

eurecat

Plastronics@Eurecat: technical development
from design to industrial upscaling



www.eurecat.org

@eurecat_news · #EurecatConnected



"innovating for business"

Comprehensive RDI
service
for businesses:

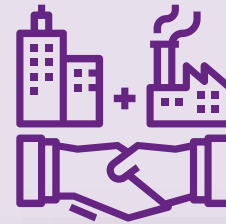
eurecat

50%
of our
activity is with
SME

Enric Fontdecaba, PhD.
Director of the Polymeric
Materials and Processes Unit
Eurecat



51,3_M Turnover
in 2019

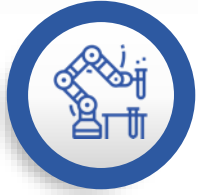


1,700 Business
clients

Data corresponding to the end of 2019

We help companies discover new opportunities and participate in creating and improving products, services, processes and business models with an impact on their competitiveness and social wellbeing.

Integration of multiple technologies



Industry

1. Advanced materials (metallics, composites, polymers) and new manufacturing processes
2. Functional printing and embedded devices
3. Interactive and autonomous robotics
4. Functional textiles
5. Chemical Technology
6. Innovation and product development



Digital

1. Sensor systems and IoT
2. Artificial intelligence
3. Big Data & Data Science
4. E-Health
5. Cybersecurity
6. Multimedia technologies



Biotechnology

1. Nutrition and health
2. Omic sciences



Sustainability

1. Water
2. Air
3. Soil
4. Waste
5. Energy
6. Batteries
7. Environmental impact

Enric Fontdecaba, PhD.
Director of the Polymeric Materials and Processes Unit
Eurecat



Our differential value:

Our multi-technological capacities allow us to face complex challenges.



Differential offer

Together with companies, we create and/or improve products, services and processes, from coming up with an idea to industrializing it.

Enric Fontdecaba, PhD.
Director of the Polymeric
Materials and Processes Unit
Eurecat



Applied research and technological development

- R&D&I units set up with the company
- R&D projects
- Minimum viable product



Advanced technology services

- Science and technology diagnostics
- Audits
- Trials and analyses
- Concept testing
- Certifications



Technology Consultancy

- Innovation strategy and management
- Technological monitoring
- Trend analysis and viability studies
- Project management and financing



Specialized training

- Masters and postgraduate courses
- Customized corporate training
- Ongoing training
- Job training



Value building

- Protection and transfer of industrial and intellectual property
- Evaluation and support in building value from technological assets
- Advice and participation in the creation of technology based companies
- Due diligence of technological assets



