

# cecimo

magazine

## MANUFACTURING INNOVATIONS: UNLEASHING THE POWER OF CHANGE



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# ALL FACES OF INNOVATION



METAL CUTTING, METAL FORMING AND ADDITIVE MACHINES, ROBOTS, DIGITAL MANUFACTURING AND AUTOMATION, ENABLING TECHNOLOGIES, SUBCONTRACTING.

MACCHINE UTENSILI A ASPORTAZIONE, DEFORMAZIONE E ADDITIVE, ROBOT, DIGITAL MANUFACTURING E AUTOMAZIONE, TECNOLOGIE ABILITANTI, SUBFORNITURA.



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*Olha Hunchak, Policy and Projects Officer, CECIMO*

# Foreword

Welcome to the 17th edition of our association's magazine. This year, our focus is on "Manufacturing Innovations: Unleashing the Power of Change." As we navigate the ever-evolving landscape of the manufacturing industry, one thing remains clear: innovation is the driving force behind transformation and progress.

In the following pages you will embark on a journey through the realms of manufacturing excellence, exploring the dynamic and sometimes revolutionary innovations that are reshaping our industry. The diversity of the articles in this magazine reflects the multifaceted nature of manufacturing innovation.



This issue covers a range of topics that are considered to be key drivers of sustainable and digital development. Exploring areas such as advanced manufacturing, data, IoT, AI, and cybersecurity, you will discover how digital innovation is streamlining processes, improving efficiency, and unveiling fresh horizons for the manufacturing landscape. Our articles also explore how manufacturing is embracing green practices, minimising waste and reducing its carbon footprint. In line with our commitment to the future of manufacturing, this issue has a strong focus on addressing the skills gap in our industry. We highlight initiatives and programmes aimed at bridging this gap, and emphasise the importance of digital and green skills required for key enabling technologies.

These are just a glimpse of the captivating topics we have delved into in this year's magazine. Our aim is to equip you with valuable insights, knowledge, and inspiration that will empower you in the dynamic world of manufacturing.

I would like to thank all the contributors and authors who have made this magazine possible. Their dedication and expertise have transformed ideas into the insightful articles you will explore.

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

**Filip Geerts,**  
**CECIMO Director General**

— **DRIVING DIGITAL INNOVATION** —



# ADVANCED MANUFACTURING: A TRAIN THE EU CANNOT MISS

By Vincenzo Belletti, Director of EU Public Affairs, CECIMO

The manufacturing industry is undergoing unprecedented change, fuelled by technological innovation, changes in consumers' requirements, shift to green practices and evolving business models.

Recent international events highlighted the need for resilience and flexibility in supply chains, driving greater interest from multiple sectors in solutions that could support supply chain optimisation and risk mitigation.

Advanced manufacturing technologies and processes can play a great role to address most of these challenges. By incorporating solutions such as automation, AI, and data analytics into their processes, companies can optimise production, reduce costs, and minimise errors. This not only boosts productivity but also ensures consistent product quality, which is essential for meeting market expectations and regulatory standards. As these technologies continue to mature and offer a compelling return on investment, we can anticipate a continued upward trajectory in their adoption rate as businesses strive to remain competitive and

adaptable in an increasingly digitised world. Furthermore, embracing advanced manufacturing technologies allows companies to stay at the forefront of innovation and adapt to changing market demands as they can be more agile in responding to shifts in consumer preferences and market dynamics.

Among the supports schemes that could help to boost the adoption of advanced manufacturing technologies we can find: Test Before Invest. Testing technologies enable businesses to identify what works best for their specific operations and refine their strategies accordingly to position themselves for long-term sustainability and growth. A big role in helping with this issue will be played by the European Digital Innovation Hubs (EDIH). Such new entities can help, at local level, companies to digitally transform their business and provide access to technologies or essential technical expertise and innovation services, such as financing advice, training, and skills development, and more.

The EDIH are only one of the tools that the European Union (EU) should continue using to

promote the uptake of European advanced manufacturing solutions. In terms of policy support, the EU should start by addressing the recommendations listed in the report “Advanced manufacturing at the heart of a resilient, sustainable and competitive Europe”. The report was developed by the Task Force on the Uptake of Advanced Manufacturing within the Industrial Forum (CECIMO was the co-chair of the group) and includes more than 30 actionable recommendations across seven priority areas, based on a detailed SWOT analysis of the state of advanced manufacturing in Europe and illustrated through 12 use cases across different industrial ecosystems.



Vincenzo Belletti, CECIMO

Such resources and information should be used by the current and next European Parliament and European Commission to address the barriers that are slowing down the advanced manufacturing industry in Europe.

A concrete EU endorsement and prioritization of the adoption of advanced manufacturing technologies could bring a profound transformation in the manufacturing sector. At the same time, supporting the uptake of these technologies can help the EU increase the competitiveness of its industrial ecosystems, progress towards its climate change mitigation goals and increase the level of digitalization in industry.



In conclusion, the manufacturing industry is at a critical juncture, driven by a convergence of forces ranging from technological innovation to eco-conscious practices and evolving consumer preferences. This transformation is unfolding against the backdrop of unprecedented global events, which have shown the need for adaptable supply chains and risk mitigation strategies. EU policymakers cannot miss the opportunity to lead the way of this transformation and help this sector's companies become the engine of green and digital transition of the European industrial ecosystem.



**Advanced manufacturing is the cornerstone of the future of production, underpinning innovation, efficiency and sustainability to meet the evolving needs of our world. The EU should support this sector by creating an environment that fosters the competitiveness of our industry.**

Michael Merkle, President & CEO, Agathon AG

# Edge Computing Transforms Machine Tools: Innovation, Efficiency, and Sustainability

By Andrea Gozi, Managing Director, Digital Industries World - Italia



Edge Computing is revolutionising the machine tools industry, enhancing efficiency, introducing new business models, and promoting sustainability. This article explores how Edge Computing is reshaping the machine tools sector and the challenges and opportunities it presents, including the exchange of high-frequency data with CNC machines and the reference to the guide created by Digital Industries World.

## **Efficiency and Flexibility: Leveraging Edge for CNC Data Exchange**

In addition to its efficiency benefits, Edge Computing offers a critical advantage for the machine tools industry—high-frequency data exchange with Computer Numerical Control (CNC) systems.

Traditional data protocols, such as OPC UA, often fall short when it comes to meeting the demands of real-time CNC data communication. A robust Edge Computing platform must be equipped to manage this challenge by implementing more performant protocols tailored to CNC data exchange.

By enabling seamless, high-frequency data communication with CNC systems, Edge Computing allows for precise control of machine tools. Real-time adjustments can be made based on data collected from the CNC, ensuring best production outcomes. This capability significantly enhances the overall agility and responsiveness of manufacturing operations.

## **New Business Models: Embracing "Pay-per-Use" and "Data-Driven" Strategies**

Edge Computing does not just optimise processes; it also fosters innovative business models. The "pay-per-use" and "data-driven business" models are gaining traction in the machine tools industry. These models empower manufacturers to adapt their services and products in real-time based on data insights. For example, machine tool providers can offer customers flexible payment models based on actual machine usage, thanks to the real-time data provided by Edge Computing. This approach enhances customer satisfaction and competitiveness while reducing costs for users.

## **Edge and Cloud: A Synergistic Approach**

The combination of Edge Computing and Cloud Computing forms a powerful partnership for manufacturers. Edge Computing processes data in real-time on the shop floor, while the Cloud offers extensive storage and advanced analytics capabilities. Together, they enable companies to harness the

Data collected at the Edge can be seamlessly transmitted to the Cloud for in-depth analysis, predictive modeling, and long-term storage. This hybrid approach empowers manufacturers to make data-driven decisions informed by historical trends and future predictions, all while keeping rapid responsiveness to real-time events.

## Sustainability and Beyond: Expanding Applications

Edge Computing's impact extends beyond predictive maintenance. It plays a pivotal role in optimizing various industrial processes, including real-time quality control and tools management. Sensors and machine vision, enabled by Edge Computing, check cutting process, prevent collisions, reduce energy consumption, reducing operational costs.

## Implementation Challenges and Best Practices

While Edge Computing promises substantial benefits, implementation can be challenging. Companies must address issues like data management, cybersecurity, and the need for technical expertise. Adopting best practices is crucial:

- **Identify Key Processes:** Begin by identifying the processes that stand to gain the most from Edge Computing, setting clear project objectives.
- **Select the Right Technologies:** Choose suitable Edge technologies and specialized suppliers within the industrial sector for your use case and create a comprehensive implementation plan.
- **Data Management:** Implement standardized data management protocols to ensure compatibility and interoperability.
- **Cybersecurity:** Develop multi-layered cybersecurity measures to safeguard data and Edge devices.
- **Training and Collaboration:** Invest in training your staff or hiring external experts. Foster a culture of innovation throughout your organization.

## Choosing the Right Edge Platform

Selecting the ideal Edge platform is paramount. Beyond hardware considerations, the platform should excel in managing and updating Edge applications. It must support industrial needs, including high-frequency CNC data exchange, and offer centralised device fleet management for continuous updates and security. The promising platform also offer a multi-vendor, open marketplace of Edge applications.

## Conclusion: Embrace the Edge Revolution

Edge Computing is ushering in a new era for the machine tools industry, propelling efficiency, innovation, and sustainability. Challenges exist, but with the right approach, companies can unlock unprecedented agility and success. As the Edge revolution gains momentum, those who embrace it will lead the digital transformation of manufacturing. Don't forget to explore the valuable guidance provided by Digital Industries World's comprehensive guide ["A Hitchhiker's Guide to EDGE-Technology"](#).



**Data sharing and the Industrial Internet of Things (IIoT) represent the foundation of the last industrial revolution. When people, software, machines, suppliers, and maintenance providers seamlessly integrate and communicate, it has the potential to significantly boost productivity, reduce response times, create new business models, and enhance competitiveness. Collaboration is critical to building trust among industry stakeholders to share data, all while safeguarding proprietary information.**

Juha Mäkitalo, CEO, Pemamek Oy Ltd

# USING DEVELOPMENT POLICIES TO MANAGE LEGAL PRODUCT REQUIREMENTS

By Benjamin Wollet, Domain Architect Security & IAM, TRUMPF Werkzeugmaschinen SE + Co. KG

With the significance of cybersecurity rising in the machine tools industry, companies need to adapt existing digital development policies or create new ones. Experts argue whether the need to update process governance favours small companies, which can adapt to changes more quickly, or more prominent companies, with their dedicated capacities on processes and operations. Either way, many cybersecurity experts face the challenge of adding development policies alongside standards and procedures for stakeholders on all levels: The top management needs to get a realistic impression of the security status of the whole product portfolio, compliance with legal requirements, and changes to high-level processes or organisational structures, if necessary. The portfolio and product managers require gaining insight into the remaining workload and ways to reach conformity, and the development teams need to be able to choose from easy-to-use approved design patterns, tools, and workflows for their daily work. Thankfully, the IEC 62443 series of standards provides the companies' cybersecurity specialists with well-structured security requirements to improve their policies. The upcoming Cyber Resilience Act (CRA) also sets an industry-wide security baseline as a reference point.

On the downside, this guidance is extensive; there is no one-to-one mapping between the CRA and the designated harmonised standard, and the stakeholders can only utilise it explicitly translated for their target group. However, keeping the relation between legal (CRA) requirements and their corresponding standard (IEC) requirements is essential to facilitate communication between portfolio and product management on a joint security strategy. The cybersecurity organization needs to target its digital policies to the management and development teams as a company-specific translation of the IEC standard requirements while keeping the legal requirements as a justification. As a side effect, this approach implicitly maps the standard's well-defined structure to the organization's digital policies. Sticking to the norm structure helps external auditors and can guide the cybersecurity team through creating adequate development policies step by step. The IEC 62443 standards comprise parts targeting the component manufacturer, system integrator, and operator, in addition to the overarching development process. Several companies finished their policy (re)design, starting from certifying the development process.

