Joint press release of the partners in the European SemI40 research project:

Presseinformation

Innovation boost for "learning factory": European research project "SemI40" generates path-breaking findings

Villach, 10 December 2019 – Scientists and researchers have been conducting intensive research into the further development of autonomous factories in the framework of the European "SemI40" project (Power Semiconductor and Electronics Manufacturing 4.0). Under the leadership of Infineon Austria, 37 partners from science and industry have made decisive progress in the development of processes and methods for Industry 4.0 applications over the past three project years. The result: a unique security concept for networked communication of factories, a quality leap in the production process, plus significant improvements in energy efficiency.

Machinery, plant, equipment, logistics and products communicate and cooperate across the globe and across the entire value chain. The aim is to make production more intelligent, faster, more efficient and more flexible. "Digitization is the economic driver for the innovative clout and competitiveness of European industry", says Sabine Herlitschka, CEO of Infineon Austria. "We are pooling the strategic skills of all partners across national borders in cooperative research schemes, and through our cooperation and with findings such as those generated by the 'SemI40' project, we strengthen the global position of Europe as a production location."

The research focus of SemI40 was on intelligent production and cyber-physical production systems in order to advance them by means of enhanced data processing and communication methods. With its Industry 4.0 pilot space in Villach, Infineon provides the ideal conditions for testing these new processes and methods in real operation.

Unique concept for secure data traffic between networked factories

One of the outcomes of the project is a novel concept for the secure remote control of production equipment. What makes this concept so special is the fact that it facilitates the simple use of a wide range of devices and also integrates older systems for which no modern IT features have so far been available. This ensures secure communication between globally networked systems with the most

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diverse features and interfaces. The innovative security concept led to a new product that is of the highest interest to all consortium partners.

Smart production: higher quality and less energy consumption
Deep Learning methods were used in quality control to make automated and self-controlling error detection possible. The system detects quality deviations in ongoing production and in real time by identifying defect patterns it has memorized. Using big data approaches, the researchers have also been able to identify the causes of defects earlier and provide a lasting improvement of production quality.

Not only do factories learn continuously, they also need to be flexible and energy-efficient. The combination of real operating data with virtual data led to a noteworthy optimization of the entire cooling system – one of the biggest power consumers in semiconductor production. The algorithms developed simulate the various load options (summer vs winter, day vs night) to operate the cooling system with the lowest possible energy input. The result: energy savings of around 13 percent. The networked and learning factory thus contributes significantly to making production not only smarter, but also greener.

Industry 4.0 and the workplaces of the future
The European project also made an important contribution to developing the workplaces of the future. Various assessment models were used to analyze the technical, business and social changes that Industry 4.0 entails for jobs in production. The focus in all of this was on training and qualification measures.

The fundamental findings from Semi40 have already triggered subsequent research. The iDev40 project (Integrated Development 4.0) kicked off in mid-2018 and launched further research into artificial intelligence and further training and qualification of staff.

European research team from science and industry
SemI40 was a three-year cooperative research project (2016 – 2019) with participants from research institutions, SMEs and international companies. The project budget of the 37 partners from five countries was EUR 62 million, financed by investments from industry and funding from the individual countries and the ECSEL Joint Undertaking program (Electronic Components and Systems for European Leadership).

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Link: www.semi40.eu

About Infineon Austria
Infineon Technologies Austria AG is a group subsidiary of Infineon Technologies AG, a world-leading provider of semiconductor solutions that make life easier, safer and greener. Microelectronics from Infineon reduce the energy consumption of consumer electronics, domestic appliances and industrial facilities. They make a major contribution to the convenience, security and sustainability of vehicles, and enable secure transactions in the Internet of Things.

Besides Germany, Infineon Austria is the only subsidiary within the group that pools competencies for research and development, production as well as global business responsibility. The head office is in Villach, with further branches in Graz, Klagenfurt, Linz and Vienna. With 4,609 employees from around 68 countries (including 1,977 in research and development), in the financial year 2019 (ending in September) the company achieved a turnover of € 3.1 billion. An R&D expense rate of €525 million makes Infineon Austria one of the strongest industrial research companies in Austria.

Further information at www.infineon.com/austria

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