Dissemination of knowledge

- Promotion actions
- Dissemination and transfer of knowledge actions



**What is
IME?**



Advantages

Hibridized
Multilayer

3D complex
pass through

3D simple

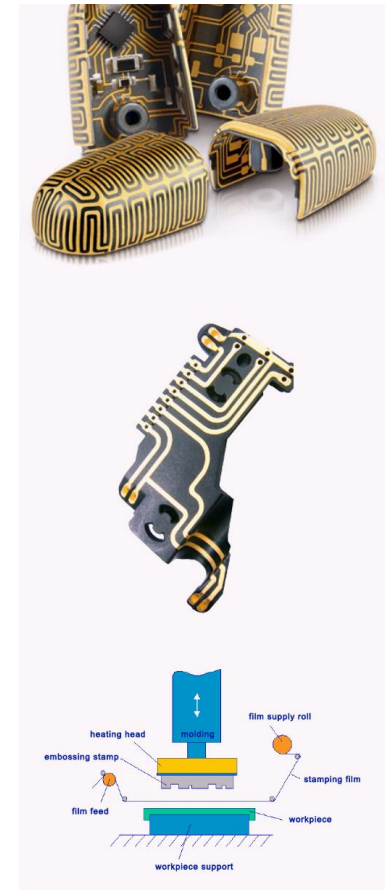
Flat surfaces

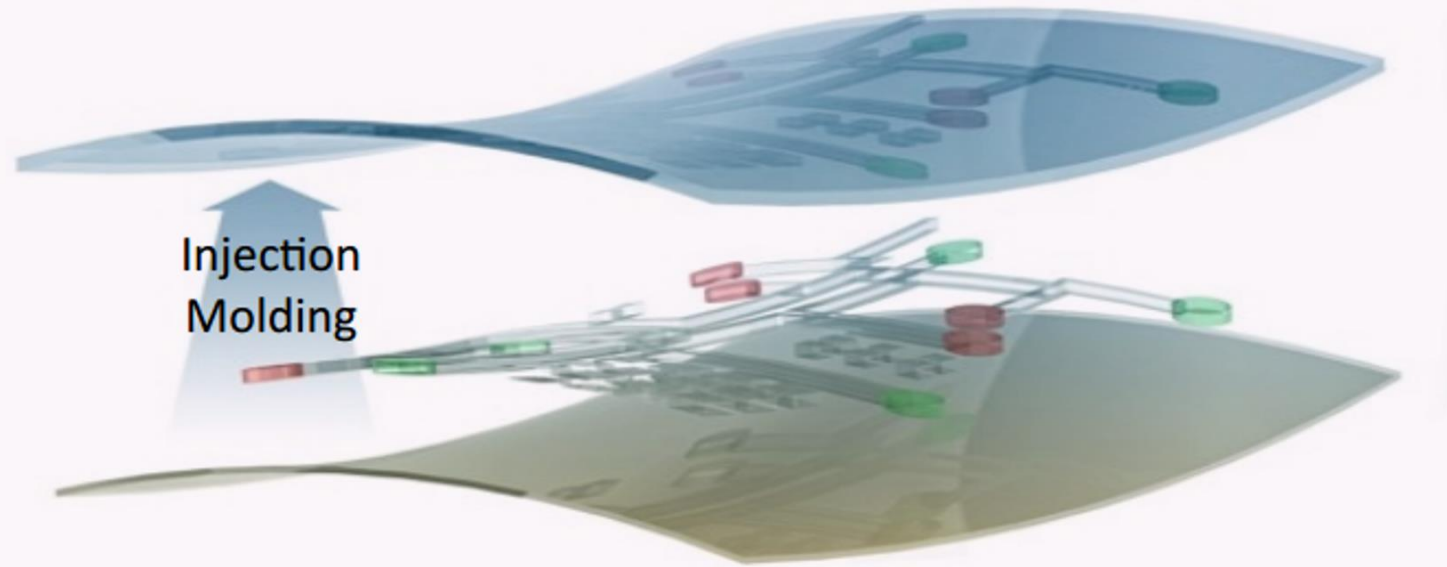
IME

LDS

2k Injection

Hot Stamp





Printed
Electronics

Hibridization

Thermoforming

Injection



Cleanroom I

Cleanroom II

Printed
Electronics

Hibridization

Thermoforming

Injection



Printing

Pick & Place

Thermoforming

Plastic Moulding

LSR Moulding

