



## About CECIMO

CECIMO is the European Association of Manufacturing Technologies. With a primary focus on machine tools and additive manufacturing technologies, we bring together 15 national associations, which represent approximately 1500 industrial enterprises in Europe (EU + UK+ EFTA + Türkiye), over 80% of which are SMEs. CECIMO covers 97% of the total machine tool production in Europe and about 1/3 worldwide. It accounts for approximately 150,000 employees and a turnover of around 25.8 billion euros in 2024.



# THE DIGITAL REVOLUTION IN ADVANCED MANUFACTURING

A Collection of Case Studies

## More Info

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## INTRODUCTION

In an era where technology and innovation are driving the industrial landscape, advanced manufacturing stands at the forefront of this transformative wave. CECIMO's new brochure, "Innovating the Future: The Impact of Digitalisation on Advanced Manufacturing," showcases the remarkable journey of companies that have harnessed the power of digitalisation to revolutionize their manufacturing processes. This collection of case studies highlights the important role that digital technologies play in enhancing efficiency, productivity, and competitiveness in the manufacturing sector.



Through this brochure, we explore how digitalisation has not only streamlined production processes but also enabled companies to adapt to changing market demands and environmental challenges. The featured case studies illustrate how businesses have leveraged digital technologies to achieve greater flexibility, sustainability, and customer satisfaction. Whether it's through predictive maintenance, real-time data monitoring, or smart factory solutions, these companies exemplify the future of manufacturing.



The project brings together insights and experiences from leading companies that are members of the national associations from the CECIMO network. These organizations have embraced new digital tools and strategies, from automation and robotics to big data analytics and the Internet of Things (IoT), to drive their growth and innovation. By examining their success stories, we aim to provide valuable lessons and inspiration for other manufacturers looking to embark on their own digital transformation journeys.



# FOREWORD



In an era where technology and innovation are driving the industrial landscape, advanced manufacturing stands at the forefront of this transformative wave.

This brochure showcases the remarkable journey of companies that have harnessed the power of digitalisation to revolutionize their manufacturing processes. This collection of case studies highlights the important role that digital technologies play in enhancing efficiency, productivity, and competitiveness in the manufacturing sector.

The featured case studies illustrate how businesses have leveraged digital technologies to achieve greater flexibility, sustainability, and customer satisfaction. Whether it's through predictive maintenance, real-time data monitoring, or smart factory solutions, these companies exemplify the future of manufacturing.

At CECIMO, we have always championed innovation and excellence within the manufacturing sector. Our member associations and the companies they represent have consistently demonstrated leadership in adopting cutting-edge technologies to stay ahead in a competitive global market. This brochure highlights their successes and provides a roadmap for others to follow. As you read this brochure, I hope you find inspiration and valuable insights that will guide your own digital transformation journey!

A handwritten signature in blue ink, reading "Filip Geerts". The signature is stylized and fluid, with a long horizontal line extending from the end.

**Filip Geerts,**  
CECIMO Director General



AFM, Advanced Manufacturing Technologies, the Spanish Association of Manufacturers of Machine Tools, accessories, parts and tools, represents 90% of machine tool and advanced manufacturing technology companies in Spain.

Based in San Sebastian and with an office in China (Tianjin), AFM works to promote internationalisation and, through its INVEMA (Foundation for Machine Tool Research) technology unit, the technological innovation of its member companies.

AFM defends and represents the industry's interests, building links with government bodies, professional associations and related organisations, particularly promoting inter-company relationships.

AFM provides a comprehensive range of added-value services to its member companies, including:

- **Market Intelligence:** Access to detailed market reports and analysis to help companies make informed business decisions.
- **Training and Development:** Offering training programs and workshops to enhance the skills and knowledge of the workforce.
- **Technical Support:** Providing technical assistance and consultancy services to address specific manufacturing challenges.
- **Networking Opportunities:** Organising events, forums, and meetings that facilitate networking and collaboration among industry professionals.

### **CASE STUDIES PRESENTED:**

- ✓ Ibarmia
- ✓ Fagor automation

## IBARMIA - FINGERPRINT SOFTWARE IN MACHINE TOOLS

Ibarmia, a leader in advanced manufacturing solutions, presents a case study on the development of a robust, parameterized, and scalable machine tool fingerprinting software. This software is designed to be installed in machining centers, seamlessly coexisting with the machine's normal operations and easily adaptable to the specific characteristics of each machine.

