

Thermal Energy Storage Global Market Insights 2025, Analysis and Forecast to 2030, by Market Participants, Regions, Technology, Application

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Abstracts

Thermal Energy Storage Market Summary

Introduction

Thermal Energy Storage (TES) systems store thermal energy for later use, enabling efficient energy management in heating, cooling, and power generation. The industry is defined by its role in decarbonizing energy systems, leveraging materials like molten salts and water tanks to shift energy loads and integrate renewables. The European Association for Storage of Energy notes that half of European energy consumption goes to heating and cooling, with around 89% supplied by fossil fuels, notably natural gas. Gas consumption shifted significantly since the invasion of Ukraine and the ensuing energy crisis. The International Renewable Energy Agency (IRENA) projects that by 2030, the global TES market could triple, growing from a few gigawatt-hours (GWh) in 2019 to over 800 GWh, with investments in cooling and power applications reaching USD 13 billion to USD 28 billion. Molten salt storage is widely used in the power sector, while water tank thermal energy storage (WTES) dominates the building sector globally.

Market Size and Growth Forecast

The Thermal Energy Storage market is projected to reach USD 6 billion to USD 8 billion in 2025 and expand to USD 15 billion to USD 20 billion by 2030, with a CAGR of 18% to 22%.

Regional Analysis

North America: Expected at 16% to 20%, the U.S. leads with renewable integration.

Trends focus on industrial applications.

Europe: Forecasted at 19% to 23%, Germany and Spain dominate, driven by

decarbonization. Trends emphasize policy support.

Asia Pacific: Projected at 20% to 24%, China leads with rapid urbanization. Trends favor cost-effective solutions.

Middle East and Africa (MEA): Anticipated at 15% to 19%, the UAE shows potential. Trends focus on cooling needs.

South America: Expected at 17% to 21%, Chile drives growth with solar projects. Trends lean toward scalability.

Application Analysis

Utility: Projected at 19% to 23%, it supports grid stability with molten salts. Trends emphasize renewable pairing.

Industrial: Expected at 17% to 21%, it reduces costs in manufacturing. Growth shifts to sustainable processes.

Key Market Players

Energy Nest: A Norwegian firm, Energy Nest offers high-temperature TES solutions.

KraftBlock: A German innovator, KraftBlock focuses on modular storage.

Kyoto: A sustainability player, Kyoto provides efficient TES systems.

Rondo: A U.S. firm, Rondo targets industrial decarbonization.

Brenmiller Energy: An Israeli company, Brenmiller excels in thermal storage tech.

Porter's Five Forces Analysis

Threat of New Entrants: Moderate, with high capital needs offset by innovation potential.

Threat of Substitutes: Low, as few alternatives match TES efficiency.

Bargaining Power of Buyers: Moderate, with demand for cost-effective systems rising.

Bargaining Power of Suppliers: Moderate, due to specialized material needs.

Competitive Rivalry: High, driven by technological advancements and green incentives.

Market Opportunities and Challenges

Opportunities

Renewable Integration: TES boosts solar and wind use.

Policy Support: Decarbonization goals drive investment.

Industrial Demand: Efficiency needs spur adoption.

Emerging Markets: Urbanization fuels growth.

Challenges

High Costs: Initial investments deter adoption.

Technical Complexity: System integration poses hurdles.

Fossil Fuel Reliance: Slow transition delays uptake.

Competition: Alternative storage tech vies for share.

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