PAPER CONVERTING AND PACKAGING TECHNOLOGY
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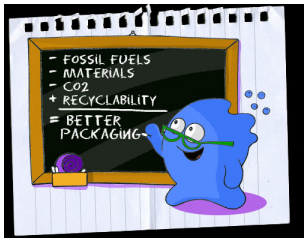
The research group offers research and teaching on paper, paperboard and polymer processing, converting and packaging technology, materials (wood-, fibre- and plastic-based) and products. R&D is focused on (co)extrusion coating, laminating, dispersion coating, wet and melt spinning and their applications. The development challenges of today include high-barrier and thin coatings, materials from renewable resources and sustainable packaging materials. The unique R2R pilot line provides tailored surface treatment and coating possibilities. Well-equipped laboratory has modern analytical methods for characterizing the essential properties of packaging materials. The unit has scientific collaboration with other universities, research institutes as well as paper, paperboard and polymer manufacturers and converters and packaging industry. For the industry, there are several opportunities for cooperation varying from academic theses to contract research (e.g. trials, measurements) and small and large-scale projects.

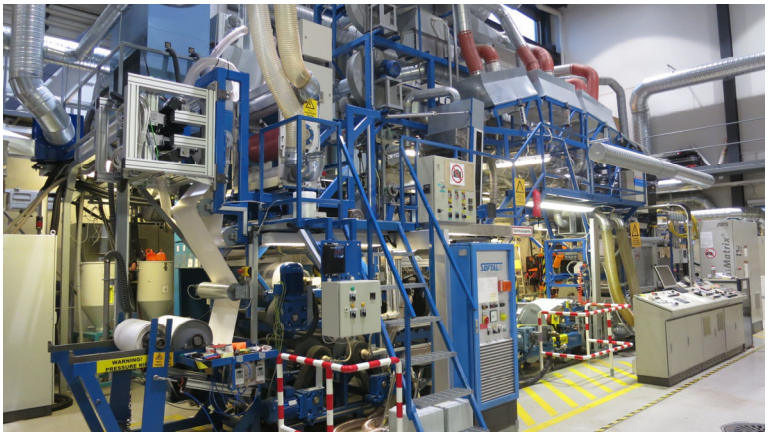
Objectives of R&D:

- Improve processing and handling
- Enhance barrier and other material and end-use properties
- Develop sustainable processing methods and materials



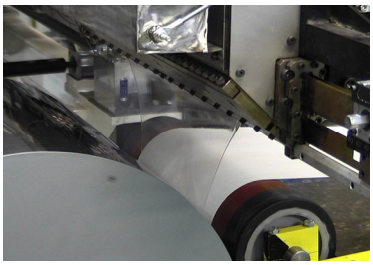
Versatile roll-to-roll pilot line:

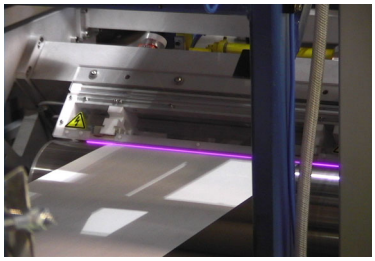
- (co)Extrusion coating and lamination
- Cast film (co)extrusion
- 4 extruders and 5-layer technology with encapsulation possibility to produce multilayer structures
- Dispersion coating
- Coatings, treatments and functionalisation of surfaces, *e.g.* corona, flame, plasma, IR, UV, LFS
- Max. line speed ~400 m/min, max. web width 550 mm

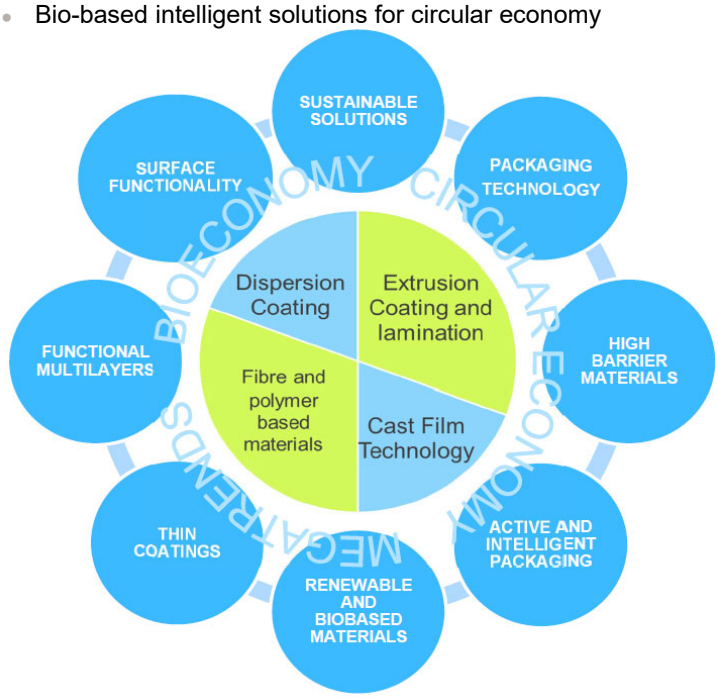


Current/recent R&D projects deal with:

- High-barrier co-extruded coatings and films
- High-barrier paper and paperboard packages
- Biodegradable and bio-based coatings and materials
- Multilayer (barrier) materials and structures
- Wood-based materials (*e.g.* lignin, nanocellulose and MFC) for various applications
- Surface functionalization of plastic films and fiber-based materials and their coatings
- Thin coatings and surface modification based on different techniques (ALD, Atomic Layer Deposition; LFS, Liquid Flame Spray; Atmospheric Plasma Deposition)
- Barrier dispersion coating
- Bio-based intelligent solutions for circular economy

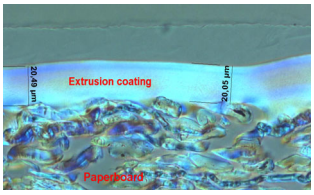






Analytics including *e.g.*

- Permeability (barrier): WVTR, O_2TR, CO_2TR, HVTR, grease
- Sealing: hot bar, hot air, ultrasonic
- Strength and adhesion properties
- Microscopic and surface analysis



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