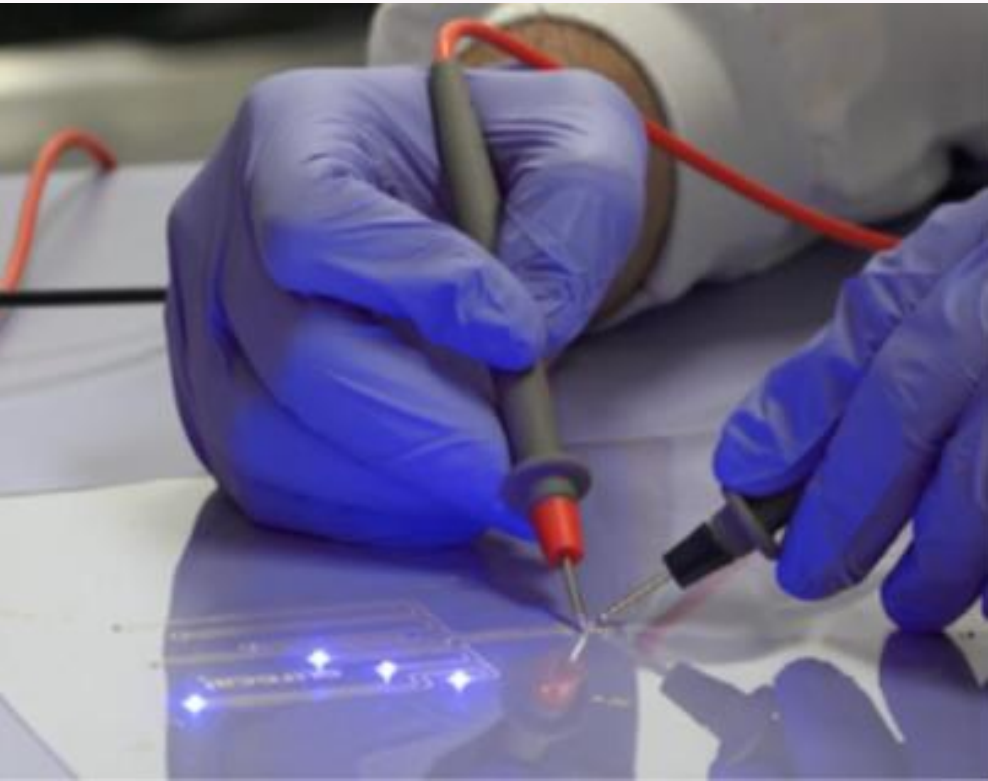
- Illig 100 ua
- Up to 800x800 wide film

- 160 Tn Clamping force
- 3 K materials
- 6 Axis robot available

- 50 Tn Clamping force



Why Plastronics?



- **Easy assembly processes.**
- Integration of electronics into **complex 3D shapes.**
- **Design products with new shapes and functionalities.**
- **Thickness reduction (up to 80%).**
- **Weight reduction in (up to 60% lighter).**
- **Complexity reduction.**
- **Increased functionality.**
- **More durable electronics (embedded/protected).**