When starting with digital policies for the development process, the focus needs to be on usability for the product management and the development teams. While the connection to the standards of IEC 62443 should remain easily traceable, the development procedures within the companies' standards should be as specific as possible for the affected product. Preferably, the development team revises new or updated procedures with the authors. This approach ensures high acceptance by the development teams and mutual understanding of the requirements. While working with the development teams and designing the development policies, the security team gains valuable insights in preparation for digital product policies, e.g., as a manufacturer, a system integrator, or an operator. Working with product management and explaining the reasons for additional costs, workload, or market opportunities helps to build or renew security awareness and minimize discussions on priorities between them and the development team. In the long run, designing digital policies, standards, and procedures is equally about people and leadership than technical knowledge.



Benjamin Wollet, TRUMPF

If the security team's knowledge of the Cyber Resilience Act or the IEC 62443 series of standards still needs to be improved, they should consult external experts for assistance. Even more experienced security teams might consider external services to prepare desired certifications or preceding gap analysis. However, it is impossible to fully externalize this process, as deep knowledge about the products and the development organization is required. Additionally, fundamental changes within the product landscape or organizational structure might be necessary - the journey to building more secure products involves all levels of hierarchy and demands a good combination of external confirmation and internal knowledge.

Please take the opportunity to focus on designing digital standards and procedures that enable the development to improve security at a time when legislation dispels any doubts about its necessity. Now is the time to start working on secure development if you still need to, and only development guided by suitable digital policies will enable the creation of compliant products.



**In the digital transformation, cybersecurity is a crucial aspect that spans across all areas. Whether it's artificial intelligence applications, safe data sharing, or an integrated industrial ecosystem, comprehensive cybersecurity measures are indispensable. This encompasses the need for a well-prepared and skilled workforce and resilient machines and infrastructure that can withstand cyberattacks. Safety and cybersecurity are intrinsically linked and are at the heart of industrial transformation.**

Marc Tröia, Director General, Huron Graffenstaden

# THE EU AI ACT AND THE GLOBAL RACE FOR REGULATORY LEADERSHIP

By Kai Zenner, Head of Office and Digital Policy Adviser for MEP Axel Voss, European Parliament



Although the European Institutions started in 2016 to discuss the political and legal challenges posed by Artificial Intelligence with a resolution on 'Civil Law Rules on Robotics' by the Legal Committee (JURI) of the European Parliament, a binding legal framework for the EU is missing until now. Despite their initial push, it were in fact the parliamentarians that have delayed the legislative process, requiring more than 25 months to agree on a joint position after the European Commission published a legislative proposal, the AI Act, on 21 April 2021. At a first glance this seems surprising. Most political actors in Brussels share the policy goals of establishing the worldwide first law on AI to increase legal certainty, foster innovation and trigger a second Brussels effect. They hope that - similar to the GDPR - the EU could create a global blueprint of how to regulate AI. The idea: a set of generally acknowledged principles would not only make the world a safer place but would also help to guide EU companies through the current twin transition, giving them on top a competitive edge by creating an internationally trusted 'AI made in the EU' brand.

What has caused the delay in the European Parliament? While there might be consensus when it comes to the policy goals behind the AI Act, the question of how to address the advances in AI revealed a strong ideological divide among

the political groups. Half the policy-makers assessed the recent developments as a huge opportunity that we should use to improve our life in many aspects, for instance by optimising our manufacturing processes in order to save significant amounts of energy and raw materials. The other side, by contrast, underlined that our fundamental rights are at risk and maybe even humankind as such. The 2018 Dutch childcare benefits scandal was during the parliamentary debates presumably the most referred negative example of what can already go wrong with AI today. Finding a joint position with such opposing viewpoints is hard but was further complicated by the European Commission's decision of how to draft the AI Act.

Instead of choosing a sectorial approach, they opted for one horizontal law with provisions that apply to every sector and use case in the same way. Already existing laws that also regulate specific aspects that the AI Act now wants to tackle one more time completed the many challenges that the European Parliament faced. The EU co-legislator has used its extra-time effectively. Not only were the parliamentarians able to align their views, striking a better balance between preventing risks and fostering opportunities by AI, they also made the Commission's proposal more adaptable. While it stays a horizontal law, it now takes sectorial

characteristics, the context of how an AI system is deployed and the technical standards more into account.

The result is a truly principle- and risk-based approach, a law that is only covering risky AI and requires only what is feasible. The European Parliament also invested many efforts in identifying and eliminating legal overlaps with other pieces of legislation. The EU's ambition to create a global blueprint on how to regulate AI is however not yet achieved. The AI Act particularly lacks the clarity that is so important in convincing Europe's SMEs and start-ups to invest, develop and deploy AI. During the ongoing trilogue negotiations between Member States and parliamentarians, the final step of EU law-making, four areas should be considered key:

- Further specify the risk classes and simplify the way providers classify themselves, in particular with regards to high-risk AI systems in Article 6 and ANNEX III.
- Make sure that the regulatory burden of the AI Act is shared equally along the AI value chain with a special focus on generative AI (Article 28, 28a, 28b).
- Introduce more initiatives to promote innovation in AI and guarantee that market actors see enough incentives for participating in regulatory sandboxes (Article 53, 54).
- Learn from the enforcement problems with the GDPR by centralising the governance of the AI Act and enhancing cooperation among national authorities.



These additional steps will make sure that the EU becomes a genuine force in AI that gives its companies enough legal certainty to invest in AI, while effectively safeguarding its citizens. Only then other regions of the world will look at the EU and might introduce similar rules on AI, triggering a second Brussels effect.



**The European AI Act is a pioneering piece of global legislation that positions Europe as a leader in the regulation of digital technologies. AI offers huge opportunities to increase productivity, efficiency and waste management. It is crucial to protect businesses and workers from potential risks while fully exploiting its advantages. Furthermore, it is fundamental to differentiate, in the implementation phase of the act, the AI application related to industrial environments (mainly related to data analysis and operation control and optimization) and those related to general public and involving also ethical and privacy aspects.**

Riccardo Rosa, President, Rosa Ermando Spa

# Additive Manufacturing Area in **JIMTOF2024**



**Date** Tuesday, 5 November to Sunday, 10 November, 2024

**Venue** Tokyo Big Sight (Tokyo International Exhibition Center)

## Additive Manufacturing Area in JIMTOF 2024 Outline

Date : Tuesday, 5 November to Sunday, 10 November, 2024 (6 days)

Organizers : Japan Machine Tool Builders' Association / Tokyo Big Sight Inc.

Venue : Tokyo Big Sight (Tokyo International Exhibition Center)  
South Halls (schedule)

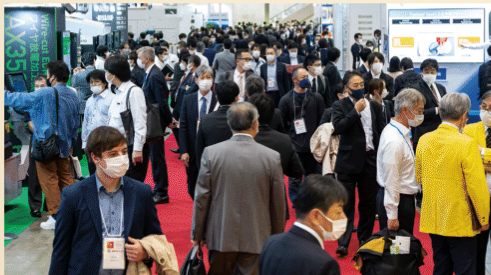
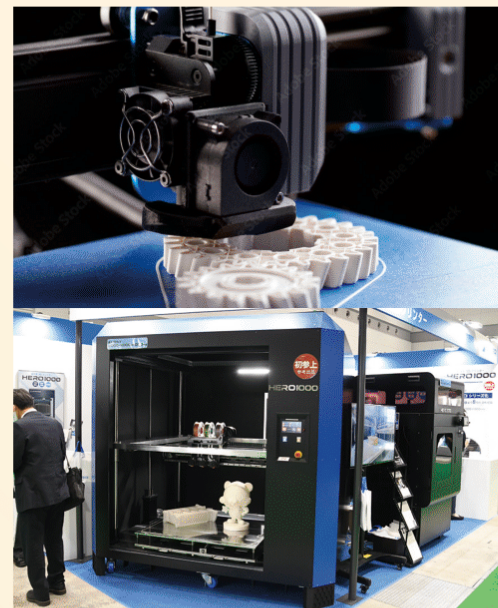
Scale : 59 companies, 173 booths (2022 DATA)

Items to be exhibited :

- Additive manufacturing machines (3D printers)
- Equipment and software for additive manufacturing machines
- Additive manufacturing machining
- Fabricating service, Measuring machines
- Materials (Metals, resins, and ceramics)
- Other related products and technologies

Concurrent Exhibition:

JIMTOF 2024 (The 32nd JAPAN INTERNATIONAL MACHINE TOOL FAIR)



## JIMTOF 2024 (The 32nd JAPAN INTERNATIONAL MACHINE TOOL FAIR)

Date : Tuesday, 5 November to Sunday, 10 November, 2024 (6 days)

Organizers : Japan Machine Tool Builders' Association / Tokyo Big Sight Inc.

Venue : Tokyo Big Sight (Tokyo International Exhibition Center)  
Exhibition Space 118,540m<sup>2</sup>

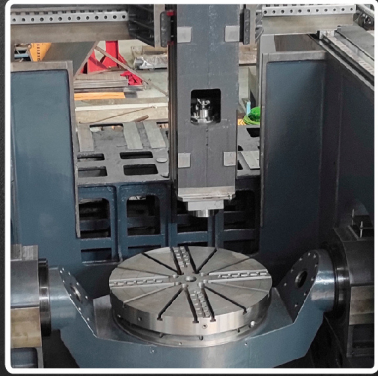


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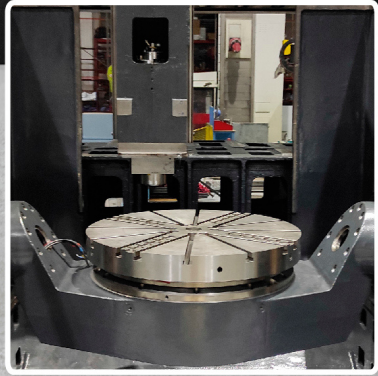
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**77 YEARS OF INDUSTRIAL EXPERIENCE AND  
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MOST ADVANCED AND ROBUST MACHINE TOOLS**

# **BUILDING A SUSTAINABLE MANUFACTURING FUTURE**

# Machine Tools Paving the Way for Sustainable Manufacturing

By Vincenzo Belletti, Director of EU Public Affairs, CECIMO

Over the past decade, growing environmental concerns, regulatory obligations and new business opportunities have led to a significant shift towards sustainability and circularity within the manufacturing technology industry.



At a policy level, the European Union (EU) has numerous sustainability initiatives and policies aimed at addressing various environmental, social, and economic challenges within its industry sector. The EU aims to become a global standard-setter for sustainability through initiatives such as the European Green Deal and the Industrial Strategy. This strategy involves a substantial shift towards clean energy sources, increased energy efficiency, and the development of innovative, low-carbon technologies. While these policies pave the way for a more sustainable future, they have not been without their challenges. Industries have faced increased administrative burdens, significant capital and operational investment required to comply with the regulations and, in some cases, a drastic change in their production methods (e.g. automotive).

In today's industrial landscape, the shift towards sustainability is not merely a trend but a fundamental change in the way leading manufacturing companies approach their operations. Recognising that their long-term success is intricately linked to environmental responsibility, many companies are integrating sustainability into their core mission. This unwavering commitment includes reducing carbon emissions, embracing innovation and improving efficiency.

As a result, these companies are not only driving the transition to a greener future, but also reaping the benefits of reduced operational costs, enhanced brand reputation, and heightened competitiveness in an increasingly eco-conscious market.

At the same time, embarking on a sustainable path entails fundamental shifts throughout the value chains, from product design, production processes and business models to consumption patterns, waste management and the use of secondary raw materials. This paradigm shift is giving rise to significant technological, financial, social and organisational innovations that alter the dynamics within the manufacturing sector in different ways.

Nevertheless, the shift towards sustainability will inevitably require a leading role in the manufacturing sector. The machine tools industry is at the forefront of these transformative changes within this sector. Recognised as key enabling technology, machine tools are designed for lasting performance, often more than two decades.