## APPROACH & IMPLEMENTATION

The development of this innovative solution included the following functionalities:

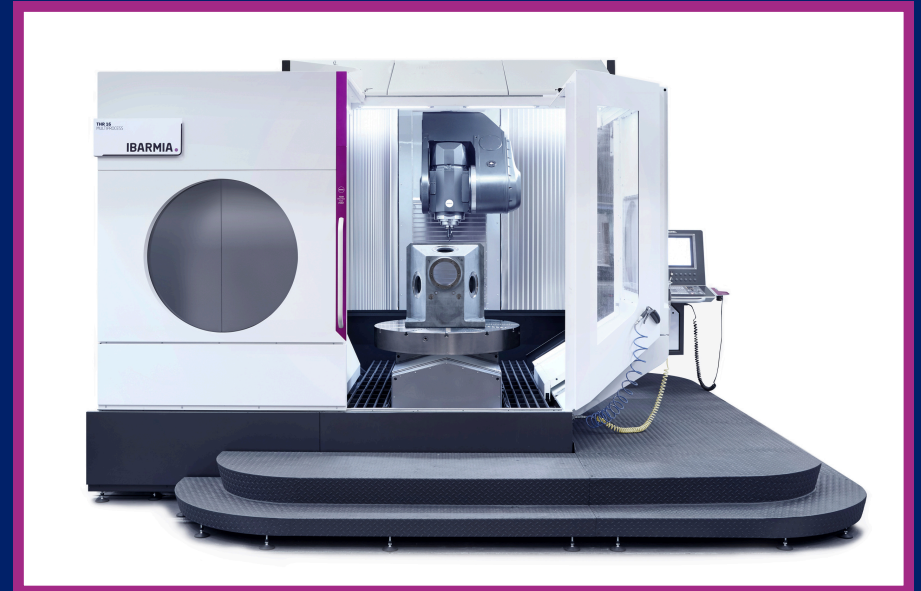
- ✓ Execution on the machine, in the form of part-programs, of empty check cycles for the different components included in the fingerprint.
- ✓ Recording of CNC and sensor signals in local IPC or server, during the execution of the check cycles.
- ✓ Signal processing to obtain indicators through an algorithm in local IPC or server.
- ✓ Recording in database of KPI (Key Performance Indicator) values and warnings in case of deviation from values.
- ✓ User access to fingerprint results through a data management platform.

For this purpose, software has been developed to obtain the machine tool fingerprint and a web platform for users to access the results of the machine tool fingerprint, a frontend.

## RESULTS / IMPACT

Fingerprint is used to monitor the state of health of machine components, based on the values of processed CNC and sensor signals (KPIs) obtained during the execution of check cycles, comparing them with the values obtained during machine set-up.

It makes it possible to anticipate machine faults, optimise machine maintenance, avoid unwanted production stoppages and guarantee the quality of machined parts by ensuring the optimum condition of the machines.



## LESSONS LEARNED

Through the development of this tool and its implementation, we have learned that in this area of digitisation, **quality is more important than quantity**. The initial phase of selecting the data to be processed is key to the success of the project.

IBARMIA has implemented the newly developed tool in its own machining processes, with the user experience being another fundamental factor in putting itself in the customer's shoes. Looking to the future, the challenge lies mainly in the business model to be proposed for its commercialisation.



## FAGOR AUTOMATION - DIGITAL SUITE

Fagor Automation is a company with extensive experience in the manufacturing and developing of automation and machine control products, Fagor Automation offers a complete range of solutions including CNC and Feedback systems, as well as a complete catalogue of services and digital solutions.

## APPROACH & IMPLEMENTATION

Fagor Digital Suite is our full digitalisation solution for workshops and OEMs. The main benefits of Fagor Digital Suite are its modularity, including Data Capture, Monitoring, Production, Planning, Documentation, OEM Administration, Teleservice, etc. On the other hand, Fagor Digital Suite is multibrand, it is compatible with the main CNCs in the market, including protocols such as OPCUA, UMATI, MTconnect, MQTT, SQL.



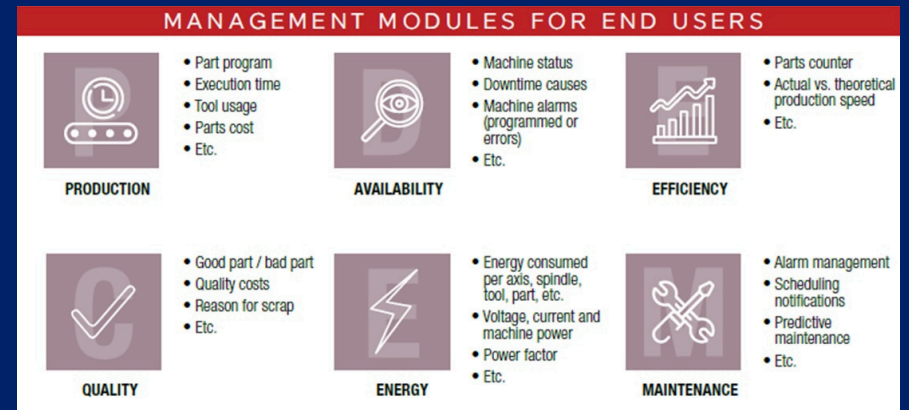
DECISION MAKING MADE SIMPLE

**FAGOR**  
**DIGITAL SUITE**

It is also connectable and compatible with most of the systems involved in production processes, facilitating accessibility and data management locally or remotely. Fagor Digital Suite has various cybersecurity certificates to guarantee the security of the machines or devices connected to the system, as well as the traffic and custody of data, whether local or in the cloud.

