Horizon2020 Information Days on Public-Private Partnerships

Brokerage event
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STRUCTURED DEVELOPMENT OF PROCESS INTENSIFIED CATALYTIC REACTORS

ACRONYM: SPICARE

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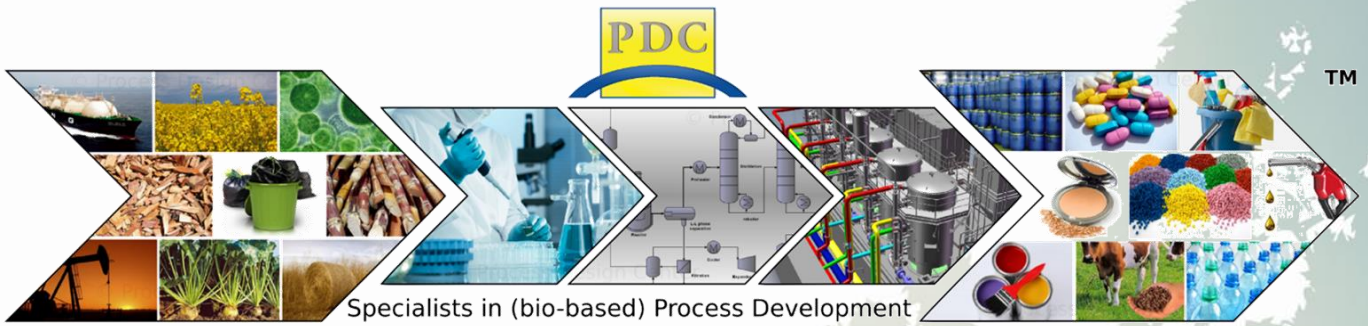
SPIRE
Sustainable Process Industry through Resource and Energy Efficiency

Process Design Center



- Highly qualified experts in chemical engineering (PhD/MSc)
  - *Conceptual process design*
  - *Techno-economic evaluation*
  - *Energy efficiency*
- Proprietary tools and methods - PROSYN®
  - *Expert system for conceptual process design*
  - *>300 man years invested (since 1980s)*
  - *Ongoing development*
- Profound experience
  - *Proven capability to come up with better solutions*
  - *Wide international experience, working with major companies and technology (startup) companies*
  - *Partner in EU consortia (FP5-FP7)*

    CYCLOP (2000 – 2003), INSERT (2004 – 2007), NEPUMUC (2005 – 2008), CACHET (2006 – 2009), F3Factory (2009 – 2013), EuroBioRef (2010 – 2014), CARENA (2011 – 2015), CAPSOL (2011 – 2015), BISIGODOS (2013 – 2017), FASTCARD (2014 – 2017)

BREDA, NL
(head office)

PROJECT IDEA

- Project idea - concept and objectives
  - *Development of new intensified catalytic reactor concepts*
    - *Microwave/plasma (irradiation) technology enabling new operating window*
    - *Homogeneous and heterogeneous catalysis*
  - *Integration of microwave/plasma catalytic reactors in relevant industrial processes*
    - *Optimization in relation to full process engineering*
    - *Assessment of benefits (resource/energy efficiency & emission reduction)*
    - *Implementation in modular or containerised setups*
  - *Capture of knowledge through development of conceptual design methodologies, thereby facilitating future implementation of microwave/plasma reactor technology.*
- Call topic
  - ***SPIRE-05-2015*** *'New adaptable catalytic reactor methodologies for Process Intensification'*

EXPECTED IMPACT

- New operating window not accessible using conventional reactors
  - Substantially increased space-time yield through (local) heating
  - New, smaller reactor concepts
- Increasing activity of (non-metal) catalysts enabling replacement of (organo)metallic catalysts by cheaper, less toxic and more abundantly available catalytic materials
- Reduced number of process steps and/or unit operations
  - Transfer from batch to continuous processing
  - Combination of manufacturing processes or unit operations, e.g. in-situ (homogeneous) catalyst manufacturing
- Reduced energy & resource use and emissions by 15% for relevant industrial processes
- Facilitating cross-sectorial implementation of microwave/plasma reactor technology by capture of knowledge in generic conceptual design methodologies

EXISTING PROJECT CONSORTIUM

Multidisciplinary consortium to address the different skills:

- *Homogeneously/heterogeneously catalyzed microwave reactors*
  - *University of Nottingham, UK*
  - *e2v technologies, UK*
  - *ARKEMA, FR*
  - *SME1, FR*
  - *SME2, D*
- *Microwave/plasma intensified reactors*
  - *TU Delft, NL (Stankiewicz)*
  - *ARKEMA, FR*
- *Conceptual design, methodology development, and techno-economic evaluation*
  - *Process Design Center, NL*

LOOKING FOR PARTNERS

- *Microwave/plasma reactor technology providers (Companies / SMEs / academia) with an interest to embed their technology in industrial processes*
- *Equipment manufacturers with an interest to develop and commercialize microwave/plasma reactor technology*
- *Process industries (cross sector) that are keen to improve their processes by intensified reactors based on microwave/plasma technology*

CONTACT DETAILS

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