They have a high potential to become the catalyst for a large-scale transition towards sustainable manufacturing. In particular, the product characteristics of this technology allow to achieve extended lifetimes, optimal reuse, refurbishment, remanufacturing and recycling of products and materials.

To illustrate, average recycling rates in our sector can range from 5% up to 99% for an increasing number of manufacturers. Of particular note is the recycling of scrap metal into new machine tool components can result in significant energy savings of up to 91% compared to conventional methods.

In addition, machine tools industries are also using digital solutions to increase their sustainability. Predictive maintenance, for example, enables manufacturers to reduce total machine downtime by 30-50% and consequently increase the machine's lifetime.

Furthermore, machine tools are equipped with advanced sensors and automation systems that can detect defects during production. This capability enables manufacturers to recover and repair components, reducing the need for new materials and minimising waste - a notable step towards a greener manufacturing future

In conclusion, the past decade has witnessed a significant transformation in the manufacturing technologies industry, with mounting environmental concerns, regulatory obligations, and emerging business opportunities driving a pronounced shift towards sustainability and circularity. The European Union's ambitious initiatives aimed at decarbonisation and sustainability set a global standard for the industry. Leading manufacturing companies have recognised that their long-term prosperity is intertwined with environmental responsibility, resulting in not only reduced carbon emissions but also fostering innovation, efficiency, and competitive advantages.

Sustainability demands fundamental changes along the entire value chain, and the machine tools industry is at the forefront of this transformative journey. Machine tools are primed to be the driving force behind sustainable manufacturing on a significant scale. Their integration with cutting-edge digital solutions further enhances their sustainability profile, making them a cornerstone of a greener, more efficient future for the manufacturing sector. The stage is set for a new era of industry, where sustainability and circularity are not only strategic goals, but the guiding principles that will shape the future of manufacturing.



**Machine tools are at the forefront of the sustainable manufacturing revolution, offering numerous advantages such as longer lifetimes and high recycling potential. Combined with digital solutions, they are driving the manufacturing sector towards a greener, more efficient future.**

Rafael Idigoras, Managing Director, Soraluce



# Give sustainable technology the green light

By Dr. Martin Stockinger, Team Leader Product Management for CNC at FANUC Europe

There are many different strategies that manufacturing companies can deploy to become more sustainable. At management level these typically include initiatives such as streamlining supply chains, implementing pollution control measures, educating your workforce, adopting recyclable packaging and so on. However, from an engineering perspective, it is often technology that will have a more direct impact on your energy and carbon footprint reduction measures. We are talking specifically about machine tool technology and how the latest advances can help manufacturers cut their energy consumption.

Here at FANUC, we are constantly evolving our technologies for the betterment of customers and, in the case of sustainability, wider society. A case in point is our new FANUC  $\alpha$  *i*-D servo platform. To explain the significance, the servo platform is essentially the 'engine' or CNC drive system of the machine tool, typically comprising components such as motors, amplifiers and AC reactors.

According to the International Energy Agency (IEA), electric motors and the systems they drive account for more than 40% of global electricity consumption. The IEA goes on to say there is huge, untapped potential for energy efficiency in electric motor driven systems.

At FANUC we think that our new  $\alpha$  *i*-D servo system represents a major step forward, reducing energy consumption in all types of CNC machine tools.

FANUC  $\alpha$  *i*-D servomotors offer lower energy consumption than the previous-generation solution, due largely to further optimisation of the magnetic circuit. Importantly, despite reduced energy usage, the performance is the same, if not higher thanks to a 20-25% increase in maximum speed.

Central to the improvements in our  $\alpha$  *i*-D servo amplifiers is new IGBT (insulated-gate bipolar transistor) technology. The latest IGBTs offer the fastest possible switching of electric currents, thus achieving the lowest switching losses.

Further supporting sustainability is built-in power regeneration, where braking any machine tool axis will see electricity fed back into the mains supply. Also important is the fully integrated brake circuit, avoiding the extra wiring associated with the separate configuration of the previous servo amplifier. The upshot is fewer cables and connections, simplifying both build time and maintenance. Notably, FANUC  $\alpha$  *i*-D servo amplifiers are 30% smaller than conventional models, allowing machine tool builders to

downsize their control cabinets, while a further benefit is battery-free pulse encoders. Previous-generation amplifier modules required a battery pack for memory back-up of the absolute pulse coder. Now, there is no requirement for battery replacement or battery disposal.

In total, the new servomotors and servo amplifiers, alongside low-loss AC reactors with a new hexagonal structure, means that the FANUC  $\alpha$  i-D servo system delivers a 10% reduction in power loss in comparison with the legacy solution. The  $\alpha$  i-D is available for use with existing and newly enhanced versions of FANUC's 30i/31i/32i B Plus advanced and 0 i-F Plus CNC systems, as well as our in-development 500iA.



The  $\alpha$  i-D is available for use with existing and newly enhanced versions of FANUC's 30i/31i/32i B Plus advanced and 0 i-F Plus CNC systems, as well as our in-development 500iA. The 500iA will be FANUC's first new CNC platform for many years. Visitors to EMO Hannover 2023 got a sneak preview of the system on the FANUC booth.

Responsibility for a sustainable manufacturing industry lies at every link in the chain. CNC technology developers such as FANUC must come up with the ideas and innovation. Machine tool builders must look to reduce the energy consumption and carbon footprint of their products by specifying sustainable sub-technologies. And component manufacturers must invest in their futures by adopting those machines. Only by giving sustainable technology the green light will the manufacturing sector deliver the results that society and the planet needs.

# UNLOCKING THE POWER OF **SKILLS** IN MANUFACTURING

# Challenges and Opportunities in the **Manufacturing Workforce**



By Bianca Maria Colosimo, Professor at Politecnico di Milano

The landscape of manufacturing is on the brink of transformation, bringing forth a wave of challenges and opportunities that will profoundly influence the workforce. One of the pivotal shifts is the digital revolution, ushering in innovative solutions tailored for a new era of sustainable, zero-waste, and error-free manufacturing. Thanks to advancements in data mining and Artificial Intelligence (AI), a plethora of tools has emerged, enhancing the intelligence of our manufacturing processes and systems.

Simultaneously, there is a surge in the demand for "green" products characterised by reduced weight, improved performance, and prolonged lifespan, often incorporating biobased or recycled materials. These advancements need a fresh set of skills and competencies, demanding specialised training.

The integration of software and digital solutions is birthing intelligent manufacturing systems where the expertise of workers becomes indispensable in preventing false alarms and erroneous decision-making.

Workers are transitioning from repetitive tasks to roles that require oversight and adept utilisation of AI and automation. This shift is steering us towards a manufacturing paradigm where creativity is key.

The emergence of sustainable products and services requires a departure from traditional material selection, design, and manufacturing methods. Instead, it beckons for inventive approaches, carving new pathways in manufacturing. Here, the workforce stands as the cornerstone for the creative redesign of processes and products, essential for ensuring a sustainable future.

Industry 5.0 underscores a human-centered manufacturing ethos. It mandates the redefinition of workers' roles, emphasising the need for interdisciplinary collaboration, creative thinking, and adept supervision of AI and automation. Consequently, technical universities, digital innovation hubs, and competence centers are tasked with revising education and training programs to nurture a workforce equipped to thrive in this dynamic landscape.

# Upskilling and Reskilling the Manufacturing Workforce

## Focusing on Skills to Meet the Evolving Needs of the European Industry

By Jakub Boratyński, Director of Networks & Governance, DG GROW, European Commission



Skills were put at the top of the EU political agenda when in her September 2022 State of the Union address, the President of the European Commission, Ursula von der Leyen, announced that 2023 would be the “European Year of Skills”. But what does that mean concretely? The Year is intended to help people acquire the right skills for quality jobs and support companies in addressing skills shortages in Europe. This will also make the green and digital transitions (also known as the twin transition), socially fair and just. The announcement of the Year of Skills was followed by the launch of new initiatives in this area, such as the Net-Zero Industry Academies to up- and reskill the workforce needed to scale up the manufacturing capacity of net-zero technologies in the EU (more on this below). The Commission is also working on a future recommendation on the recognition of qualifications acquired outside the EU.

The above is an acceleration of a process that had already gained momentum with an initiative in which CECIMO participates, namely the EU Pact for Skills, launched in 2020 to meet the challenge of up- and reskilling the European workforce. The EU Pact for Skills created 18 large-scale skills partnerships covering all the European Industrial ecosystems, to equip 10 million workers with the necessary skills to enable the twin transition and boost the competitiveness of the European industry. One example is the large-scale skills partnership in the digital ecosystem and its ICT manufacturing sub-sector.

Digital industries employ 6.8 million workers in 1.2 million companies across Europe, and this Skills Partnership, composed of European and national associations, clusters and digital innovation hubs, universities, research centres, companies, and VET providers, aims to help reach the EU Digital Decade targets to equip 80% of EU citizens with basic digital skills, achieve gender convergence, and have 20 million ICT specialists employed by 2030. Partners are developing a strategy to design and implement an ecosystem-wide upskilling and reskilling framework, which will support Europe’s green and digital transitions. Some members of the partnership are also engaged in the DTAM SSA (Erasmus+) project that comprises five European Regional Skills ecosystems of Vocational Education and Training centres, educational policymakers, digital transformation experts and sectoral representatives. The project developed a Digital Transformation Skills Index, and a curriculum of digital transformation in advanced manufacturing.

If we zoom into the energy sector, Europe faces not only threats, but also opportunities. Both Russia’s war of aggression against Ukraine and climate change have accelerated the need for the energy transition. The skills needs for the fuel cell hydrogen sub-sector in manufacturing are estimated at 180,000 trained workers, technicians, and engineers by the year 2030, according to the Commission’s European Strategic Energy Technology Plan.

In the solar PV sector, skills needs amount to 66,000 trained workers. To address these gaps, the Commission has proposed, under the Net-Zero Industry Act, the launch of Net-Zero Industry Academies to develop education and training content to upskill and reskill the workers of the future. This content will be developed together with industry and other relevant stakeholders, and will be used by education and training providers in Member States to ensure that the transition takes place at national, regional and local level.

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**Manufacturing activities are cross-cutting to many EU industrial ecosystems and are at the heart of the Net-Zero Industry Act proposal.**

I would like to encourage the active participation of CECIMO and its members in the existing and upcoming European initiatives on upskilling and reskilling, such as the EU Pact for Skills and the Net-zero Industry Academies. Their engagement will be crucial to ensure that the activities resulting from such initiatives reach the manufacturing sector, equipping it with the necessary workforce to seize tomorrow's opportunities and meet its needs.



**As the fourth industrial revolution advances and technology evolves rapidly, one thing is clear: advanced manufacturers must partner with educational institutions to match market demands with available talent by embracing emerging technologies like robotics, AI, and VR.**

Roland Haas, General Manager, framag Industrieanlagenbau GmbH



# Navigating Tomorrow's Workplace

## Digital and Green Skills in Manufacturing

By Olha Hunchak, Policy and Projects Officer, CECIMO

In the evolving manufacturing landscape, fuelled by the merging forces of digital and green transformations, the adoption of advanced technologies has become imperative. Machine tools, robots, and automation systems have evolved from basic mechanical tools to intricate mechatronic systems. This new era demands a harmonisation of intelligent systems and a highly skilled workforce adept in technology design, programming, engineering, and manufacturing. While certain roles may confront the prospect of automation and displacement by robots and AI, these changes also offer the potential to boost efficiency and broaden access to services.