**Lightweight
 Electronics**



**Reduced
 Assembly Time**



**Reduced
 Cost**



**Designing
 Freedom**



- 3 pieces + 1 pcb
- 0,28 cm
- 56 gr



- 25 pieces + 5 pcbs + 22 screws
- 3,7 cm
- 298 gr

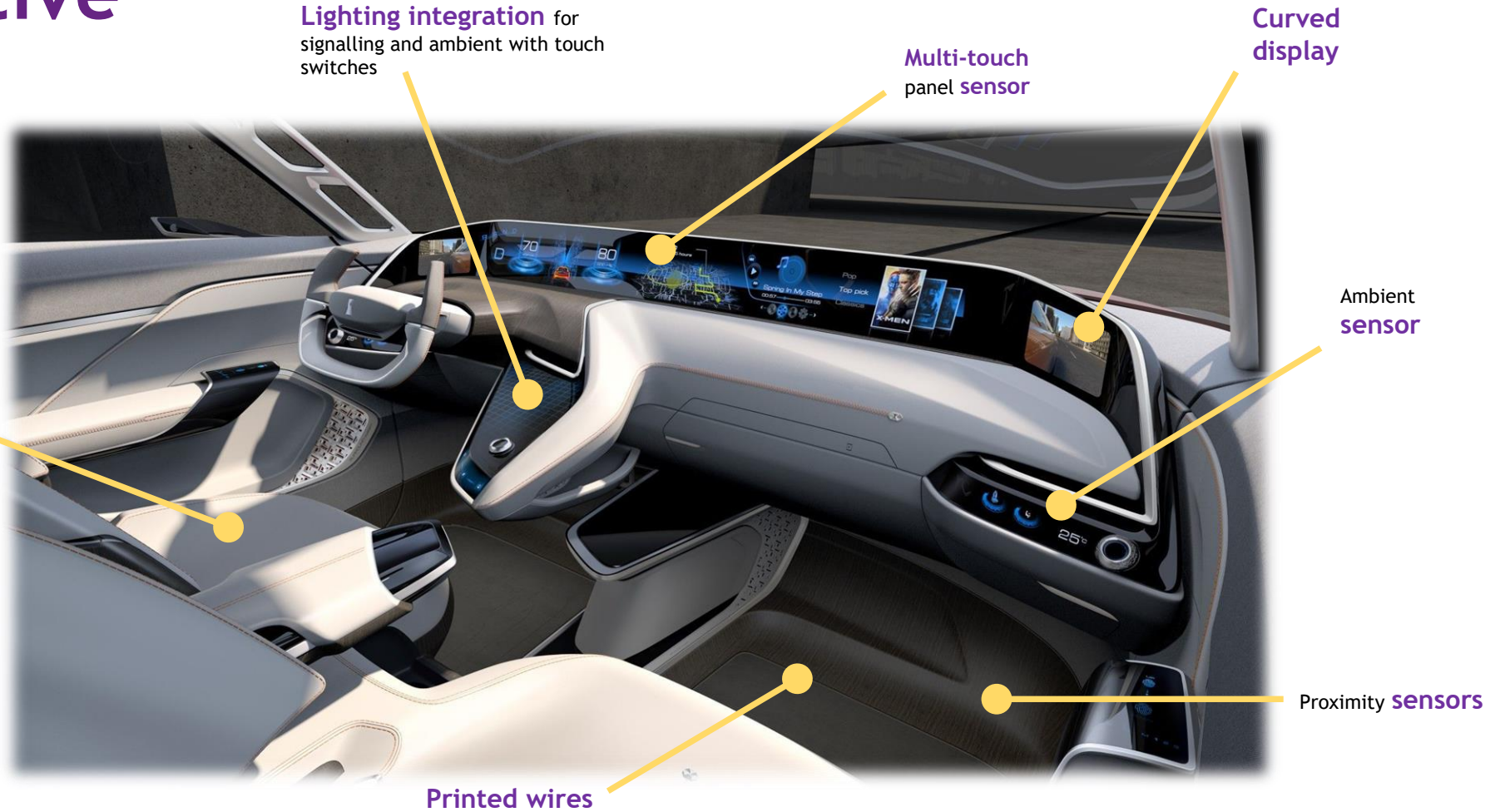


What we do

Applications

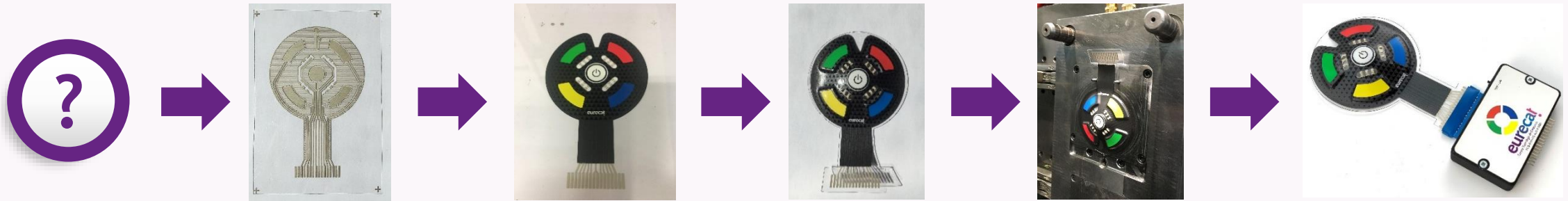


Automotive





Complete solution



Design:

- What is possible?
- In which materials?
- How tooling must be done?

Screen Printing:

- Tooling design
- Material selection
- Process optimization.

Hybridization:

- Electronic Component Selection
- Conductive Adhesives
- Process optimization

Thermoforming:

- Tooling Design
- Process optimization

Moulding:

