LEE-BED

Bring your ideas and concepts to market using lightweight, flexible, printed electronics

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 814485

Do you want to make a product...

- That
  - communicates with your electronics
  - Senses environmental parameters like temperature, humidity, movement, touch, *etc*......
  - Incorporates lighting elements
- but
  - can be integrated seamlessly into an existing production line
  - Enables functionality without impacting the weight or profile of your product
- While reducing
  - Production costs, production waste, materials costs, and energy consumption
  - Dependence on supply chains outside of Europe

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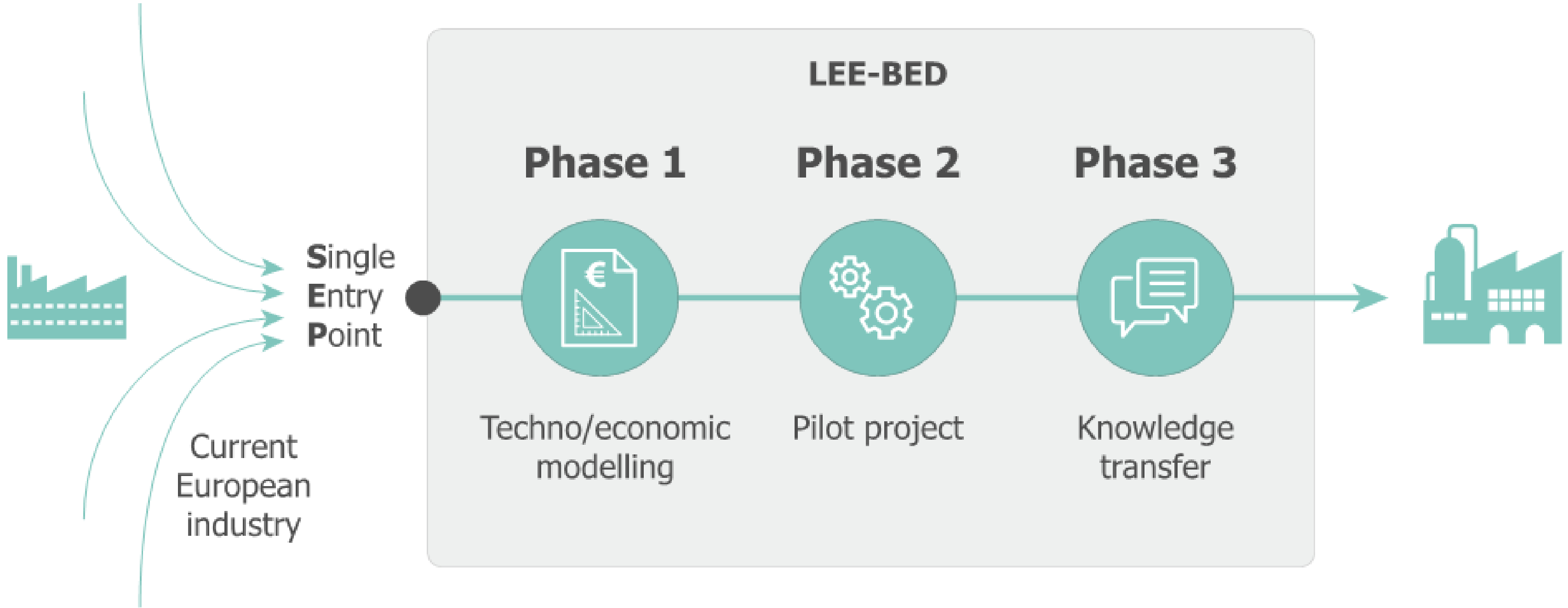
LEE-BED

Innovation Test Bed for development and production of nanomaterials for lightweight embedded electronics

www.lee-bed.eu



The single entry point (SEP) is the main contact point for customers wanted access to LEE-BED services and pilot lines

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DANISH TECHNOLOGICAL INSTITUTE

SWAROVSKI

Interactive lighting DEMO

Intelligent decorative surfaces

Smart textiles

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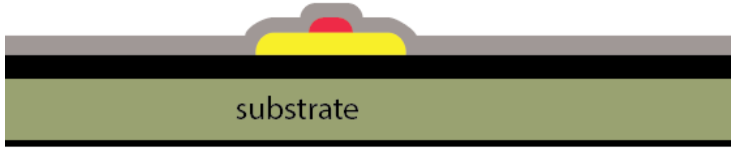
SWAROVSKI

