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SUSHEAT MAGAZINE

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In Memoriam

Ruben Barbero Fresno

With deep sadness, the SUSHEAT consortium mourns the passing of our colleague Rubén Barbero Fresno, who passed away on 22 April 2026, after an illness. Our thoughts and sympathies are with his family, friends, and all those who knew and worked with him.

Rubén played a central role in SUSHEAT and was deeply committed to advancing solutions for sustainable industrial heat. Through his work, he brought scientific rigour, clarity, and a collaborative spirit that helped the consortium move forward—both in the technical work and in ensuring that project communication remained accurate and respectful of partners' contributions

Those of us who worked with him will remember his dedication and professionalism, as well as his thoughtful engagement with the wider project community. We honour his contribution to SUSHEAT and his impact on the people around him.

The consortium extends its sincere condolences to Rubén's loved ones during this difficult time.

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Editorial

From integration to system-level validation

The second edition of the SUSHEAT Magazine spans a period of steady progress and consolidation for the project. Since the publication of our first issue in early 2025, SUSHEAT has continued to advance its work on renewable and waste-heat-based solutions for industrial heat upgrade, moving from the development of individual components towards an increasingly integrated system perspective.

Over the past year, project activities have focused on strengthening the links between technologies, refining system interactions, and preparing the ground for the next phase of experimental work. Alongside this technical evolution, SUSHEAT has expanded its presence within the wider research, industry and policy communities, sharing insights through events, communication materials and new digital formats.

This issue reflects that broader trajectory. Rather than providing exhaustive technical detail, the magazine offers a curated overview of where the project stands, highlighting key concepts through visual material, showcasing selected communication outputs launched during Period 2, and pointing to opportunities for engagement in the months ahead. In doing so, it complements SUSHEAT's regular newsletters and online channels by offering a more reflective snapshot of the project's ongoing journey.

As SUSHEAT progresses into its next phase, system integration, performance assessment and knowledge sharing remain central priorities. We hope this edition provides readers with a clear and accessible view of how the project is evolving, and how its results contribute to the wider discussion on the decarbonisation of industrial heat.

Clìo E. Agrapidis
D&C Manager

The consortium on SOLATOM premises in Valencia
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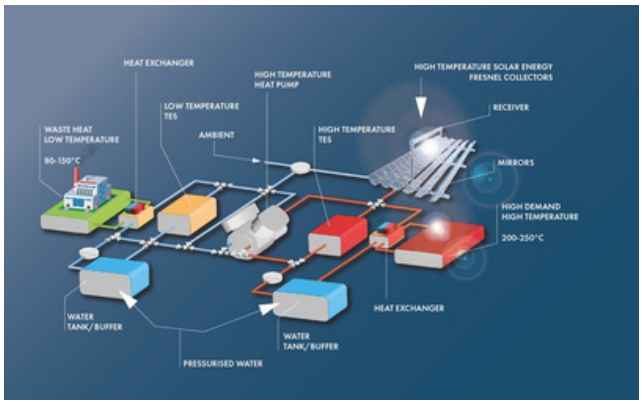
From development to integration

Industrial processes require large amounts of high-temperature heat, much of which is still generated using fossil fuels. At the same time, significant quantities of thermal energy are lost as waste heat, while renewable energy sources often remain underutilised due to variability and integration challenges. SUSHEAT addresses this structural inefficiency by focusing on a system-level solution for sustainable industrial heat upgrade, rather than treating technologies in isolation.



The full SUSHEAT ecosystem

To respond to this challenge, the project brings together three complementary technological elements. A high-temperature heat pump enables the upgrade of low-temperature heat to levels suitable for industrial processes. Thermal energy storage makes it possible to decouple heat supply from demand, improving operational flexibility.

An AI-assisted control and integration layer coordinates heat sources, storage, and industrial demand to support efficient system operation under varying conditions.

While each technology provides value on its own, their integration within a single, coordinated system is what enables meaningful transformation. By combining waste heat recovery, renewable energy inputs, thermal storage and intelligent control, SUSHEAT explores how industry can gain flexibility in heat management—supporting both decarbonisation objectives and potential cost reductions through improved energy use.

The project is now moving from individual technology development towards integrated system operation under laboratory conditions, allowing interactions between components to be observed and optimised. This approach enables the assessment of how the SUSHEAT ecosystem could function under conditions representative of real industrial environments, and how it compares with conventional heat supply solutions currently in use.

By shifting the focus from individual components to system integration, SUSHEAT reflects the understanding that industrial decarbonisation requires integrated, flexible and reliable solutions, capable of supporting industrial processes while reducing dependence on fossil fuels.

