

Europe 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 Europe thermal energy storage market is expected to grow from US\$ 7,183.01 million in 2022 to US\$ 10,497.06 million by 2030. It is estimated to grow at a CAGR of 4.9% from 2022 to 2030.

Growing Heating & Cooling applications Fuels Europe Thermal Energy Storage Market

Sensible thermal energy storage technologies are usually integrated with district heating and cooling systems. Sensible storage technologies such as TTES are widely used for storing heat in buildings, while UTES is used in various instances in small-scale installations. PCM (applied in district cooling), solid-state thermal batteries, and ice storage are a few substitutes for air-conditioning units in advanced infrastructures such as heat pumps. The major advantage of deploying TES in these systems is its nature to dissociate heat and cold generation for hourly as well as seasonal consumption. From the energy demand perspective, TES can provide solutions for the overall energy system rather than focusing on individual vectors, such as power, heat, or cold. Energy demand in end-use sectors such as buildings is highly dependent on seasonality. Thermal storage can store energy for long periods, aiding in fulfilling seasonal demand and supply fluctuations. For instance, electricity requirements for building space heating or cooling systems can be shifted to low peak hours by charging thermal storage during

off-peak hours and then discharging when necessary. The technology decreases grid congestion, provides higher renewable energy penetration, and is cost-effective. Thus, the growing demand for thermal energy storage in large-scale cooling technologies, district heating and cooling, industrial power generation, cold-chain applications, and the building industry is fueling the market for thermal energy storage.

Europe Thermal Energy Storage Market Overview

In 2022, Europe led the thermal energy storage market. The key countries are Germany, the UK, France, Italy, and Russia, among others. Climate change concerns, targets of the Paris Agreement, and the inclination toward renewable energy for power generation are driving factors for the Europe thermal energy storage market. The use of thermal energy storage technologies as a cost-effective measure to manage energy imbalances in times of crisis or supply shortage is a major boost for the market. In solar power plants, district heating is a major application area of thermal energy storage. Europe has over 200 solar district heating programs, predominantly in Germany, Austria, Denmark, and Sweden. The global energy crisis owing to the Russia-Ukraine war has showcased the importance of energy storage and the requirement for alternative energy resources. The demand for energy in the industrial, commercial, and residential sectors is growing rapidly; hence, governments of various countries in Europe are focused on developing alternative solutions to conventional power supply. The governments realized the urgency of establishing alternative solutions, including renewables and proper storage infrastructure. Sufficient power generation from renewable sources can make the countries more energy secure and help manage climate change challenges generated by the usage of non-renewable sources. The government policies and mandates in line with the net zero carbon emission and clean energy targets are creating the demand for sustainable storage infrastructure, including thermal storage. In the European Union, the carbon dioxide ratio in the power sector intensified substantially in 2022. A few countries resumed operations at coal-driven power plants while outages at nuclear plants and low hydropower production contested the system's dependability. In line with the Paris Agreement, which involved 196 participants at the UN Climate Change Conference (COP21) in Paris, France, in 2015, the government is establishing net zero emission and green energy policies. The growing share of renewable energy resources in the power mix, incentives for using renewable sources in the industrial sector, and the rising application of advanced technologies with thermal storage facilities for residential and commercial heating and cooling processes are major driving factors for the thermal energy storage market in the region.

Europe Thermal Energy Storage Market Revenue and Forecast to 2030 (US\$ Million)

Europe Thermal Energy Storage Market Segmentation

The Europe thermal energy storage market is segmented into technology, storage material, application, end user, and country.

Based on technology, the Europe 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 Europe thermal energy storage market in 2022.

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

Based on application, the Europe 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 Europe thermal energy storage market in 2022.

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

Based on country, the Europe thermal energy storage market is segmented into Germany, France, Italy, Russia, the UK, and the Rest of Europe. Germany dominated the Europe thermal energy storage market in 2022.

Abengoa SA, Baltimore Aircoil Co, Burns & McDonnell Consultants Inc, Evapco Inc, MAN Energy Solutions SE, and Sunamp Ltd are some of the leading companies operating in the Europe thermal energy storage market.

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