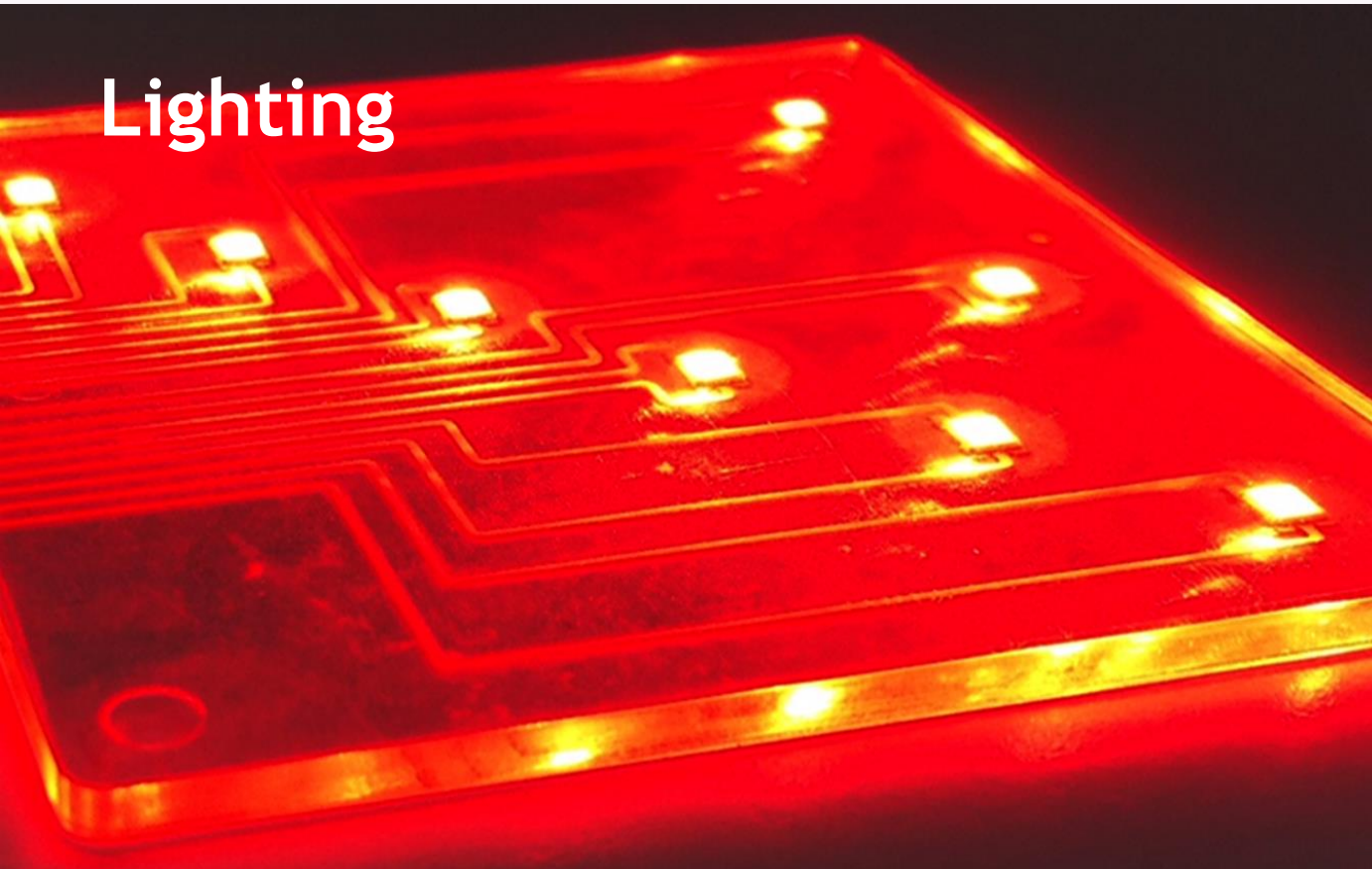
- Tooling design
- Handling procedures
- Process optimization

Electronic Control:

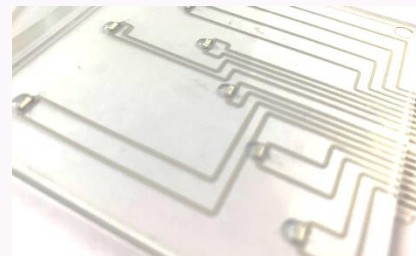
- Electronic Design
- Prototypes manufacturing
- Programming



