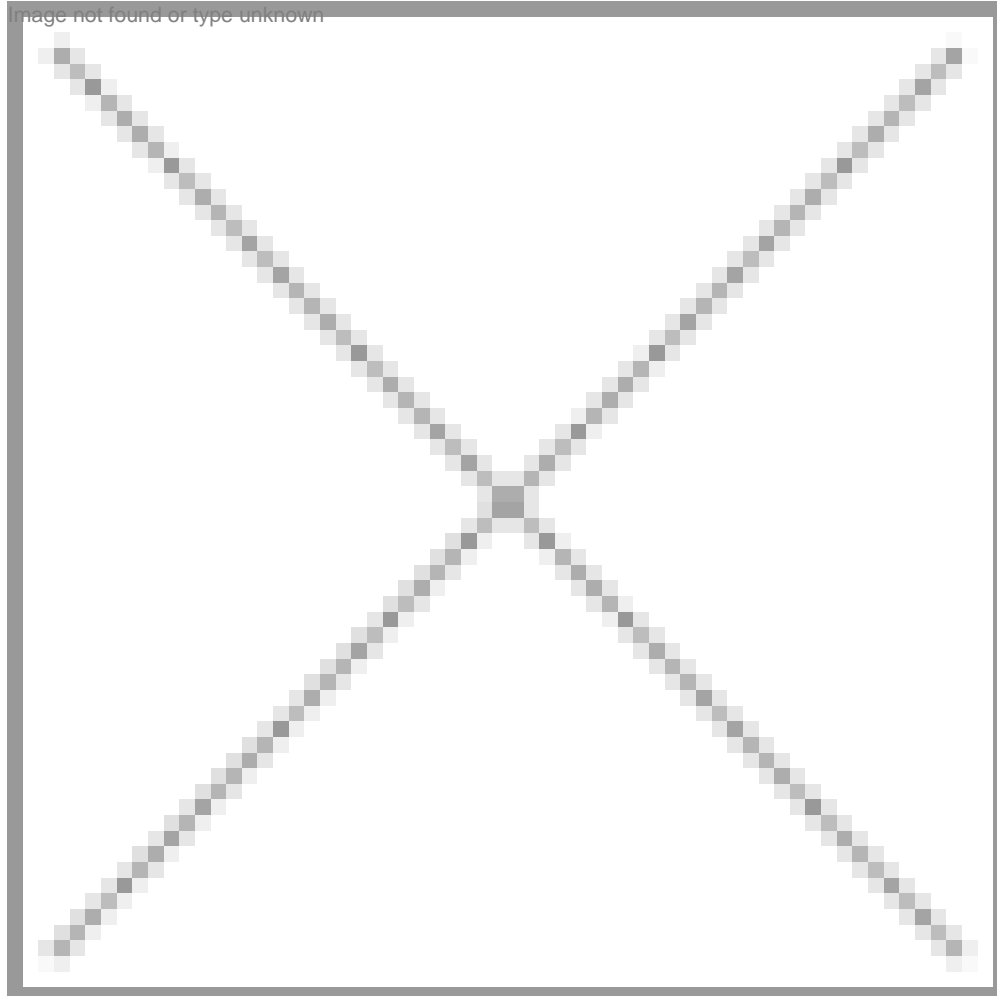


## A.SPIRE

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### **Emission Reduction and Energy Efficiency for the Process Industry**

#### **Potential Impact Showed in Three Demo-Cases**

#### **The Context**

In this day and age, as we face our greatest environmental crisis, reducing CO<sub>2</sub> emissions and saving energy have become increasingly urgent, and energy-intensive industries are stepping up their efforts to combat climate change.

## The DryFiciency Project – Industrial Heat Pumps



Among those efforts is the **DryFiciency**

**project (full title Waste Heat Recovery in Industrial Drying Processes).** Funded by Horizon 2020, under a SPIRE call, DryF was launched on 1 September 2016, and ended in 2021, hence being one of the projects transitioning from the **SPIRE cPPP**, to its current continuation, the **Processes4Planet** partnership.

### The Aim



Coordinated by A.SPIRE's member **AIT AUSTRIAN INSTITUTE OF**

**TECHNOLOGY**, DryF aimed to lead the European energy-intensive industry to high energy efficiency and a reduction of fossil carbon emissions through waste heat recovery, working towards a vision of competitiveness, improved security of energy supply and sustainability.

## **Implementation. The Approach and The Demonstrators**

To achieve its ambitious goals, the DryFiciency project successfully developed and implemented three advanced high-temperature vapour compression heat pumps at TRL 7, across three industries: **AGRANA** (food industry), **WIENERBERGER** (brick industry), and **SCANSHIP** (waste management). These innovative heat pumps, featuring both closed-loop and open-loop systems, efficiently recover waste heat and reduce energy costs. The project also designed the necessary **training** to facilitate the adoption of these cutting-edge technologies.

## **Results, Replicability and Potential Impact– Up to 80% Carbon Emissions Reduction**

In May 2024, a representative from AIT, the project coordinator, said that the closed-loop heat pump demonstrators used for air drying were operated for more than 4,000 hours each and showed **carbon emission savings of up to 80%**.

Furthermore, the refrigerant used for the two closed-loop prototypes reduces the use of **F-gases** (Fluorinated greenhouse gases).

The open-loop heat pump demonstrator was combined with a novel highly efficient MVR dryer technology and was also tested in an industrial setting in a two-stage compression. **The efficiency of the dryer technology was increased by 75% and its energy consumption was reduced by 70%**.

**Moreover, the AIT representative stressed that the solutions are highly replicable and that the level of absolute carbon emission savings can be increased by upscaling the prototypes to larger capacities and testing them in various industrial processes and sectors including food/beverage, chemical or pulp and paper.**

**A.SPIRE considers DryFiciency a success story because its tangible results and proven replicability contribute to the 2050 SIRA vision – towards a climate-neutral and circular Europe (the first Key Performance Indicator of the P4Planet partnership is CO2 Eq. emission reduction by integration of renewable energy & energy efficiency, measured on a relevant number of demonstrators).**

**Therefore, DryFiciency is an inspiring project, a valuable tool to help limit global warming to 2 degrees Celsius while fostering a highly performant and sustainable European industry.**

Check out **this document** for more information about the June Success Story and pictures of the demonstrators.

Visit the **DryFiciency website**.

For more information about A.SPIRE, the Processes4Planet Partnership, and the *Success Stories* campaign contact **the team**.



**Funded by  
the European**