Ingenious Brain

Case Study

How We

Enabled Strategic Partnerships for the Client in the Thermal Energy Storage Ecosystem

Objective

A global client partnered with IeB to seek emerging thermal energy storage (TES) solutions, with a specific focus on high-temperature applications. Their objective was to explore technology options, commercial solutions, key players, and market opportunities, particularly in the context of power-to-heat (P2H) integration and energy-intensive industrial processes.

Our Strategic Approach

To pinpoint the most viable thermal energy storage solutions and partnership opportunities, IeB conducted a comprehensive assessment of the TES landscape through a technology- and market-driven framework.

Heat Stream & Application Assessment

Analyzed critical heat streams generated through power-to-heat solutions, mapping temperature ranges, load profiles, and operational requirements across energy-intensive processes. Our industry experts also identified use cases where thermal storage can enable energy efficiency, flexibility, and decarbonization.

Technology & Material Evaluation

Assessed high-temperature TES technologies, including sensible heat, latent heat, and thermochemical storage systems. Additionally, we evaluated storage media performance based on thermal stability, cost, scalability, and integration feasibility, narrowing down the most promising material categories for industrial deployment.

Market & Use-Case Analysis

Sized the addressable market opportunity for high-temperature TES across sectors such as steel, cement, chemicals, and power generation. Apart from this, our domain experts identified unmet market needs, including long-duration storage, high cycling stability, and compatibility with electrified heat sources.

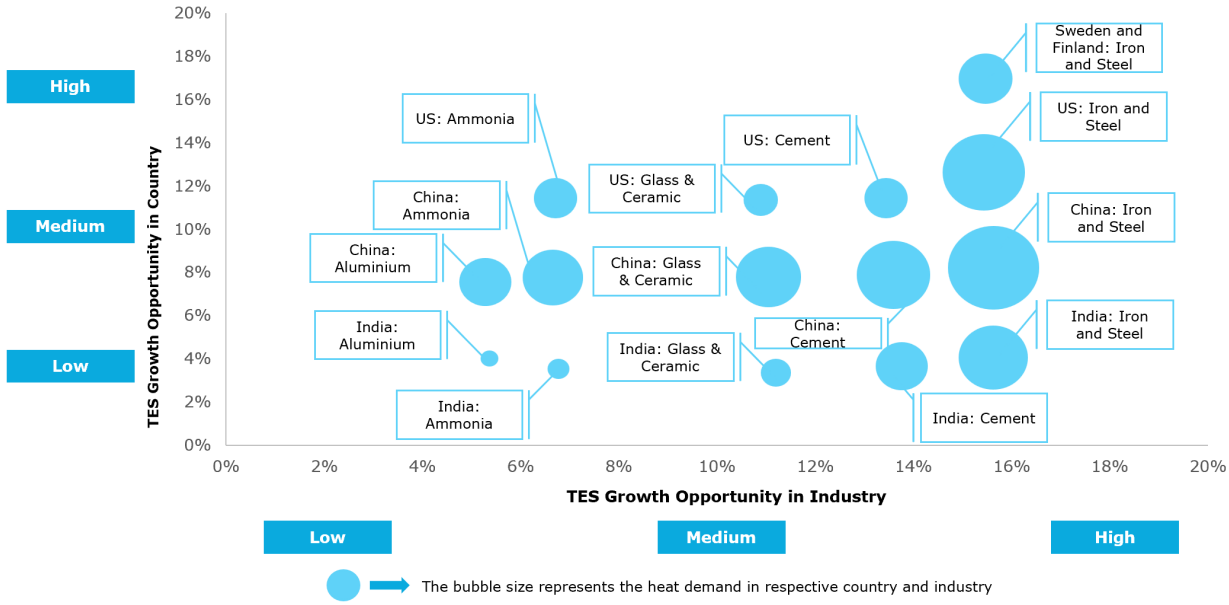
Key Players & Technology Ecosystem Assessment

Profiled key technology developers and solution providers active in the thermal storage space. Moreover, we assessed their technology maturity, commercialization status, and partnership readiness to identify collaboration opportunities aligned with the client's strategy.

