domestic production for the period ahead remained positive.

Geopolitical uncertainty, potential new lockdowns that could cause new supply-side issues and the energy crisis in Europe are challenges that need to be considered and may affect demand and production levels in the second half of 2022 and in the beginning of next year. Furthermore, monetary tightening and potential global recession scenarios could negatively impact investment confidence, which could lead to lower demand and output next year. However, we believe that global and European policymakers are making decisions that will ensure more resilient value chains, reduce inflationary pressures and enhance consumer and business sentiment. While looking ahead, we believe that in line with the digital and green transition, new investment opportunities will arise from the sustainable energy transition and will have a positive effect on MT demand.



With rapidly rising input costs, European industries are becoming less competitive. Quick, decisive, and coordinated actions are needed to strengthen value chains and diversify our sources of supply, both at the EU and national levels.

Dr.-Ing. Heinz-Jürgen Prokop, CECIMO President

CECIMO NEWS AND INSIGHTS

MEET A CECIMO DELEGATE

INTERVIEW WITH NORBERT JUNGREITHMAYR, MANAGING DIRECTOR, WFL

In your opinion, what are the main advantages of being a CECIMO member?

Access to information and exchange with experts and colleagues is a great advantage for us as a member. CECIMO is extremely valuable for the entire machine tool industry as a representation of interests at EU level. Information such as statistics and forecasts are essential for the managers of the entire machine tool industry.

The EU industrial and competition policy is centred around the green and digital transition. In the context of the manufacturing sector, can you identify the main trends in the digital transformation adoption process and what kind of support do companies need to successfully navigate through the twin transition?

Digitisation helps to produce more efficiently and conserve resources. This is done through high-quality simulation of the processes and the collection of data, which is understood and processed. On the one hand, we need sensors in the machines and algorithms to implement these steps. On the other hand, we need a data infrastructure that supports the comprehensive use of the collected information. Machine tool manufacturers provide systems for this purpose, not only to record and visualize the CO2 footprint, but also to optimise it. In this way, our machines can be manufactured in a way that conserves resources and energy.



The machine tools industry is known for providing innovative solutions. What would you say it is the most innovative product your company has put forward in recent years?

We continuously optimise the machining processes in our machines. However, there are always interruptions requiring operator intervention, such as measurements and controls. It is important to minimise these interruptions to make best use of the availability and productivity of the machine. This is ensured by software packages in the machine control as well as additional intelligent clamping devices and tools automating the processes. One of these tools is WFL iControl, the process monitoring system. iControl directly processes signals coming from the machine or from external sensors, such as coolant flow rate, coolant pressure, vibration sensors in a boring bar or the clamping force of a clamping jaw.

myWFL Cockpit is our new operational data acquisition system. Machine and program states over time, productivity and technical availability will all be displayed, either on the control system, PC or mobile device via a web browser. This means that the user can always be well-informed about their machine productivity. Another new feature is the myWFL Energy energy usage measurement device integrated into the myWFL Cockpit, which displays the current power data as well as the energy and compressed air consumption of each workpiece. The Condition Monitoring cycle integrated into myWFL continuously records the status of the axes and spindles during a measuring run and saves them to the control system. Possible changes can easily be detected and displayed via the Condition Monitoring Viewer.

An absolute innovation is our mobileCELL – a mobile robot that is spatially unbound and can therefore perform activities at different machines and stations. It is a hybrid solution, which impresses with its combination of wide-ranging functions and advantages. A generously sized automated guided vehicle (AGV) is equipped with a robot cell design with everything that you need. In other words, the robot, workpiece and tool gripper, along with buffer positions for workpieces and tools, and the necessary control and safety technology. The machine is freely accessible. It is not blocked or obstructed. The AGV collects the required tools and workpieces in the warehouse, it then travels to the front of the machine, locks itself in place on the floor and exchanges parts and/or tools. The vehicle then moves away again and receives the travel instructions for the next machine. The space in front of the machine it has just loaded becomes clear again.

Since customers are increasingly factoring sustainability into their purchasing decisions, how did WFL adapt in this sense?