**As advanced manufacturers embrace digital technologies, there is a growing demand for skills that prioritise problem-solving over repetitive tasks such as in software development, cybersecurity, data analysis, and programming.**

Web security experts, for example, must possess a profound understanding of security risks, safety protocols, and cybersecurity practices. Within their purview, they undertake comprehensive risk assessments, craft effective mitigation strategies, oversee the management of software and firmware ecosystems, interpret complex error codes, and establish resilient authentication mechanisms. Moreover, the manufacturing

industry demands the expertise of data specialists and analysts skilled in advanced statistical analysis, predictive modelling, data visualisation, manipulation, and Cloud-Edge Computing to drive the design and optimisation of modern manufacturing platforms. Complementing these proficiencies, a comprehensive command of AI for predictive maintenance, Machine Learning, digital twin and simulation technologies, as well as a deep familiarity with IoT devices and sensor technologies, stands as essential prerequisites for staying at the forefront of innovation.

Simultaneously, there is a growing demand to incorporate green skills and competencies into industries seeking Sustainable Energy Experts, Energy Engineers, and Sustainability Managers. Professionals are expected to possess a diverse skill set, including electrical engineering expertise for designing, optimising, and operating energy systems. Proficiency in thermodynamics, life cycle assessment (LCA), and sustainable practices is fundamental for the evaluation and mitigation of environmental risks. Additionally, specialised knowledge in energy-efficiency analysis assumes a pivotal role, enabling the execution of energy and sustainability audits, thereby facilitating the efficient management of energy consumption and the implementation of cutting-edge energy-saving solutions.



**The skills gap and the speed of change is hampering the adoption of technologies such as AI and cloud computing, affecting industrial competitiveness and innovation. In the era of digital and green transformation, there is an urgent need to invest in digital and green skills and continuous upskilling to address the evolving labour market.**

Carl Dewulf, President and Managing Director, LVD Company n.v.

Moreover, the evolving landscape of manufacturing necessitates the cultivation of a new generation of professionals who excel in high-level technical skills. This proficiency encompasses programming CNC machines, understanding Industrial Control Systems (ICS), mastery of industrial networking, and a focus on quality control for programming and operating industrial robots. These competencies are indispensable in the pursuit of precision, safety, and the automation of complex industrial systems.

For instance, robotics specialists must be adept in programming languages and utilize computer-aided design (CAD) software for the development, testing, and control of robotic systems and applications. Complementing these skills, a foundational understanding of Machine Learning and AI is vital to enable autonomous and secure robot operations. In parallel, mastering Programmable Logic Controllers (PLCs), coupled with mechanical and troubleshooting skills for maintenance and preventive maintenance, remains essential. Additionally, expertise in industrial sensors for process control and familiarity with Human-Machine Interface (HMI) systems for process visualization complete the array of indispensable competencies in this field.

In conclusion, the convergence of digital and green transformations in manufacturing underscores the need for a diverse range of specialized skills. Professionals equipped with these competencies will assume a pivotal role in shaping the future of manufacturing, where the seamless coexistence of advanced technologies and sustainable practices is paramount.



**Lifelong learning is the bridge to the future of work in advanced manufacturing. It's not just about degrees; it's the harmony of formal and non-formal education that equips individuals with the essential industrial skills required for success.**

Barbara Colombo, Vice President, FICEP Spa

— **POLICY INSIGHTS & CECIMO** —  
**NEWS**

## Unsafe Machines: Need for Improved Market Surveillance

*INTERVIEW WITH DR.-ING. HEINZ-JÜRGEN PROKOP, CECIMO PRESIDENT*

By Gabriele Favarò, Digital and Technical Policy Officer, CECIMO

### **Why is it so important for end-users and customers to be sure that the machines they are purchasing are safe and compliant?**

The safety of workers and operators should always be a top priority. Unsafe machines pose a significant risk of accidents, injuries, and even loss of life. To illustrate, exposure to laser radiation can result in severe damage to the vision of operators and lead to long-term eye issues. Furthermore, in the case of cutting machines, serious accidents can occur if parts are ejected from the chuck toward the operator and the machine manufacturer fails to install the required safety glass. For end-users and customers, ensuring machine safety means protecting their employees, safeguarding their investments, and minimising potential legal and financial consequences. Moreover, using compliant machines helps maintain the reputation and credibility of the industry as a whole.



### **What can an end-user do to make sure they are purchasing safe machines?**

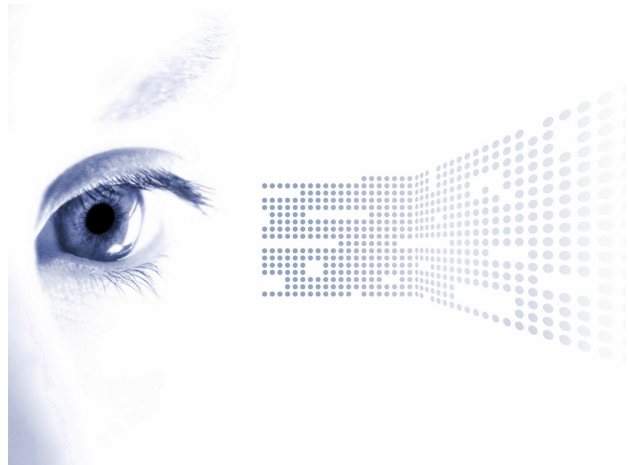
End-users play a pivotal role in ensuring the machines they purchase are safe and compliant. One of the key steps they can take is to demand proper documentation and certification from manufacturers. This includes checking for CE markings and obtaining relevant information about the machine's compliance with mandatory safety requirements. It also entails getting comprehensive information about the machine supplier. Leveraging the knowledge and resources of industry associations can further assist in making well-founded decisions.

### **What do the end-users face in terms of legal risks if an accident happens, and an operator gets injured because of a non-compliant machine tool?**

The end-user is legally responsible for the safety of their workers. Even if a machine's non-compliant features are due to manufacturer negligence, an employer might be prosecuted under certain circumstances. This is illustrated, for instance, by a legal case in Italy, where a ruling mandated that the employer was responsible for ensuring the machinery's adherence to legal requirements. The presence of the CE marking on the machinery or reliance on the manufacturer's reputation does not exempt them from their responsibilities. The manufacturer's responsibility, in cases where harm is caused due to the lack of safety precautions in the machine's design and manufacturing, generally does not absolve the employer, even if the specific legal implications may vary across Europe. The employer bears the obligation to eliminate hazards for employees using the machine and to use adequate technologies to ensure worker safety within the shop floor.

**It's evident that collaboration among various stakeholders is crucial. Can you elaborate on how manufacturers, industry associations, and regulatory bodies are working together to ensure the safety of laser machines in the market?**

Collaboration is fundamental. We are working closely with national associations, manufacturers, and market surveillance authorities to create a coordinated approach. Manufacturers must be committed to providing safe machines, and authorities need to enforce compliance effectively. Industry associations like CECIMO act as intermediaries, bringing together expertise and resources to share best practices, create awareness, and develop guidelines such as the CE Technical Guides that you can find on the CECIMO website (see below, editor's note). Additionally, we're engaging with regulatory bodies to provide them with the necessary data and insights to improve enforcement mechanisms. When all stakeholders work together, we can achieve safer standards and a level playing field for the market.



**Can you share some insights into the potential long-term impact of successfully addressing this issue?**

Successfully addressing this issue will have a significant impact on our industry. It will enhance the overall safety of machines used in various sectors, ensuring the well-being of operators. Additionally, it will promote fair competition by eliminating the advantage that non-compliant producers have due to lower manufacturing costs. Ultimately, we aim to create a safer and more reliable market environment that benefits both businesses and workers.

**Could you shed light on the significance of providing end-users with user guides and informative materials to effectively convey the importance of machinery safety?**

Absolutely. The user guides CECIMO has co-developed are designed to be accessible and informative. They explain safety standards, compliance requirements, and potential risks associated with non-compliant machines in a clear and easy-to-understand manner. The goal is to empower end-users with the knowledge to make informed decisions. Additional materials will also be developed to emphasise the role of end-users in ensuring machine safety and encouraging them to actively seek information from manufacturers and industry associations.



**CE Marking Guides for  
Laser Machines**



**CE Marking Guides for  
Metalworking Milling  
Machines**



**CE Marking Guides for  
Electro-discharge  
Machines**



**CE Marking Guides for  
Metalworking Band  
Sawing Machines**



# Advancing Additive Manufacturing Leadership in Europe

By Vincenzo Belletti, Director of EU Public Affairs, CECIMO

Additive Manufacturing (AM) is revolutionising the manufacturing landscape, offering the potential to complement and transform conventional manufacturing processes. Over the past three decades, many industries have recognised the potential of AM. This technology is driving a profound shift in productivity characterised by reduced tooling costs, shorter lead times for machine setup, and minimised raw material waste. In addition, AM offers an unparalleled level of customisation and design flexibility.

The adoption of AM has brought transformative changes in various manufacturing sectors. It has optimised many facets of the manufacturing process, from streamlining production steps to drastically reducing material consumption and the production of spare parts. The industrial implementation of AM is complex and involves the entire value chain. However, although the sector has developed at a good pace and shows a good level of adaptability, there remains a substantial room for growth that the sector should achieve.

## How can we boost AM growth in Europe?

A key strategy to stimulate the growth of AM lies in fostering **industrial collaboration**. To effectively harness the potential of AM, it is critical to increase the collaborative efforts across the different stages of development and production. This concerted approach can bring significant benefits in the short term, elevating the quality and value of products and services within the AM sector. The focus of such collaboration should be on collaborative innovation, where the key players in the AM ecosystem combine their strengths to drive sector-wide innovation.

In practice, there should be a way for the AM industry players to pool their resources and expertise and collectively work towards advancing the sector. The common goal should be to cultivate innovative ideas and technologies that address customer needs. This effort would result in the creation of novel solutions that not only meet industry standards but also resonate

with end-users seeking for reliable and user-friendly applications. This collaborative approach to innovation puts the AM industry on the fast track to progress and ensures that the transformative potential of additive manufacturing is fully realised.

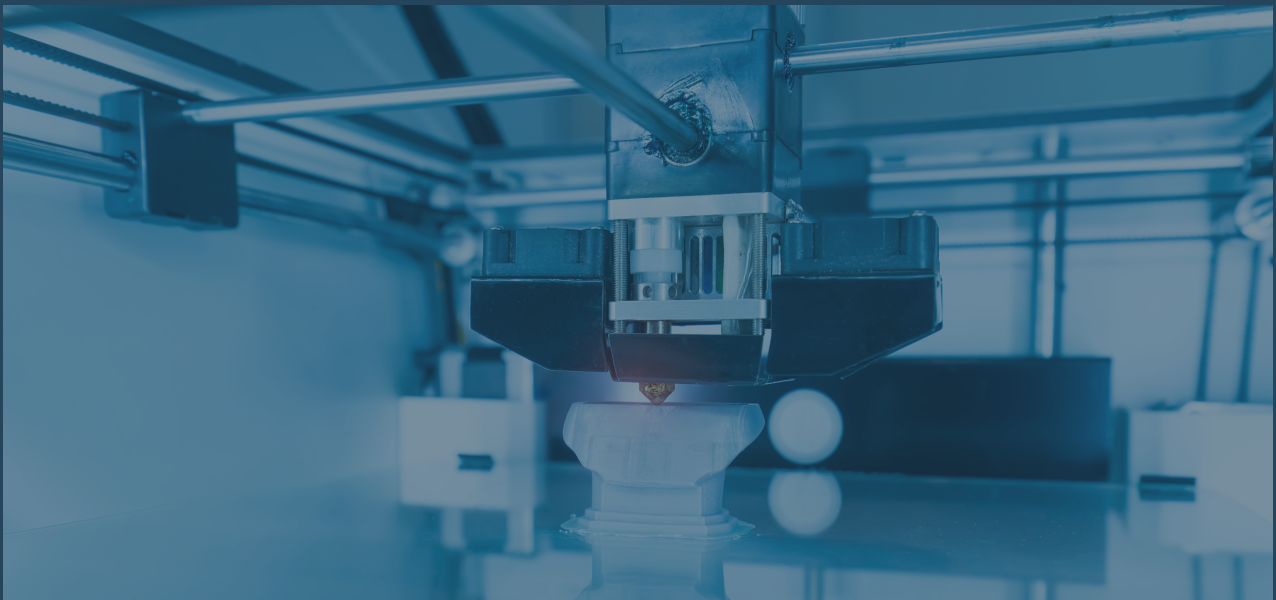
Collaboration of this kind, and more generally the growth of the sector, could be greatly facilitated by the launch of a European AM initiative. This initiative would bring the EU and the industry together to build a strategic framework aimed at harnessing the full potential of this growing sector.