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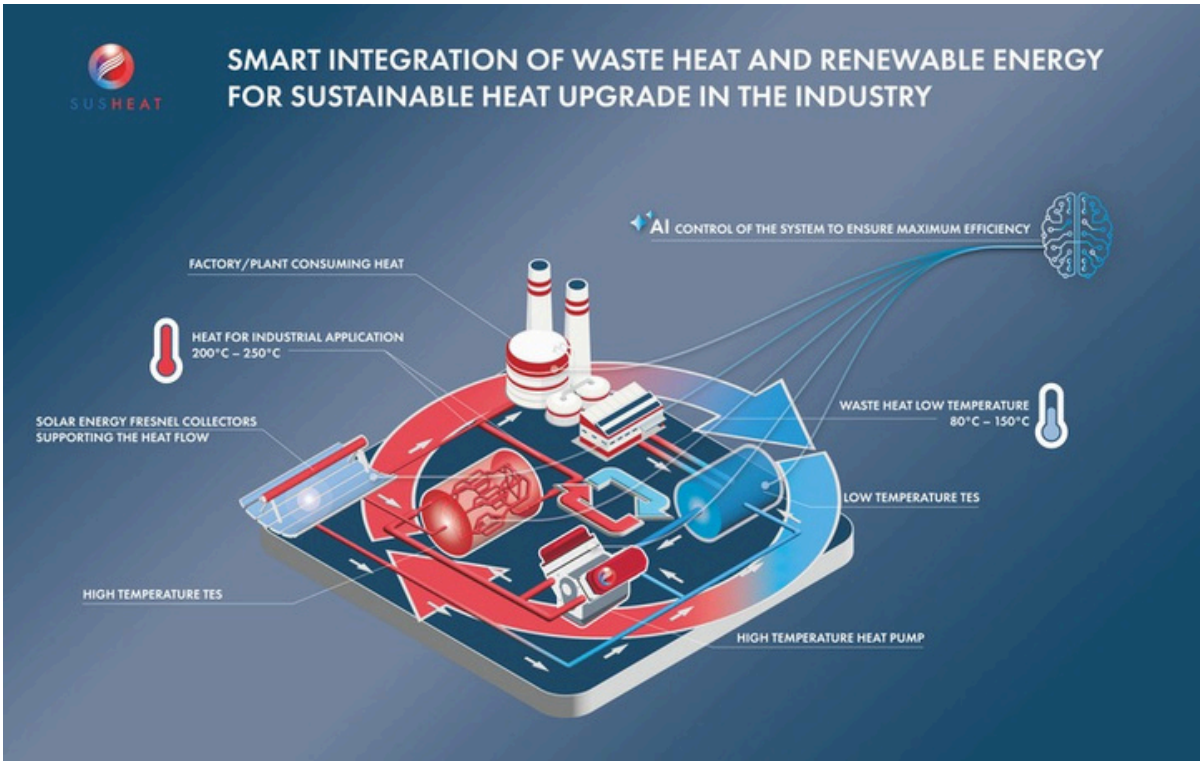
Two new infographics (1/2)



This infographic presents the overall SUSHEAT system concept for delivering high-temperature heat (200–250 °C) to industrial processes through the smart integration of waste heat, renewable energy, and thermal storage.

Low-temperature waste heat available at industrial sites (typically 80–150 °C) is recovered and upgraded using a high-temperature heat pump, supported by renewable energy sources such as solar Fresnel collectors. To balance variability in supply and demand, the system includes Thermal Energy Storage (TES) at both low and high temperature levels, allowing heat to be stored and dispatched when needed.

A key element of the SUSHEAT approach is the AI-based control system, coordinating heat sources, storage units, and industrial demand. By optimising heat flows across the system, this control layer supports efficient operation, flexibility, and reliable heat delivery for industrial applications.

Through this integrated configuration, SUSHEAT addresses a key challenge in industrial decarbonisation: upgrading low-grade heat and intermittent renewable energy into usable, on-demand process heat, reducing reliance on fossil fuels and associated emissions.

