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## Innovative Modular Process Makes Plastic Film Coating Highly Efficient

**The multiTask joint project funded by the Saxon Ministry of Science and Fine Arts (SMWK) and the European Fund for Regional Development (EFRE) was successfully completed. Scientists at the Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP, ISA Installations-, Steuerungs- und Automatisierungs GmbH and VTD Vakuumtechnik Dresden GmbH laid down the foundations of a new vacuum coating process for plastic films.**

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and the Free State of Saxony.  
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Plastic films serve many purposes in everyday life. They are used for packaging food, as substrates for flexible solar cells, even as decorative films for furniture. To meet the requirements of various applications, films must be processed and coated.

There are several different procedures for the vacuum coating of plastic films that are suitable for specific cases of application, but there are also challenges, such as with coating larger film surfaces. Electron beam evaporation is a very complex and therefore expensive process that requires a significant investment; the boat evaporation ("Schiffchenbedampfung") process mainly involves the evaporation of aluminium and sputtering is time-consuming.

The multiTask project lays the foundation for an innovative, modular and highly flexible vacuum coating process. "The innovation of this coating process resides in its tremendous flexibility," explained Steffen Straach, Project Head of the "Flexible Products" Division at Fraunhofer FEP. "In addition to aluminium, many other materials, such as copper, silver and oxides, can be applied on any film width."

The process can also be used as a plasma-supported procedure. The high coating rates and automated operations greatly increase the overall process. The groundwork carried out by the project partner ISA led to the design of a special power supply adapted for the process, which played a significant role in the success of the project.

As a result of the work carried out under the project, the groundwork had been laid for the partners to develop customized technologies, bring new products to the market or optimize existing processes.

FRAUNHOFER INSTITUTE FOR ORGANIC ELECTRONICS, ELECTRON BEAM AND PLASMA TECHNOLOGY FEP

“We are pleased to be able to take advantage of a new process platform for joint development projects,” says Dr. Nicolas Schiller, Division director of “Flexible Products” at Fraunhofer FEP.

The project partners would like to thank the Free State of Saxony and the European Union for their funding of the project.

**Fraunhofer FEP**

[www.fep.fraunhofer.de](http://www.fep.fraunhofer.de)

**ISA Installations-, Steuerungs- und Automatisierungs GmbH**

[www.isa-electric.de](http://www.isa-electric.de)

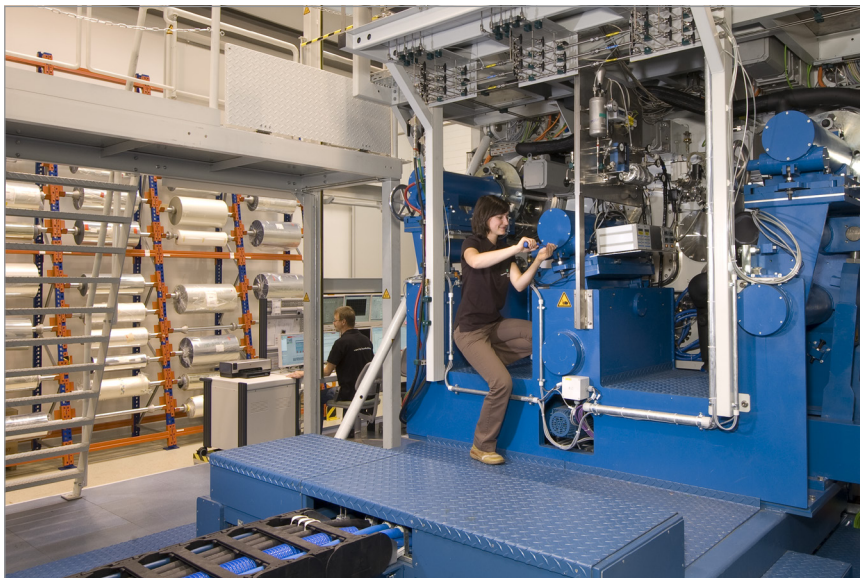
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**Pilot plant for the vacuum coating of plastic film in roll-to-roll mode. Existing processing lines such as these or industrial facilities can be refitted for the innovative process.**

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The **Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP** works on innovative solutions in the fields of vacuum coating, surface treatment as well as organic semiconductors. The core competences electron beam technology, sputtering and plasma-activated deposition, high-rate PECVD as well as technologies for the organic electronics and IC/system design provide a basis for these activities. Thus, Fraunhofer FEP offers a wide range of possibilities for research, development and pilot production, especially for the processing, sterilization, structuring and refining of surfaces as well as OLED microdisplays, organic and inorganic sensors, optical filters and flexible OLED lighting. Our aim is to seize the innovation potential of the electron beam, plasma technology and organic electronics for new production processes and devices and to make it available for our customers. COMEDD (Center for Organics, Materials and Electronic Devices Dresden) with all known activities in organic electronics is now acting as a new business unit at Fraunhofer FEP, Dresden, Germany.