FUDIPO

- Reference of the call: H2020-IND-CE-2016-17
- Start/end date: 1\textsuperscript{st} Oct 2017/30\textsuperscript{th} Sept 2020
- Partners:
Project Case Study

1. The EU/ SPIRE needs
   Energy and resource efficiency in industries leading to low CO2 emissions and EU competitiveness

2. The Project Solution
   Toolbox with methods for enhancing energy efficiency for processes industries

3. Value to Customers
   Solutions for processes optimization leading to energy and resource savings

4. How will this happen?
   A model-based control platform for optimization and analysis for the production parameters
What are the **key expected sustainability impacts** of **FUDIPO**?

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Baseline</th>
<th>Expected Impact</th>
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<tbody>
<tr>
<td><strong>Savings in electricity in waste water treatment plants</strong></td>
<td>Aeration demand in WWTP is about 50% of electric energy demand, which corresponds to about 2% of the total electric energy demand in developed countries. Electricity consumption in EU is around 3400 TWh/year</td>
<td>Savings potential in the range of 60-80 TWh(el)/year. Electricity savings in the range of 3-4 B€/year. Biogas production can be increased by some 25% in those plants using sludge for biogas production.</td>
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<td><strong>Energy consumption in the pulp and paper industry</strong></td>
<td>14GJ/ton of virgin pulp, 5-8 GJ/ton of paper</td>
<td>Reduction of 10% in the energy required for paper production, energy saving of 14-24 THh/year for Europe.</td>
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<td><strong>Production improvement in pulp and paper industry</strong></td>
<td>In EU, pulp and paper industry produces 100.4 Mtons of paper and board products.</td>
<td>2-4% production improvement, with a revenue increase of 400€/tons of increased fiber production.</td>
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<td><strong>Decrease in electricity consumption in power plants</strong></td>
<td>Electric power from organic fuels is about 58% out of 3400 Twhel/year</td>
<td>Potential to save up to 30-150 Twhel/year</td>
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<td><strong>Energy and resources savings in refineries</strong></td>
<td>EU consumption of oil is around 8900 TWh/year.</td>
<td>Energy and resource savings in refineries around 10 %.</td>
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What outputs or learning from FUDIPO could have value for other SPIRE projects here?

FUDIPO SHOW CASES

Pulp and paper industry processes

• Predict the Kappa number from the Wood properties of Wood coming into the fiber-line by measuring NIR spectra of the incoming chops.

Oil refining plant

• Economic optimization of the DHP unit by optimizing the feed blend procedure with the help of current MPC. Produce the maximum amount of diesel at given specifications. New sensors to know T95 of the feed to operate the unit more efficiently.

Heat and power plants

• Reduce pollutant emissions (e.g. dioxins).
• Enable the possibility of using cheap fuels with reduced environmental impact.
• Reduce down-time and improve system efficiency.

Waste water treatment plants

Methods with control, based on quality measurements of incoming waste to:

• Increase of biogas production
• Low the aeration demand
“A holistic approach to optimization and control can achieve a much better economic and environmental performance compared to individual actions that lack integrated planning”

A project is an idea, but even more the people who follow it!
Contact

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