The **launch of a European AM initiative** would contribute to keeping the European manufacturing industry competitive and bring it closer to the digital and green transition. By tackling barriers, raising awareness, fostering collaboration and supporting investments, the EU can harness the benefits of AM to drive innovation, boost competitiveness, promote sustainability and strengthen resilience across multiple industries. In addition, this initiative would also ensure that efforts and resources

related to AM are aligned and optimised at the EU level and across member states. It will enable the EU to pool its expertise, knowledge, and funding, maximising the impact of AM development and enhancing the EU's collective ability to address the challenges and capitalise on opportunities offered by these technologies.

Finally, an official EU supporting action for AM should raise awareness, provide policy guidance, lead to common standards, attract investments, build a skilled workforce, and foster synergies among member states, regions, industries, and stakeholders. Such recognition can effectively overcome barriers that have hindered the sector's growth, while guiding end users, particularly SMEs, in the integration of AM technologies into their production processes.

Through a collective effort and strategic vision, Europe can not only secure a prominent position in the ever-evolving landscape of additive manufacturing, but also leave a lasting legacy for future generations. This initiative will pave the way for European industry to take the lead in the adoption and advancement of AM.



**A European Additive Manufacturing initiative is crucial in helping the sector achieve its true potential as well as enhancing innovation, competitiveness, sustainability and resilience of Europe's manufacturing industry.**

Stewart Lane, Chairman of the Additive Manufacturing Committee, CECIMO



## CECIMO Appoints New President. François Duval Sets a Bold Course for European Manufacturing

By Damir Glas, Director of Communications and Operations, CECIMO

The European Association of Manufacturing Technologies (CECIMO) has appointed François Duval as the new CECIMO President for the 2023-2025 term of office, effective from 7 December 2023.

François Duval will succeed Dr. Heinz-Jürgen Prokop, who is stepping down as CECIMO President at the end of his two-year term. Commenting on his successor, Dr Prokop said: "Duval is well equipped to take us forward" and praised his extensive experience, citing his various senior leadership roles and his proven track record of achievements in the sector.

In a constantly evolving industrial landscape, the future of manufacturing is centred on innovation. In this context, Mr Duval's presidency brings a strong vision for the future of European manufacturing, underlining the industry's crucial role in fostering innovation, improving competitiveness, and driving economic prosperity and growth. However, he emphasises that innovation cannot thrive in isolation and that innovation without the necessary skills and talent is doomed to fail.

**"As manufacturing solutions become more complex, the need for expertise becomes paramount. To truly reap the benefits of the innovations we offer, we must provide our customers with unwavering support and guidance. Complex innovation requires a skilled and talented workforce and a commitment to helping customers realise their full potential"** said Mr Duval.

Policymakers should actively foster pro-business regulation, making Europe more attractive in terms of economic growth. Implementing innovation-driven regulations is therefore crucial, as they will increase the potential for innovation in the MT sector by providing a structured framework that encourages the development and deployment of disruptive technologies, while ensuring the safety and competitiveness of our companies on a global scale. Under the leadership of President Duval, CECIMO will actively promote the reduction of administrative burdens and the promotion of a positive environment for innovation and growth. CECIMO will continue to advocate for environmental responsibility and support the industry's transition towards eco-friendly technologies and materials.

Embracing Industry 4.0 and the digitalisation of manufacturing processes will remain a core focus. The rapid advancement of technology and innovation, including AI, data, robotics, IoT and more, offers significant benefits. However, it also brings with it a complex landscape of ethical, privacy and security challenges that the industry must navigate. These challenges underline the importance of effective governance and a sound regulatory framework to support and facilitate innovation in the industrial sector.

Mr Duval strongly believes that Europe needs to prioritise advanced manufacturing on the EU policy agenda.

That is why he encourages CECIMO to continue to actively contribute to the Industrial Forum on Advanced Manufacturing, which is part of the EU Industrial Strategy, in order to accelerate the uptake of advanced manufacturing technologies by EU industry and to support the EU's green and digital objectives. He argues that the success of the EU's industrial strategy will depend on an active promotion of the sector's image and the implementation of a proactive strategy aimed at attracting and retaining top talent.

In conclusion, with a dynamic leader at the helm, the industry is well positioned to face future challenges and opportunities with confidence and purpose. Looking ahead, it is clear that this leadership will continue to steer us towards a future of innovation, resilience and sustainable growth.

## Meet François Duval

With a degree in engineering from the prestigious Institut Catholique d'Arts et Métiers (ICAM) in Lille, Mr Duval has embarked on a remarkable journey that has spanned almost three decades within the FIVES Group. Throughout his career, he has held prominent

management positions and has distinguished himself as an exceptional leader. Mr Duval has been Managing Director of GF Machining Solutions France since July 2020. With over two decades of experience in the machine tool industry, including 6 years as President of the Machine Tool Manufacturers and Importers Group within the French trade union SYMOP, which has now become EVOLIS, he has played a key role in shaping the landscape of the industry.

Mr Duval began his career in the MT sector as Managing Director of Cinetic Machining, where he oversaw the development of Rouchaud milling and laser welding solutions for the automotive powertrain, aluminium extrusion milling and routers for the aerospace industry, and machine tool reconditioning. His subsequent acquisition of Metrap, the largest remanufacturer in France, marked a significant milestone in his career. By merging Metrap with Cinetic Machining, he created Fives Machining, a testament to his strategic vision and leadership. He has also participated and gained experience in powder bed fusion and direct energy deposition as a board member of AddUp, a JV between Fives and Michelin. He has a broad international career with extensive experience in Eastern Europe, Asia and Australia.



CECIMO Spring Meetings, From left to right: François Duval, Virginie Duval, Joel Duprat, Maxime Petite

# THE EUROPEAN MACHINE TOOL INDUSTRY: ECONOMIC OVERVIEW

By Anto Jerkovic, Economist, CECIMO

In the first half of 2023, the global and European manufacturing sectors faced significant challenges due to the weakening global economic situation, restrictive monetary policies and lower demand. With improvements in supply chains and reduced demand, there has been a notable improvement in energy and material prices. However, continued low business confidence, tighter global monetary policy, reduced investment appetite and ongoing geopolitical conflicts continued to create uncertainties for the road ahead.

According to the IMF's latest forecast (October 2023), global growth is expected to fall from an estimated 3.5% in 2022 to 3.0% in both 2023 and 2024. The rise in central bank interest rates to combat inflation continues to weigh on economic activity. Regarding the EU, the European Commission recently presented the Summer Economic Forecast 2023 (September 2023), which shows that the EU economy is still growing, albeit at a slower pace. EU economic growth has been revised downwards to 0.8% in 2023 and 1.4% in 2024.

Overall, the weaker growth momentum in the EU is expected to persist until 2024, with the impact of tight monetary policy continuing to dampen economic activity. Next year, however, growth is projected to pick up slightly as inflation eases, the labour market remains robust and real incomes gradually recover. Inflation is also expected to decline, with EU inflation projected to reach 6.5% in 2023 and 3.2% in 2024.

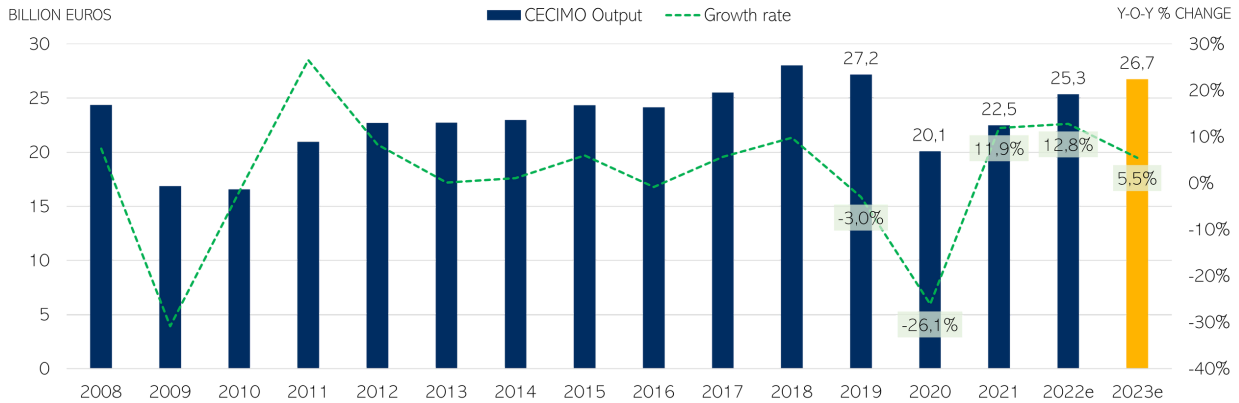
According to our latest database update, global machine tools (MT) production reached 79.2 billion euros in 2022, reflecting an annual increase in production of 11.9%. In the same year, MT production in CECIMO countries recorded a 12.8% increase, with a level of 25.3 billion EUR, maintaining CECIMO's share of 32% of global MT production. In 2023, CECIMO production is expected to grow at an annual rate of around 5.5% to almost 27 billion euro. Although there was a visible decline in new orders in the first half of 2023 compared to the same period in 2022, the growth momentum in terms of output is the result of stable new orders and significant order backlogs from previous years.



**“Despite challenging times, European machine tool builders must continue to innovate. Supported by advanced technologies, machine tools will continue to serve as the cornerstone of global manufacturing and we remain confident in the stability of future demand.”**

Marcus Burton, Chairman of the Economic Committee, CECIMO

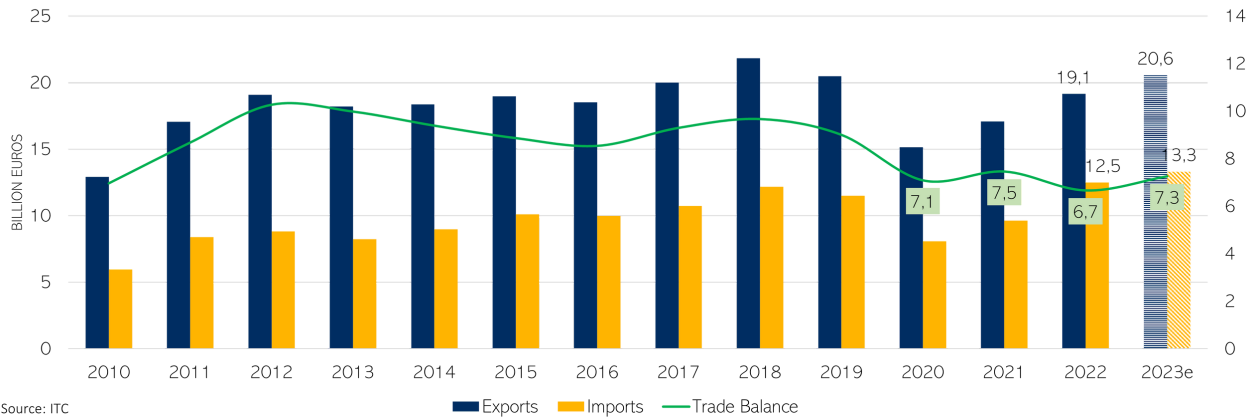
CECIMO MT Output Volumes & Yearly Growth Rate (2008-2023e)



Source: CECIMO & National Associations

The graph below illustrates CECIMO's latest trade balance estimates for 2023 (last updated in September 2023). A positive trade balance of around EUR 7.3 bn is expected in 2023, based on an increase of around 7.4% in total exports and 6.6% in total imports.