Fabrication process

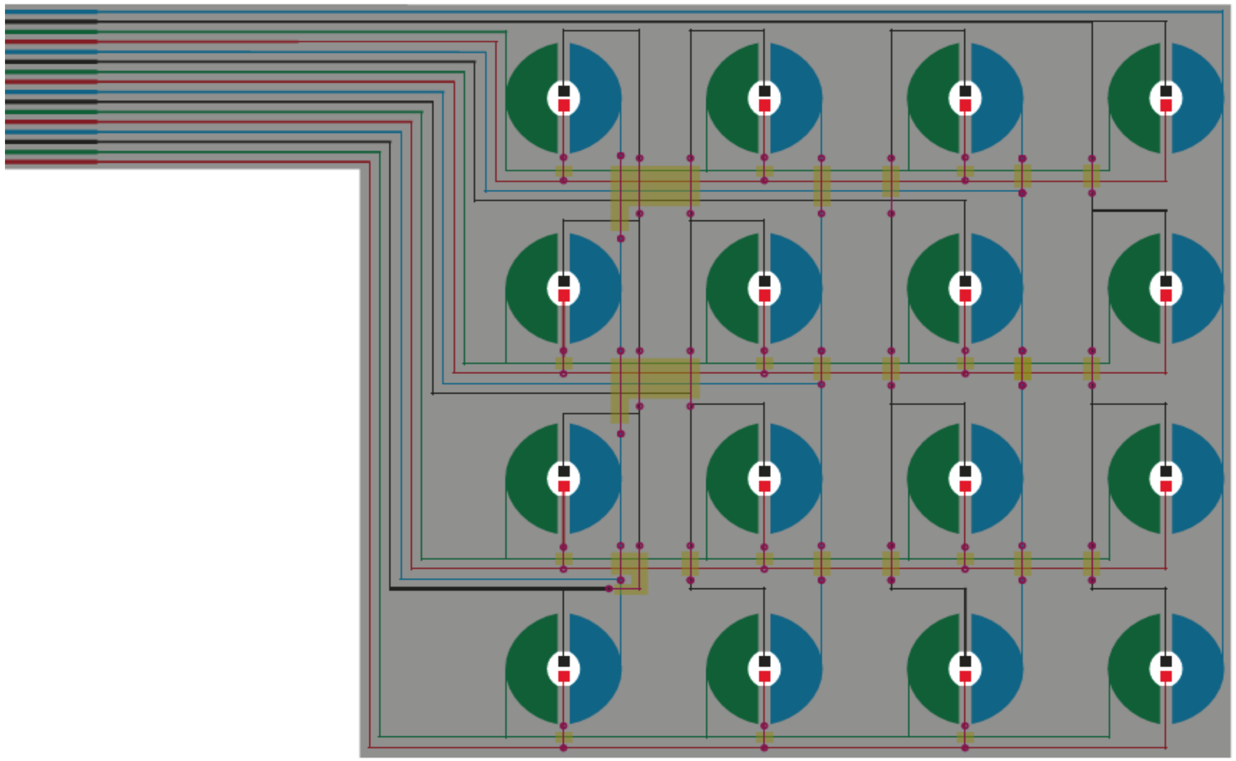


Capacitive electrodes

Electrodes for LED Assembly

Electrical connections

Dielectric material



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SWAROVSKI

Smart, Interactive, Decorative Surfaces Responding to the User and Environment

- Features:
  - Transparent
  - Touch sensing
  - Flexible backlighting

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SWAROVSKI

Technical Challenges: Transparent Conduction

Nanomaterial Pilot line enables us to make the materials needed for the solution our customer needs

- Step 1: Make a Demo with Features Excluding Transparency
- Step 2: Make a Transparent Conductive Nanomaterial Ink

