Push2Heat

Project Scope, Objectives and Expected outcomes

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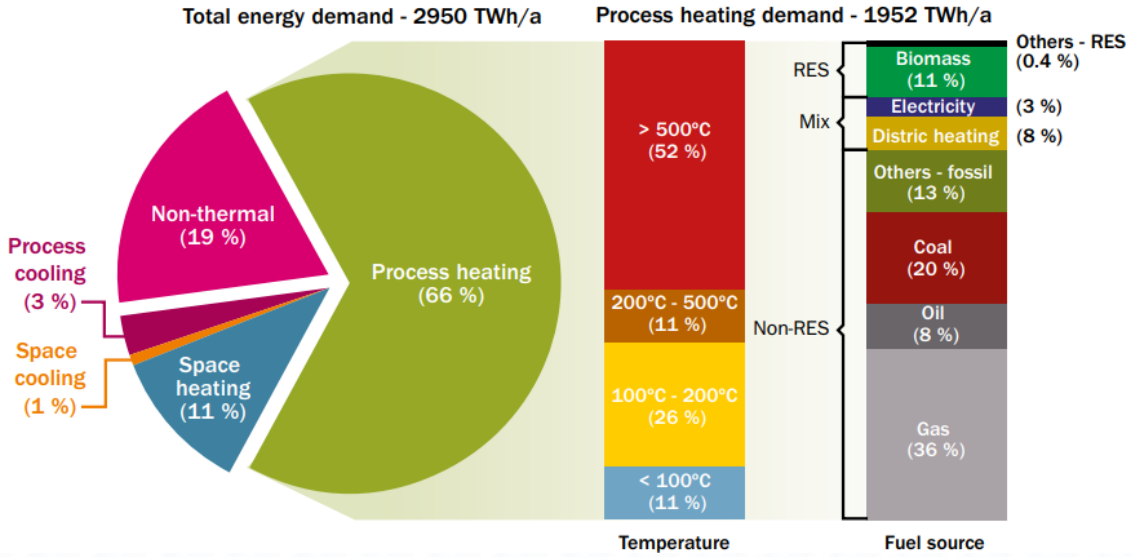
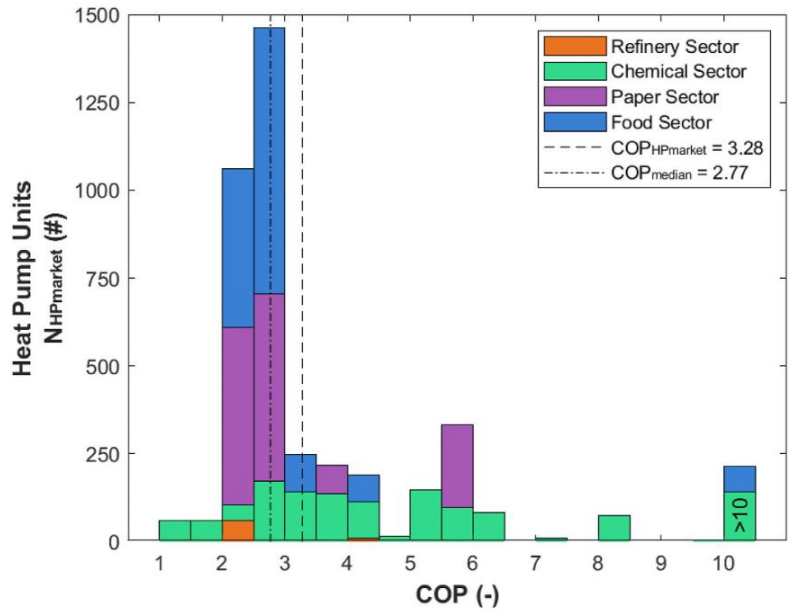
VITO

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101069689 (PUSH2HEAT).

Background

- Thermal energy demand for process heating accounts for ~ 66% of the total industrial energy demand in EU [1].
- Heat pump technologies for heat upgrading can be utilized to cover the target temperature range of < 100°C and 100°–200°C.
- Food, paper, and chemical/pharma industries have been identified as the ones with maximum potential [2].





