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Green Deal for Europe

The Fraunhofer-Gesellschaft and the VSB – Technical University of Ostrava start German-Czech research collaboration for sustainable production

In the scope of a future-oriented collaboration in the field of industrial production, the Fraunhofer-Gesellschaft is cooperating with the VSB – Technical University of Ostrava (VSB-TUO). The partners research and develop the potential offered by energy management technologies, artificial intelligence (AI) and intelligent production in industry. The collaboration provides production companies with innovative solutions, which they can in turn use to develop innovative and sustainable solutions for reducing greenhouse gas emissions.

This builds on over five years of successful collaboration between the Fraunhofer Institute for Machine Tools and Forming Technology IWU, the Fraunhofer Institute for Chemical Technology ICT and the VSB – Technical University of Ostrava (VSB-TUO). The ambitious venture “Fraunhofer Innovation Platform for Applied Artificial Intelligence for Materials & Manufacturing at VSB – Technical University of Ostrava FIP-AI@VSB-TUO” commenced operation on June 1, 2021. The opening ceremony was held on June 8, 2021 on the Campus of VSB-TUO in Ostrava, and was attended by the partner institutions and the Czech Minister for Trade and Industry, Karel Havlíček.

The cooperation’s objective is to research and develop innovative thermal energy storage systems in industry on the basis of modular concepts for energy storage and heat recovery systems. They link this approach with solutions for digital production technologies and integration in process chains. Advanced and highly-specialized AI applications are a decisive factor in every step along this process. On this basis, the partners are creating a broad portfolio of research and development offerings for companies and partners in industry. This puts industry in a position to improve their energy balance and reduce CO₂ emission while simultaneously improving production.

Bundling of competencies

In this ambitious initiative, the partners each contribute their own expertise: VSB-TUO in the areas of artificial intelligence and next generation computing, Fraunhofer ICT in

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materials research and energy systems and Fraunhofer IWU in manufacturing technology and production. The bundling of these competencies enables the partners to offer particularly powerful solutions for the entire industrial value chain.

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“The Fraunhofer-Gesellschaft has been an important and valued partner for VSB – Technical University of Ostrava for many years. I am very pleased that this partnership will become even stronger and even more productive through the establishment of the first Fraunhofer Innovation Platform in the Czech Republic,” says Václav Snášel, rector of the university.

Supporting the Green Deal in Europe

Prof. Reimund Neugebauer, president of Fraunhofer-Gesellschaft, says: “In times of climate change, we need ambitious research-based solutions that industry and business can use to effectively reduce CO₂ emissions while strengthening competitiveness. Our cooperation with the VSB – Technical University of Ostrava and the Czech Republic sets a strong example in Europe. Across countries, we combine expertise in key technologies such as artificial intelligence, next-generation computing, energy management and manufacturing. Together we create an attractive research and development offer for companies and support them in implementing trailblazing solutions for smart and sustainable manufacturing processes. This is the basis for the creation of value chains based on ethical principles. The partnership between the Czech Republic and Germany thus also makes a contribution to the Green Deal of the EU.”

Fraunhofer IWU’s director, Prof. Martin Dix, further states: “It is a win-win situation that the cross-border cooperation between the three partners will be further intensified in the future. Together with VSB-TUO, we provide new potential for manufacturing companies. By bringing together production engineering know-how and excellence in the field of information technology, the highly specialized production process chains of the future can be simulated and controlled. This can reduce CO₂ and costs, increase productivity and eliminate sources of error. This will certainly bring the three of us a big step forward – and also our industrial partners.”

“This cooperation is truly unique,” explains Vladislav Kolarik, the project leader at Fraunhofer ICT. “This is the first Fraunhofer Innovation Platform in the Czech Republic, and the combination of disciplines will unlock significant technological potential for all of the partners involved.”

The FIP-AI@VSB-TUO provides companies with these concrete services:

- Technology developments
- Control solutions
- Material developments
- Demonstrator developments
- Development of holistic solutions with the involvement of other specialist departments
- Detailed solutions and optimization

Good for small and medium-sized companies

The FIP-AI@VSB-TUO works with clients from industry and the public sector. Especially small and medium-sized companies without their own R&D department, or companies with a different R&D focus, can benefit from the cooperation and know-how transfer. The services offered to industrial partners in Germany and the Czech Republic as well as other partners from Europe are based on the long-standing experience of the three partners, and are enhanced to a new level by the application of AI.

In addition, the FIP-AI@VSB-TUO aims to strengthen the university's research activities and application orientation, and thus to support regional companies through high-end research. It offers these companies possibilities to collaborate on international projects (e.g. Horizon Europe), rapid market access in the partner regions and networking with German companies in joint research.

Career opportunities for young scientists

An additional benefit is the enhanced career prospects of German and Czech students, Ph.D. candidates or early stage researchers, who will all be able to complete internships in the partner country. A regular exchange of both students and staff fosters joint research and innovation and creates initiatives for new projects.

The FIP-AI@VSB-TUO is managed by a team consisting of one representative from each partner institution. The Managing Director is Michaela Vráželová, who is also the current Head of the University International Office from VSB-TUO. Two Deputy Directors, Dieter Weise (Fraunhofer IWU) und Vladislav Kolarik (Fraunhofer ICT), represent the two Fraunhofer Institutes and coordinate the activities of the FIP-AI@VSB-TUO's mirror group based at their home institutes to ensure a smooth start of the collaboration.

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Fraunhofer Innovation Platform FIP

A Fraunhofer Innovation Platform FIP is a temporary Fraunhofer-like research unit hosted and operated by a university or a non-commercial research organization abroad, in close collaboration with one or more Fraunhofer Institutes in Germany. The FIP's initial term is limited to a period of five years. The FIP program fosters a collaborative approach to valorize, transfer and commercialize scientific research output. To this end, the Fraunhofer Institute and its international partner organization develop a joint strategy as well as a unique business proposition by synergistically combining their complementary competencies.

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Picture 1: The inauguration of the “Fraunhofer Innovation Platform for Applied Artificial Intelligence for Materials & Manufacturing at VSB – Technical University of Ostrava” took place on June 8, 2021 at the VSB-TUO campus in Ostrava

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