

WAS2TES: Turning Waste into Clean Energy Solutions

Giving new life to construction and industrial waste through heat storage technology

What is the project about?

Europe produces over 2 billion tons of waste every year, much of it from construction and industry. Most of this waste ends up in landfills. The WAS2TES project wants to change that by turning waste materials—like concrete, iron slag, and ash—into useful materials that can store heat. This heat storage system, called Packed Bed Thermal Energy Storage (PBTES), helps industries save energy and reduce pollution.

Why is this important?

Industries often waste heat or burn fuels to produce it, which harms the environment. PBTES systems store heat from renewable sources and release it when needed, making industrial processes cleaner and more efficient. But current systems are costly and struggle with extreme temperatures. WAS2TES solves this by using waste materials to build strong, heat-resistant parts, making the system cheaper and more durable.

How will it work?

The project will develop two new materials- one for storing heat and one for structural support. These materials will be tested for strength, heat resistance, and environmental safety. A new design for the PBTES system will be created using these materials, aiming to cut costs by at least 20% compared to traditional systems.

Who's Leading the Project – and When Does It Start?

The project is led by researchers from the Technical University of Denmark. The team combines experts from the Dept. of Energy Conversion and Storage (DTU Energy) and the Dept. of Environmental and Resource Engineering (DTU Sustain). The project will run for sixteen months starting January 2026.

What's the impact and perspective?

WAS2TES supports Denmark's green transition and circular economy by turning waste into valuable resources. It helps industries become more sustainable, reduces CO₂ emissions, and opens new opportunities in waste management and renewable energy. The project aligns with COWIfonden's mission to promote sustainable development.