cogniman

COGNIMAN

COGNitive Industries
for smart MANufacturing

Welcome!

The EU project COGNIMAN aims at establishing innovative AI-powered robotic systems creating the above values and making manufacturing more effective, efficient and flexible with a sustainable development. A partnership between sixteen partners from seven countries are collaborating on the novel concept of "digital cognitive smart manufacturing". COGNIMAN stands for "COGNitive Industries for smart MANufacturing".

Follow us on LinkedIn and stay updated on our activities if you are interested in

- making your manufacturing processes more flexible and efficient.
- boosting your profits by increasing your effectiveness in operations and maintenance.
- improving your warehouse efficiency by automatising its processes.
- reducing waste and increasing production yield by enabling advanced prevention capabilities.
- improving welfare at work by automation and robotisation of dirty and heavy manual work and upskilling of employees.
- enhancing safety in automated and robotised work environment by establishing protective measures for staff and infrastructure.

Our impact

Improved workers' conditions

Sustainable manufacturing

Increased efficiency

More flexible manufacturing

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COGNIMAN

Discover a concept that fuses technologies such as simulations, digital twins, advanced sensors, machine learning and cognitive robotics. Our goal? To shape a manufacturing landscape that's agile, safe and sustainable.

Learn more about the potential for enhanced flexibility, resilience and efficiency. This approach not only enhances the European technology and manufacturing sector's global competitiveness but also contributes to a greener, more environmentally conscious future.

Join us on this transformative journey towards innovation and industrial leadership. Welcome to the era of digital cognitive smart manufacturing.

Ethics

Collaborative robotics and the responsible use of artificial intelligence have an ethical dimension to them, which the partners of COGNIMAN are very much aware of. To ensure the ethical implementation of the solutions developed, a dedicated team regularly monitors and conducts surveys on site to gather the sentiments of the workers on the shop floor.

Facts and figures

48
months project from Jan 2023 to Dec 2026

16
project partners from 7 EU countries

11
million Euro budget amount

Defect detection in fibreglass production

Challenge

In glass fibre manufacturing, fibre breaks disrupt the production process causing defects and waste. Swiftly detecting and addressing these breaks is challenging, but crucial.

Objectives

The COGNIMAN project aims at detecting breaks early, classifying them automatically and analysing parameters to predict failures.

Solution

COGNIMAN creates a system with a blend of sensors and machine learning that automatically identifies breaks, empowering operators to respond promptly, ensuring seamless operations and heightened productivity.

Impact

Predicting breaks before they occur minimises downtime, curbs waste and saves resources. Reduced defects and waste translate to a smaller environmental footprint. Moreover, recycling glass waste becomes more efficient.

Use case owner

3B-the fibreglass company is a provider of glass fibre to cater to the needs of the automotive, wind sectors and performance composites.

www.3b-fibreglass.com

Precision machining for deburring of large metal parts

Challenge

Deburring is an integral part of metal manufacturing. The unwanted material called burrs needs to be removed, often manually. This lacks efficiency and can hold risks for the operators. Collaborative robotic deburring offers a promising solution.

Objectives

The COGNIMAN project aims at creating an advanced robot for deburring of large metal parts, which safely works alongside humans and learns autonomously.

Solution

COGNIMAN's innovation is an AI-powered deburring robot. Through cutting-edge sensors and machine learning, it learns and adapts, while a digital twin boosts optimisation. Navigation and guidance ensure precise operations.

Impact

COGNIMAN transforms deburring from a manual work with variable outcome to reproducible results from a collaborative robot. A smart robot collaborating seamlessly enhances efficiency and quality, at the same time freeing operators' time for other tasks.

Use case owner

GOIMEK specialises in precision machining, adeptly handling material procurement, metal forming and treatments.

www.goimek.com/en

Additive manufacturing for medical implants

Challenge

In the additive manufacturing of orthopaedic implants, complex geometries pose challenges in both printing and post-processing. Determining orientation, where supporting material is required, as well as post-processing and polishing are critical to producing a high-quality implant. Presently, this process relies heavily on manual operations. Additionally, there are potential hazards for operators.

Objectives

The COGNIMAN project aims to develop a solution to semi-automate the entire process chain from design to finishing and inspection.

Solution

Simulation and intelligent design will minimise support material. An AI-driven collaborative robot system developed by COGNIMAN will remove supporting materials and perform surface finishing of the implant regardless of its shape and size. Algorithms will ensure seamless and safe human-robot interaction.

Impact

This solution will increase productivity and decrease costs for medical device manufacturing. Moreover, it will increase the system's capability to handle a wide variety of designs, also for patient-specific implants, whilst minimising potential risks to the operators. Instead of performing repetitive tasks, workers can be upskilled in additive manufacturing, increasing skills and resilience.

Use case owner

Croom Medical offers contract manufacturing services for orthopaedic implants.

www.croommedical.com

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Flexible manufacturing – Digital library for batches

Challenge

The logistics process of a steel manufacturer lacks overview: a large amount of products that come in a great variety is produced and stored in a big space, leading to inefficiencies and delays. Typically valid solutions like Radio Frequency Identification (RFID) cannot be applied due to the products being made from metal.

Objectives

The COGNIMAN project aims at developing a complete digital overview, employing drones for batch identification, enhancing efficiency and safety. Vehicle-based sensors will detect issues, automate inventory and refine processes.

Solution

COGNIMAN creates a dynamic system connecting data servers, streamlining product flow. Automation streamlines storage management, transforming data for quick product identification.

Impact

This digital library delivers instant access to the inventory enabling the manufacturer to see exactly which product is stored in what batch sizes at which location, thus increasing efficiency as well as use of resources ie., time, space, labour.

Use case owner

Acciaierie Bertoli Safau S.p.A (ABS) manufactures steel products for diverse industries.

www.absacciai.com/en

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Project partners

NORCE

ITAINNOVA

IDEKO

SINTEF

deepblue

GOIMEK

ALDAKIN

CROOM MEDICAL

montimage

EYDE CLUSTER

eit Manufacturing
Co-funded by the
European Union

MANUFACTURING THE FUTURE

ABS

IBM

3B the fibreglass company

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