We adapt our products with the latest, most advanced technology, such as consumption-based drives. The system of complete machining is extremely efficient. It ensures minimal clampings, short wait and handling times and less intracompany transport. In-process measurement avoids scrap, and process monitoring guarantees more efficient machining processes and less damage. As a company, we use a photovoltaic system, i.e. we produce up to one third of the electricity we need ourselves. We also carried out thermal refurbishment of large roof areas and facade elements. We use electromobility and heat recovery of process heat.

The workforce landscape is changing, and we should prepare the ground for the coming years. From a company perspective, what are the major challenges when it comes to reskilling and upskilling of the existing workforce, and which specific skills will be critical in future manufacturing work?

Highly-qualified and dedicated employees lay the foundation for a successful future. We train our specialists of the future ourselves. Furthermore, we have extremely good technical colleges in Austria. The specialists of the future are mechatronics engineers, software engineers and mechanical engineers.



NATIONAL ASSOCIATION UNDER THE SPOTLIGHT

AN INTERVIEW WITH XABIER ORTUETA, DIRECTOR GENERAL, ADVANCED MANUFACTURING TECHNOLOGIES (AFM) CLUSTER



What is the mission and vision of AFM? What about its core values?

AFM's mission is to represent the advanced manufacturing sector in Spain. Grouping manufacturers of machine tools, components and tools, since its foundation, AFM has incorporated companies from the additive manufacturing and 3D printing sector, manufacturers of hand tools and industrial supply elements, contract manufacturing, industry-oriented startups, as well as companies offering smart tech for advanced manufacturing. We have built a unique ecosystem with more than 700 industrial companies.

Our vision is to become the meeting point for industrial interests in Spain, based on our capacity of representation, our added value services for member companies, our vocation to continuously promote collaboration, our independence and self-sustainability.

AFM offers advanced services in the fields of internationalisation, technological innovation, talent attraction, communication, marketing and lobbying.

Our key guiding values:

- Our members come first
- Cooperation first, then competition
- We offer a powerful, modern and technological image of our sector
- We perform under rigorous quality standards, offering a quick and personalised response to our companies and collaborators, under strict business management criteria.



How do you see the association evolving over the next 5 years? What are some big milestones that you would like to hit?

During the last 10 years AFM Cluster has grown from being a single association of machine tool manufacturers with 85 members, to group 700 companies in 6 different organisations that cluster together the complete ecosystem of advanced manufacturing technologies (machine tools, cutting tools, additive manufacturing, contract manufacturing, digitisation, automation and robotics, hand tools and start-ups for manufacturing).

Our future strategy is structured around the following pillars:

- Growth: where we will continue grouping companies within the AFM Cluster ecosystem. We also are in the midst of a convergence process with our sister Machine Tool Importers association, which both organisations are managing with interest and respect.
- Cooperation: we need to activate all the cooperation opportunities generated by our new reality and our 700 members from the most diverse origins. Our intention is to foster activities that make cooperation structural among our members.
- Added value: through innovative and evolving lines of service for our members in the areas of markets, R&D, digitisation, people and talent, marketing, sustainability, information and data, and lobbying. Additionally, we are working on translating some of our services into digital platforms (i.e., market intelligence or talent attraction).

Green or sustainable manufacturing has become a central theme in our sector. Could you give us some examples of AFM initiatives related to sustainability?

Indeed, sustainability has become a primary issue for us. In the strategic reflection we are carrying out for the 2023-2025 period, it is one of the main challenges prioritised by our members. In this sense, we have created our own brand "AFM Green" to group together all the activities that we plan to launch in this area. These include the creation of a proprietary methodology to calculate the carbon footprint of companies, their products and services; the promotion of eco-design in machines; the analysis of new business models and related services and the design of a roadmap for the decarbonisation of the sector. We have also decided to actively incorporate companies that provide assistance and services around industrial sustainability within AFM Cluster, to accelerate the process.

The transition towards sustainable and circular manufacturing will imply a significant change in the sector, which will entail a decided shift towards new practices and technologies that minimise our direct and indirect environmental impact. In this context, machine tools can play a fundamental role in improving sustainability, since they directly affect the productivity and competitiveness of almost all manufacturing processes.

As an association that represents 90% of machine tool and advanced manufacturing technology companies in Spain, what kind of support do companies need to successfully navigate through the digital transition and to attract the best talent in manufacturing?