How to address the existing implementation barriers for wide deployment ?

[1] De Boer R, et al (2020) Strengthening Industrial Heat Pump Innovation, Decarbonizing Industrial Heat, White Paper.
[2] Marina, A. et al. (2021). An estimation of the European industrial heat pump market potential. Renew. & Sust. Energy Reviews

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Project Scope

*' **Pushing forward the market potential** and business models of heat upgrade technologies by **full scale demonstration of heat upgrade systems** in relevant industrial sectors with high waste heat recovery and upgrading potential, with supply temperature in the range of 90-160°C '*

- overcoming existing **implementation barriers** for the wide deployment
- achieving successful exploitation roadmaps and business models for heat upgrade technologies **higher market penetration**

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Project Objectives

- Full-scale development of heat upgrade **technologies** ensuring an optimized integration in industrial processes
- Full scale **demonstration** of industrial heat upgrade systems
- Develop successful exploitation roadmaps, business models and contractual agreements for heat upgrade technologies **deployment**
- Environmental and Economic **Impact Assessment**

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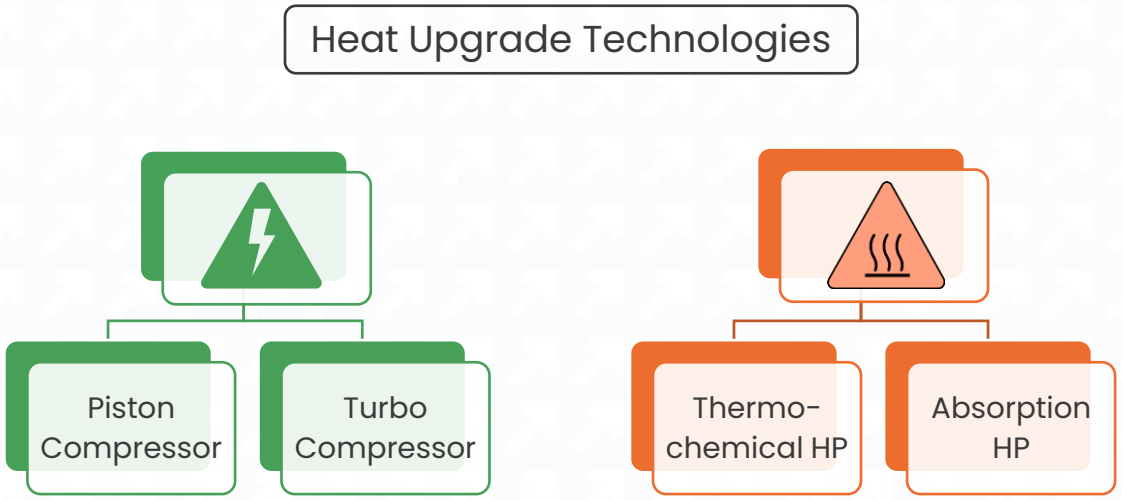
Technologies & Innovations



- Modular design approach for high temperature heat pumps
- Optimized heat pump control strategies for performance improvement
- High speed hermetic compressor with active magnetic bearing systems
- Optimized heat exchanger designs for pressure drop reduction