Lighting



Electroluminescent



Top Leds

Side Leds



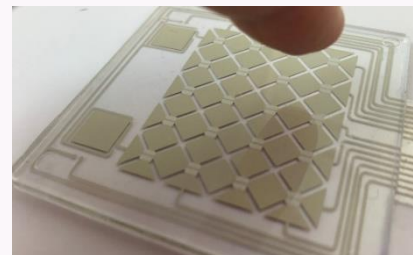
RGB Leds



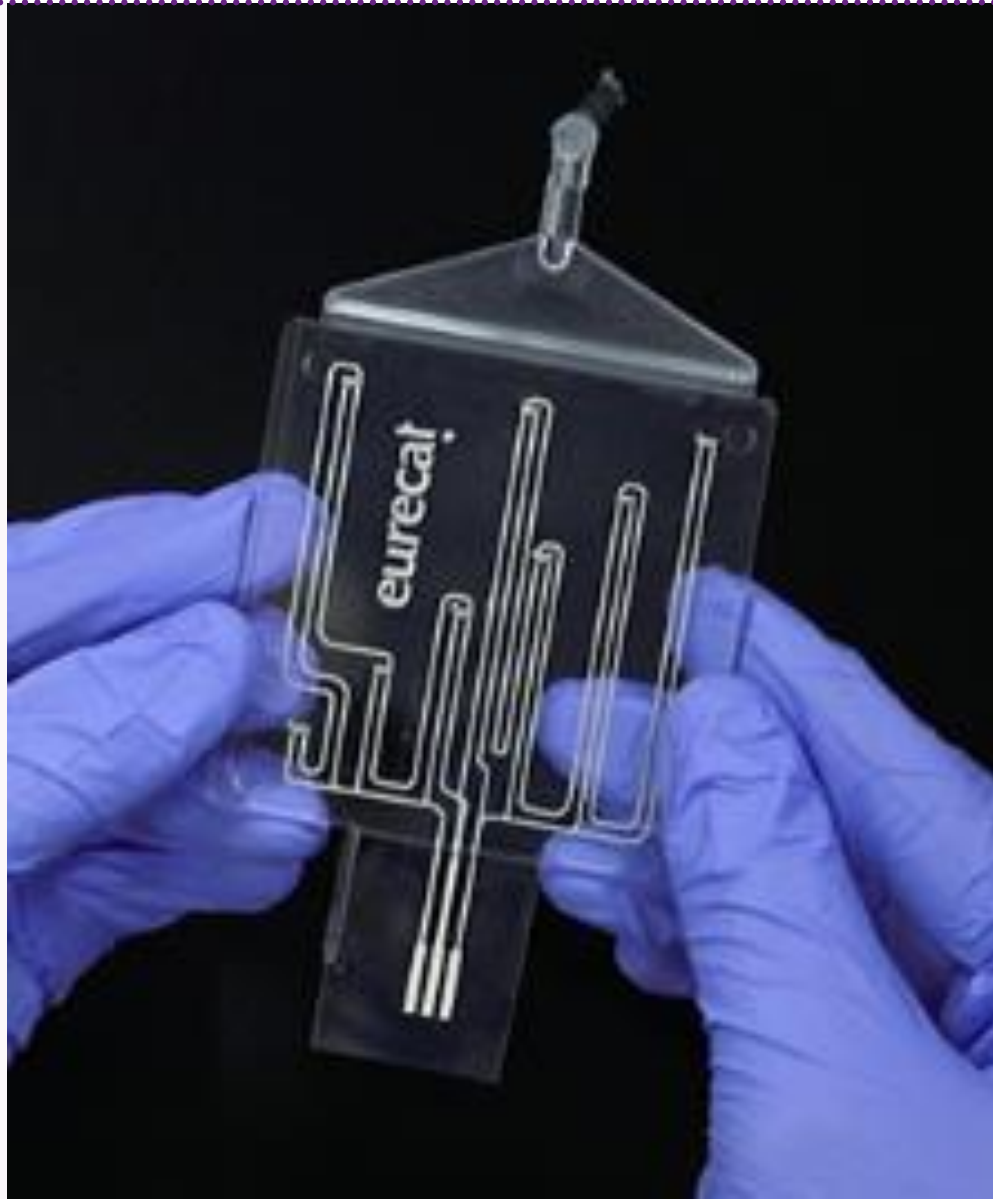
**Resistive Touch
pad sensor**



**Capacitive touch
pad sensor**



Slider sensor



Films & Resins

.....

