CONVERGING

Welcome to the 2nd issue of the CONVERGING Newsletter!

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We are pleased to announce the publication of the second issue of the **CONVERGING** newsletter. If you are interested in industrial collaborative environments integrating AI, Big Data and Robotics with wide applicability in manufacturing environments, you are at the right place!

CONVERGING project by bringing together 16 high-profile partners from several EU and Asian countries aims to develop, deploy, validate, and promote smart and reconfigurable production systems including multiple autonomous agents (collaborative robots, AGVs, humans) that are able to act in diverse production environments.

STAY TUNED

Stay updated on all our latest news, developments, research, and general information regarding the **CONVERGING** project.

Stay tuned@ **https://www.converging-project.eu/**

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PROJECT OVERVIEW

Global economic crises and the COVID-19 pandemic have dictated manufacturing firms to rethink their production and business models. Production systems need to adopt both human and automated resources that can work together seamlessly. As a response, **CONVERGING** aims to Develop, deploy, validate and promote smart and reconfigurable production systems including multiple autonomous agents (collaborative robots, AGVs, humans) that are able to act in diverse production environments.

The diversifying factors will be a multi-level AI-based cognition (line, station, resource levels) which will exploit the collective perception (Digital Pipeline) of these resources, allowing them to interact with each other and seamlessly coexist with humans under a "social industrial environment" that ensures trustful, safe and inclusive user experience.

The project proposes the development of systems that can:

1. **Perceive:** The ability to identify and understand processes, resources, and environments and their status through the use of Big Data, Real Time Integration & Communication Architecture, Digital Twins and Human in the Loop techniques.
2. **Reason:** Analyze the production system status and independently form plans using AI, Planning and Reconfiguration Algorithms as well as Resource Autonomy solutions.
3. **Adapt:** Automatically modify hardware and control systems to implement formulated plans using Robotics and Autonomous Systems, Smart Devices and Adaptable Mechatronics.
4. **Collaborate:** Work seamlessly with humans or other resources, creating a social industrial environment which exploits Smart Human Machine Collaboration, User experience assessment and User centric workplace design.
5. **Innovate:** Expand its capabilities and Openness via an Open Pilot Network as well as links to local and international innovation ecosystems.

MEET THE CONVERGING USES CASES

Below, you will explore the core use cases of the CONVERGING project. Join us, as we delve into the details of how this initiative is reshaping industries through collaboration between humans and robots. A transformation that will reshape industries and define the future.

FORD Use Case: Streamlining Stamping Plant Operations

The automotive industry demands precision at every turn, and CONVERGING is here to deliver. FORD use case tackles the challenges faced in the Stamping plant, where car panels take shape. Traditionally, this process required intensive manual labor, posing ergonomic risks and leaving little room for error. But CONVERGING has a vision: introducing AI-empowered collaborative robots to handle repetitive sanding procedures. This shift allows our skilled human operators to focus on visual quality inspection, enhancing efficiency, and performance while reducing ergonomic risks. It's a win-win, ensuring that every Ford car meets the strictest quality standards.