CECIMO MT Trade Balance (2010-2023e)



Source: ITC

It is important to note that the CECIMO8 index of total new orders recorded a level in the second quarter of 2023 that was 7% lower than in the previous quarter and around 8% lower than in the same period of the previous year.

CECIMO8 Total MT Orders (2016-2023)

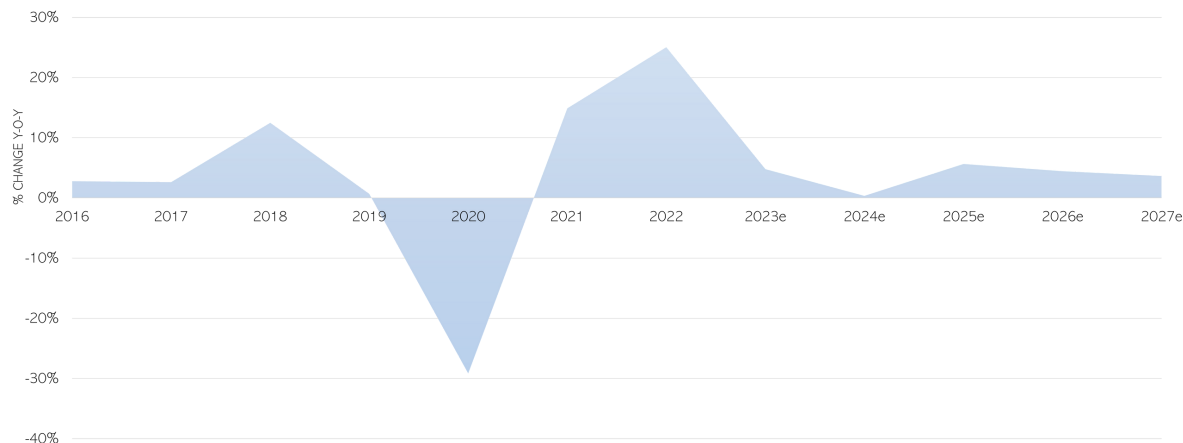


Source: CECIMO & National Associations | CECIMO8 = Germany, Italy, Switzerland, Spain, France, United Kingdom, Austria and Czech Republic

Given that most of the business indicators closely associated with our industry continue to show negative trends, our latest trend indication models (October 2023) suggest a further decline in total new orders in the upcoming quarters, followed by stabilization in the second half or end of 2024. This trend indication points to a highly uncertain situation in the domestic market in the coming quarters, potentially leading to more stable production and consumption levels in 2024.

In line with this, the latest Oxford Economics Global MT Outlook of October 2023 presents a less optimistic scenario for MT consumption. The new data shows that CECIMO machine tool consumption is expected to grow by around 4.8% in 2023, remain stable in 2024, before experiencing stronger growth of 5.6% in 2025. With the stronger growth of CECIMO consumption compared to other regions, the share of CECIMO countries in total MT consumption is expected to increase from 25% in 2022 to 27% in 2023.

CECIMO MT Consumption Forecast 2016-2027e



Source: CECIMO & Oxford Economics

2023-2027 estimates are based on OE consumption estimates for Germany, Italy, Switzerland, Austria, Spain, Czech Republic, France, UK and Turkey (October 2023)

Global MT consumption is expected to decline by 3.9% in 2023 before stabilising in 2024 (measured in EUR values). Among the major purchasing sectors, aerospace is expected to see the strongest investment growth in 2024, followed by electrical/electronics and special machinery.

While our early indications for 2024 remain positive, it is important to highlight the significant challenges currently facing our manufacturers. The ongoing conflict in Ukraine and the emergence of new conflicts in the Middle East remain major concerns, with the potential to disrupt supply chains and escalate energy prices, especially if the conflicts spill over into neighbouring countries. In addition, the ongoing slowdown in economic growth and tight monetary policies are expected to have a negative impact on investment and global demand for MT in the short to medium term.

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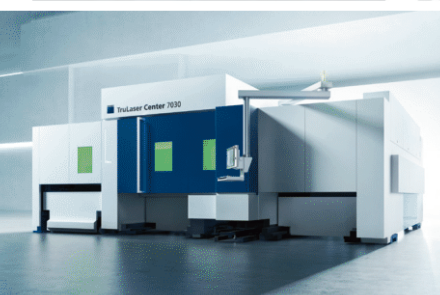


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# INSIGHTS INTO EMO HANNOVER 2023

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

*Innovate Manufacturing.*

EMO Hannover 2023 from September 18 to 23 was the highlight of the year for production technology. 92,000 trade visitors from 130 countries were coming to the show to learn about new things, automation, digitalization, sustainability and new business strategies.

"After the four-year break, the relaunch has been a huge success for EMO Hannover," confirmed EMO Commissioner General Carl Martin Welcker after six highly eventful days. "We saw everything here that makes up the future of production: new solutions for automation, for networking in the factory and for sustainability in production. When digitalization finds its way into the factory, the way is clear for new solutions and increased efficiency in production. This was impressively presented by the exhibitors. And there was a positive mood despite the rather tense economic situation," Welcker reported further.

## **Focus on automation, digitalization and sustainability**

Against the backdrop of the shortage of skilled workers, automation was clearly the focus of the trade show. In the visitor survey it was named as the top industry topic by more than a third of visitors. Almost a quarter named digitalization and networking. At many exhibitors visitors were able to find what they were looking for.

A mid-three-digit number of robots were counted at EMO. What is new is that programming skills are no longer necessary to use cobots (collaborative robots). That applies for different applications such as loading and unloading, quality control, painting, washing, as well as connecting with measuring devices. Robots are equipped with sensors that mimic the human sense of touch.



Carl Martin Welcker, General Commissioner of EMO Hannover 2023



Dr. Heinz-Jürgen Prokop, President of CECIMO

This allows them to compensate for workpiece tolerances or avoid obstacles in the workspace. This allows them as well to operate without an enclosure in collaboration with employees. This trend is also helping robot manufacturers do good business. "Cobots are still a rising star in manufacturing, especially for smaller companies that are now facing labor difficulties," says Nils Tersteegen, marketing manager at Japanese supplier Fanuc.

Another focus of EMO exhibitors was connectivity. This is primarily about openness in data exchange, for example on the basis of OPC UA. The OPC UA for Machine Tools Companion Specification under the umati umbrella is also based on this. The retrieval of large amounts of data from the digital control system without affecting the process is an important aspect here. The availability of transparent process data forms the basis for process monitoring and quality management based on it.

According to the visitor survey, Future of Sustainability in Production was high on the agenda for 68 percent of visitors. Even more foreign visitors, three quarters, talked about sustainability as an important topic. The main aspect is efficiency. Here are a few examples: The so-called Product Carbon Footprint shows the CO2 emissions during production and gives customers detailed information on which indirect emissions the tools used specifically contribute to their CO2 balance. Another example is the spindle design, which is designed for energy efficiency and not primarily for maximum performance. Finally, cooling lubricants can be used for longer by monitoring and filtering.

Dr. Hubert Ermer, Managing Director Products and Markets, Dr. Johannes Heidenhain GmbH, Germany, put it in a nutshell. "The topics of digitalization and automation continue to advance at a rapid pace. In this context, it is important to manufacture in a process-safe manner. This increases productivity and at the same time the carbon footprint can be reduced. EMO has given us the platform to discuss the specific challenges of transformation processes in manufacturing in particular and to provide intensive support to our customers here."

---

**Save-the-date: mark your calendars today for the next EMO Hannover 2025: September 22 to 27, 2025.**





# CECIMO Brussels Forum and Machine Tools Innovation Awards

By Diana Anichitoaei, Communication Manager, CECIMO

The first edition of CECIMO Brussels Forum 2023 set on 6-7 December, presents an insightful programme featuring high-level event tackling topics related to innovative manufacturing and skills. The Forum welcomed an impressive line-up of industry experts and policy makers via keynotes and panel discussions addressing topical issues such as advanced manufacturing, innovation, sustainability, and skills development.

A significant highlight of the Forum is the launch of the Machine Tools Innovation (MTI) Awards—a milestone event that promises to redefine recognition and innovation within the sector. Set to be inaugurated during the CECIMO Brussels Forum, the MTI Awards represent a significant leap forward for the industry, setting the stage for the recognition of ground-breaking contributions.

In collaboration with esteemed partners, namely EIT Manufacturing, European Factories of the Future Research Association (EFFRA) and European Round Table for Industry (ERT), the MTI Awards aim to spotlight notable contributions within the machine tool sector. This collaborative effort underlines our commitment to recognising and celebrating innovation.

The MTI Awards programme is open to all European players in the machine tool industry of all sizes, including both established and up-and-coming enterprises. Positioned as CECIMO's flagship event, our gathering aims to promote and shape the machine tool sector by spotlighting innovators at the forefront of industry progress. Follow us to keep up to date with the next submission process and showcase your innovative and impactful work.



VISIBILITY & RECOGNITION



NETWORKING & PARTNERSHIPS



INDUSTRY TRENDS



**Participating in the MTI Awards is more than just recognition; it's an investment in your professional growth. By showcasing your projects and innovations, you not only raise your company's profile, but also contribute to the collective knowledge base of the industry.**

Filip Geerts, Director General, CECIMO

## MTI Awards Finalists' Testimonials



 **Fraunhofer**  
IWU

“

*By participating in the CECIMO MTI Awards, we would like to present ourselves as an institute of applied research and show that we develop innovative technologies for the machine tool industry based on creative, new ideas and transfer them into industrial practice. Besides customized solutions for special applications, Fraunhofer IWU also develops smart systems with a broader range of applications like the energy-autonomous, sensor-integrated tool holder "smartTOOL" proposed here.*

*The idea for this novel sensor system originates from the needs and wishes of numerous companies we have worked with in joint R&D projects in recent years. We saw demand for easily retrofittable in-process monitoring systems that detect all critical changes in the machining process, the tool condition, and the workpiece quality. Such systems are key components for successful digitization, automation, and optimization of all manufacturing processes.*

*Therefore, they will gain significance in the future, especially regarding the steadily increasing shortage of skilled workers and ever-growing competitive pressure from outside of Europe.*

*By applying to the CECIMO MTI Awards with such an innovative product, we hope to reach many companies from the production sector that need especially sensitive, easy-to-handle monitoring technology to enable further digitization of their machine tools. Moreover, by applying for this award, we would like to value the contributions of all colleagues working on this project and, of course, motivate them to continue pursuing new and innovative ideas that might shape the production of tomorrow.*

**-Dipl.-Ing. Alexander Schuster, Fraunhofer Institute for Machine Tools and Forming Technology IWU**



 **ALDAKIN**

“

*European manufacturing companies need to increase their production flexibility since in an everyday basis new composite parts are being designed for products as diverse as aircrafts, automobiles and consumer goods. Currently used milling-machines are not suited for that flexibility. Current robotic solutions don't meet the accuracy requirements (+/- 0.25mm) of composite parts in sectors such as aerospace, wind power and automotive that are gaining momentum in the EU Green Deal for transport optimization, electrification and clean energy generation. Moreover, EU composite manufacturing industry is extremely concerned with the dust generated during composite machining due to the potential cancer risk related to the breathing of fibres and resin, and severe health issues on skin, eyes, lungs and liver. In an industry survey on carbon fibre machining 81% of respondents agreed that there is "very high" or "high" need for new actions in order to extract dust from the working area.*

*In this context the product of Aldakin answers the needs of EU composite part manufacturers and the European Commissions' trends in Advanced Manufacturing Key Enabling Technology for cleaner processes and to increase the competitiveness of the EU industry by proposing a robotic system that will disrupt current state of the art of composite machining including an internal dust suction system (98% suction) for improved health and safety conditions by minimizing the exposure of humans to dust with fibres and resins, reduced energy consumption (22% less), increased performance (3 times more accurate than current robot systems) and continuous process monitoring and control for "right the first time" machining, while being significantly cheaper than milling machines.*

