



# Holistic Energy Management and Thermal Waste Integrated System for Energy Optimization

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## HEATWISE



### About project

The HEATWISE project tackles the integration of waste heat and thermal energy management in tertiary buildings with significant IT loads for the minimization of waste heat, maximization of energy efficiency, and generation of additional value. Through pilots in Denmark, Poland, Switzerland, and Turkey, HEATWISE aims to pioneer innovative solutions, encompassing hybrid (liquid and air) cooling technology, a digital twin-supported holistic data management system, an integrated multi-objective building energy management system, and a self-assessment and optimization tool, complemented by a knowledge-sharing platform.

### Objectives

- Novel automatically operated integrated building and DC ecosystem
- Waste heat recovery of 100%
- Power Usage Effectiveness (PUE) below 1.05
- Energy Reuse Factor (ERF) improved by a minimum of 10%
- Primary Energy Saving (PES) of 20% for each server



#### Pilots

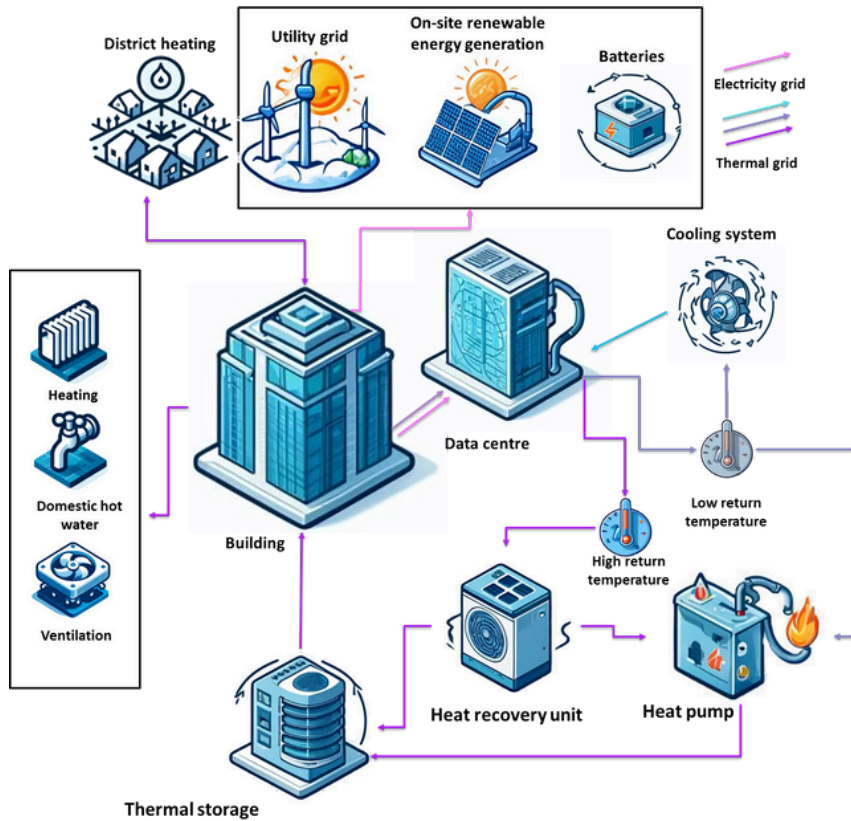
- A university building in Denmark
- A residential and public mixed-usage building in Switzerland
- A smart factory in Turkey
- A super computing center in Poland



#### Budget & Duration

- €4,5M
- 2024 - 2026

## HEATWISE Solutions



- ▶ **Multi-objective building thermal energy management system**
- ▶ **Self-assessment and optimization tool with open-source CFD tools for the thermal simulations of pilot sites**
- ▶ **Hybrid air immersion and on-chip dielectric liquid cooling system**
- ▶ **Holistic data centre management system**

## Challenges

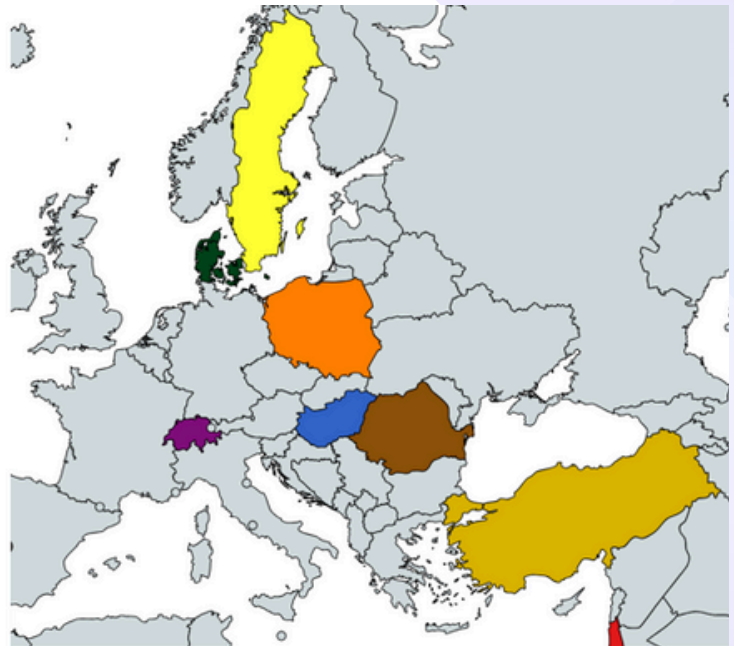
- **Date Centers:** increasing heat, confined space, energy cost, reporting obligation on resource efficiency, space rental fee
- **Buildings:** greening the buildings, passive building, energy cost
- **Policy Makers:** A need for integrated KPIs for integrated systems.

## Ambition

HEATWISE aims to maximize energy efficiency and waste heat recovery, from IT equipment and HVAC systems, on a building level based on self-assessment and self-optimization tools, repurposing the generated waste heat potential by the thermal management process for other compatible energy-demanding purposes through the use of sophisticated digital twin designed to dynamically manage the complex energy exchanges and precisely simulate and optimize energy flows.

# HEATWISE

## PARTNERS



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