## ELUX Use Case: Elevating Appliance Manufacturing to New Heights

Electrolux Rothenburg, one of the world's premier appliance factories, produces millions of ovens and hobs each year, blending manual and automatic assembly tasks. CONVERGING brings innovation to the forefront by targeting the hobs' manufacturing line. Here, human-dual arm humanoid robots take center stage. These robots work collaboratively with human operators to assemble components, guaranteeing precise and reliable connections. With AI monitoring assembly, the result is unparalleled efficiency and quality assurance. Electrolux and CONVERGING are rewriting the playbook for appliance manufacturing.
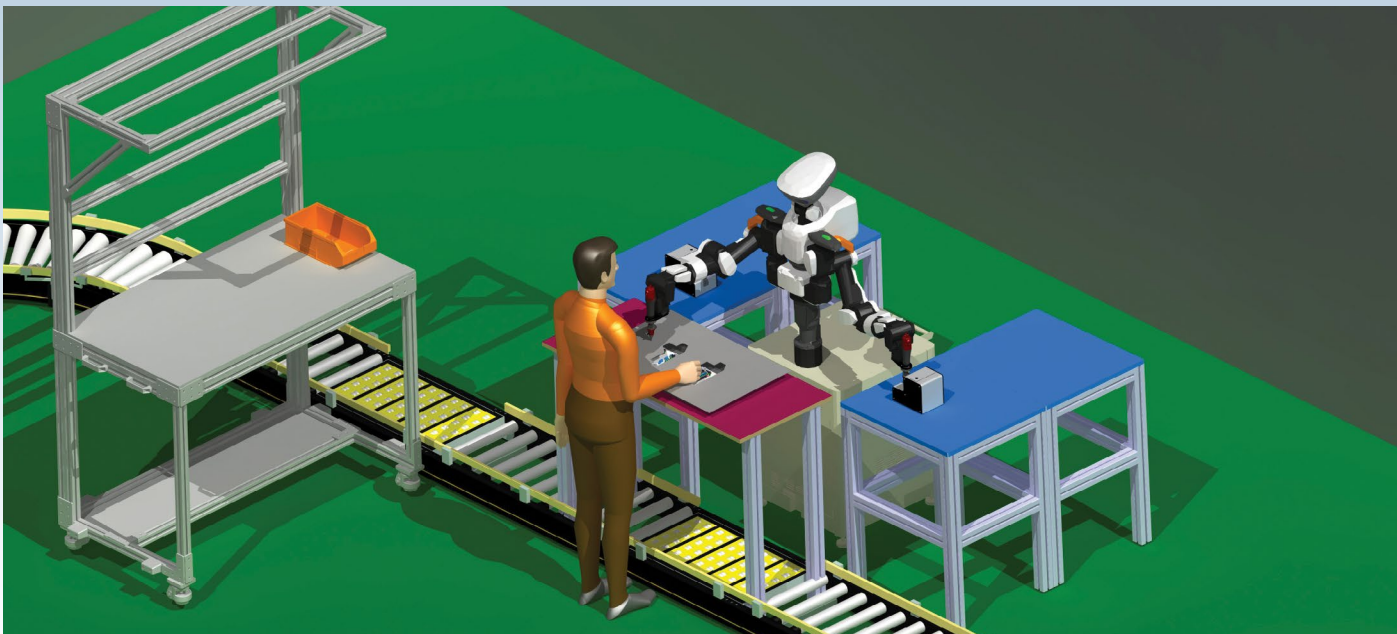
## IAI Use Case: Improving Aircraft Fuel Tank Maintenance