**-Ibai Inziarte, Aldakin Automation S.L.**



**TRUMPF**



“

*Equipment as a Service (EaaS) models have great potential to increase productivity and competitiveness in the manufacturing industry. The possibility for companies paying only for the use of the machine helps to overcome central challenges such as a shortage of skilled workers or time and cost pressures.*

*To scale EaaS business models economically, systems must be operated remotely. Live monitoring, access, programming, and remote troubleshooting pose significant challenges.*

*TRUMPF identifies downtimes remotely via monitoring and analyzes them using visual machine insights. The downtimes are resolved with the help of Remote System Control. In addition to remote troubleshooting, the customer receives additional guidance so that downtimes do not occur in the first place. The technical system not only solves the problems in the context of EaaS, but also opens up new business opportunities for TRUMPF by offering the technology to the existing customer base but also to other industries. One step further from "made in Germany" to "operated by Germany".*

*Remote operation enables a stepwise machine autonomy by enabling to collect and curate a considerable amount of valuable operations data. This data enables to build smart AI solutions, such as collision control, visual anomaly detection or others, to increase the number of machines a remote operator can securely control. Our next steps in scaling the solution are the distribution of EaaS in the European region, especially in Germany, Austria, Switzerland and the Netherlands. Furthermore, we aim to extend remote control capabilities to other manufacturing technologies.*

*CECIMO serves as a platform in the European region to promote collaboration, knowledge sharing and innovation in the field of manufacturing technologies. As TRUMPF, we have a great interest in spreading the knowledge of new technologies. This is something we want to work on together.*

**-Dr.-Ing. Philipp Humbeck, TRUMPF Werkzeugmaschinen SE + Co. KG**



**Thanks to our Brussels Forum Silver Sponsor:**



# Meet a CECIMO Delegate

INTERVIEW WITH JOËL DUPRAT, DIRECTOR GENERAL, ESCOFIER

## What key benefits do you see as a CECIMO member?

CECIMO actively advocates for our sector in policymaking, amplifying our collective influence. The commitment to research and development creates opportunities for participation in cutting-edge projects, ensuring members stay informed about industry trends. Access to market intelligence and trade data equips us to make informed business decisions. Ultimately, being part of CECIMO means being at the forefront of the machine tool industry, shaping its future, and enhancing our global competitiveness.

## Discovering the latest trends in digital transformation for manufacturing: How can companies effectively navigate the twin green and digital transition?

Successfully navigating the green and digital transition demands a strategic fusion. Companies should intertwine sustainability into their digital strategies, utilizing technologies like IoT, AI, and data analytics to enhance resource efficiency. In the machine tool industry, the inherent sustainability lies in the long lifespan of the machines, made with recyclable components.

Emphasising the use of local suppliers and retrofitting existing machinery are crucial elements in reducing environmental impact. Collaborative industry efforts are vital, fostering the exchange of best practices and driving collective progress. It's essential to perceive the green and digital transitions not as separate paths but as interconnected routes toward a more sustainable and technologically advanced future.

## Unveiling cutting-edge innovations: What stands out as your company's most remarkable recent product in the machine tools industry?

We are thrilled to offer the "FLEX green line" from Escofier. This 100% electrical machine prioritises sustainability with its low energy consumption and minimal noise levels. What sets it apart is its full robotisation potential, featuring a bean picking solution and impressively short changeover times—all seamlessly controlled through our user-friendly HMI. Additionally, the "FLEX green line" is designed with connectivity in mind, reflecting our commitment to staying at the forefront of industry trends. While we celebrate these innovations, we remain grounded, understanding that continual improvement is essential in our ever-evolving field.



**Emphasising the use of local suppliers and retrofitting existing machinery are crucial elements in reducing environmental impact.**

## Embracing sustainability: How has Escofier adapted to meet the growing sustainability demands of customers?

At Escofier, sustainability is at the core of our principles. Collaborating closely with local suppliers, we've achieved a sourcing model where over 80% of our purchases are from France, with more than 50% coming from our home region of Burgundy, reducing environmental impact through shorter supply chains. A notable aspect of our commitment is the transformation that began over a decade ago, shifting from hydraulic to electric machines. Additionally, we actively engage in retrofit activities, breathing new life into old machines, contributing to a more sustainable industry. These efforts underscore our commitment to exceeding the evolving sustainability expectations of our customers.



## Preparing for the future workforce: What are the major challenges for companies in reskilling and upskilling their workforce for the evolving manufacturing landscape? Which skills will be crucial for success?

In envisioning the future of the industry, marked by robotisation and digitalisation, a shift in the skill landscape is imminent. As automation takes center stage, the traditional skill requirements for operators on specific equipment may diminish. The emphasis, therefore, is on ensuring that machines are as user-friendly as possible. Simplifying the user interface and minimising the learning curve become paramount challenges.

In this context, the crucial skills for success will pivot towards a broader understanding of digital systems, basic troubleshooting, and adaptability to evolving technologies. While specific equipment expertise remains valuable, the focus is on cultivating a workforce that can effortlessly navigate the digital terrain and collaborate effectively with advanced machinery.



# National Association Under the Spotlight

INTERVIEW WITH CHRISTOPH BLÄTTLER, SECRETARY GENERAL, SWISS MACHINE TOOLS MANUFACTURERS, SWISSMEM

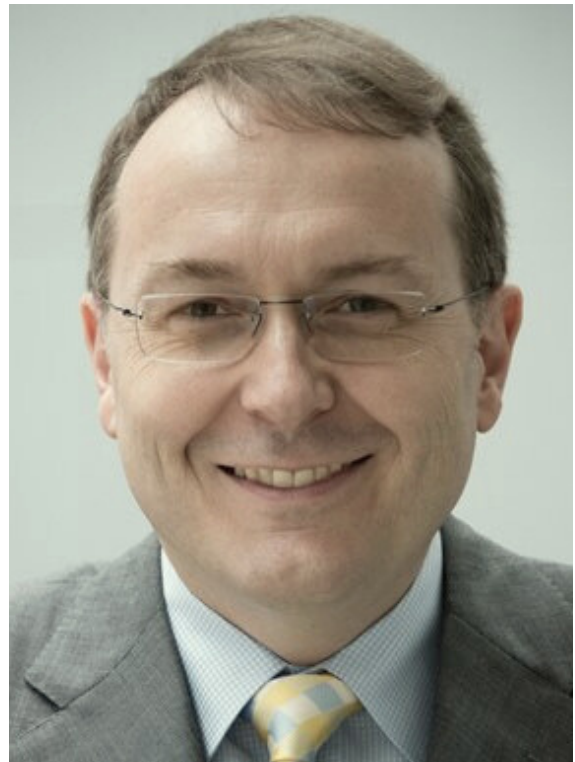


Swissmem is the leading association for both SMEs and major corporations in the Swiss technology industry. Swissmem enhances the competitiveness of its 1,400 member companies both at home and abroad by providing needs-based services. These services include professional advice on employment, commercial, contract and environmental law, energy efficiency as well as knowledge and technology transfer. In addition, Swissmem offers market-oriented training packages for employees working in the sector. Swissmem operates a number of strong networks: 25 industry sectors, various experience-sharing groups and forums give member companies an opportunity for dialogue on technical questions or work on joint projects. In doing so we contribute to an innovative, internationally competitive industrial centre, as well as stability and prosperity in Switzerland.

The «Swiss Machine Tool Manufacturers» with their 100 member companies represents the biggest Industrial Sector of Swissmem. All the industrial sectors of Swissmem are organised like smaller, specialised associations within the umbrella association. So, each SIS (Swissmem Industrial Sector) features a President, a Board and holds an annual general assembly. At our latest annual general assembly, the 80th, on August 30, 2023, a new President and two new Vice-Presidents were elected. Michael Hauser, CEO of Tornos SA, handed over the Presidency after 18 years of service to Michael Merkle, CEO & majority owner of Agathon AG. As new Vice-Presidents Alex Waser, CEO of Bystronic AG and Vincent Affolter, CEO of Affolter Group SA were officially confirmed after Dr. Hans-Martin Schneeberger resigned following a period of more than 20 years acting as a Vice-President.

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**Swissmem is committed to the concepts of competition and entrepreneurial freedom, rooted firmly in a strong sense of social responsibility.**



**What does Swissmem aim to achieve in terms of its mission and vision, and can you elaborate on the core values that guide its operations?**

We are proud to provide our member companies in all language regions of Switzerland with professional advice, offer them extensive networks and support them in digitalization while also, at a political level, advocating good framework conditions and an innovative centre of industry in Switzerland. Swissmem is committed to the concepts of competition and entrepreneurial freedom, rooted firmly in a strong sense of social responsibility. Drawing on its broad-based knowledge of the sector, Swissmem advocates the best possible economic and political framework and a liberal labour market in its dealings with politicians, government and the public. It also supports constructive social partnership. In its capacity as employer representative, the association negotiates the terms of the collective employment agreement for the technology industry with the social partners.

**Looking ahead, how do you envision the evolution of the Swissmem association in the coming five years? Are there specific significant milestones on your radar?**

Swissmem will focus on the following key areas in the coming years:

- Provide member companies with knowledge and contacts for entering new export markets.
- Bundle the political forces of the technology industry and improve, strengthen its public image.
- Support the companies of the technology industry on their way to digitalization.
- Advise member companies competently, individually and with commitment.
- Train professionals at all levels for any company of the technology industry.

**Given the growing importance of green and digital advances in our industry, could you share specific examples of Swissmem's initiatives in the manufacturing sector that emphasise sustainability and digitalisation?**

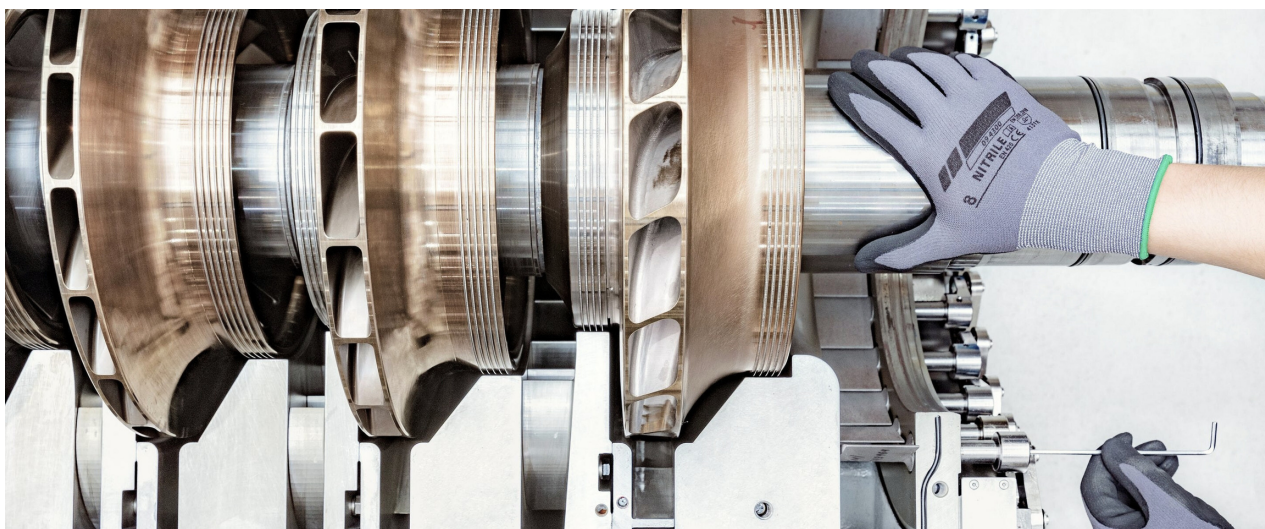
Swissmem is a major partner in the initiative «Industrie 2025» and hosts the team within its offices. Industrie 2025 is the Swiss initiative to drive forward the digital transformation of industry. It brings together stakeholders, structures, it deepens existing knowledge and makes the results freely available. It ensures the introduction, support and anchoring of Industrie 4.0 concepts in value creation networks and production companies. This is achieved through a variety of activities, moderated working groups and by providing specific services.