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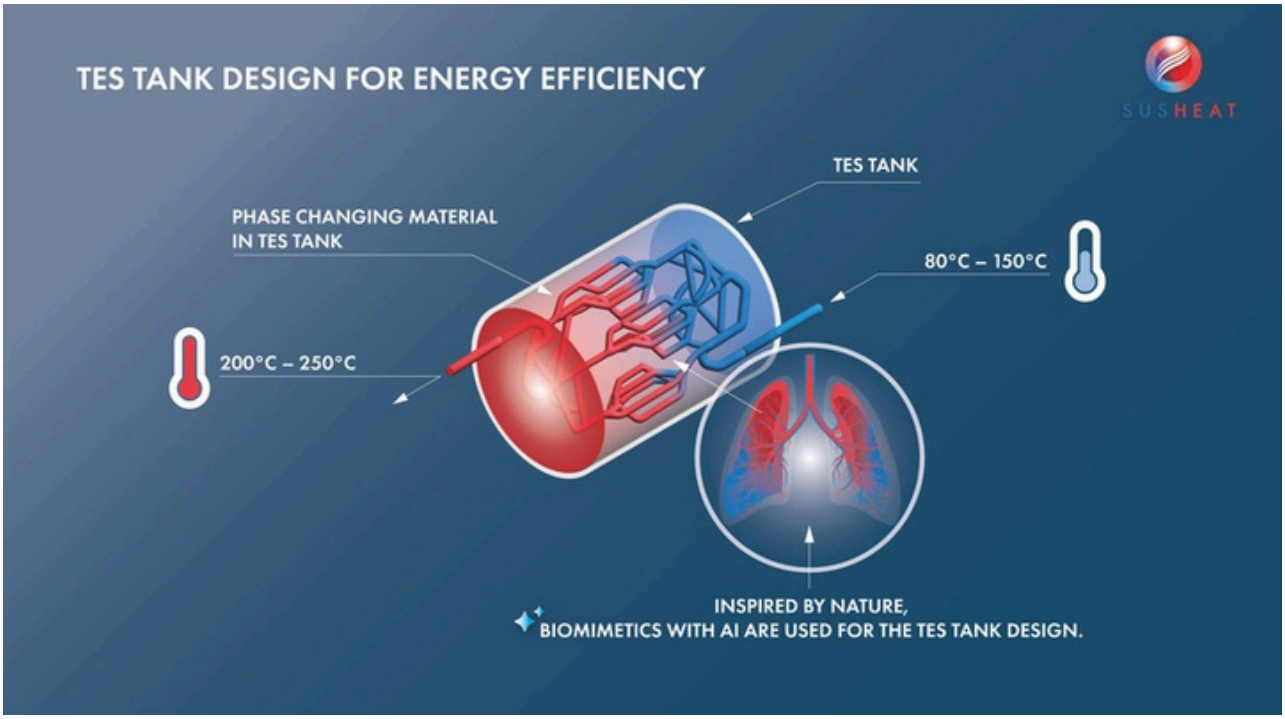
Two new infographics (2/2)



This infographic illustrates the Thermal Energy Storage (TES) concept developed within the SUSHEAT project to support efficient and flexible industrial heat upgrade.

A key challenge in combining waste heat and renewable energy is the mismatch between heat availability and industrial demand. Thermal Energy Storage addresses this challenge by storing heat when it is available and releasing it when required by the process, helping ensure stable and continuous operation.The SUSHEAT TES design is based on phase-change materials (PCM), which store and release large amounts of thermal energy during phase transitions within specific temperature ranges.

In the SUSHEAT system, TES operates across both medium temperatures (80–150 °C) and high temperatures (200–250 °C), supporting the full heat-upgrade chain.

Inspired by biomimetic principles, the internal TES structure is designed to enhance heat transfer and energy efficiency. AI-supported design and optimisation are used to improve thermal performance, contributing to faster charging and discharging and improved system flexibility.

By integrating advanced TES into the overall system, SUSHEAT enables more efficient use of recovered and renewable heat, strengthening the reliability and decarbonisation potential of industrial heat supply.

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SUSHEAT Videocast

In December 2025, the SUSHEAT project launched its quarterly videocast as a new channel to share insights around industrial heat decarbonisation and the project’s system-level approach to sustainable heat upgrade.

Through this format, SUSHEAT aims to make complex technological concepts more accessible by creating space for conversation, explanation and reflection. Episodes feature internal experts from the consortium as well as external voices from industry, research and the energy community, discussing challenges, solutions and perspectives related to industrial heat, waste heat recovery, renewable integration and system design.

The videocast complements SUSHEAT’s written communication by offering a direct and engaging way to explore ideas behind the project, beyond formal reports and technical publications.
All episodes are available on YouTube and Spotify.

Follow the series and subscribe to stay informed about new releases.

Susbcribe!

Listen to Episode 1: Interview with Ruben Barbero Fresno and learn more about SUSHEAT, UNED’s role, and the future of industrial heat decarbonisation.

Listen to Episode 2: Interview with Carles Mateu and Emiliano Borri from UDL to hear about TES, their role in SUSHEAT, and the interplay of AI, design, and material science.