We translate digital transition into 3 different lines:

- Product digitisation: where we are assisting our members in projects that enable our companies to generate new added value through intelligent and connected machines while understanding the required business model transformation.
- Process digitisation: which has to do with implementing digitisation strategies to improve processes, making them more productive, efficient, sustainable and profitable. The real challenge is to generate, capture and process the necessary data in order to apply all the available digital enabling technologies (from monitoring, analytics and simulation to artificial intelligence) in manufacturing processes.
- Digital marketing and positioning: which means understanding and using all the new tools, channels and possibilities that digital marketing is opening up for our companies.

HELLO, EMO HANNOVER 2023!

By Sylke Becker, Director of Press and Public Relations, VDW



When EMO Hannover opens its doors again after a four-year break in Hannover from September 18 to 23, 2023, it will be "Hello, Exhibitors! Hello Visitors – Nice to meet you!" With a new concept, new claim, new exhibition area, new formats and thematic focuses, the new edition of The world's leading trade fair for production technology will bring a fresh breath to the industry. The focus is on technical innovations, topics and trends in the industry worldwide, new business partnerships and dialog in the network. At no other trade show in the industry will you experience so many trends and innovations up close – because our exhibitors have long aligned their innovation cycles with their trade show appearance with us.

As the central communication platform for the industry, EMO Hannover 2023 is under the slogan "Innovate Manufacturing". It addresses the challenges for industry in the coming months and years. The pace of change has accelerated considerably, and competitive pressure has increased in many fields. The transformation in customer industries and markets is extremely challenging for companies on both sides.

Business, politics and society in most countries must find solutions in many fields and initiate change if they want to remain fit for the future. Technological, strategic and organizational trends are often the basis for concrete developments.

EMO Hannover has grouped the most urgent fields of action under the so-called Future Insights: "The Future of Business", "The Future of Connectivity" and "The Future of Sustainability in Production". These focus topics e.g. deal with:

The Future of Business: innovative business models, new markets, opportunities and potential of a culture of innovation in the company, introduction of agile methods and development of methodological knowledge, change in structures and working methods.

The Future of Connectivity: Industry 4.0, Industrial Internet of Things (IIoT), Predictive Maintenance, Machine Learning, Connectivity, Interoperability or AI (Artificial Intelligence), AR (Augmented Reality) and VR (Virtual Reality) applications.

The Future of Sustainability in Production: innovative approaches and concepts for resource-efficient and climate-neutral production and factory design, circular economy, circular value creation, energy-efficient production, sustainable supply chains, safe workplace design.

On these topics, you will continuously find current trend reports from experts of the international manufacturing industry and related sectors. This opens up the online discussion on the EMO Hannover website www.emo-hannover.com and in social media channels. International exhibitors are expressly invited to participate if they wish to contribute to the topics mentioned.

The Future Insights also offer points of contact with the classic topics of the machine tool industry, which are the heart of EMO Hannover. As production suppliers and enablers, stable processes, their physical penetration and the quality of the products produced continue to be the dominant aspects for capital goods manufacturers.

Productivity, accuracy and quality remain the drivers of technological innovation. Quality in particular must not be underestimated – whereby we are talking here about more than the purely measurable quality on the manufactured component.

It is also about the quality of the machine itself i.e., its reliability and availability. This includes open, transparent data interfaces, efficient operation, and simple repair, maintenance and operation. Thus, effective use and safe and sustainable operation follow from high-quality machines and components, such as those on display at EMO Hannover.

Even though the many details have been known for a long time, they are continuously developing and improving. One example is multi-process integration: milling on lathes, turning on milling machines, grinding on these machines, hybrid systems for additive manufacturing, in-line metrology, closed-loop applications with data feedback from measuring machines into the production system, modular machine concepts for customized configuration, 3D printing of non-alloyable or pure materials – the list could be continued indefinitely. These are the strengths of the industry, which can be experienced in all conceivable and surprising facets at EMO Hannover.

EMO Hannover 2023 will show what contribution production technology makes to solving existing challenges.

At the trade show, in addition to the actual company presentation, there will be a variety of opportunities for exhibitors to highlight their expertise in this regard, as well as to gain attention and reach, stay in touch with customers and do business. They can participate:

- Technologically on the IIoT in Production platform
- Thematically at special booths, forums and in events on Future Insights and other topics
- Organizationally digitally or in person through a hybrid trade show concept.

