The Heat2Battery project is an EIC Pathfinder Open project, funded under the Horizon Europe programme, rethinking **how we recover, store, and use energy** through two powerful ideas:

Waste Heat Recovery

Energy Storage

At the heart of our innovation is a hybrid **All-Solid-State Thermal Battery (ASSTB)** — a brand-new type of thermal cell that works without liquid components; it is safer, more stable, and able to operate across a broader range of temperatures.

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www.heat2battery.com

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The Heat2Battery consortium brings together complementary and world-class expertise in a synergistic effort.

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TECHNISCHE UNIVERSITÄT MÜNCHEN

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day one

HEAT2BATTERY

Turning Waste Heat into Power

The Problem

A vast amount of waste heat generated by industrial processes and devices goes unused as existing thermal energy storage technologies are limited by narrow temperature ranges determined by the liquid components of the battery and poor energy capacity, making them unsuitable for real-world applications.

Our Mission

Heat2Battery aims to develop a revolutionary solid-state thermal battery that can store and release energy using waste heat, without relying on rare materials or constant temperature gradients. We aim to create a scalable, efficient, and sustainable energy solution that transforms how we harvest and use thermal energy — powering a wide range of applications from IoT sensors to electric vehicles and industrial systems.

Our Goal?

To create a solid-state thermal battery that:

- Works reliably in a broad temperature
- Stays stable over time
- Stores enough energy to power small electronics (from mAh to Wh range)

Use cases

Scientific Objectives

The Heat2Battery project pushes the boundaries of energy research by exploring how temperature-induced changes in materials can be harnessed for thermal energy storage. The key scientific goals include:

- **Understanding Proton Dynamics in Solids**
- **Electrode Phase Transitions**
- **Innovative Materials Design**
- **Multidisciplinary Research**

Technological Objectives

The project aims to deliver a new class of energy devices that combine heat harvesting and storage — moving beyond conventional batteries or thermoelectric generators.

- **Model Cell Design**
- **Solid-State Electrolytes**
- **Advanced Electrodes**
- **Advanced Characterization**
- **Demonstration & Testing**