## RESULTS / IMPACT

After implementing our digitisation solution, all the processes are digitised and automated, from the customer order to the delivery of the manufactured product, eliminating all the manual work and papers, and the dependence on critical experienced personnel. With all of this, we achieve greater efficiency, cost reduction, energy consumption management, productivity improvements and we can offer more accurate delivery times.



### Benefits achieved:

- Asset management
- Monitoring module
- Production and planning management
- Energy consumption management
- Quality and traceability management
- Machine-side document management
- Incident management and scheduled alerts
- Machine maintenance management
- Teleservice module

## LESSONS LEARNED

In our experience, a Digital Solutions must:

- Be intelligent, easy to understand and easy to use.
- Allow for short term profitability, rapid return on investment
- Be multi-brand, multi-protocol and open systems
- Allow fast and non-intrusive implementation
- Scalable in new features and in additional systems
- Cybersecure systems



Headquartered in Frankfurt am Main, Germany, VDW serves as the voice of the German machine tool industry. In 2016, it commemorated its 125th anniversary. Comprising approximately 300 primarily mid-tier companies, VDW, in partnership with the Sector Association Machine Tools and Manufacturing Systems within VDMA (German Engineering Federation), represents a collective force. These entities contribute to nearly 90 percent of the sector's overall turnover, which nearly reached 15.4 billion euros in 2023.

VDW undertakes the role of advocating for its members on various platforms, both domestically and internationally, engaging with the public, policymakers, business associates, and the academic community.

Furthermore, it serves as a proactive service provider for its members, facilitating market expansion, monitoring business trends, gathering market data, addressing technical, commercial, and legal matters, fostering collaboration with the global machine tool industry, promoting standardization, and aiding in talent recruitment. Leveraging its comprehensive knowledge of the sector, VDW offers tailored information, consultation, and support to address individual queries and challenges.

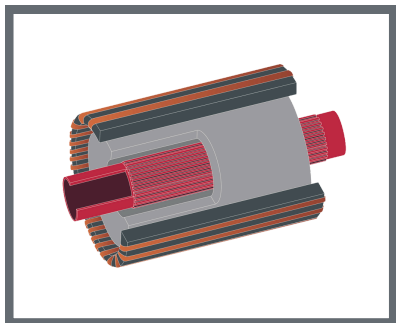
Ongoing committees and workgroups ensure a continuous exchange of sector-specific insights and empirical input. Regular updates on pertinent technical, commercial, and legal matters are provided to members.

### **CASE STUDY PRESENTED:**

✓ Profiroll Technologies

## PROFIROLL TECHNOLOGIES CASE STUDY

Profiroll Technologies presents a case study on the shaft-hub connection in the rotor design of electric motors for battery electric vehicles (BEVs). This connection faces specific challenges in maintaining consistent performance under a wide range of external conditions. Implementing an external spline on the shaft and an internal spline in the rotor package is a viable solution, provided that quality requirements are met at **competitive costs**.



## APPROACH & IMPLEMENTATION

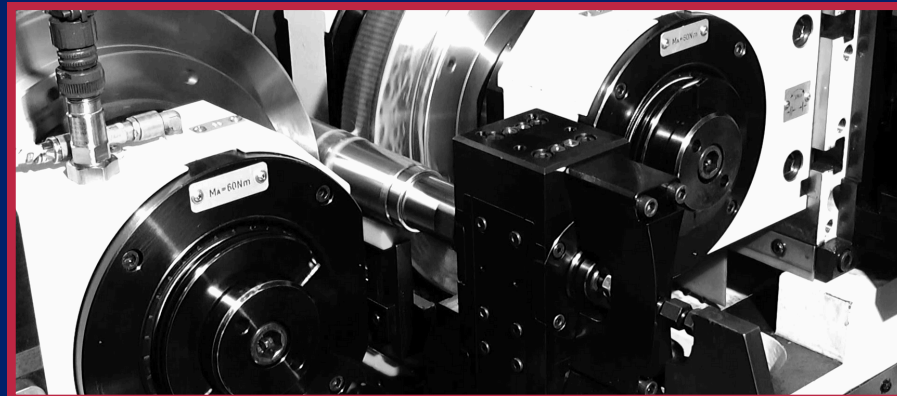
The shaft-hub-connection with external spline on shaft and internal spline on hub (Rotor) is well known from the transmission production in automotive industry. Such splines are well calculated and industrially cheap to produce. The repeatability of the quality is essential. Since the internal spline is stamp laminated the parameters are fixed. The external spline must fit perfectly to the internal spline of the rotor independent of the specific material conditions and of the hollow character of the rotor shaft.

The manufacturing strategy is to apply a throughforce rolling process combined with digital quality assurance procedures. The throughforce rolling requires minimal forces to avoid deformations of the ingoing tubes which are considered for **weight reduction**.