- PC
- PMMA
- ABS
- TPU
- PVC
- Silicone



Inks

.....

- Conductive
- Dielectric
- Barrier layers
- Decoration
- Adhesion primer



Electronic components

.....

- LEDs
- Sensors
- Antennas
- Chips
- Connectors



Challenges



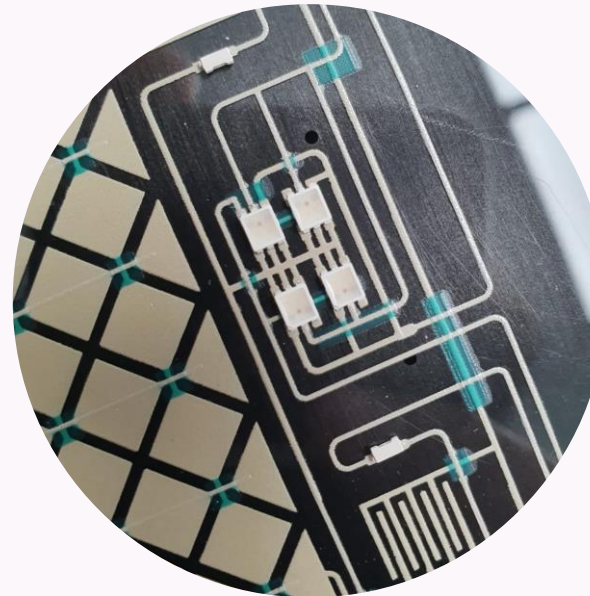
Printing

- Ink stretching
- Adhesion
- Interlayer ink compatibility
- Resolution
- Register



Flexible SMT

- SMD geometry limitations
- Low T soldering
- Density of components
- Connectors

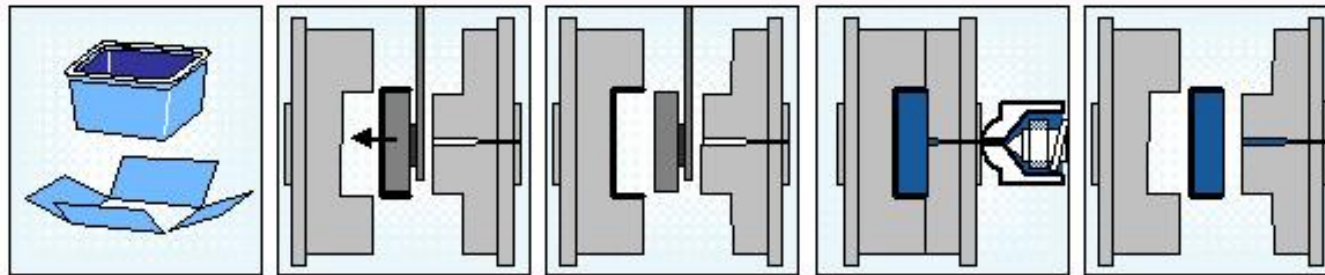


**Lack of
design rules**



Adapting In Mold Decoration IML or Film Insert Molding FIM for IME

IML



- Ink - Resin interaction
- Handling of inserts
- Gate design
- Material Selection
- Injection parameters

FIM



- Limits of thermoforming
- Changes in conductivity
- Handling of inserts
- Gate design
- Injection parameters



