# Printed Electronics

(FEIM – **F**uture **E**lectronics for **I**ndustry 4.0 and **M**edical 4.0 project)

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**Objectives of the Project**

Integration of sensors, heating and interconnect elements into the structure of flexible and 3D polymer substrates using printing techniques. The design uses standard technological processes such as thermoforming, molding and 3D printing. The results are intended for the automotive industry, especially the emerging electromobility and the production of prosthetic devices.

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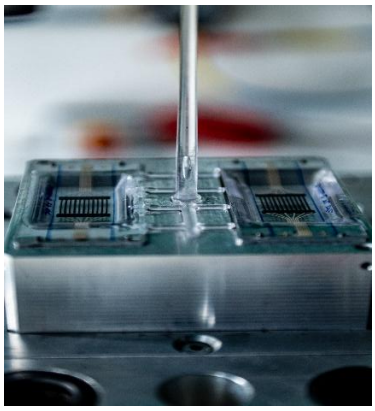
**Topics covered by the Project**

- Electronic components, sensors, heating and interconnect structures on flexible and 3D substrates
- Multifunctional polymer nano/composites for 3D printing designed for industrial applications and prosthetic devices
- Direct integration of electronic systems into structural parts by combining functional printing technologies, hybrid assembly of electronic components and subsequent in-molding into plastic parts
- Combination of non-conductive structural and electrically conductive polymer-based materials in a 3D arrangement. Applications mainly for interior and industrial control, communication, sensing, heating and lighting elements with lower material and energy consumption, lower price and enhanced technological capabilities



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**What will the Project Results enable?**

- Integration of heating and sensing elements into the polymer matrix structure in 2D and 3D arrangement.

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- Application of carbon nanostructures instead of metallic elements and reduction of the carbon footprint of final products.
- Integration of electronic functionalities into prosthetic devices.
- Integration of electronic elements into the structural parts of electric vehicles.

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**Selected Results**

- Functional sample of a hybrid electronic system on a flexible substrate protected by a utility model
- Functional sample of a structural element with built-in electronic functionalities protected by a utility model
- The technology of contacting planar component structures using the additive process protected by the patent CZ 310291
- Validated technology for implementing hybrid electronic systems on flexible substrates, 3D forming of structural elements with built-in electronic functionalities and extrusion of functional materials for 3D printing with optimized electrical and technological parameters

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**Partners involved:**

More about FEIM project can be found on projects webpage.

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