## RESULTS / IMPACT

For **weight reduction and cheap production**, the assembled rotor shaft is more and more preferred. The shaft consists of the rotor and two flange parts made as single parts and later welded together. A very good runout of all components to each other is essential.

The tube part of the assembled Rotor shaft gets an involute spline on circumference. This part only has a small wall thickness left that is designed to transfer the torque but to keep the mass as small as possible. Production wise it is now a challenge to apply an involute spline on this thin-walled part, preferably by cold forming. The throughforce rolling process has been developed for hollow shafts. Anyway, the repeatability of the rolling process is dependent on the repeatability of the ingoing material conditions.



## LESSONS LEARNED

Unless spline rolling with throughforce technology is used, the repeatability is insufficient for a robust process. The variation in hardness and wall thickness, combined with the residual elasticity of machine components, increases the spread of the flank diameter.

Therefore, software and sensor technology are integrated to provide intelligent technical solutions. Hardness compensation, an essential tool, adjusts the feed in the rolling process according to varying material parameters. The rolling force sensor supplies necessary data to a specific software tool, ensuring the flank diameter remains within a narrow range. This digital software tool makes the process **robust enough for mass production**, guaranteeing a perfect fit in assembly.





The Manufacturing Technologies Association (MTA) is dedicated to representing and promoting the interests of the UK's manufacturing technology sector. As a leading trade association, the MTA supports companies involved in designing, producing, and supplying advanced machinery, equipment, and intellectual property essential for creating everyday products and driving economic growth.

Key areas of focus include machine tools, cutting tools, metrology equipment, Additive Manufacturing (3D Printing), surface finishing, robotics, and CAD/CAM systems. The MTA is also at the forefront of the Fourth Industrial Revolution (Industry 4.0), integrating digital technologies that make manufacturing systems increasingly automated and adaptive.

In response to the evolving landscape of engineering-based manufacturing, the MTA has broadened its support network. This expansion includes the Engineering Industries Association (EIA) and Additive Manufacturing UK (AMUK), forming a distinctive alliance aimed at advancing excellence in the sector.

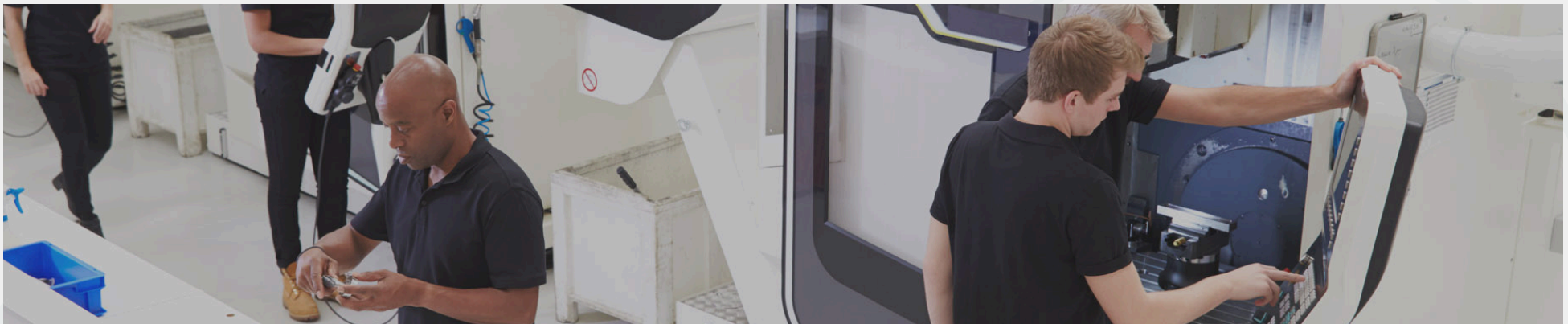
Together with MACH, the UK's premier manufacturing event, and the new Engineering Supply Chain Show, this cluster represents a unified effort to enhance the interests of UK manufacturers and foster new business opportunities.

### **CASE STUDY PRESENTED:**

✓ MTT

## MTT CASE STUDY

MTT are an independent machine tool maintenance company who have combined their wealth of engineering experience with the best research in data analytics to provide a modular solution for advanced asset management and predictive maintenance. Our combined Sensor Toolkit and true digital twin target the key failure modes for machines of any size.



## APPROACH & IMPLEMENTATION

The approach is underpinned by ISO-standard performance measurements, enhanced by continuous monitoring through the MTT Sensor Toolkit. This **independent system collects temperature, vibration and current data**, according to a client's needs. By capturing and analysing these parameters we can see how an asset changes over time and predict areas of concern. We then combine these findings with regular machine measurement to develop a geometric digital twin, this enables MTT through our analysis software to predict the machining outcome of the asset to single digit Micron levels. Throughout this case study MTT utilised both sensor tool kit and our analysis software to understand the machine's behaviour and how changes can affect productivity or indicate unplanned maintenance.