Snippets

Executive Summary – TES Opportunities in Countries by Sector

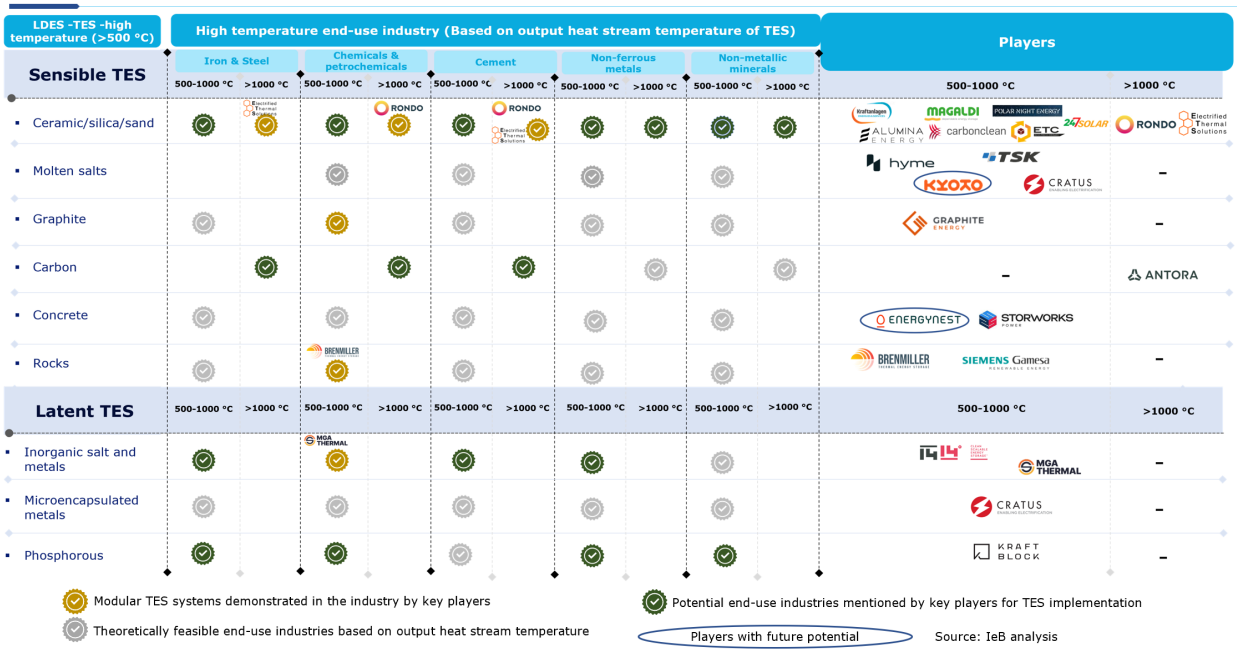
Opportunities for TES systems are showing in great opportunity in China due to investment trend in decarbonization and clean energy



Source: IeB analysis

Overview – Key TES Materials Vs. High-temperature End-use Industry

Rondo Energy and Electrified Thermal Solution offer TES solutions based on bricks, whilst Antora's technology offers carbon block-based TES solutions with the potential to provide high-temperature heat exceeding 1000 °C to end-use industries such as the iron & steel industry



Impact

Supported the client through:

- Shortlisting ceramic, silica, and sand-based materials as the most promising options for high-temperature thermal energy storage.
- Providing clarity on technology readiness and market gaps, supporting informed decision-making on TES adoption.
- Initiating partnership discussions with two leading technology developers, accelerating the client's pathway toward commercialization and deployment.

Conclusion

Through comprehensive evaluation of heat requirements, storage technologies, materials, and market dynamics, IeB delivered a clear roadmap to navigate the thermal energy storage landscape. The engagement empowered the client to focus on scalable, high-impact TES solutions, strengthen strategic partnerships, and position itself effectively in the evolving power-to-heat and industrial decarbonization ecosystem.

Ingenious e-Brain

Ingenious e-Brain is a global research advisory and management consulting firm that helps businesses future-proof their operations by addressing complex challenges with sustainable, strategic, and expert-led solutions. With a global network of over 300 domain experts, analysts, scientists, and consultants across 5 offices in 4 countries—we bring world-class research capabilities and a proven track record of delivering 5,000+ projects across various industries.

With over 13 years of proven excellence, we have successfully tackled business challenges for Fortune 500 and Global 1000 corporations, industry leaders, manufacturing giants, startups, investors, universities, and top companies across domains such as healthcare, sustainability, chemicals, advanced materials, automotive, energy, food & beverage, consumer packaged goods, and high-tech industries, particularly in the field of intellectual property and innovation.

Our services empower organizations to accelerate innovation, optimize R&D portfolios, and navigate complex intellectual property (IP) challenges, all while scaling operations with resilience. We support clients at every stage of the innovation process—from product launches and IP co-creation to market intelligence, consumer sentiment analysis, and gathering actionable customer insights through surveys.

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