Aircraft fuel tank maintenance is a complex endeavor, filled with challenges like limited access, ergonomic risks, and safety concerns. CONVERGING introduces a game-changing solution: a smart collaborative robot system designed to inspect and perform maintenance tasks inside fuel tanks. Equipped with advanced AI and vision sensors, these robots detect damages and suggest efficient repair solutions. This innovation reduces risks for technicians and shortens maintenance cycle times, ensuring aircraft safety and operational efficiency.
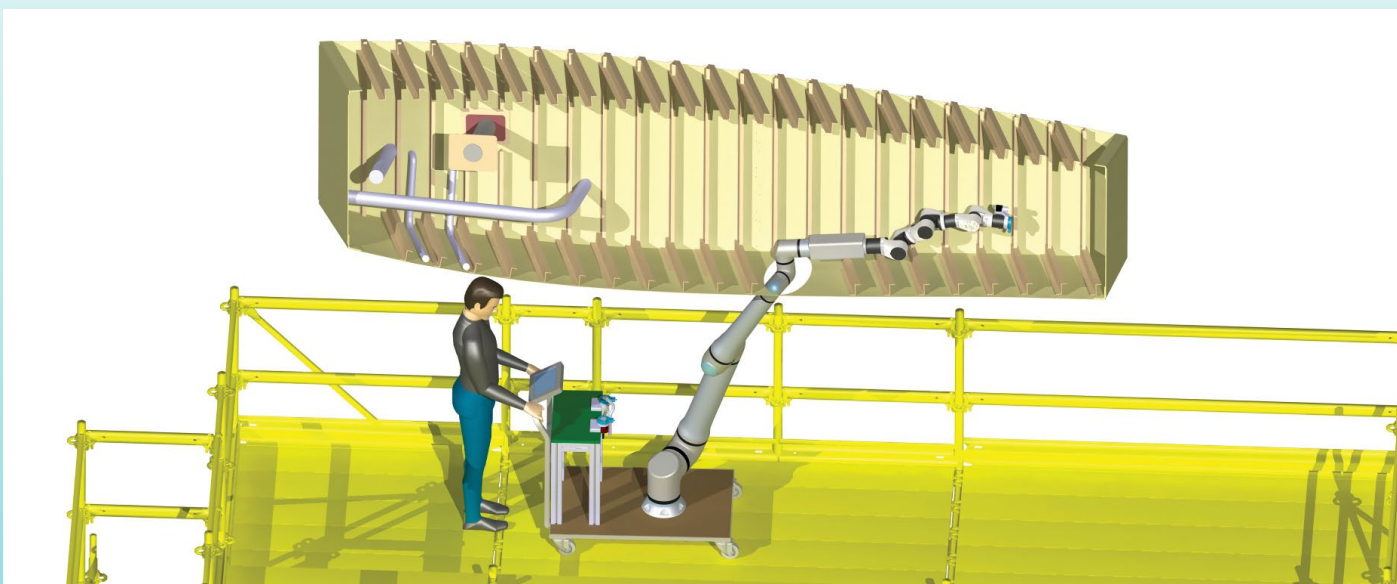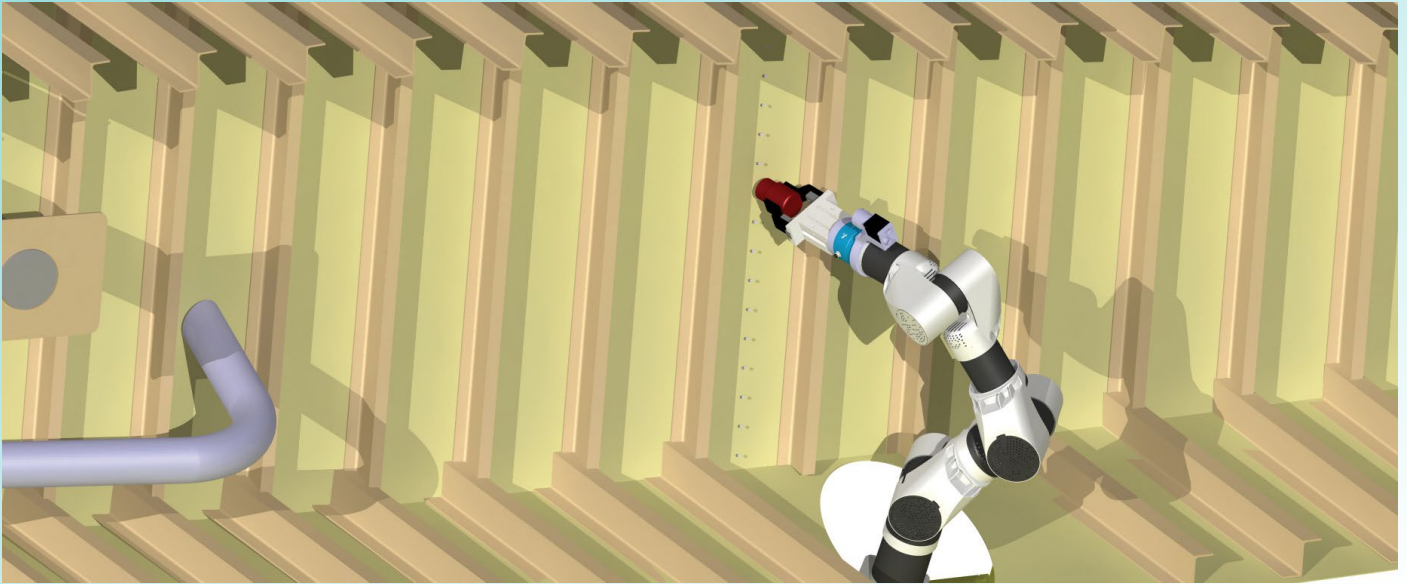
PRIMA Use Case: Enhancing Additive Manufacturing Post-Processing