## RESULTS / IMPACT

The big successes of this project revolved around **data capture, data processing, 5G integration and communication with other systems**. MTT were able to capture data from a machine, process and send this across a 5G network. This data was assessed on a networked server and actionable insights sent back to the Toolkit. This data workflow opens possibilities for comprehensive production monitoring, predictive maintenance scheduling, and adaptive process control, underpinned by AI-driven insights gleaned from data across the industry. MTT's vision extends far beyond the confines of this project, aiming to embrace the paradigm shift towards intelligent, autonomous manufacturing ecosystems, with the ability to optimise and customise a manufacturing solution to a client's needs.

## LESSONS LEARNED

The primary takeaway from this project revolves around **effective data management**. This system can produce terabytes of data daily, posing the risk of overwhelming the network if not managed efficiently. Determining which data to retain and which anomalies warrant attention presents an ongoing challenge for the industry. MTT has demonstrated their ability to utilise digital technology to provide optimised solution. These efforts yield tangible benefits such as reduced product wastage and streamlined maintenance practices. Looking ahead, MTT aims to expand this product, seamlessly integrating machines, data processing, and AI across the industry. This vision paints a picture of future factories where optimisation and innovation converge to drive efficiency and productivity to new heights.



Swissmem is the leading association representing both small and medium-sized enterprises (SMEs) and major corporations within the Swiss technology industry. Established to support the needs of this diverse sector, Swissmem plays a critical role in fostering innovation, promoting international competitiveness, and ensuring sustainable economic growth.

Swissmem's mission is to strengthen the Swiss technology industry by providing member companies with a comprehensive range of services, including advocacy, training, networking opportunities, and access to cutting-edge research and development. The vision of Swissmem is to create a dynamic and competitive environment that allows its members to thrive on a global scale.

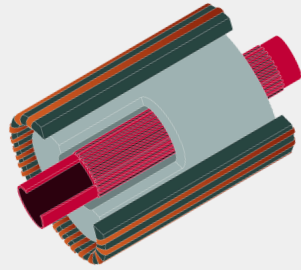
### **Key Services**

- **Advocacy and Representation:** Swissmem actively engages with governmental bodies and policy-makers to influence legislation and regulations in favor of the technology industry.
- **Training and Education:** Swissmem offers a wide array of training programs designed to enhance the skills and knowledge of the workforce.
- **Innovation and R&D Support:** The association facilitates access to research institutions and promotes collaborations that drive technological advancements.
- **Networking Opportunities:** Swissmem organizes events, conferences, and forums that allow members to network, share best practices, and explore potential collaborations.

### **CASE STUDY PRESENTED:**

✓ Agathon

# AGATHON



## AGATHON CASE STUDY

Agathon is a Swiss SME producing machine tools for precision grinding of indexable inserts. In the recent years, our global customer base is facing severe competition and scarcity of qualified labor. This drives the demand for enhanced autonomy of the production. A lot of innovation is going into our products to enable autonomous production.



## APPROACH / IMPLEMENTATION

The difficulty and complexity of autonomous grinding can be compared to the challenges in autonomous driving. Various subsystems must be developed and integrated to succeed in a complex environment. Today, no complete solution exists. Agathon iteratively investigated several fundamental aspects in research projects founded by the Swiss innovation agency Innosuisse. By **bringing together academic excellence with practical experience**, it was possible to push the limits of autonomy in the complex shopfloor environment.

The collaboration of Agathon R&D with researchers from ETH Zurich and inspire AG developed a grinding process which is sensitive to the actual grinding forces. This **enhances the autonomy and stability in the production** and is therefore **in operation in many production sites**.

## RESULTS / IMPACT

The **pracademic approach proved to be a key success factor**. By testing iterative development steps and lean solutions early in the market, we could learn and evolve alongside our customers. Today, we understand that autonomous production heavily depends on three pillars: automatic material flow, parallel flow of information, and autonomous process control. Advanced sensor technology is essential for obtaining real-time data, which must be processed using modern algorithms capable of handling the process's complexity. This is where AI comes into play on the factory floor. **Integrated sensors and novel algorithms** have been developed through several Innosuisse-funded projects and are now in the industrialization phase.



## LESSONS LEARNED

We embarked on our journey towards autonomous grinding in 2015. As it is typical for large and disruptive innovation efforts, the solution was not clear at the onset. In a first approach we ventured to directly automate the grinding process. This taught us the necessity of good and copious data, which triggered the development of a Machine-Cloud for fleet data collection.

Analyzing the data taught us, that before controlling a production process **we have to make sure that the production equipment is in a sound status**. Design thinking and agile development methods allowed us to steadily move forward in the face of challenges, and to stay close to the customers. As result oriented organization we learned how to successfully collaborate with our academic partners.



## UCIMU-SISTEMI PER PRODURRE

UCIMU-SISTEMI PER PRODURRE is the Italian association representing manufacturers of machine tools, robots, automation systems, and related products (including NC, tools, components, and accessories).

As the official voice of the sector, UCIMU-SISTEMI PER PRODURRE boasts over two hundred member companies, which collectively contribute to more than 70% of Italy's production in this field.

