Plastronics Pilot Plant
Eurecat: adding intelligence and functions to plastic components.
From product concept to industrial production.

www.eurecat.org
We offer companies comprehensive R&D&I services

Eurecat provides businesses with innovative technology and knowledge to respond to their innovation needs and drive their competitiveness.

We help companies to discover new opportunities and participate in the creation and improvement of their products, services, processes and business models, thereby achieving a positive impact on their competitiveness and on the wellbeing of society in general.

50% of our work is with SMEs

+650 professionals
22% are PhDs

50M in turnover in 2018
1,600 corporate clients
Multi-technological integration

**Industrial Area**
1. Advanced materials and new manufacturing processes
2. Functional printing and embedded devices
3. Interactive and autonomous robotics
4. Functional textiles
5. Modelling and simulation

**Digital Area**
1. Sensors and IoT
2. Big Data & Data Science
3. Artificial Intelligence
4. Multimedia technologies
5. Cybersecurity

**Biotechnology Area**
1. Nutrition and health
2. Omic sciences

**Sustainability Area**
1. Water
2. Soil
3. Air
4. Energy
5. Waste
6. Environmental Impact
7. Batteries

**Our differential value:**
Our multi-technological capacities enable us to meet complex challenges.
We are investing in Plastronics as a means of tackling new business challenges and meeting society’s needs

Companies and society increasingly require products with a greater added value that:

- Incorporate and integrate new functions and more complex services.
- Are highly customisable, smart and sustainable.
- Have a lower manufacturing cost.
- Can connect to each other from any location and share information in real time.
- Are manufactured on a multi-technological basis and incorporate electronics (for example).
- Incorporate advanced materials and have an attractive and functional design.

To meet the expectations of today and the needs of tomorrow, manufacturing processes and techniques must be adapted in line with these requirements and companies must be shown the way forward regarding the incorporation of equipment and the development of highly-advanced manufacturing systems integrating different disciplines.

These include:
- Artificial Intelligence
- Sensor systems
- Additive manufacturing
- Numerical simulation
- Traditional processes

In combination, as always, with our in-house developed technology.
Plastronics, also known as **in-mold electronics (IME)**, is an emerging technology that combines electronics and plastics to create products that have high added value, advanced functions or features and are manufactured on a large scale.

By combining the functional printing of electronics and the hybridisation of electronic components with traditional transformation processes, such as injection, it is possible to create lightweight devices with new functionalities and embed them in geometrically complex products.

Plastic-embedded electronics will be one of the next revolutionary developments in the design of innovative products and the optimisation of industrial processes.
The first Plastronics pilot plant in Europe

Eurecat’s Plastronics pilot plant is the first of its kind in Europe.

It is a pioneering platform that has been made available to companies for the purposes of creating and/or improving products, services and processes: from the initial idea to industrial production.

Located in Cerdanyola del Vallès (Barcelona), the plant boasts a series of truly unique facilities.

It consists of two cleanrooms that enable an orderly combination of different manufacturing processes. One is dedicated to printing and electronics, while the other is dedicated to processes involving plastics.
With this new facility, Eurecat is able to provide companies with a complete production cycle, from product concept to manufacturing:
Eurecat offers a complete cycle of plastronics’ manufacturing processes

**Printing**
Additive deposition of inks with electronic properties onto plastic substrates, with the aim of producing functional films containing thin layers of circuits and electronic devices.

**Hybridisation**
Placing electronic SMDs (surface-mount devices) components onto a functional film using pick and place equipment. A combination of printed electronics and SMD components is known as hybrid electronics.
Thermoforming
Controlled deformation using a mold of the printed sheets and hybridised rigid components to transform 2D films into 3D shapes.

Injection
3D films coating with plastic materials by pressure-injecting melted plastic into a closed mold and allowing it to solidify inside.
Cleanroom for printing and electronics

The facility is equipped with:

- A one-stop cylinder S2S screen printing machine.
- A machine for the hybridisation of SMD components (distribution and pick and place).
- Equipment for the handling of electronic inks.
- UV, IR and heat-curing lines.
- Curing oven for solder paste.
- Cutting equipment with numerical control.
Cleanroom for plastic processes

The facility is equipped with:

- LSR silicone injection-molding machine (Arburg 50 Tn).
- Tri-material thermoplastic injection-molding machine (Engel 160 Tn).
- Sheet-thermoforming machine (Illig 100-UA).
- Six-axis robot for loading and unloading inserts.

Both rooms comply with the ISO 7 standard; however, their working protocols are designed to meet the ISO 8 standard.
The advantages of Plastronics

- Reduction in the complexity of plastic products (fewer parts).
- Automation of assembly processes. Conventional “monolithic” manufacturing processes are replaced with a single part that does not require any assembly during production.
- Integration of electronics into products that have geometrically complex 3D shapes.
- Reduction in thickness (up to 80%).
- Reduction in weight (components are up to 60% lighter than traditional PCBs).
- Increased functionality.
- More durable electronics, as they are embedded/protected.
- Greater freedom to design products with new shapes and functionalities.

Plastronics make possible to combine aesthetically pleasing finishes with functional elements in the same production cycle.
Plastronics’ applications

Plastronics is a revolutionary technology for the automotive, aeronautics, packaging, consumer electronics, medical and sports industries.

• Manufacturing flexible screens and haptic controls that enable interactive responses or invisible buttons.
• Creating plastic products that contain embedded sensors (temperature, pressure, etc.).
• Creating buttons for vehicle interiors.
• Creating user interfaces for domestic appliances.

• Producing geometrically complex and 3D products.
• Producing lighter and smaller components and parts.
• Producing thinner and cheaper pieces.
• Creating products from conductive plastics.
Success stories

Printed, hybridised and overinjected LED tree design

Polycarbonate film with silver circuits and integrated LEDs. Proof of concept for a lighting system designed for a vehicle interior.

Printing of sensors and circuits via the hybridisation of LEDs, thermoforming and overinjection

A device that demonstrates the capacity to create interfaces. It has all of the functionalities necessary to operate the “Simon” memory game.
Development of the necessary techniques and methods for establishing, at an industrial scale, a pilot facility for manufacturing plastic-injected products, whose surfaces provide advanced functionalities. The pilot production facility will enable companies in Catalonia to develop new products using these technologies and to acquire the necessary knowledge to make their production profitable.

PLASTFUN is an Industries of the Future RIS3CAT Community project, coordinated by Eurecat.
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Would you like to visit our pilot plant?
Would you like to incorporate plastronics into your products?

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“Innovating for business”

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