SusChem 2017 Brokerage Event

Material feedstock processing using Plasma MW
SPIRE-02

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• **RTO** private non-profit foundation.

• Result of the merging process of different Technology Centers (among others ASCAMM, **CTQC**, BDIGITAL...), started in 2015 and still ongoing.

- **Homogeneous & Asymmetric Catalysis.**
- **CO2 Transformation.**
- **Membranes** and Encapsulation.
- **Photonic monitoring** of corrosion.
- **PHOTOCATALYSIS** and **PHOTOCHEMISTRY**.
SUSCHEM

**SUSCHEM**

- **DIGITAL partner in SPIRE Projects**
  SPIRE 03 – 04 – 05 – 06 - 10

- **ULTRASOUNDS applied to**
  SPIRE - 02

- **MW & Plasma**
  SPIRE - 02

**SPIRE Topics INTEREST**

- **Data Value Chain Management** (Collection-Information-Knowledge-Intelligence).
- **Intelligent resource management and decision support.**
- **Interoperable real-time platforms** based on AI, machine learning, data analytics & data management.

- **Ultrasonic Micromolding (USM).**
  - Polymers Thermoforming
  - Molten Metal (Al) degassing

- **Generation of hydrogen.**
- **Decomposition of CO2 and CH4** (biogas plants)
- **Electronic PCB, Composites recycling.** SPIRE - 10

- **COMPOSITES**
  - RTM (faster resin curing)
  - Thermoforming (as preheating step)

- **REVALORIZATION OF FIBERS** obtained from **COMPOSITES RECYCLING** processes.
  SPIRE - 10
SPIRE-02: Application of Microwave Plasma Torch in gas fired industrial furnaces.

Developing microwave plasma torch add-ons for continuous industrial processes to be integrated into existing gas-fired industrial furnaces.

- Processing of material feedstock using plasma torch as a convective heating source complementing gas heating.
- Preheating source in industrial furnaces.

At present, Eurecat own self-designed and self-manufactured Microwave induced plasma generators (circular type) providing a torch-like plasma.

TRL4, technology have been validated in lab (200 cm³, 300-700 °C, low consumption magnetrón of 1-1,3 kW) → TRL6 Industrial Demo.
Gas consumption will be reduced at least by a 20%, mainly due to the new heating plasma source but also enhanced by a plasma side effect of increasing the gas combustion efficiency.

Reduction of CO\textsubscript{2} and industrial air pollution emissions (NO\textsubscript{x} and CO).

Suitable for connection to the electricity grid - potential for integration in a renewable energy grid.

Solutions compatible with existing production lines for a wide adoption.

The solutions may be modular applied to different sectors.
## LOOKING FOR PARTNERS

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>ROLE</th>
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<tbody>
<tr>
<td><strong>eurecat</strong></td>
<td>Development of add-ons unit with plasma torch.</td>
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<tr>
<td>¿RTO?</td>
<td>Industrial process (chemistry, metallurgy, ceramics)</td>
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<td>¿RTO?</td>
<td>Integration in fluctuating electricity stream</td>
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<td>¿SME / LE?</td>
<td>Equipment / furnaces manufacturer</td>
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<td>¿SME / LE?</td>
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Contact details for project idea(s) in SPIRE topics:

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