The association leverages the heritage and innovation of its member companies, exemplifying the excellence of the entire manufacturing chain. This, combined with the robust capabilities of its network, positions UCIMU as a pivotal entity within the Sistema Confindustria (General Confederation of Italian Industry).

### The Role of the Association

- Representation: UCIMU-SISTEMI PER PRODURRE serves as a global ambassador for advanced Italian technology, enhancing the international presence of the sector's companies in both established and emerging markets.
- Advocacy: The association actively engages with national, European, and international institutions to advocate for the interests of its member companies, ensuring their voices are heard on key industry issues.
- Support and Growth: UCIMU offers support to its members, including assistance in research and development, sales and marketing, promotion and communication, fostering growth and innovation across the sector.

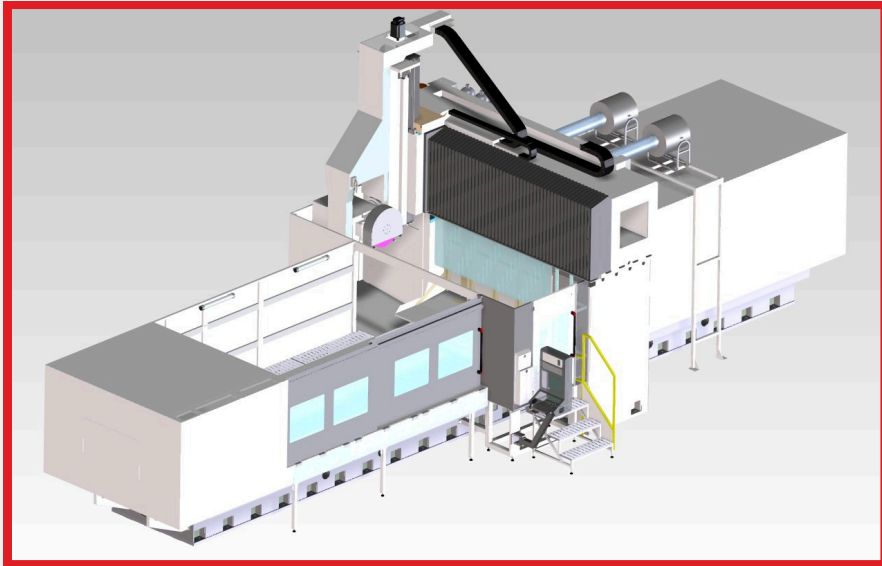
### CASE STUDIES PRESENTED:

- ✓ Rosa Ermando
- ✓ Ficep

## ROSA ERMANDO CASE STUDY

This project involved designing and manufacturing a double-column profile grinding machine with a linear motor for table movement. It was specifically created to grind large aerospace telescope components made of metal or silicon carbide, achieving a surface roughness of 0.4 Ra or better. Some components required precise interpolation between the table's longitudinal and vertical axes for accurate grinding.

In this project, the use of digital technologies was crucial, enhancing **precision, efficiency, and automation** through simulations, real-time monitoring, and data analytics.



## APPROACH & IMPLEMENTATION

Rosa Ermando usually uses hydraulics for their double-column machines, but for this project, a linear motor was chosen for the first time to enable accurate grinding of parabolic profiles. This posed challenges related to the machine's large mass and the motor's force. Replacing hydraulics with linear motors improved energy efficiency.

## A digital package was developed to:

- ✓ Detect the machine's instantaneous energy consumption.
- ✓ Create a historical consumption database.
- ✓ Optimize machine functions for energy efficiency.

This energy-saving system significantly reduced consumption, making production more sustainable.



## RESULTS / IMPACT

The result was a unique, large-sized, double-column machine, previously unavailable in the market. Rosa Ermando's experience with linear motors and F.E.M. engineering enabled the project to meet high customer expectations. The machine also features a universal grinding head with  $\pm 100$  degrees of automatic swiveling for versatile profile grinding.

Digital technologies improved accuracy, reduced lead times, and minimized waste, boosting the process's efficiency and cost-effectiveness.

## LESSONS LEARNED

This project highlighted the importance of **innovation and customer-focused solutions** in attracting investments. The success of this custom machine has sparked interest from other customers, showcasing Rosa Ermando's ability to adapt and scale similar projects. It demonstrated how a custom-built machine can become a successful model for mass customization.

## FICEP CASE STUDY



The MF series mechanical presses by Ficep are integrated solutions designed for steel forging and processing. Available in various models, the presses are primarily distinguished by their nominal force, which ranges from 2,500 to 50,000 kN. This innovative product includes a compact planetary gear system with a transverse flywheel shaft, replacing the traditional double torque reduction mechanism. This innovation ensures modularity and flexibility in various operations such as preforming, deburring, and stamping. Furthermore, Ficep offers a complete range of integrated systems that cover a broad array of industries, from automotive to medical sectors.



