



## Press Release

### **CHARM – Würth Elektronik develops robust electronics for harsh industrial environments**

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**In June 2020, Würth Elektronik started the EU project CHARM together with 36 European partners. The goal of the ECSEL JU project CHARM is to develop industrial IoT solutions that have an improved tolerance to harsh industrial environments. The digitisation of European manufacturing industries is key to their continued renewal and competitiveness. Harsh environmental conditions in manufacturing processes and in the end-user environment can slow down the opportunities that IoT (Internet of Things) and AI (Artificial Intelligence) present. The CHARM project is designed to solve this challenge.**

CHARM (Challenging Environment Tolerant Smart Systems for IoT and AI) runs over a period of three years and is a comprehensive project with 37 partners from ten European and a total budget of 29 million euros. Co-financing is provided by the European research programme ECSEL JU, EU Horizon 2020, national funding agencies of the participating countries and the project partners. The partners come from Austria, Belgium, the Czech Republic, Finland, Germany, Italy, Latvia, the Netherlands, Poland, and Switzerland.

The CHARM project develops technologies for condition monitoring, predictive maintenance, automation, real-time production control, and optimisation and demonstration systems for virtual prototyping systems and tests them in industrial environments. “The CHARM project will contribute to strengthening the competitiveness of European industry in the market for robust electronic components and systems, the immediate availability of which is also essential for other markets (smart systems, embedded systems, cyber physical systems) in the industrial sector,” explained Dr.

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Alina Schreivogel, member of the Research and Development Department at Würth Elektronik Circuit Board Technology (CBT).

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ECS technology (electronics, components and systems) must be designed to withstand the combination of severe thermal, mechanical and chemical stresses that occur during industrial manufacturing processes. The CHARM project will demonstrate solutions for condition monitoring, predictive maintenance and quality assurance in real time for six use cases.

The people responsible for CHARM use cases come from six different production areas: Mining (Sandvik Mining and Construction Oy, Finland), paper production (Valmet Technologies Inc., Finland), mechanical engineering (Tornos SA, Switzerland), production of solar modules (Applied Materials Italia SRL, Italy), maintenance and decommissioning of nuclear power plants (ÚJV Řež, a.s., Czech Republic) and professional digital printing (Canon Production Printing Netherlands BV, Netherlands). The project consortium consists of 11 small and medium-sized enterprises, 14 large companies and 12 research and technology companies. They represent the industrial value chain, ranging from simulations, sensors and components to packaging, integration and reliability as well as connectivity, cloud and cyber security solutions.

The project will develop sensors e.g. for gas detection, high temperatures and high pressures, advanced image processing systems for real-time quality control and autonomous devices for industrial applications. To ensure that the sensors withstand such harsh conditions, packaging technologies for electronic components are used that go beyond the current state of technological progress. The IoT systems will also include new solutions for wireless power transmission, connectivity and cybersecurity.

“As part of the project CHARM, Würth Elektronik will focus on the development of packaging and interconnection technology for rugged



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assemblies at the PCB level with integrated sensors,” said Dr. Alina Schreivogel. “At the same time, we are also aiming to extensively miniaturize sensor modules with high functionality. Our expert knowledge of PCB-based sensors and innovation approaches for flexible film systems allows us to support our project partners conceptually, technologically, but also from the point of view of the end user.”

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Valmet, the world's leading developer and supplier of technology, automation, and services for the pulp, paper, and energy industries, is acting as project coordinator for CHARM. Spinverse, the Nordic innovation consulting company, coordinated the project application process and the establishment of the consortium and was also selected by the partners to support the project planning and administration as well as the management and moderation during the project.

### **About Würth Elektronik Circuit Board Technology**

*Founded in 1971, Würth Elektronik Circuit Board Technology is today Europe's leading PCB manufacturer, with national and international sales teams, 1,100 employees, 4,000 customers and an annual turnover in the triple digit million range. Production takes place at three German plants as well as with qualified partners in Asia. Whether basic or high-end technologies, customer-specific requirements are met from prototypes and samples to medium and large series. With the development of innovative product technologies, the company qualifies as a pioneer in the market.*

*Experts from the most diverse divisions provide intensive consultation and support, from the initial idea to the finished product and beyond. Würth Elektronik Circuit Board Technology sees itself as a reliable partner for both individual entrepreneurs and large corporations. The comprehensive portfolio is rounded off by an [online shop](#), where PCBs can be ordered around the clock.*

*Würth Elektronik. More than you expect!*

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### **About ECSEL JU**

The European research programme “Electronic Components and Systems for European Leadership” (ECSEL) was established by the Council of the European Union in June of 2014. The ECSEL joint project promotes public-private partnerships in the field of electronic components and systems, as well as research, development and innovation projects for cutting-edge research in key technology segments that are essential for Europe's leading position in the competitive digital economy. The ECSEL joint project promotes and co-finances industry in Europe, SMEs (small and medium-sized enterprises) and research and technology companies from 30 ECSEL participating states and the European Union. Learn more about the programme here: [ECSEL JU programme](#)

### **Project partner**

Project coordinator: Valmet Technologies Inc.

aixACCT Systems, Applied Materials Italia, AT&S Austria Technologie & Systemtechnik, Beneq, Besi Austria GmbH, Besi Netherlands B.V., Canon Production Printing Netherlands B.V., Consorzio Nazionale Interuniversitario per la Nanoelettronica, CSEM Centre Suisse d'Electronique et de Microtechnique, Delft University of Technology, E+E Elektronik Ges.m.b.H., Fraunhofer Institute for Reliability and Microintegration IZM, Imec Netherlands, InnoSenT GmbH, ŁUKASIEWICZ - Instytut Technologii Elektronowej, Lapland University of Applied Sciences, Luna Geber Engineering, Materials Center Leoben Forschung GmbH (MCL), NOME, Pac Tech Packaging Technologies GmbH, Qplox Engineering, Quantavis, Reden, Riga Technical University, SAF Tehnika, Sandvik, SmartMotion, SSH Communications, Sylvac SA, Tampere University, Technische

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