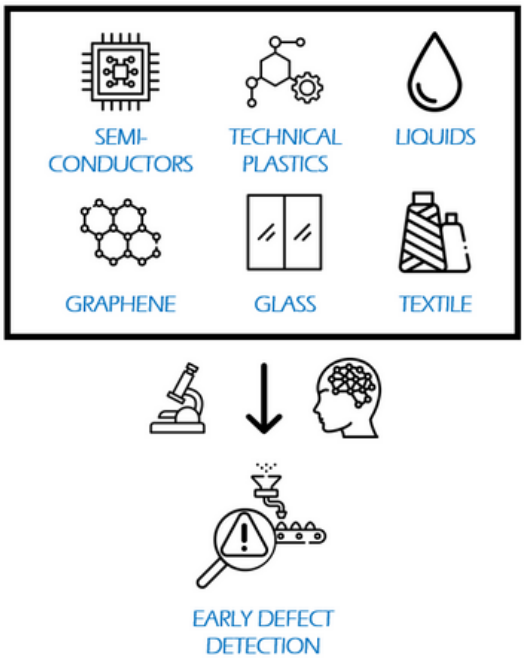
CUSTOMIZED INDUSTRIAL PROCESS MONITORING

USING IN-LINE OPTICAL AND OPTOELECTRONIC INSPECTION

THE CONCEPT



ADDED VALUE

- Non-destructive
- Highly customizable

TRL

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CONTACT

https://irec.cat
KTT area
ktt@irec.cat
+34 933 562 615

PRODUCT DESCRIPTION

- Modular and adaptable **multi-sensor head** for the **in-line monitoring of industrial processes**
- Uses **advanced AI** and **combinatorial analysis** to deliver clear and direct outcomes
- Can cover the **analysis of many different materials**, from complex semiconductors to glass or plastic
- **Non-destructive** characterization to assess the quality of the final or intermediate products
- Helps to **identify defects and small deviations** of the physico-chemical properties of the materials, allowing early correction and/or prevention of pre-critical production faults
- **Contributes to the digitalization** towards industry 4.0

APPLICATIONS

- Manufacturing industrial processes requiring in-line monitoring for high-value products
- Customized inspection systems for materials' assessment
- Advanced characterization of complex materials

DESIRED PARTNERS

- Fabrication/manufacturing industries
- Metrology companies
- Quality control end-users

EXPECTED BENEFITS

Real-time monitoring

Production optimisation

Saves material

Reduces costs

technical details

TYPE OF ANALYSED MATERIALS

The present solution allows to perform an extensive and non-destructive local characterization of many different materials, in a fast and practical way, with none or minimal sample preparation. The materials under analysis can be: composites, chemical products, liquids, ceramics, graphene, organic materials or even agrifood.

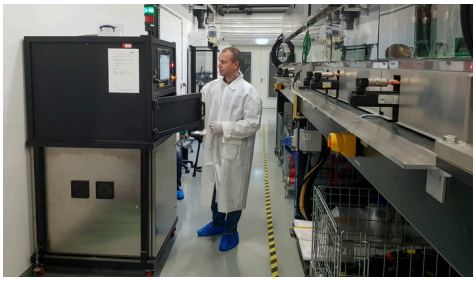
DETAILS OF THE ANALYSIS

Can analyse a variety of **properties**: Quantification of composition (including dopants and additives), chemical structure, crystallinity, intrinsic materials' strain, poli-types, and optical and electrical properties.
Can use a variety of **techniques**: *structural and physicochemical* (IR, Raman, XRF, fluorescence). *optical* (reflectance, transmittance, thermography, UV/VIS/IR inspection) or *optoelectronic/electrical* (I-V, dark I-V, spectral response/quantum efficiency, electroluminescence, resistivity, capacitance, photoluminescence spectroscopy).
Employs automatic Big Data **analysis** using analytical and statistical AI methods.

IMPLEMENTATION

Several pilot plants have been implemented for different industrial processes, together with: ZSW, Sunplugged, Saule, LENZ, Dismeco, Graphenea, Lurederra, Ecopol, checking materials as diverse as silicon in photovoltaic panels, polymers, graphene or classification of glasses for recycling.

Sorting system - Pilot line for recycling plastic in Lurederra (Navarra)



Process monitoring system- pilot line for CIGs PV production in ZSW (Sttugart)