## APPROACH & IMPLEMENTATION

To enhance **productivity and operational flexibility**, Ficep's engineers redesigned the traditional Ram adjustment system. By moving the adjustment to the mold bed, they created a more robust mechanism that is easier to maintain. This design allows for seamless interchange between single-rod solutions for upstream and downstream processes and double-rod solutions for large-table stamping. The MF series is equipped with an inverter-driven asynchronous motor, allowing variation in available energy and stamping speed. Additionally, the integration of the digital twin technology in compliance with Industry 4.0 principles enables virtual prototyping, where the machine can be tested and controlled remotely, improving **performance validation**.

[WWW.FICEPGROUP.COM](http://WWW.FICEPGROUP.COM)

## RESULTS / IMPACT

The implementation of the MF series mechanical presses has positioned Ficep as a key player in providing **complete, functional, and efficient solutions**. These features are particularly valued in the automotive industry, where high production volumes and lean manufacturing paradigms are paramount. The new MF series complements Ficep's existing range of machines for hot cutting, hydraulic preforming presses, and screw presses, creating fully automated forging plants that deliver high productivity and flexibility



## LESSONS LEARNED

Ficep's proactive approach to market demands has demonstrated the value of integrated systems and advanced technologies like digital twins in **enhancing production efficiency**. The ability to simplify complex mechanisms, such as the kinematics of traditional presses, and introduce modular, energy-efficient designs has led to improved performance, reduced maintenance costs, and increased adaptability across various industries. This case highlights the importance of **continuous innovation** in meeting the evolving needs of global manufacturing sectors.



**Technology Industries  
of Finland**



Technology Industries of Finland is the lobbying organization for technology industry companies. It promotes competitiveness and the operational preconditions for the technology industry, the largest and most important export sector in Finland. A constantly developing technology industry creates the basis for the Finnish welfare state. Technology Industries of Finland represents about 1,800 member companies.

Technology Industries of Finland safeguards its members' interests in national and EU-level decision-making. It has a presence in numerous international organizations and helps members negotiate company-level (collective) agreements (for national collective agreements, see Technology Industry Employers of Finland). The association provides information on the technology industry and promotes its public image.

The association offers advice and consultation. It refines and distributes information to support its members' businesses, provides training and advice on employment issues, and raises awareness of the technology sector. It arranges networking opportunities, acts on behalf of member organizations, and cooperates with different stakeholders.

TIF is committed to Finland's goal of climate neutrality by 2035. By making the green transition good business and by ensuring that our technological handprint has more impact, we pursue a sustainable world where humans' activities are in balance with the planet's ecological capacity.

### **CASE STUDY PRESENTED:**

✓ **Fastems**



## FASTEMS CASE STUDY: RODIN MACHINING

Rodin Machining is a Dutch contract manufacturer of machined parts, offering a revolutionary AI-based online portal for part orders. A unique flexible manufacturing system (FMS) by Fastems manages their production, enabling efficient and flexible high-mix milling and turning in one system – with minimal human intervention.



## APPROACH & IMPLEMENTATION

The system is based on a central storage and production management via Fastems' MMS control. Milling and turning happen on two sides of the system.

### Milling with two 5-axis milling machines, two robots and a small buffer:

- ✓ Auto-loading robot attaches raw materials to universal fixtures, which are then delivered by the second robot to a small buffer and finally to the machine table.
- ✓ The second robot, delivering the zero-point plates, also replaces worn-out tools via the machine magazines.

### Turning with two multi-tasking lathes, served by a robot:

- ✓ Robot changes turning machine set-ups and replaces worn-out tools via the machine magazines.
- ✓ Set-up changes happen automatically by changing the chuck jaws. The uses different grippers for workpieces, tools and chuck jaw change.

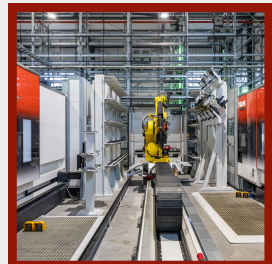
## RESULTS / IMPACT

Delivered in the summer of 2023, the system shows that **digital business models such as an online part ordering portal need the right automation technology to deliver value.** The system enables high automation rate in high-mix manufacturing, creating a unique combination of flexibility and efficiency.

Rodin Machining explains "We have to have human interaction while creating the CAM file, loading/unloading the system and also pre-setting the cutting tools, but more than 90% of the process is automated. We are about creating a steady high-mix flow that will run 24/7 unmanned. While a typical CNC machine runs 1500 to 2000 hours a year, the FASTEMS logo says '8760' referring to the yearly hours – and that is where we want to be with our spindle hours."

## LESSONS LEARNED

Great results are the result of a **vision, determination and great partnerships.** The entrepreneurs of Rodin explain: "We wanted to create an autonomous factory without people and only robots. Everyone told us that it wasn't possible, but **we wanted to stretch the bounds of what was possible.** So, we started gathering a group of leading suppliers like Fastems in CNC automation and asked them searching questions. Along the way, we were met with a lot of 'you can't do that', 'that is not possible' and 'it's always been done like that'. Our team and our partners agreed that every time we heard those negative phrases, the perpetrator would have to buy the drinks. A lot of people bought beers – which usually yielded solutions, and we managed to change the mindset and have the project delivered."





