

Project idea/ Field of expertise:

In-line monitoring of microscale metallic objects and assemblies/ NDT, sensors /RF

Organisation Name:

- CEA -

French Alternative Energies and Atomic Energy Commission

Adressed challenge(s)/ PPP(s):

DT-FOF-07-2020: Assembly of micro parts

Adressed topic(s) in Work Programme:

(+ DT-FOF-11 : Quality Control in smart Manufacturing

+ DT-FOF-10, NMBP-35, NMBP-36, LC-NMBP-31, FTI, Eurostars, ITEA 3.)

Our project idea / expertise

IDEA

Inline monitoring of small metallic object such as RF and sensor electronic components.

EXPERTISE

In-line inspection of small metallic assemblies to increase the quality of micro-objects with:

- Ultrasensitive magneto-resistive sensors (GMR/TMR) based EC probes
- X-Ray Fluorescence, Micro and Nano Computed Tomography
- Micro-Robotics

COMPETENCIES

- Electromagnetic sensors for 2D spatial resolution
- Sensors integration
- Real time data processing
- Control automation



128 sensors and 4 ASICs

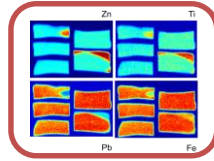


Inspection Automation



Flexible Multi-sensors

NDT Department at CEA



Advanced NDT

- Ultrasonic
- Electromagnetic
- X-ray
- Thermography

Material characterization

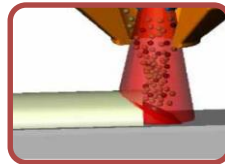
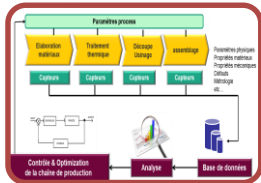
- Density, thickness
- Viscosity, polymerisation
- Stress constraints
- Elemental Composition

Inline Monitoring

- Defect detection, material characterization
- Data analysis, diagnosis

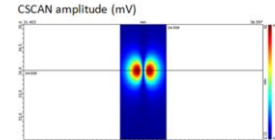
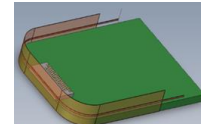
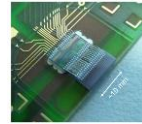
Additive Manufacturing

- In situ monitoring
- NDT integrated in the digital twin



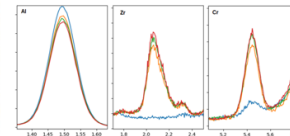
Past references CEA

•IMAGIC project (FP7)



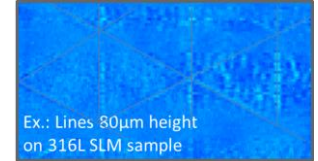
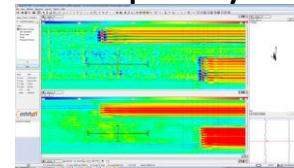
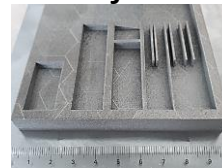
ASIC for 32 GMR/ TMR sensors + CIVA simulation for **Magnetic Imagery** and **defect detection**

•LEE-BED Project (H2020)

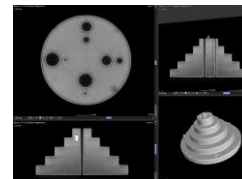


Coating composition and thickness measurement for quality control of printed products.

•Projects on AM quality and measurements



Inline Measurement for detection of 80µm height issues



Micro Computed Tomography for surface determination and dimensional measurements

Consortium

Known partners / Competence offer

Name	Type	Country	Role in the project
BAM	RTO	Germany	NDT methods, electronics

Partner search

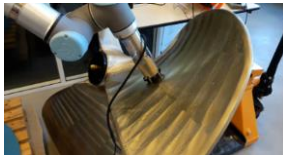
Sensors



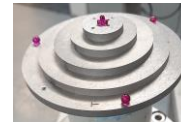
Electronics



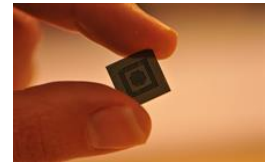
(Micro-)Robotics
and grasp tech



Assembly
quality control



End users



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