Registration has been open since August 2022, and we are offering an attractive early bird discount until October 15, 2022. You can find all the latest information and the status of preparations at any time at www.emo-hannover.com. Subscribe also to the newsletter, which will keep you actively informed about news at any time at <https://emo-hannover.de/newsletter>.

And then it's "See you soon in Hannover!"



MAKING INNOVATION HAPPEN THROUGH COLLABORATION

By Dr Christian Bölling, Director, EIT Manufacturing Central

The manufacturing industry faces several challenges – collectively as a trade as well as individually as companies. How to digitalise production, how to reduce CO2 emissions, how to train present staff and attract a workforce with the right qualification plus retain them? There is not a single correct answer to all of these questions, no recipe for success.

From our perspective, collaboration is key to solving challenges – this is why EIT Manufacturing as the manufacturing-focused knowledge and Innovation Community of the European Institute of Innovation and Technology has created a large and unique pan-European community of actors from diverse backgrounds: innovators, start-ups, scale-ups, research and technology organisations, universities, small and medium sized businesses as well as larger enterprises form a network, which is designed to move the needle in manufacturing in Europe.

We are constantly growing the network of collaborators and are delighted to have forged a network partnership with CECIMO. Their in-depth knowledge of the machine tools industry gives us new insights into challenges also our partners face. Learning in more detail about pain points enables us to connect partners from the different ecosystems, facilitating solutions to the issues at hand. In turn, CECIMO partners benefit from the diverse approaches from members of the EIT Manufacturing community.

From their interaction, solutions can evolve that were unthought of before – not only for business challenges, but also for education and training, which EIT Manufacturing offers as well.



This wealth of opportunities is particularly thrilling, since the machine tool industry has enormous impact on the entire manufacturing industry. Without machine tools, no production can be envisaged. Any innovation in the machine tool industry will positively impact the entire manufacturing industry directly, so supporting the one will support the other.

We are very much looking forward to our collaboration and will also be present at EMO in Hannover in September 2023. One of the initiatives we plan to present there currently develops innovative solutions related to the European data infrastructure Gaia-X, which is absolutely crucial for the machine tool industry with regard to data-driven business models.

To name but one: the Austrian-German project EuProGigant, dedicated to smart and sovereign use of data in manufacturing. It was the first Gaia-X lighthouse project to show a demonstrator on the 2022 Hannover fair and will have evolved even further by next September.



We need to work together to re-think manufacturing, to put in place a European Manufacturing System. The old model of the quality, cost, time triangle needs to be relegated to the past – sustainability needs to be taken into the equation. But most importantly, we need to put people at the centre of our approach. For this, we need everybody on board – collaboration is the only way to succeed.

Klaus Beetz, CEO, EIT Manufacturing

JOINED CECIMO IN 2022

Secretariat



Olha Hunchak
Policy and Projects Officer



Anna Pomortseva
Administrative and Communications Assistant

Delegates



Vincent Affolter
Managing Director, Affolter Group



Cemal Dener
General Manager, Dener Makina



Joël Duprat
Director General, Escofier



Osman Fatih Igrek
Managing Director, Igrek Makina



Riccardo Rosa
President, Rosa Ermando Spa



Marc Troïa
Director General, Huron Graffenstaden



George Wels
Director General, FPT-VIMAG

MACHINEERING

MACHINES, TOOLS, MATERIALS & SOLUTIONS FOR ADVANCED MANUFACTURING & ENGINEERING

29-31/03/2023

BRUSSELS EXPO



I
INNOTEQ

«FIT FOR FUTURE»
7 - 10 MARCH 2023

Hotspot of the Swiss manufacturing industry - live and digital
4 days expo, networking & conference

Inform now & secure your presence!

Lamiera
fieramilano
10-13/05/2023



23-25 MAGGIO 2023 PARMA

MECFOR

MECHANICS FOR MANUFACTURING & SUBCONTRACTING

TÜYAP

MIB

MATEF

Manufacturing Technologies Fair

May 24 - 27, 2023

www.mateffair.com

Tüyap Fair and Congress Center - Istanbul

EVOLIS
CISMA + PROFLUID + SYMOP

EVOLIS organises a France pavilion,
labelled by Business France at the
CIMT 2023 international show.