Additive manufacturing is known for its complexity and the need for post-processing, such as support removal. CONVERGING responds to this challenge with HRC and AI technologies that work seamlessly with operators. Robots assist in post-processing tasks, enhancing precision and reducing the variability in surface finishing. This innovative approach streamlines additive manufacturing, increasing efficiency and product quality.
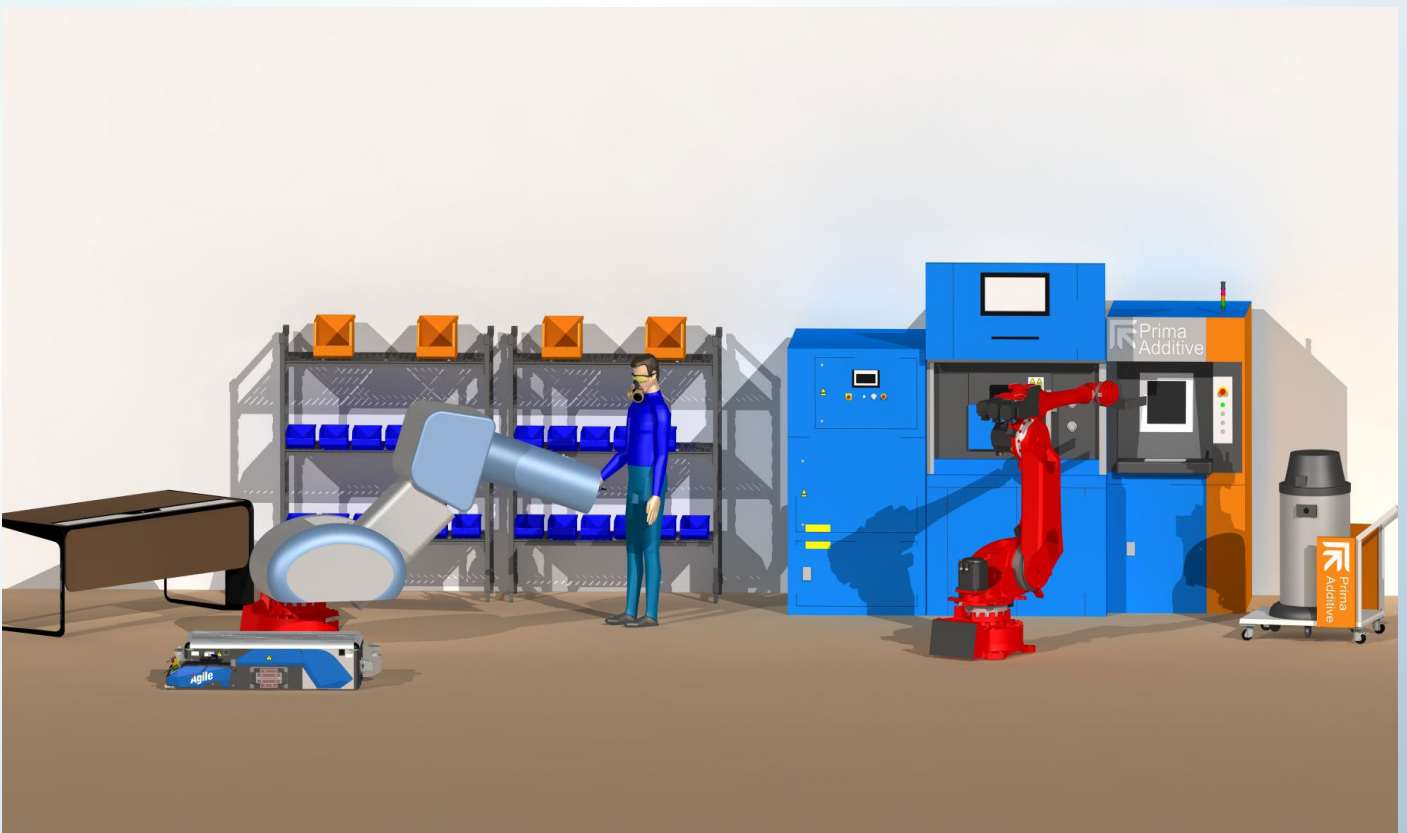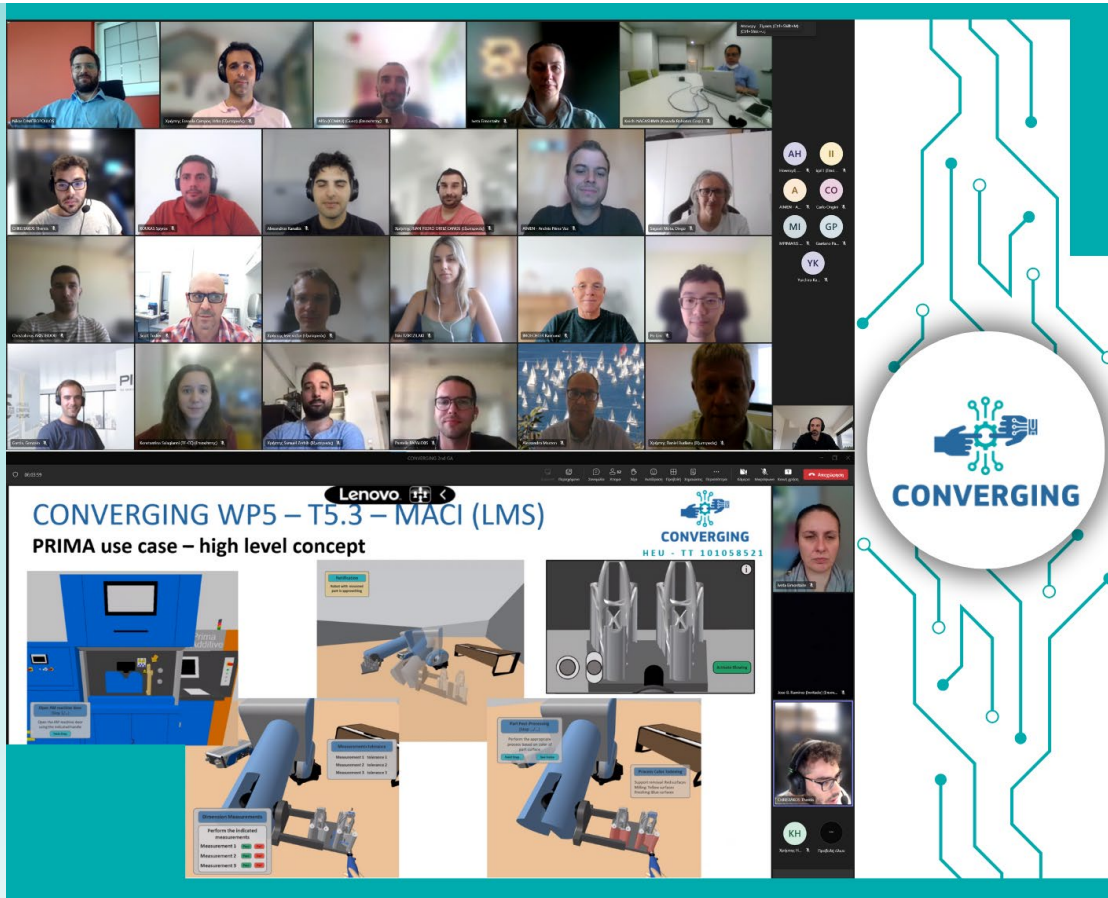
The **2nd GA Meeting** of the CONVERGING project took place virtually June 18th. The meeting brought together the members of the consortium since our last meeting in Pordenone, Italy in April.

