

# centi

Centre for  
Nanotechnology  
and Advanced Materials

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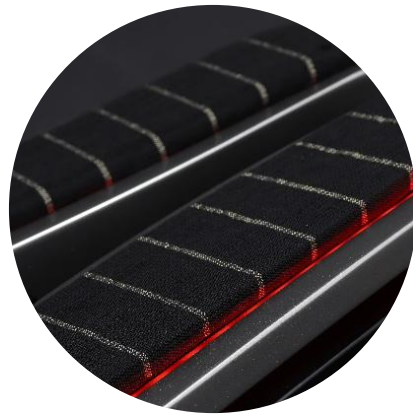
About CeNTI

# Centre for Technology and Innovation (CTI)

Focus on Research, Technological Development, and Engineering based on **Nanotechnology, Advanced Materials** and **Smart Systems**, for business ecosystem.



Functional Materials



Functional Fibres



Smart Materials



Smart Systems



Design & Engineering



Technical Departments

## Smart Materials



**Printed Eletronics**



**Batteries & Energy  
Generation**



**Smart Textiles &  
Structures**



**Thin Films &  
Microfabrication**



**Bioprinting**

# Printed Sensors Pilot Line

## Semi-industrial Roll-to-roll Printing Equipment

**Roll-to-roll pilot line for continuous  
printing of flexible sensors** with a wide  
range of materials and substrates.



## Physical parameters

Development of printed  
and nanofabricated sensors: **Voltage,  
current, temperature, strain gauges,  
water and moisture detection, and  
other types of sensors.**





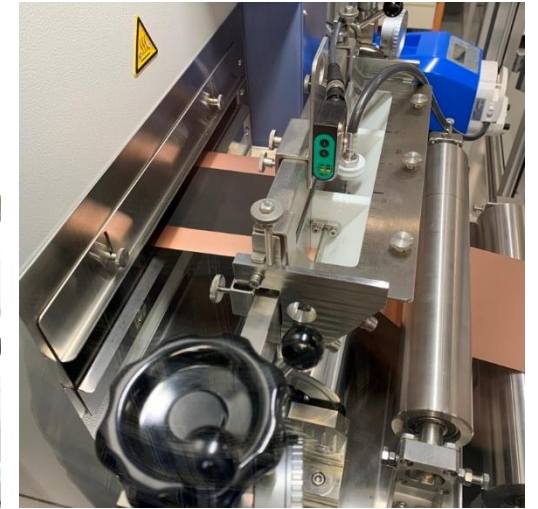
# Battery Cell Manufacturing Pilot Line

## Roll-to-roll and sheet-to-sheet coating processes for anodes and cathodes assembling

Evaluation of the **upscaling of battery coatings** using semi-automatic pilot scale mixing, coating and calendaring.

## Semi-automatic pilot scale assembly machines

Versatile machines with both z-stacking and **pick and place stacking**, to **assemble roll-to-roll and sheet-to-sheet pouch cells** in a dry room environment ( $-45\text{ }^{\circ}\text{C}$  dp).



## Development of LMFP modules with integrated flexible electronics for battery monitoring

### Goal

Development **advanced LMFP pouch cells** using a **pilot-scale dry room production line**. The module LMFP cells and modules **will incorporate flexible sensorisation**, to monitor a larger surface area than traditional sensing approaches

### Idea

- Producing cells using a pilot-scale dry room production line
- Evaluation of the cells (performance, safety, and lifetime optimization)
- Incorporation sensorization into the cells or modules – monitoring thermal behaviour, stress distribution, and early signs of degradation

### Our capabilities

- Pouch cell assembly - pilot line;
- flexible sensor technology - pilot line;
- Power electronics;

### Potential partners

- LMFP cell development;
- Data acquisition & health monitoring;
- Techno-economic and lifecycle assessment;



## Smart sensors to improve safety in micro mobility

### Goal

Development **an innovative e-bike concept** that **integrates smart sensors** to enhance urban mobility, safety, maintenance efficiency, and environmental awareness

### Idea

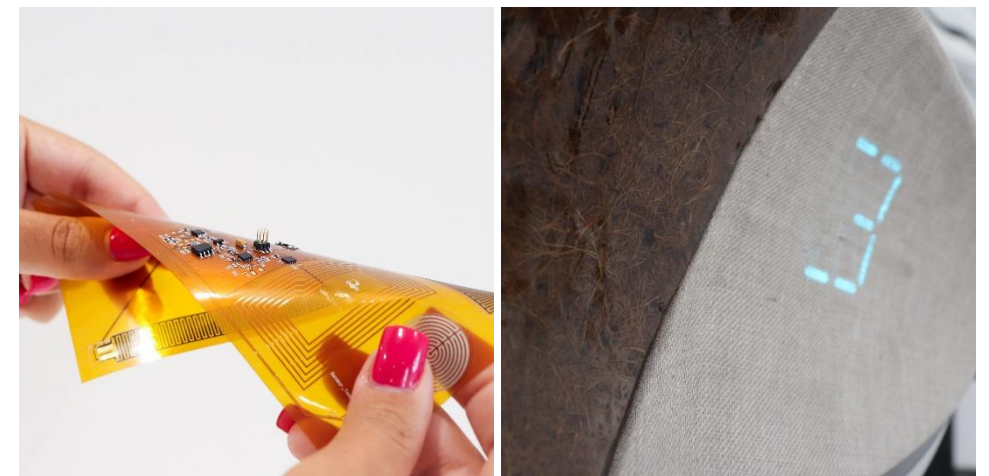
- Development of thermochromics coatings
- Development printed strain, vibration and air quality sensors
- Development NFC and RFID unlocking solutions
- Integration LED or e-ink display for personal branding
- Integration all of them during the manufacturing of the ink.

### Our capabilities

- Flexible sensor technology - pilot line;
- Control electronics;
- Smart labels

### Potential partners

- End-user;
- Design;
- Techno-economic and lifecycle assessment





## IoT systems for improved efficiency in operations and freight transport

### Goal

Development **an interoperable IoT system that enables seamless integration between different modes of transport** through advanced digitalisation

### Idea

- Development of flexible sensors
- Development digital solutions that bridge existing systems and infrastructures, using open standards and interoperable services to enable synchro-modal and efficient transport operations
- Development API's

### Our capabilities

- Flexible sensor technology - pilot line;
- Control electronics;
- Smart labels

### Potential partners

- Transport operators
- API's developments
- Machine Learning







THANK YOU FOR YOUR ATTENTION!



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