SPIRE PPP
- Sustainable Process Industries through Resource & Energy Efficiency –
Info Day 16/12/2013

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Process industries in the value chain

**Raw Materials**

**Process Industry:**
Chemical, biochemical, and physical transformation and formulation of raw materials using continuous and batch processes into Materials with new properties and functionalities

**Discrete Manufacturing:**

[Icon representing discrete manufacturing processes]
Process industry sectors

- METALS
- CHEMICALS
- MINERALS
- STEEL
- WATER
- CEMENT
- ENGINEERING
- CERAMICS
Within the existing installed base of industrial processes

- **Reduce** feedstock: enhance the availability and quality of existing resources
- **Reduce** emissions
- **Reduce** energy and water: integrated use, new materials
- **Reduce**, prevent waste
**PROCESS INDUSTRY**
**ADDRESS COMMON CHALLENGES**

**RE-USE with SPIRE**

Within the existing installed base of industrial processes

- **Re-use** energy within and between different sectors: energy harvesting, storage and re-use
- **Re-use** water within the sector and within the area
- **Re-use** waste streams as feed, including recovery, recycling and re-use of post-consumer waste; waste system approach – new business models
Within the existing installed base of industrial processes

- **Replace** current feedstock by integrating novel and renewable feedstock (such as bio-based) to reduce dependency while reducing the CO₂ footprint of processes or increase the efficiency of primary feed stock.
- **Replace** current inefficient processes
**PROCESS INDUSTRY**
**ADDRESS COMMON CHALLENGES**

**RE-INVENT with SPIRE**

Rejuvenate & invest in industrial processes

- **(Re-)invent** feedstock
- **(Re-)invent** more efficient equipment
- **(Re-)invent** devices for better monitoring, control & optimisation
- **(Re-)invent** energy & resource mngt. concepts, incl. industrial symbiosis
- **(Re-)invent** materials & products with a significantly increased impact on resource & energy efficiency down the value chain: transport, housing
- **(Re-)invent** technologies for valorisation of waste streams
STRATEGIC ROADMAP
SIX KEY COMPONENTS

1. **Feed**: Increased energy and resource efficiency through optimal valorisation and smarter use and management of existing, alternative and renewable feedstock.

2. **Process**: Solutions for more efficient processing and energy systems for the process industry, including industrial symbiosis.

3. **Applications**: New processes to produce materials for market applications that boost energy and resource efficiency up and down the value chain.

4. **Waste2Resource**: Avoidance, valorisation and re-use of waste streams within and across sectors, including recycling of post-consumer waste streams and new business models for eco-innovation.

5. **Horizontal**: Underpinning the accelerated deployment of the R&D&I opportunities identified within SPIRE through sustainability evaluation tools and skills and education programmes as well as enhancing the sharing of knowledge, best practices and cross-sectorial technology transfer.

6. **Outreach**: Reach out to the process industry, policy makers and citizens to support the realisation of impact through awareness, stimulating societal responsible behaviour.
FEED

- KA 1.1: Enhancing the availability and quality of existing resources
- KA 1.2: Optimal valorisation of waste, residue streams and recycled end-of-life materials as feed
- KA 1.3: Optimal and integrated (re) use of water
- KA 1.4: Advancing the role of sustainable biomass/renewables as industrial raw material
PROCESS

• KA 2.1: Novel advanced energy technologies
• KA 2.2: Energy harvesting, storage and reuse
• KA 2.3: Process monitoring, control and optimization
• KA 2.4: More efficient systems and equipment
• KA 2.5: New energy and resource management concepts (including industrial symbiosis)
APPLICATIONS

- KA 3.1: New processes for energy and resource efficient materials applied in sectors down the value chain
- KA 3.2: New materials contributing to development of energy and resource efficient processes
• KA 4.1: Systems approach: understanding the value of waste streams

• KA 4.2: Technologies for separation, extraction, sorting and harvesting of gaseous, liquids and solid waste streams

• KA 4.3: Technologies for (pre)treatment of process and waste streams (gaseous, liquids, solids) for re-use and recycling

• KA 4.4: Value chain collection and interaction, reuse and recycle schemes and business models
• KA 5.1: Identification, benchmarking and cross-sectorial transfer of good energy and resource efficiency solutions and practices

• KA 5.2: Methodologies and tools for cross-sectorial Life Cycle and Cost Assessment as well as novel social Life Cycle Assessment of energy and resource efficiency solutions

• KA 5.3: Develop skills and education programmes required for the development and deployment of novel energy and resource efficiency solutions and practices

• KA 5.4: Enhancing innovation and entrepreneurial skills and culture
OUTREACH

• KA 6.1: Analysis and establishment of efficient technology dissemination methodologies, mechanisms and frameworks

• KA 6.2: Develop social responsibility for the process industry
AMBICTIONS

- A reduction in fossil energy intensity of up to 30%
- Up to 20% reduction in non-renewable, primary raw material intensity
  + a significant contribution to a drastic efficiency improvement in CO₂-equivalent footprints of up to 40%
  + potential improvements extend beyond “process industry”
SPIRE in FIGURES

GROWTH

- +450K enterprises (+ SMEs)
- +90 members
- +15 EU countries
- +6.8M employees
- +1,600bn € turnover
- 8 sectors
- +30 RTOs

RESOURCES

- 900M € EC contribution
- match € Company leverage
- 20% EU economy
In Summary ...

- SPIRE is a joint initiative from a substantial part of European industry – with a clear strategic roadmap.
- SPIRE has broad commitment from industry, academia, SMEs and RTOs.
- SPIRE will help improve Europe’s competitiveness through focusing on very relevant societal needs.
- SPIRE is well prepared and ready to go.
THANK YOU

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