



Hueck Folien

OPEN INNOVATION ECOSYSTEM  
FOR SUSTAINABLE  
NANO-FUNCTIONALIZED  
PLASTIC & PAPER  
SURFACES & MEMBRANE



Hueck Folien Use Case

# Biobased optical films

Context

Objective:

*Introduce bio-based/bio-degradable or recycled substrates and bio-based resins in optical films.*

Optical tamper-evident features on packaging are used to protect food and pharmaceutical products. Premium lamination films are used for the decoration of interior design. Both products are manufactured using synthetic (non-degradable) resins on plastic films. Thus, this application case shows the implementation of existing roller-based technologies for high throughput large area fabrication of optical films onto bio-based/bio-degradable or recycled substrates. The use of bio-based/bio-degradable resins will further improve compostability of valuable polymer material. This is accompanied by full LCA, recyclability and bio-degradable studies.

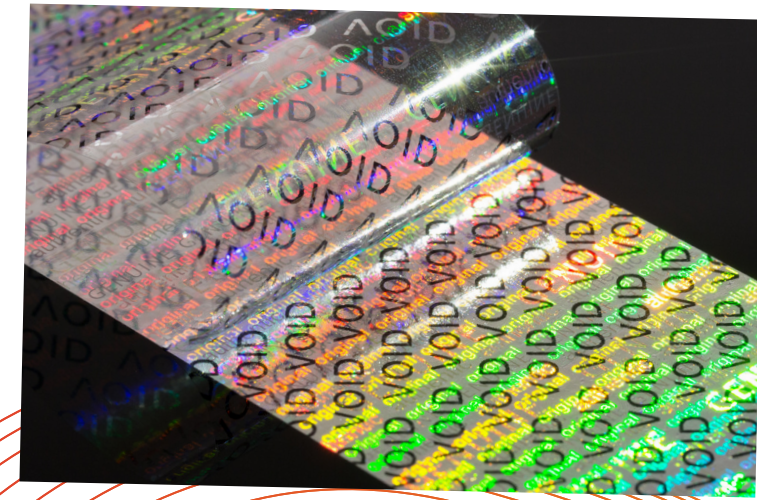
Our ambition

- High throughput large area fabrication and continuous quality control of optical layers onto recycled or bio-based substrates accompanied with full LCA;
- Formulation of bio-based resins maintaining their biocompatibility as well as printability and their applicability at production speeds;
- Development of fully industry-compostable/biodegradable optical films;



## Intermediate Results

- Formulation of a UV-resin based on epoxidized soy bean oil acrylate (ESBOA) by partner Joanneum Research;
- Manufacturing of optical film at HUECK FOLIEN based on recycled or bio-based substrate with bio-based UV resin and additional coating layers also based on sustainable materials in cooperation with Fraunhofer FEP;
- Accompanied evaluation of recyclability and biodegradability of the new sustainable films by partner IPC;
- Accompanied LCA modelling performed by IPC of different alternatives shows that it is not possible to conclude that one solution is 100% better than the others, even though the film with r-PET substrate seems to be the best alternative;



*HUECK FOLIEN  
optical variable  
feature imprinted  
into bio-based resin  
on a cellulose-based  
film substrate*



*Lamination  
films by  
HUECK Folien*



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