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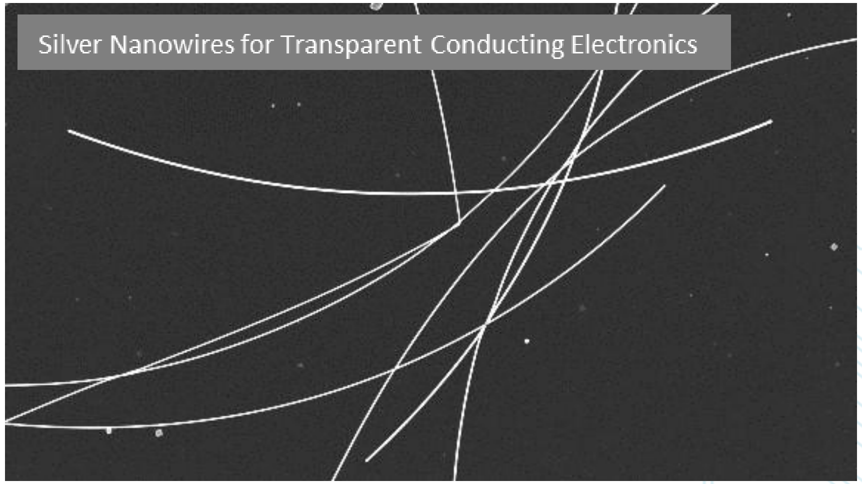

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SWAROVSKI

LEE BED

Prototype: Vision Realized

- Features:
  - Transparent
  - Touch sensing
  - Flexible backlighting

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Structural Monitoring Under Extreme Conditions

- Features:
  - Monitoring temperature
  - Able to be embedded
  - Flexible
  - Capable of operating at high temperatures
  - Able to survive corrosive chemistries
- Current issues:
  - Low reliability of sensors,
  - Easy sensor breakage

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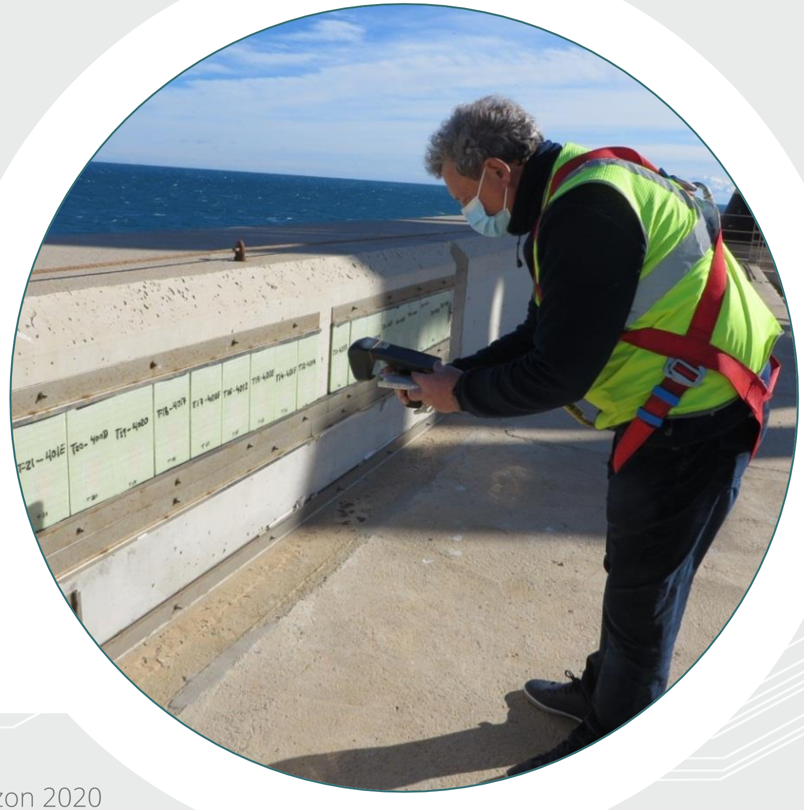
Technical Challenge: Surviving Pultrusion

- Challenge: Finding communication hardware that could survive high temperature and corrosive conditions
- Solution: New solution enables reliable data for optimization of process design and process safety
- Sensors are more robust, and easy to use

Our formulation and component pilot lines enabled a successful prototype that works at extreme conditions