Read more

The **first General Assembly meeting** of the CONVERGING project was held in Turin, Italy, on April 4th, 2023. The meeting was hosted by **Prima Additive**, one of the project partners, at their premises.

Read more

10TH WORKSHOP ON HYBRID PRODUCTION SYSTEMS

15 MARCH 2023
13:55-17:15 CET

The **HPS Cluster** together with the CONVERGING project co-organized on March 15th, the **10th Workshop on Hybrid Production Systems** where interested parties had the opportunity to discover these key Horizon Europe projects.

Read more

A GLIMPSE INTO CONVERGING BLOG POST

Delve into our Blog Post Section, and be informed about the latest news, landscape of HRC in industry, challenges, innovation, and opportunities.

- **Flexible** Robot Planning for Human-Robot Interaction
- **Bridging** The Skills Gap for Successful Human-Robot Collaboration In Industry 4.0: A Literature Review And Expert Validation Study
- **Industrial** Pilots Towards Digital Transformation
- **Digital** Pipeline for Data Orchestration and Reconfigurable Production Systems
- **Passenger** To Freighter Conversion
- **ScanNPlan:** Powerful and Easy-To-Use Tool for Automation

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The EU-funded **CONVERGING** project brings together
16 high-profile partners from several EU and Asian countries
consisting of 5 research organizations and 11 industrial partners.

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