DryFiciency – Waste heat recovery in industrial drying processes

• Reference of the call: H2020-EE-2016-2017
• Start/end date: 01.09.2016 – 31.08.2020
• Partners:
Project Case Study

1. The EU/ SPIRE needs

Measureable substantial primary energy savings clearly quantified and substantiated, and subsequent reduction of CO2 emissions.

2. The Project Solution

Two high-temperature industrial heat pump systems demonstrations for recovery of waste heat in brick, pet feed and starch drying.

3. Value to Customers

Customers will be able to buy cheaper or first high temperature industrial heat pumps reaching a supply temperature of up to 160°C and recover up to 80% of heat.

4. How will this happen?

With market launch and roll out plan supported by sound innovation management and training program.
What are the **key expected sustainability impacts** of *Project DryFiciency*?

*(select key indicators)*

**Baseline:** e.g. 1000 te/yr [manufacturing plant of ...], using fossil fuel energy, conventional solvents, conventional heat exchangers etc., sited in Southern Spain, Cradle to Gate assessment (producing identical product; improving the process)

<table>
<thead>
<tr>
<th>Indicator (Max 3-4 key indicators)</th>
<th>Baseline</th>
<th>Expected Impact</th>
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</thead>
<tbody>
<tr>
<td><strong>Global Warming Potential (mainly CO2 emission reduction)</strong>*</td>
<td>The industrial processing sector produces 374 mil. Tonnes of CO2 every year in the EU alone</td>
<td>CO2 reduction in Agrana of 878 t-CO2/a, Wienerberger if 1489 t-CO2/a and Mars of 806 t-CO2/a.</td>
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<td><strong>Fossil energy intensity</strong>*</td>
<td>12-25% of industrial energy consumption is used for drying on a national scale in EU</td>
<td>Primary Energy Saving (PES) in Agrana of 3188 MWh/a (40-60%) , Wienerberger of 5960 MWh/a (50-80%) and MARS of 3418 MWh/a (60-80%) in three industrial scale heat pump demonstrators.</td>
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<td><strong>Total material consumption</strong>*</td>
<td>No critical materials used currently.</td>
<td>OPEX reduction by 29.7 % at the demo sites.</td>
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<td><strong>Economic added value/Cost reduction due to energy efficiency improvement</strong></td>
<td></td>
<td>Agrana 55 to 67 % more efficient, Wienerberger 60 to 75 % more efficient, Mars 60 to 80 % more efficient. Cost reduction in Agrana of 4%/kg Starch, Wienerberger of 5%/kg Brick, Mars of 20%/kg-kibble.</td>
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</table>
What **outputs or learning** from Project DryFiciency could have value for other SPIRE projects here?

- Guidelines on Lessons Learned and Training materials as public deliverable finished in 2020,
- DryFiciency technologies and know-how can be commercialized in a range of energy intensive industries within 3 years post-project,
- ready-to-sign agreements finished by the end of the project,
DryFiciency: demonstration of close-to-the-market high temperature industrial heat pumps

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