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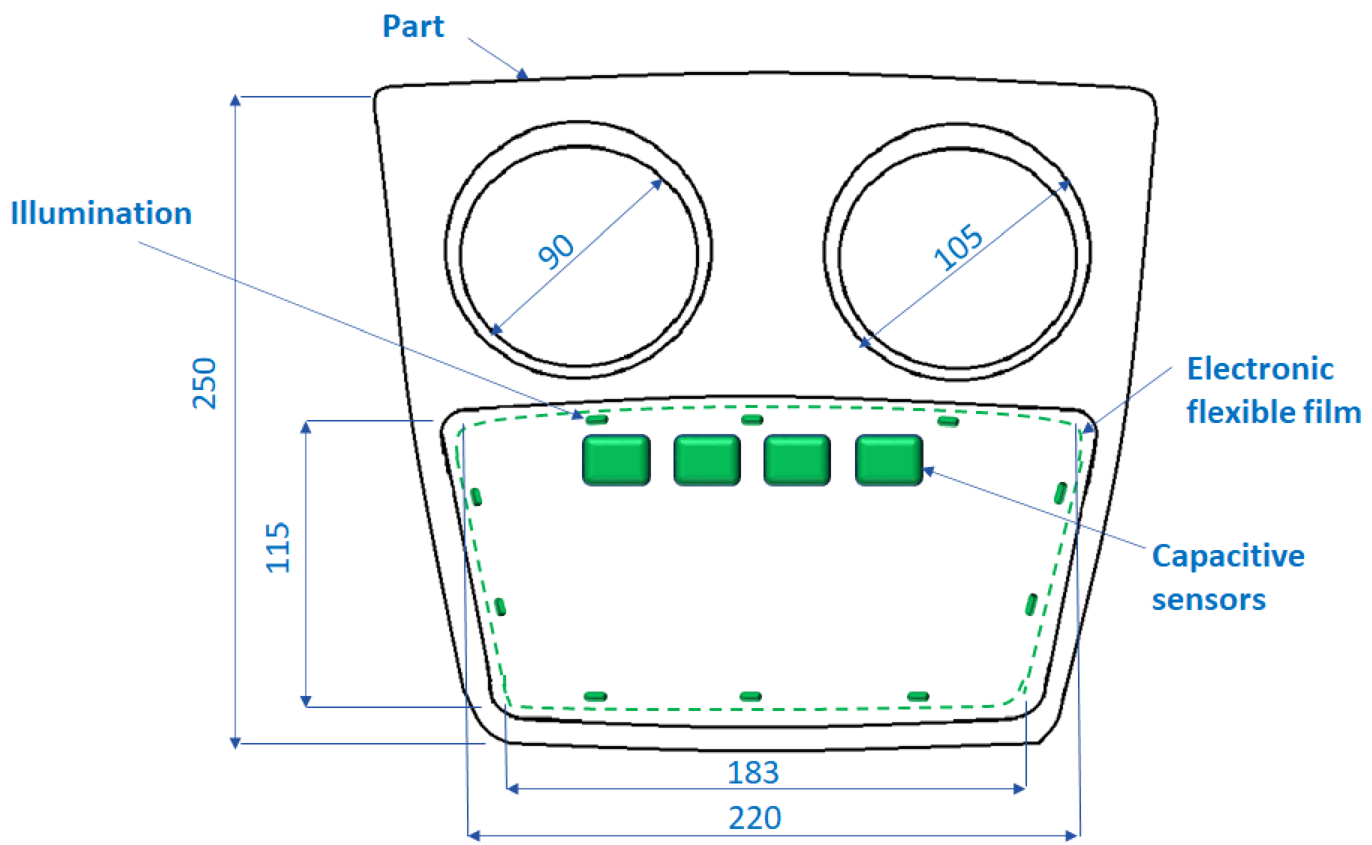
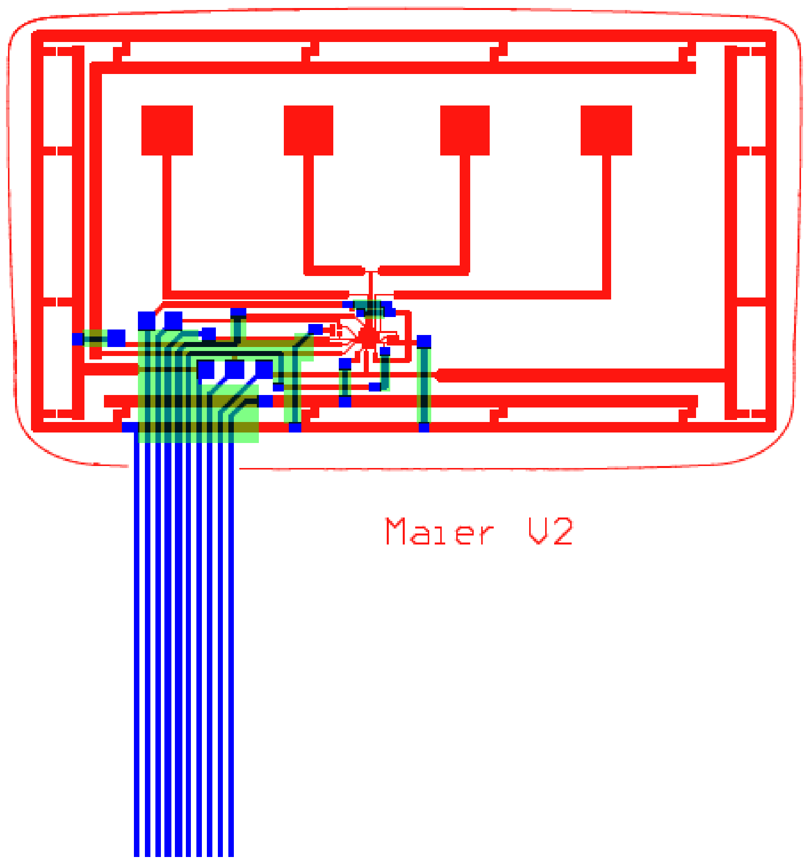
In-Mould Electronics Automotive Control Panel