**In the context of the digital transformation, what strategies and support mechanisms are crucial for Swiss companies to not only successfully navigate this transformation, but also to attract and retain top manufacturing talent?**

Adequately educated and skilled people are at the heart of a successful transformation. Therefore, Swissmem is on one hand substantially investing into vocational education and efforts to keep the curriculums up to the speed of the transformation process (e.g. Project FutureMEM). On the other hand, we support re- and up-skilling namely by offering respective courses and further education ranging from half-a-day up to full fledge CAS courses catering specifically for the needs of our member companies.



From left to right: Michael Hauser, Michael Merkle



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— **RESEARCH AND INNOVATION** —

# The Status of Ongoing CECIMO Projects

By Olha Hunchak, Policy and Projects Officer, CECIMO



Since 2020, the PENELOPE project, led by AIMEN TECHNOLOGY CENTRE, has been dedicated to developing an end-to-end digital manufacturing solution that aims to revolutionise the production of large-scale components within interconnected factories. PENELOPE relies on a modular, flexible, and worker-centric approach, strategically targeting labour-intensive and non-ergonomic tasks while simultaneously safeguarding the invaluable skills and knowledge of the workforce. PENELOPE's solution is set to empower factories, enabling the production of highly customised, value-added products while minimising reconfiguration time through the utilisation of simulation models, Digital Twin technology, online control and inspection, data analytics, and cutting-edge AI tools.

Specifically, PENELOPE's solutions are being implemented in four different Pilot Lines:

- Oil and Gas (IDESDA demonstrator): enhancing precision in pressure vessel manufacturing.
- Aeronautics (FOKKER demonstrator): Streamlining fuselage lower section assembly.
- Bus and Coach (VDL demonstrator): optimising bus module production.
- Shipbuilding (MVW demonstrator): Improving precision in supply module pre-fabrication for outfitting, ducts, and cables.

## Training Initiatives in the Didactic Factories Network

Another crucial aspect of the PENELOPE project is the initiative for the digital upskilling of the workforce through training activities and seminars scheduled to commence in 2024. The project will offer training activities and services, provided as part of the Expression of Interest (EoI), to interested companies who can apply to test new

innovative technologies. These opportunities are made available within the European network of six Didactic Factories, which comprise:

- 1.SAM/XL
- 2.BIBA
- 3.TECNALIA
- 4.AIMEN Technology Centre
- 5.LMS
- 6.CEA Tech

Beginning next year, CECIMO will actively participate in the organisation of training activities and seminars within the Didactic Factories Network. This initiative is poised to bolster employees' confidence in their skills, leading to increased workplace morale. Ultimately, PENELOPE's mission aims to bridge the skills gap, reduce shortages, and generate more job opportunities in the manufacturing industry. By seamlessly integrating innovative technologies and digital upskilling initiatives, PENELOPE is setting the stage for a future of efficient, high-quality, and cost-effective manufacturing.



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

# DIMOFAC in its Concluding Phase



**DIMOFAC**  
www.dimofac.eu

The manufacturing landscape has entered an era of mass customization, where the demand for flexible production lines has become paramount in meeting customer expectations with the utmost efficiency. In response, the Digital and Intelligent Modular Factories (DIMOFAC) project, led by the French Alternative Energies and Atomic Energy Commission (CEA) since 2019, has assumed the task of fortifying reconfigurable production lines while concurrently reducing resource consumption and overall production costs.

This initiative revolves around the transformation of assembly lines into agile, adaptive systems capable of swift responses to shifts in demand.

The ultimate goal is to enhance production line modularity, adaptability, and responsiveness through the integration of Plug-and-Produce modules within a Closed-Loop Lifecycle Management System. This system ensures ongoing production adjustments, optimisation, and improvements with unprecedented speed and flexibility. DIMOFAC's approach is currently undergoing rigorous testing across six Pilot Lines, including prominent participants such as VDL Industrial Modules and Sculpteo, a specialist in 3D printing.



## RECENT ADVANCEMENTS WITHIN DIMOFAC

DIMOFAC has successfully developed 18 production modules designed for various manufacturing processes like welding, assembly, and inspection. These modules utilise plug-and-produce technology, seamlessly integrating into production processes, ensuring swift operational readiness. This year, DIMOFAC initiated an Expression of Interest, providing invaluable support to companies across diverse industries, including robotics, automation, augmented reality, and electronics. These companies have benefited from a range of services, including consultancy, process development, training, and pre-series development.

CECIMO's pivotal role in this project revolves around standardisation. Its primary responsibility is to ensure that the digital solutions developed within the DIMOFAC project adhere to existing standards for advanced production and align with standards currently under development at European and international levels. As CECIMO represents the European Manufacturing Technologies, it has made substantial contributions to standardization initiatives. Notably, CECIMO has been an active participant in the Digitising European Industry Initiative, a Commission-launched initiative aimed at promoting the digital transformation. Additionally, CECIMO has established robust partnerships with international organisations in the realm of intelligent manufacturing, solidifying its position as a key intermediary between the DIMOFAC project and established or emerging standards.



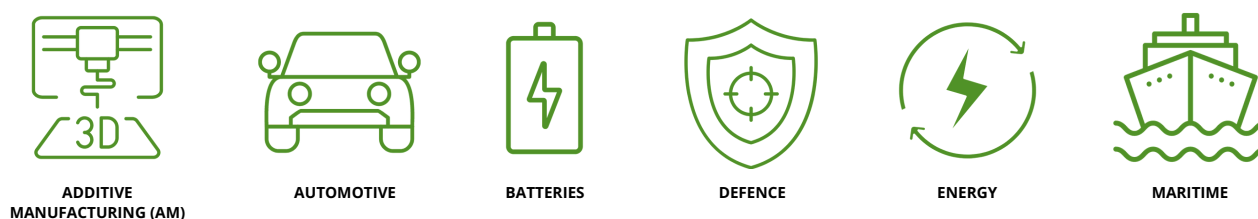
This project has received funding from the European Union's Horizon 2020 research and innovation programme under GA 870092.

# Green skills for a greener future



While various European countries have adopted environmental and sustainable education strategies, green learning is not yet systematically integrated into continental policies and practices. Thus, the two-year GREEN project, funded by ERASMUS+ and coordinated by EWF, commenced in December 2022 alongside nine other partners, including CECIMO.

Its principal objective is to enhance the quality and efficiency of green education by piloting innovative training solutions for both trainees and the workforce. This entails integrating green skills, curricula, and training modules into Vocational Education and Training (VET) and Higher Education (HE) systems across six industrial sectors:



Concretely, GREEN strives to identify and define the labour market skills required for digital and green transitions within these sectors. These defined skills act as the cornerstone for the establishment of a network of Green Education Providers facilitated by educational organisations. This network creation is a proactive endeavour to equip the European workforce with the indispensable knowledge and skills. It does so by bringing together a diverse consortium of experts, VET providers, and industry leaders in a collaborative effort to develop and integrate green skills into VET curricula. This approach effectively aligns skill requirements with labor-market demands and incorporates innovative learning methodologies.

## GREEN IMPACTFUL BEGINNINGS

Despite its short two-year duration, the project has already begun making a significant impact on green competencies across a wide array of economic sectors. This impact is attributable to the project's implementation through a diverse partnership of education and industry organizations, encompassing both the public and private sectors, each contributing valuable and complementary expertise. During a dedicated EU Green Week event, CECIMO and EWF unveiled the overarching mission of the GREEN project and its relevance in fostering skills for a sustainable and resilient educational and industrial landscape. GREEN has also earned recognition in the European Economic and Social Committee's report on green skills as a pivotal contributor to the circular economy.

Furthermore, the GREEN consortium has organized six Focus Group Meetings, engaging discussions among skills experts from education and industries in each economic sector. These discussions revolved around the requisite green skills and professional profiles essential for a seamless industrial transformation across Europe. CECIMO's member, MTA, participated in the Additive Manufacturing (AM) Focus Group, emphasising the significance of the AM technology in achieving a green transition. Designers and Engineers, according to these discussions, will play pivotal roles in realizing this transition. Conclusions drawn underscored that the sustainability of AM is linked to the interplay between manufacturing processes, materials utilisation (including metals and polymers), deployment within specific economic sectors, and the design and modelling of AM technology itself.



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



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

# Delegates that Joined CECIMO in 2023



**Jean-Christophe FINCATO**  
*President and CEO, Fives Machining*



**Dr. Thomas SCHNEIDER**  
*Managing Director, TRUMPF*



**Dr. Marcus HEERING**  
*Executive Director, VDW*

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## SUPPLIER OF COMPLEX TECHNOLOGIES FOR MACHINING

**TOS VARNSDORF a.s.**, based in Varnsdorf in northern Bohemia, has a 120-year tradition in the production of machine tools.

### Production programme

The company specialises in supplying solutions for machining technologies for **parts from 1 m<sup>3</sup>**, which it implements with various types of machine tools complemented by a wide range of accessories according to the required technology.

Using cutting edge design features, the machines enable high cutting performance to be applied while maintaining precise workpiece quality.



- Horizontal machining centers
- Horizontal boring mills
- Portal milling machines

### Services offered

- Machine assembly
- Operator training, including technological training
- Design of entire technology, including supply of clamping fixtures and tools



### Focus on Industry 4.0 and ecology

All currently manufactured machines are equipped with a software extension to the machine control system called **TOScontrol**.

- This is a dashboard with a default screen and icons for each application
- A unified interface to expand the possibilities of using the machine
- An OPC-UA communication protocol that enables connection with external systems
- Monitoring of machine status, its functions with the possibility of changing settings
- Fully implements **INDUSTRY 4.0**

The machines are equipped with functional covers, an operating fluid circulation system and chip removal as standard. In this way they contribute to reducing the ecological burden on their surroundings.

### Own high school

Since 2016, the company has been operating their own private secondary school with a primary focus on practical teaching. The school is located directly on the premises of the company and was founded due to the need to educate its own sufficiently technically educated and skilled young generation of workers.



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Belgium: AGORIA, the Federation of the Technology Industry  
[www.agoria.be](http://www.agoria.be)

Czech Republic: SST, Svazu Strojírenské Technologie  
[www.sst.cz](http://www.sst.cz)

Denmark: DI - Confederation of Danish Industry  
[www.di.dk](http://www.di.dk)

Finland: Technology Industries of Finland  
[www.teknologiateollisuus.fi](http://www.teknologiateollisuus.fi)

France: EVOLIS, Organisation Professionnelle des Bénéficiaires d'Équipement  
[www.evolis.org](http://www.evolis.org)

Germany: VDW, Verein Deutscher Werkzeugmaschinenfabriken e.V.  
[www.vdw.de](http://www.vdw.de)

Italy: UCIMU, Associazione dei costruttori Italiani di macchine utensili robot e automazione  
[www.ucimu.it](http://www.ucimu.it)

Netherlands: FPT-VIMAG, Federatie Productie Technologie / Sectie VIMAG  
[www.fpt-vimag.nl](http://www.fpt-vimag.nl)

Portugal: AIMMAP, Associação dos Industriais Metalúrgicos, Metalomecânicos e Afins de Portugal  
[www.aimmap.pt](http://www.aimmap.pt)

Spain: AFM Cluster for Advanced and Digital Manufacturing  
[www.afm.es](http://www.afm.es)

Sweden: SVMF, Machine and Tool Association of Sweden  
[www.svmf.se](http://www.svmf.se)

Switzerland: SWISSMEM, Die Schweizer Maschinen-, Elektro- und Metall-Industrie  
[www.swissmem.ch](http://www.swissmem.ch)

Türkiye: MIB, Makina Imalatçılar Birliği  
[www.mib.org.tr](http://www.mib.org.tr)

United Kingdom: MTA, The Manufacturing Technologies Association  
[www.mta.org.uk](http://www.mta.org.uk)

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