French exhibitors are eligible for the export subsidy.
To benefit, contact g.gemble@symop.com

CIMT 2023

第十八届中国国际机床展览会
THE 18TH CHINA INTERNATIONAL MACHINE TOOL SHOW

Partner of

2023年4月10-15日

北京·中国国际展览中心（顺义馆）

北京顺义天竺裕翔路88号

Dates: April 10-15, 2023

Venue: China International Exhibition
Center (Shunyi Hall), Beijing

Address: 88 Yuxiang Road, Tianzhu,
Shunyi, Beijing, P.R.China





cecimo
European Association of the Machine Tool Industries
and related Manufacturing Technologies

OUR MEMBER ASSOCIATIONS

Austria: FMTI, Association of Metaltechnology Industries
www.metalltechnischeindustrie.at

Belgium: AGORIA, Federatie van de Technologische Industrie
www.agoria.be

Czech Republic: SST, Svazu Strojírenské Technologie
www.sst.cz

Denmark: DI – Confederation of Danish Industry
www.di.dk

Finland: Technology Industries of Finland
www.teknologiateollisuus.fi

France: EVOLIS, Organisation Professionnelle des Bens
d'Equipement
www.evolis.org

Germany: VDW, Verein Deutscher
Werkzeugmaschinenfabriken e.v.
www.vdw.de

Italy: UCIMU, Associazione dei costruttori Italiani di
macchine utensili robot e automazione
www.ucimu.it

Netherlands: FPT–VIMAG, Federatie Productie Technologie /
Sectie VIMAG
www.fpt-vimag.nl

Portugal: AIMMAP, Associação dos Industriais Metalúrgicos,
Metalomecânicos e Afins de Portugal
www.aimmap.pt

Spain: AFM Cluster for Advanced and Digital Manufacturing,
Asociación Española de Fabricantes de Máquinas–herramienta,
Accesorios, Componentes y Herramientas
www.afm.es

Sweden: SVMF, Machine and Tool Association of Sweden
www.svmf.se

Switzerland: SWISSMEM, Die Schweizer Maschinen–, Elektro–
und Metall–Industrie
www.swissmem.ch

Turkiye: MIB, Makina Imalatçileri Birliği
www.mib.org.tr

United Kingdom: MTA, The Manufacturing Technologies
Association
www.mta.org.uk

CREDITS

Publisher

CECIMO

Editor

Damir Glas, CECIMO

Contributors

Filip Geerts, CECIMO

Marco Taisch, PoliMi SoM Manufacturing Group

Federica Acerbi, PoliMi SoM Manufacturing Group

Marco Spaltini, PoliMi SoM Manufacturing Group

Seán O'Reagain, European Commission

Vincenzo Belletti, CECIMO

Joël Duprat, Escofier

Jan Rydl, TOS VARNSDORF

Vincent Affolter, Affolter Group

Mauro Biglia, Officine Meccaniche Biglia

Victor Backman, SMT Group

Mikko Nyman, FASTEMS

Menno Bart, The Adecco Group

Jasper van Loo, Cedefop

Diana Anichitoei, CECIMO

Thomas Schneider, TRUMPF

Stefan Pahl, UNIDO

Johanna Stiernstedt, EIT Manufacturing North

Abir Hossain, EIT Manufacturing North

Barbara Bonvissuto, European Commission

Gabriele Favaro, CECIMO

Iva Tasheva, CyEn

Brando Benifei, European Parliament

Eva Maydell, European Parliament

Stefano Ramundo Orlando, CECIMO

Alessandro Liani, Video Systems srl

Andrea Gulasci, CEN and CENELEC

Olha Hunchak, CECIMO

Anto Jerkovic, CECIMO

Xabier Ortueta, AFM

Norbert Jungreithmayr, WFL

Sylke Becker, VDW

Christian Bölling, EIT Manufacturing Central

Copyediting and Graphic Design

Diana Anichitoei, CECIMO

www.cecimo.eu

Email: information@cecimo.eu

Tel: +32-2-502-70-90

Boulevard Brand Whitlock 165 , 1200 Brussels