# AGORIA



Founded in 1946 as Fabrimetal, the Federation of Enterprises in the Metal Industry, Agoria's origins are rooted in the principles of the Federation of Manufacturers, which was established in 1906. At its height, Fabrimetal represented 1,200 enterprises within the metalworking, electrical construction, and plastics processing industries.

On 9 November 2000, Fabrimetal officially rebranded as Agoria to reflect the organization's broader vision, which had expanded beyond the metal industry to support companies in emerging sectors such as ICT. Today, Agoria represents more than 2,000 technology companies from the manufacturing, digital, and telecommunications sectors, of which 70% are small and medium-sized enterprises (SMEs). This makes Agoria the largest federation within the Federation of Belgian Enterprises.

Agoria operates with a team of around 200 employees across offices in Brussels, Antwerp, Ghent, Liège, and Charleroi. It also operates Sirris, its dedicated technology center, which helps companies integrate new technologies into their products, processes, and business models.

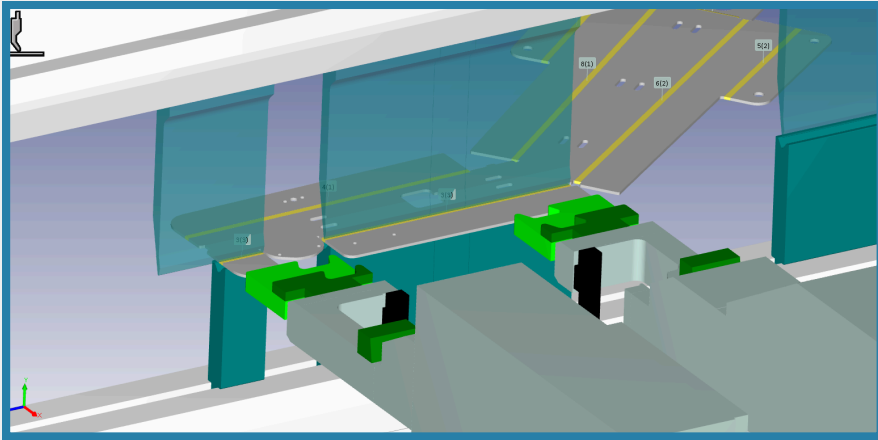
Belgian technology companies, represented by Agoria, lead the country in terms of added value (€39 billion in 2019) and economic growth (11.5% since 2015). In 2019, the sector achieved a turnover of €132 billion, with investments surpassing €4 billion.

## CASE STUDY PRESENTED:

✓ LVD

## LVD CASE STUDY

An industrial flatbed trailer manufacturer sought to improve the production flow in their bending department. Their goal was to decrease lead times and to increase machine efficiency through digitisation of the manufacturing process without adding machinery or operators.



## APPROACH & IMPLEMENTATION

### Step 1 – Efficiency measured

A benchmark of current processes was established to measure efficiency gain. Onboard OPC-UA was used to evaluate machine usage. Results showed that more than 50% of the operator's time was spent programming at the machine, which meant throughput suffered.

### Step 2 – LVD CADMAN® software suite implemented

- CADMAN-SDI, Smart Drawing Importer, to help engineers check designs for errors and manufacturability
- CADMAN-B, CAM software, to automatically create bending programs and 3D simulations, improve efficiency and reduce errors caused by programming at the machine
- CADMAN-JOB, MES, for a “mission control” overview of manufacturing – to schedule, monitor, and log the production flow

### Step 3 – Connect to ERP

Digital communication was established between the CADMAN software and the company's upstream ERP system used to capture the job details (quantity, due date, operations needed). This provided connection to a centralized database for data sharing.

## RESULTS / IMPACT

The manufacturer reported an increase in throughput of more than 300%, shortened lead times and reduced errors because of enhanced digitalisation of the process flow. Significant improvements included:

- ✓ Pre-production engineering completed using CADMAN-SDI and CADMAN-B
- ✓ Elimination of programming “at the machine”
- ✓ Smarter bending solutions for low batch size, high mix complex parts using CADMAN-B
- ✓ Optimised “art to part” process for all parts using CADMAN-JOB
- ✓ Maximised planning accuracy through the feedback of digital production data from the CADMAN database to ERP

## LESSONS LEARNED

A significant challenge in this case was the **change of culture** needed on the shop floor and the **acceptance of a digitalised solution**. To help overcome this, the company included shop floor personnel in the decision-making process to identify and emphasize benefits of the digitalisation to all employees. Shop floor personnel were provided **in-depth training** on LVD's CADMAN software products so that they could incorporate their years of practical experience into a more effective digitalised process.

An unexpected benefit of using CADMAN-SDI: By providing the length, thickness, and required bending force for each part, the company can use this information to add capacity where/as needed, allowing this manufacturer to make intelligent decisions for future machine investments.

