

# To the Media

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## **Platform-ZERO aims to reach zero defect manufacturing for the photovoltaic industry**

### **The ZSW contributes with advanced PV technologies and industrial pilot lines facilities**

**The Platform-ZERO project, starting this month, aims to improve the overall production quality of photovoltaic devices, and at the same time to lower fabrication costs, through zero defect manufacturing. This will be achieved by applying in-line process monitoring, control and artificial intelligence strategies, and implemented in four different pilot plants in four different countries. The ZSW contributes to the project with its strong know-how in advanced PV technologies and with industrial pilot lines facilities to validate concepts based on high efficiency CIGS devices.**

Solar photovoltaic (PV) already provides an important contribution to the European energy mix (3.1 percent of EU-28 gross electricity generation in 2020), and solar energy has the potential to meet 20 percent of the EU electricity demand in 2040. The latest generation of PV technologies combine high performance with a strong flexibility for integration in buildings, vehicles, agrivoltaics and internet-of-things devices. However, their high-complexity makes them prone to the appearance of critical defects with just small deviations from standard manufacturing conditions, leading to significant production waste.

Platform-ZERO addresses this challenge by developing a new customizable in-line process monitoring platform, supported by artificial intelligence, for achieving zero-defect manufacturing in the third generation PV industry to allow an early detection, correction and/or prevention of pre-critical production faults. The strategy will be tested in four pilot plants from PV and PV-related industrial partners in Spain, Germany, Austria and Poland. The pilots are devoted to smart coatings for PV,

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high-efficiency solar modules and flexible solar foils of different photovoltaic materials and processes.

“We are excited to coordinate this ambitious project which combines the expertise of partners from 6 European countries with a strong background in advanced characterization of complex materials and process monitoring methodologies, including leaders at the European level in the production of third generation PV devices” said Dr. Victor Izquierdo, scientific researcher at IREC, and coordinator of the Platform-ZERO project.

The photovoltaic materials and devices within this project will not be based on standard silicon, but on the so-called third generation PV technologies. These materials, like CIGS or perovskites, offer higher efficiency, lower costs, lower carbon footprint, and high customizability for advanced integrated applications that can offer additional functionalities compared to standard silicon. Additionally, they are well suited to manufacturing with high levels of automation and industry 4.0 approaches.

Within the next four years, this 10M€ innovation project co-funded by the European Commission will contribute to increasing the overall quality and reducing the cost of high-tech PV devices, increasing the competitiveness of EU's PV industry and allowing this green technology to become a key energy source for Europe's transition towards climate-neutral energy generation.

***A multidisciplinary team formed by experts from both academia and industry***

The project has a total budget above 10M€ and will run for 4 years. The consortium is formed by 12 European partners and is coordinated by Victor Izquierdo, from the Solar Energy Materials and Systems group at IREC (Catalonia Institute for Energy Research). This includes

four research centers and one university with a strong knowledge in the development of spectroscopic methodologies (IREC, HZB), imaging (AIT), device optoelectronic assessment (UPO), AI analysis (AIT, IREC, RISC) and data management (RISC). Additionally, the consortium includes two research centers with strong know-how in advanced PV technologies and with industrial pilot lines facilities to validate concepts (two demo-sites) based on high efficiency CIGS devices (ZSW) and smart nano-based surface processes and coatings (Lurederra). Finally, the consortium is complemented by a metrology SMEs with strong knowhow in the implementation of industrial process monitoring applications (LENZ) and by two third-generation PV manufacturing SMEs (SUNPLUGGED and SAULE), both providing their production lines for demonstrating the Platform-ZERO technology (two demo-sites). Additionally, two other SME partners, R2M Solution France and R2M Solution SRL Italy, are in charge of dissemination, exploitation and communication actions.

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A ZSW researcher in front of the CIS4 coating plant

Photo: ZSW

#### **About the ZSW**

The Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (Centre for Solar Energy and Hydrogen Research Baden-Württemberg, ZSW) is one of the leading institutes for applied research in the areas of photovoltaics, renewable fuels, battery technology, fuel cells and energy system analysis. There are currently around 300 scientists, engineers and technicians employed at ZSW's three locations in Stuttgart, Ulm and Widderstall. In addition, there are 100 research and student assistants.

#### **Media contacts ZSW**

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