Coordinating Optimisation of Complex Industrial Processes (COCOP)

- SPIRE-02-2016, Plant-wide monitoring and control of data-intensive processes
- 1st Oct 2016 / 31st Mar 2020
Project Case Study

1. The EU/ SPIRE needs
   Better usage of heterogeneous and low-grade non-renewable and recycled raw materials

2. The Project Solution
   COCOP provides orchestrated operation and control of unit processes to improve plant-wide efficiency and to reduce use of fossil energy and decreases environmental impact.

3. Value to Customers
   Customers will be able to adapt the process operation to varying raw material properties and reduce the effects of disturbances. This “agility” to respond changes improves yield and reduces side effects.

4. How will this happen?
   By cross-sectorial innovation approach COCOP integrates recent developments in information technology and web-based automation software architectures with mathematically solid estimation, optimization and prediction methods.
### Key expected sustainability impacts of COCOP

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<thead>
<tr>
<th>Indicator</th>
<th>Baseline</th>
<th>Expected Impact</th>
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<tbody>
<tr>
<td>Global Warming Potential (mainly CO2 emission reduction) *</td>
<td>2016: 0.69 tCO2/t metal</td>
<td>4200t/a in a smelter (8%)&lt;br&gt;10% reduction in brick usage</td>
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<tr>
<td>Fossil energy intensity *</td>
<td>2016: 12.17 GJ/t metal</td>
<td>10% reduction in propane usage&lt;br&gt;10% reduction in oil usage in FSF and AF</td>
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<tr>
<td>Decrease of on-site material handling time **</td>
<td>Currently&lt;br&gt;- rejection/scraping Not disclosed&lt;br&gt;- Rework Not disclosed</td>
<td>Achieving a&lt;br&gt;40% reduction in rejection&lt;br&gt;20% reduction of rework</td>
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* Copper<br>** Steel
What outputs or learning from Project X could have value for other SPIRE projects here?

• Deliverable D2.3 *System Requirement Specifications* outlines the general purpose requirements for plant-wide monitoring and optimal control system (public access through SPIRE website).
• The COCOP Decomposition and coordination concept and its transferability assessment to other sectors than the use cases, e.g. waste water treatment.
• Development kit: Cookbook guideline and prototype software for transforming diverse simulation models into use in the COCOP runtime system.
• Online environmental Indicators: Define online environmental indicators which can be calculated from direct process measurements and models to predict the environmental effects of the plants operational level.
Process-industry plants will be run optimally by operators with the guidance of a coordinating, real-time optimisation system.
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