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

FLEX FUNCTION 2 SUSTAIN

Fiat Research Center Use Case

Multifunctional plastic surfaces in automotive

Objective:

Development of display cover lens with touch functions, high quality optical output (antireflection, anti-glare, anti-fingerprint) and high mechanical-chemical robustness using sustainable materials.

Context

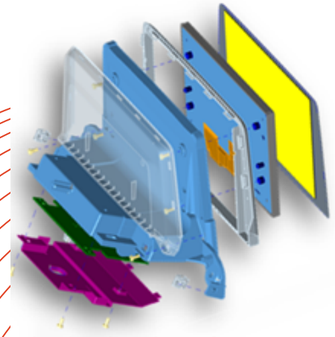
Touch surfaces of car infotainment and entertainment display need to be combined with both electronics functions and optical clarity and scratch resistance / anti-fingerprint properties. On current components, anti-scratch surfaces are limited in the market to high-gloss effects. The introduction of optical functions as anti-reflection, anti-glare, anti-fingerprint is still challenging due to the limitation in materials availability, manufacturing processes as well as integration in targeted 3D geometry and high curvatures. The integration of printed electronics functionality (sensors; signage symbols and others) is also not available today.

Our ambition

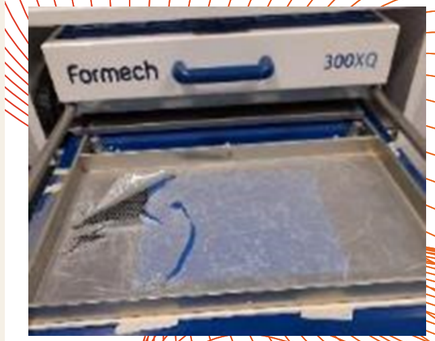
- Combine anti-scratch, anti-reflective and anti-fingerprint surface with electronic functions (capacitive or proximity sensors) on a flexible plastic surface to be integrated to complex 3D surfaces in car dashboards compliant to automotive standards;
- The use of resins from recycled and recyclable materials will give us the opportunity to introduce sustainability notice within interior vehicle;

Intermediaries Results

- A film composed by the ITO with hardcoat, antireflection and antiglare functionalities was developed by Fraunhofer FEP and successfully tested by CRF (anti-scratch tests and antireflection tests fulfilled FCA standard MS90053;
- The film is functionalized using the laser scribing technique available at the AUTH/OET to imprint the electrical circuit;
- First thermo-molding trials done at IPC and CRF (PET film with ITO + anti-scratch + laser scribing);
- The dashboard component with touch functionality, scratch-resistant and anti-reflection is manufactured and tested at CRF;



Structure of Central Instrument Display



First thermoforming trials at IPC and CRF of a 100 µm thickness foil

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