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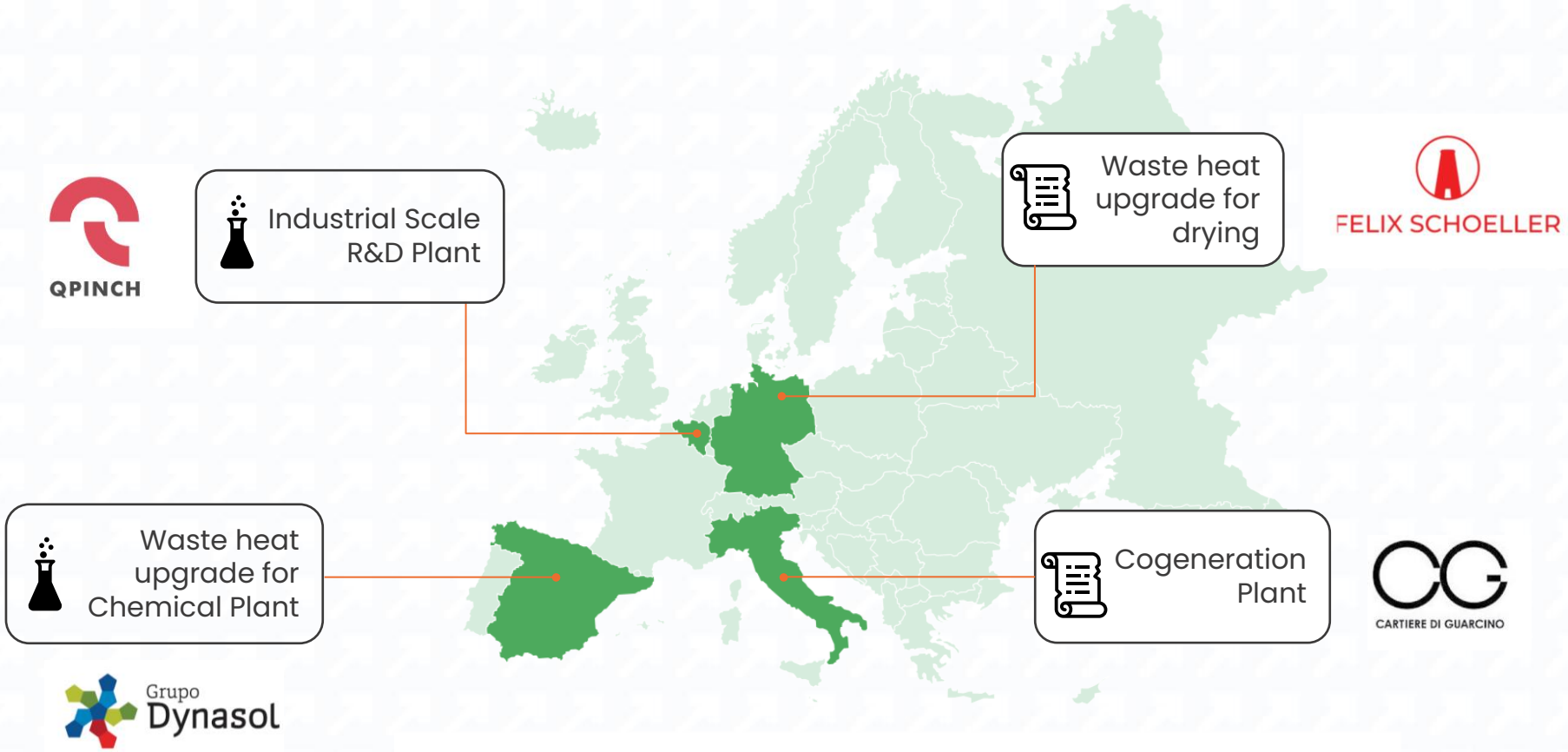
Technology Demonstration



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Monitoring & Exploitation

Barriers for Demonstration Sites based on local conditions and frameworks

Site Specific Business Models, agreements and life cycle assessments

Practical Understanding of different barriers and working solutions

Replication Studies

Industry wide impact and general guidelines

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Impact

Direct effects from full-scale demonstrations

	Primary Energy Savings (MWh/ yr)	CO_2 Savings (tCO_2/ yr)
Demo Site 1 (Germany)	3874	1022.2
Demo Site 2 (Italy)	10434.7	2041.1
Demo Site 3 (Spain)	4555.3	829.0

Estimated long-term wider impacts

	Primary Energy Savings (GWh/ yr)	CO_2 Savings ($ktCO_2$/ yr)
	974.8	222.3
	876.7	200.0
	634.4	144.7

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Consortium

Research Entities

tecnalia — MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE — *coordinator*

Universitat Politècnica de València

Fraunhofer

Politecnico Milano 1863

vito

Technische Universität Berlin

Centro Tecnológico CARTIF

OST Ostschweizer Fachhochschule

Industries, Engineering & Associations

Felix Schoeller

Cartiere di Guarcino

Cannon Bono Energia

ehpa

Grupo Dynasol

Manufacturers

SPH

BS Nova

QPINCH

enertime

2022 — 2026

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Thank you!

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