PINcHED - Process INtegrated HEat pump Drying

Accelerating the implementation of high-temperature heat pumps

Project Scope
Accelerate adoption of industrial heat pumps in the Netherlands by creating reference cases in two main industrial sectors of Food and Paper:

- Less customization and integration effort for the market by defining integrated drying units as new product for the technology manufacturers of this project consortium and
- Actively communicate this approach with the industrial community including technology manufacturers.

Objective
- Define optimal balance between standardization <-> customization:
- Formulate the designs for new value propositions for equipment manufacturers and create a possible route for fully heat pump integrated drying processes in 2030.
- Increased understanding of the heat and mass balances in conventional drying processes vs. the heat pump integrated drying process.
- Design/Create 4 full scale integrated heat pump designs for 2 green and 2 brown field situations & Formulate the R&D questions to be answered on pilot scale and on demo scale.
- 4 designs of pilot systems able to answer the defined R&D questions.

Motivation
Drying processes account for 15% of industrial energy consumption in some processes, e.g. paper production, up to 70% of the energy is used for drying. Improving of the energy efficiency of drying processes will therefore contribute significantly to energy saving targets and to the reduction of CO2 emissions.

Results
The 1st PDEng TU/e started September 2019 and the 2nd PDEng TU/e will be recruited and will start in April 2020.

Next steps
- Plan shaped and focus defined.
- 1st PDEng (chemical engineer): Literature review, process development greenfield & brownfield contact drying by June 2020 and also for convective drying by August 2020.
- 2nd PDEng (mechanical engineer): Literature review, process development greenfield & brownfield contact & convective drying by April 2021.

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