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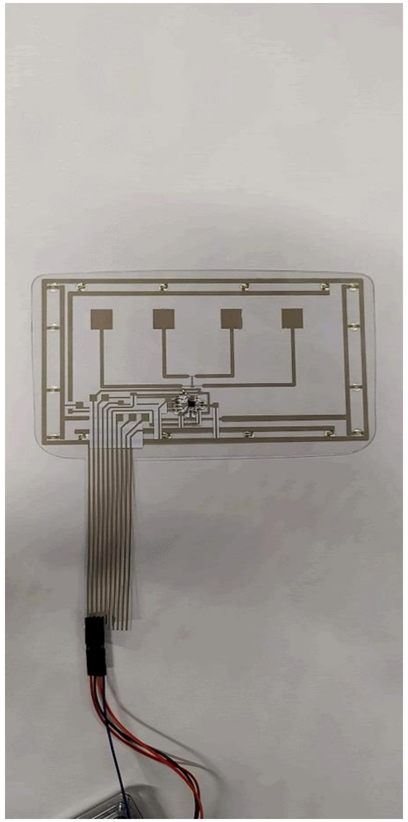
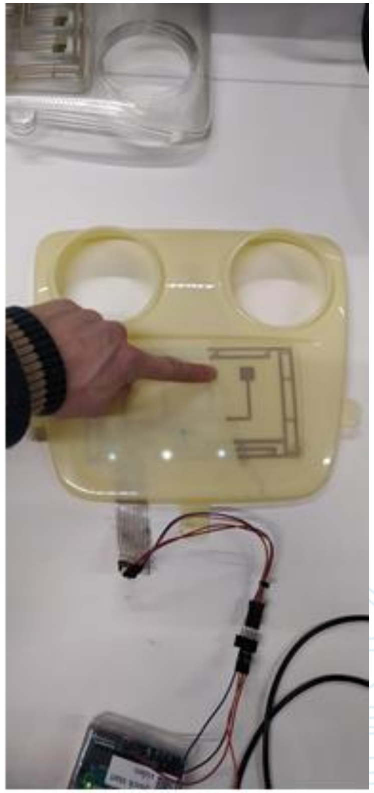
In-Mould Electronics Automotive Control Panel

Before injection



After injection

Limited number of working devices



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