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

coFlex® 600

ROLL-TO-ROLL PILOT SPUTTER ROLL COATER

Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP

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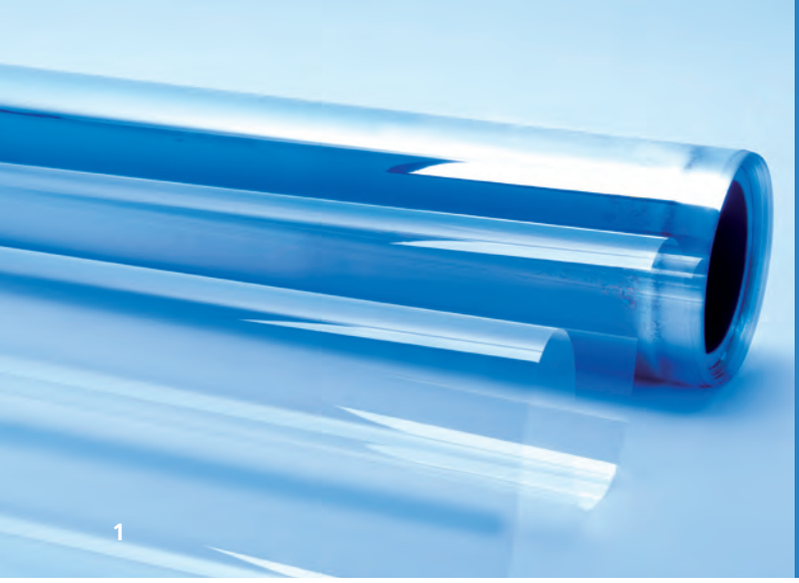
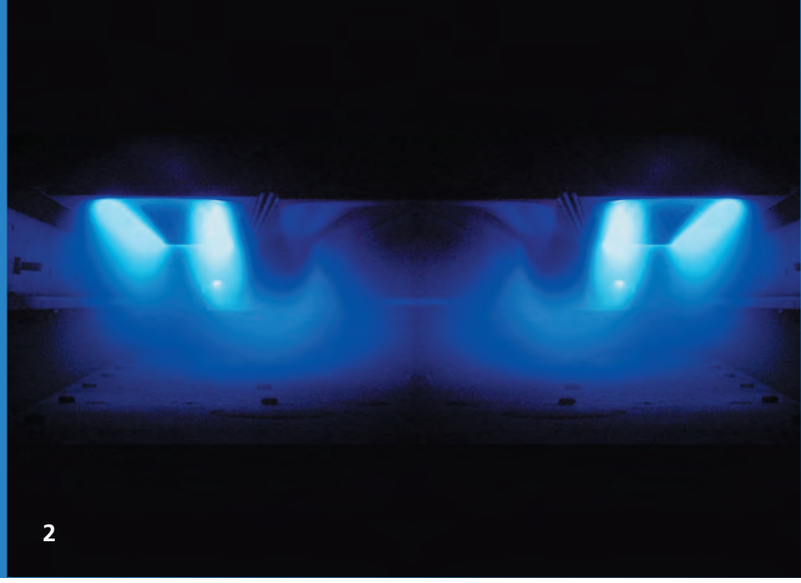
The surface refinement of polymer films and other flexible substrates by applying thin coatings allows these materials to be used in a wide range of products. Vacuum based roll-to-roll plants allow coatings to be efficiently applied at favorable cost.

The *coFlex® 600* vacuum web coating plant can be used to deposit optical, electrical, and decorative layers on substrates via sputtering techniques and magnetron PECVD processes. line speed of up to 100 meters per minute can be achieved.
Potential applications for the coated materials are numerous. Optical layer systems are, for example, used for UV mirrors and as infrared-reflecting heat protection layers. Electromagnetic decoupling layers (EMI layers) and transparent conducting layers are used for displays. Flexible solar cells require front and back contacts or transparent conducting layers which are applied to polymer films.

The *coFlex® 600* has a pretreatment unit, optical in-situ measuring units, and several coating chambers. Thus, at Fraunhofer FEP we have available a total system for the development and pilot production of multilayer systems under near-real production conditions.

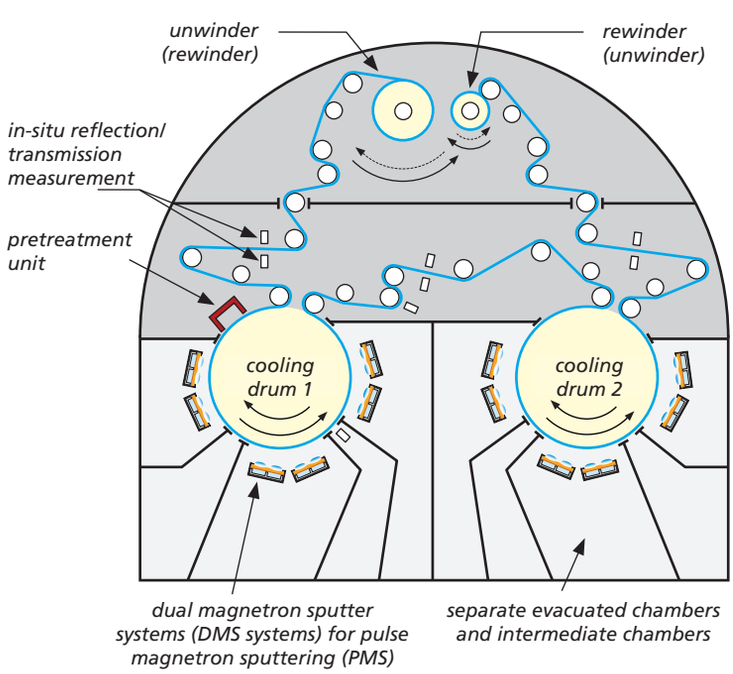




Technical specifications

deposition width	600 mm
web width	650 mm
web thickness	7 ... 200 µm
max. external diameter	400 mm
web speed	0.1 ... 100 m/min
process modules	▪ dual magnetron sputter systems (DMS systems) ▪ single magnetron sputter systems (SMS systems) ▪ ion source
coating material	metals, TiO_2, SiO_2, Nb_2O_5, ITO, ZAO, SnO_2, HfO_2, WO_3, TiN, Si_3N_4, ZrO_2, ...
in-situ monitoring	▪ optical transmission and reflection ▪ electrical resistance

Schematic representation of the *coFlex® 600*



Technology

- pulse magnetron sputtering:
  - dual magnetron sputtering
  - unipolar magnetron sputtering
- DC sputtering
- magnetron PECVD
- in-line pretreatment

Our offer

- development of technologies for coating polymer films and other flexible materials and development of plasma pretreatment processes
- development of layer systems (optical, electrical, and decorative functional layers, barrier layers)
- development and testing of key components
- sample provision for testing and marketing purposes, and pilot production
- studies on the efficiency of coating processes

Management System ISO 9001:2008
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1 *Coated roll of polymer film*

2 *Pulse magnetron sputtering (PMS)*