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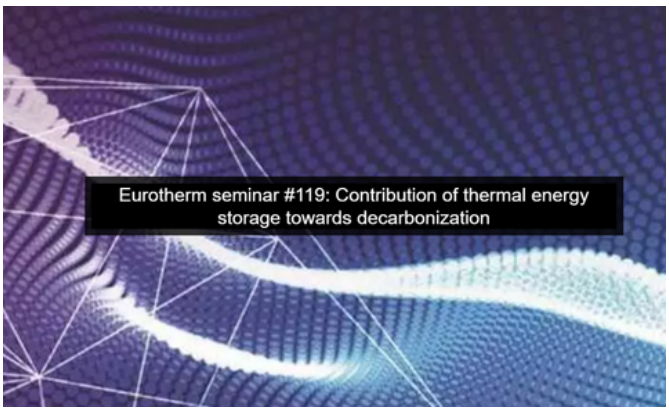
Where to find us next



Eurotherm Seminar – Lleida, Spain – 13-15 May

SUSHEAT will be present at Eurotherm Seminar #119, organised by project partner Prof. Luisa F. Cabeza and the GREiA research team. The event brings together academia and industry to discuss advances in thermal energy storage, renewable integration and AI-supported TES for decarbonisation.

IEA Heat Pump Conference- Vienna, Austria - 26-29 May

Find us at the leading international forum on heat pump technologies. The conference brings together researchers, industry, policymakers and investors to discuss innovations and applications supporting the decarbonisation of heating and cooling, with a strong focus on industrial heat.

CYTEF 2026 - Malaga, Spain, 24-26 Jun

Our Spanish partners will be present at CYTEF 2026, a biennial meeting point for academia and industry working on refrigeration, air conditioning, heat pumps and energy efficiency. The congress addresses advances in cooling and heating technologies and their applications in buildings, industry and food processing.

Enlit Europe 2026 - Vienna, Austria - 10-12 Nov

SUSHEAT will be exhibiting at Enlit Europe 2026 in the EU Projects Zone. Come meet the team and discover how SUSHEAT contributes to industrial heat decarbonisation. Booth details and speaking engagements will be announced in due course.

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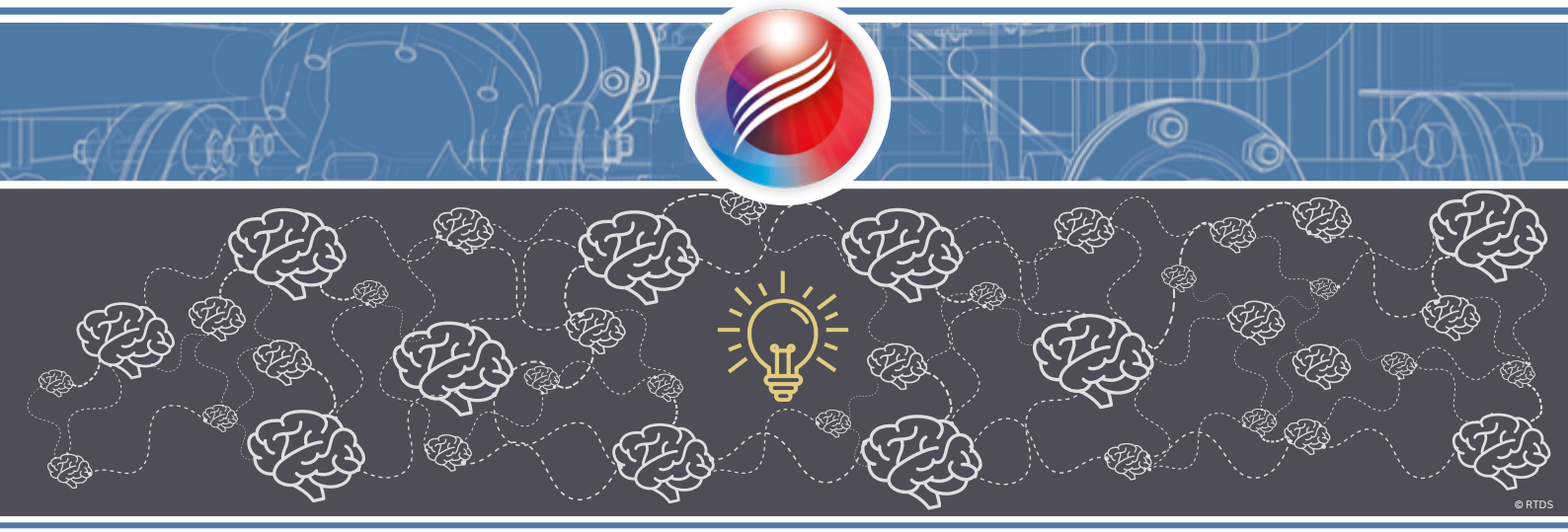

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