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Middle East & Africa Thermal Energy Storage Market Forecast to 2030 – Regional Analysis – by Technology (Sensible Heat Storage, Latent Heat Storage, Thermochemical Storage), Storage Material (Water, Molten Salt, PCM, Others), Application (Power Generation, Process Heating and Cooling, District Heating and Cooling), and End User (Utility, Nonutility)

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Abstracts

The Middle East & Africa thermal energy storage market is expected to grow from US$ 2,088.36 million in 2022 to US$ 4,078.64 million by 2030. It is estimated to grow at a CAGR of 8.7% from 2022 to 2030.

Application of artificial intelligence for optimization and control of thermal energy storage systems Fuels Middle East & Africa Thermal Energy Storage Market

Energy storage systems are crucial for boosting the operational efficiency of existing energy sources; these systems help reduce energy consumption and costs, decrease environmental impacts, and improve the power grids' flexibility and consistency. To improve thermal energy storage systems, artificial intelligence is being integrated into these systems. Different research and development activities are being conducted to understand and implement the viability of artificial intelligence for predicting, optimizing, and monitoring the performance of energy systems that encompass thermal energy storage facilities. Various studies have been led to observe the viability of applying artificial intelligence techniques, such as artificial neural networks (ANN), particle swarm optimization (PSO), adaptive neuro-fuzzy inference system (ANFIS), and square vector machine (SVM), in the energy storage sector. In addition, the global energy trend is shifting toward renewables, and various large-scale solar, wind, and geothermal

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projects are being initiated across the globe. The development of effective and high-capacity energy storage systems can assist in overcoming the intermittent issue of renewable energy as it can store and discharge energy during a shortage. The implementation of AI in such systems offers various benefits, including rapid decision-making, minimization of human errors, and digital assistance. Further, traditional computing demands a lot of labor and time and can only resolve one issue at a time; as a result, the implementation of AI is rising in these systems. The utilization of AI and other advanced technologies helps optimize operations, forecast energy production and consumption, enhance the system's efficiency, and reduce energy costs. This factor is expected to fuel the thermal energy storage market growth in the coming years.

Middle East & Africa Thermal Energy Storage Market Overview

The Middle East & Africa (MEA) consists of major countries such as South Africa, Saudi Arabia, and the UAE. Continuous and stable energy supply throughout day and night, increase in the number of concentrated solar power projects, and cost-efficient approach for energy storage fuel the thermal energy storage market in the Middle East & Africa. Coal, oil, and gas are the major shareholders of energy production; however, with the changing world scenario, the share of renewables is also making its presence slowly but steadily across the Middle East & Africa. The growing number of initiatives toward deploying renewables for meeting the long-term climate change goals is another key reason for thermal energy storage market expansion in countries of the Middle East & Africa. Global inflation and rising energy prices impact the countries' renewable energy sector. Rise in energy prices, supply chain constraints, and dependence on market conditions fuel the necessity for thermal energy storage. In addition, the need for a consistent and constant power supply, coupled with aging grid infrastructure, is fueling the thermal energy storage market growth across the MEA.

Middle East & Africa Thermal Energy Storage Market Revenue and Forecast to 2030 (US$ Million)

Middle East & Africa Thermal Energy Storage Market Segmentation

The Middle East & Africa thermal energy storage market is segmented into technology, storage material, application, end user, and country.

Based on technology, the Middle East & Africa thermal energy storage market is segmented into sensible heat storage, latent heat storage, and thermochemical storage. The sensible heat storage segment held the largest share of the Middle East & Africa

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thermal energy storage market in 2022.

Based on storage material, the Middle East & Africa thermal energy storage market is segmented into water, molten salt, PCM, and others. The water segment held the largest share of the Middle East & Africa thermal energy storage market in 2022.

Based on application, the Middle East & Africa thermal energy storage market is segmented into power generation, process heating and cooling, and district heating and cooling. The district heating and cooling segment held the largest share of the Middle East & Africa thermal energy storage market in 2022.

Based on end user, the Middle East & Africa thermal energy storage market is segmented into utility and nonutility. The utility segment held a larger share of the Middle East & Africa thermal energy storage market in 2022.

Based on country, the Middle East & Africa thermal energy storage market is segmented int o South Africa, Saudi Arabia, the UAE, and the Rest of Middle East & Africa. Saudi Arabia dominated the Middle East & Africa thermal energy storage market in 2022.

Baltimore Aircoil Co, Burns & McDonnell Consultants Inc, Evapco Inc, and MAN Energy Solutions SE are some of the leading companies operating in the Middle East & Africa thermal energy storage market.

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