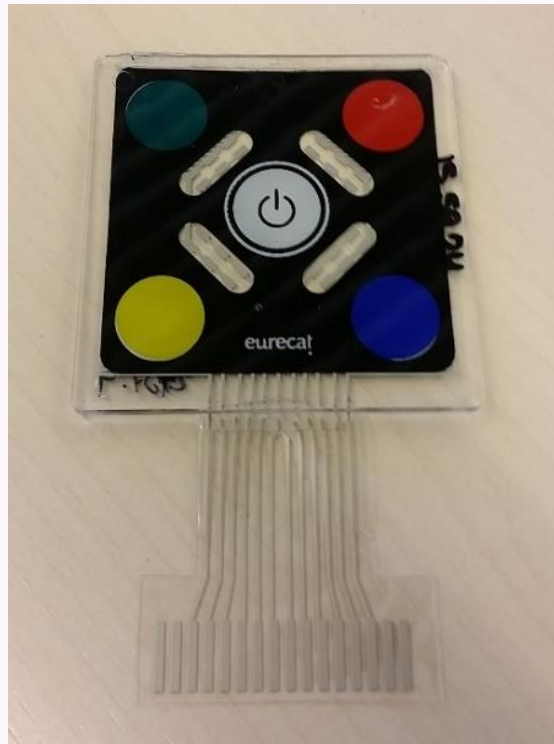
Sustainability

80% of resin recovered
100% of silver recovered



Recycling

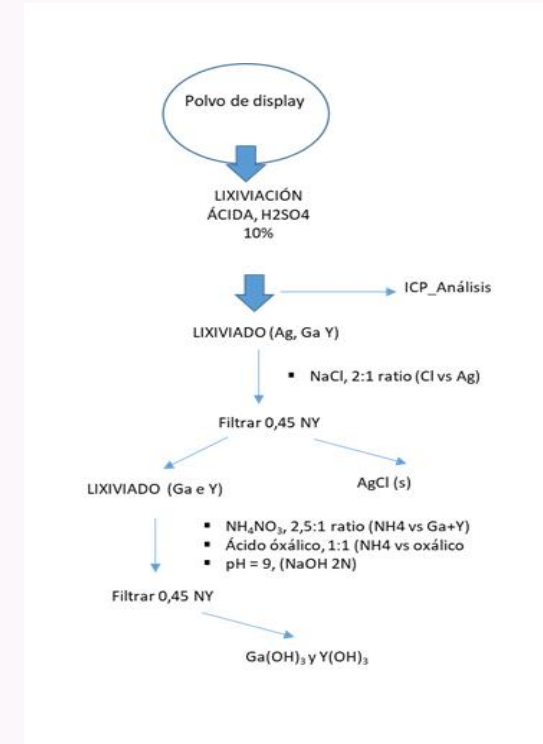
Original part



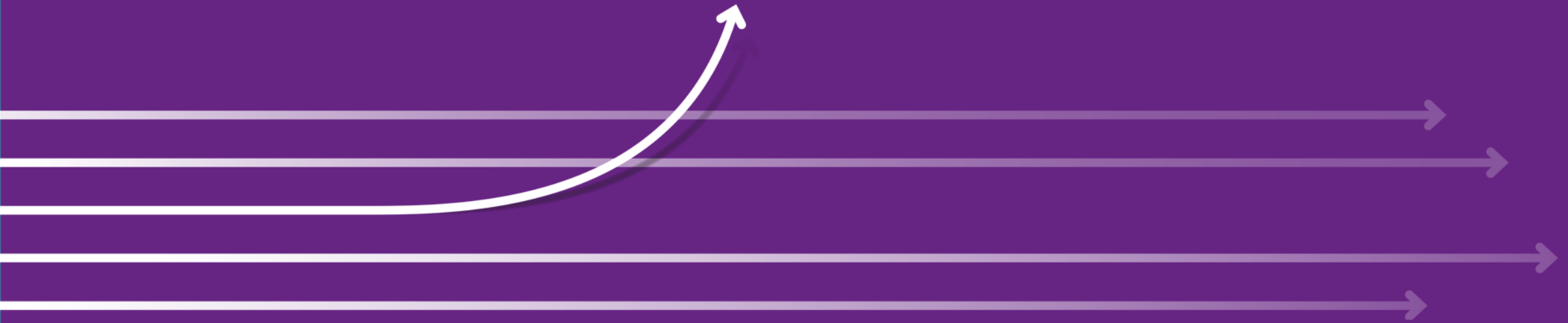
Mechanical separation



Chemical separation of metals



Thank you!



www.eurecat.org

@eurecat_news | #EurecatConnected



"innovating for business"