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iMOCO4.E



KEY FACTS

Acronym: IMOCO4.E Full name: Intelligent Motion Control under Industry4.E Coordinating institution: Sioux Technologies B.V. Project coordinator: Arend-Jan Beltman GA No.: 101007311 - H2020-ECSEL-2020-2-RIA Start date: 1st September 2021 Duration: 36 months Consortium: 46 Partners from 13 countries

Project Mission and Objectives

The mission of the IMOCO4.E project is to provide distributed edge-to-cloud motion control intelligence for a wide range of Human-inthe-Loop Cyber-Physical Systems involving actively controlled moving elements.

IMOCO4.E will deliver a reference platform consisting of AI and digital twin toolchains and a set of mating building blocks for resilient manufacturing applications IMOCO4.E improves Industry 4.0 manufacturing productivity by:

- Combining and exploiting novel sensory information, model-based Industrial approaches and IoT philosophies to make mechatronic systems smarter, more configurable, more reliable and faster while simultaneously pushing their performance toward physical limits
- Assessing the demands placed on future smart manufacturing in Europe from a mechatronics and serviceoriented point of view
- Establishing joint action of Industry 4.E and other relevant Lighthouse projects towards the identification and development of best practices and methods enhancing the European R&D ecosystem

The IMOCO4.E platform's benefits will be verified in applications for semiconductor, packaging, industrial robotics and healthcare. The project will demonstrate the results in other generic "motion-control centred" domains affecting the entire value chain of the production automation and application markets.

Highlights

Mission & Objectives: P1

IMOCO4.E CASES: P2

Participation in Events: P3

IMOCO4.E Team: P3

IMOCO4.E CASES

Five pilots will demonstrate IMOCO4.E functionality on machinery

Pilot 1: 3D printing An industrial-grade 3D filament printer with automated material handling and thermal conditioning Lead: Sioux, NL

Pilot 2: Semiconductor production A high-speed and high accuracy die bonding platform and semiconductor production line Lead: ITEC B.V., NL Pilot 3: High speed packaging In-line filling & stoppering machine, Tea bag machine for cotton thread knot technology Lead: CRIT, IT Pilot 4: Healthcare robotics X-ray intervention medical manipulator Lead: Philips Medical Systems, NL Pilot 5: Mining / tunneling robotic boom manipulator Lead: Normet, FI











Four demonstrators will show functionality of the IMOCO4.E platform within an existing industrial production line

Demo 1: Shaver blades High precision cold forming of complex 3D metal parts Lead: Philips Consumer Lifestyle, NL

Demo 2: Plastic molding Smart Sensoring on injected molded plastic parts Lead: Edilásio, PT



Demo 3: Warehouse logistics Autonomous intra-logistic transportation Lead: Still, DE





Demo 4: Cosmetics production Vision-based (AI) pick & place robotics for randomly arranged and differently shaped bottles Lead: Madara Cosmetics, LV



Four use cases will demonstrate IMOCO4.E functionality on commercial off the shelf generic motion control hardware and commercial robotic platforms

Use case 1: Industrial drive for smart mechatronics applications Lead: Gefran, IT

Use case 2: CNC for integrated machine tool and robot control Lead: Fagor Aotek, ES, and Tekniker, ES.





Use case 3: Tactile Robot Teleoperation Lead: Tyndall National Institute, IE

Use case 4: Advanced and Intuitive robot control and programming control Lead: Brno University of Technology, CZ





SEMICON Europa 2021 / November 16–19, 2021

With the aim to share project's innovation goals and vision on the future of resilient Industry 4.0 manufacturing in Europe, the 'Edge-to-Cloud Intelligence for Resilient Manufacturing – The IMOCO4.E Initiative' project session highlighted the objectives of IMOCO4.E and the expected impact of the project on the European economy and leadership in key industrial technologies. Emphasizing key concepts of the project, the session speaker Mr Sajid Mohamed from ITEC (Figure 1) captivated the audience's attention by focusing on the project's key concepts of Artificial Intelligence and digital twins, as well as model-based approaches and Industrial IoT philosophies enabling mechatronic systems to become smarter, more configurable, more reliable, while simultaneously pushing their performance toward physical limits.



Figure 1: Edge-to-Cloud Intelligence for Resilient Manufacturing – The IMOCO4.E Initiative' session kick off



Figure 2: IMOCO4.E dissemination at the EU Digital Future Forum

EFECS 2021 / November 23-25, 2021

As one of the key innovation initiatives for electronic components and systems, IMOCO4.E was featured as a virtual exhibitor at the *European Forum for Electronic Component and Systems (EFECS 2021)*, positioning itself as a key initiative shaping the future of Industry 4.0 manufacturing in Europe among attending global audiences and projects part of the EU R&D ecosystem. The IMOCO4.E virtual exhibition booth (*Figure 3*) underpinned the innovation and uptake potential of the project. With more than 60 visitors, the booth featured digital materials such as flyers and banners, presenting in a visual, comprehensive way information about the project.





www.imoco4e.eu

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