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Thermal Energy Storage Market: By Product Type (Sensible Heat Storage, Latent Heat Storage and Thermochemical Heat Storage); By Technology (Molten Salt Technology, Electric Thermal Storage Heaters, Solar Energy Storage, Ice-based Technology and Miscibility Gap Alloy Technology); By Application (Process Heating & Cooling, District Heating & Cooling, Power Generation, Ice storage air-conditioning and Others); By End-user (Industrial, Utilities and Residential & Commercial); and Region – Global Analysis by Market Size, Share & Trends for 2014 – 2020 and Forecasts to 2030

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Abstracts

Product Overview
Thermal energy storage systems are especially used to store energy which is also known as heat storage. It has an energy transfer process that is quick and highly efficient and does not require chemical conversion. This is among the most feasible options for eco-friendly energy savings. It temporarily retains thermal energy for utilization at a later stage in the hot or cold form. Thermal energy storage systems minimize carbon dioxide emissions, decrease end-user energy usage and decrease energy demand during peak hours. The system's performance and economy depend on the type of material used in manufacturing. It is commonly used like other energy storage applications in solar plants and thermal power plants as well as combined heat & power plants and process industries.

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Market Highlights

Thermal Energy Storage Market is expected to project a notable CAGR of 14.2% in 2030.

Thermal Energy Storage Market to surpass USD 374 Million by 2030 from USD 190 Million in terms of value growing at a CAGR of 14.2% throughout the forecast period, i.e., 2020-30. The shifting preference towards the generation of renewable energy, including concentrated solar power, and the growing demand for HVAC thermal energy storage (TES) systems are key factors driving the growth of the industry. The rising need for improved energy efficiency, combined with ongoing efforts to use energy, would have a positive impact on the demand for thermal energy storage. Increasing government steps towards the implementation of sustainable technologies would help to achieve the carbon emission reduction goals developed and thus stimulate consumer demand. The market environment will be complemented by rising demand for energy-efficient and cost-competitive sources coupled with continuous and reliable power requirements across different industries.

Thermal Energy Storage Market: Segments

Thermochemical heat storage Segment to grow with the highest CAGR of 13.2% during 2019-30

Thermal Energy Storage Market is segmented by Product Type as Sensible Heat Storage, Latent Heat Storage, and Thermochemical Heat Storage. The sensible heat storage segment is estimated to lead the market with a share of over 45.0% which can be attributed to increased demand for solar thermal systems, along with applicability across HVAC systems on a large scale. The main aspect of the technology that will further increase the penetration of the product is the provision of reversible charging and discharge facilities for an infinite number of cycles. Over the forecast period, the thermochemical heat storage segment is projected to display the highest CAGR of 13.2%. Compared to latent or sensible heat storage systems, thermochemical storage systems have high energy density. For long-term storage, this type of heat storage is preferable because losses do not occur over time, but only during the charging and discharge phases.

Utilities Segment to grow with the highest CAGR during 2019-30

Thermal Energy Storage Market is segmented by End-user into Industrial, Utilities and Residential & Commercial. The industrial segment accounted for the largest revenue share of 28% in 2019 and is projected to maintain its lead over the forecast period. Rising spending on the construction and establishment of infrastructure would fuel demand for HVAC systems, which will, in turn, drive the industrial segment. Besides,

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the increasing adoption of these systems across several industries would fuel the growth of the segment by using large quantities of hot water for economic purposes. Over the forecast period, the utility segment is expected to see the fastest growth. Public utilities, such as broadband Internet, transportation, telecommunications, sanitation, water, natural gas, and electricity, are included in the section. Thermal power is used at an extremely low cost to provide these public services. To derive thermal energy and then convert it to the appropriate type of energy, cogeneration plants are used.

Thermal Energy Storage Market: Market Dynamics

Drivers

Rapidly growing urbanization

The demand for electricity has been on the rise with rapid urbanization around the world leading to the deployment of various forms of energy-generating utilities, including CSP plants. Besides, there has been a considerable increase in power consumption for district heating and cooling purposes. Because of the limited availability of independent cooling and heating systems for residential and commercial buildings, to meet their power requirements, these facilities are dependent on power utilities. Energy utilities are therefore increasingly setting up energy storage systems to meet the energy demand of these facilities, which in turn is driving the growth of the thermal energy storage market.

Rising deployment of concentrated solar power plants

The main factors driving the market growth are the increasing installation rate of concentrated solar power (CSP) systems and the increasing demand for energy storage solutions for heating, ventilating, and cooling (HVAC) applications. Renewable energy sources such as solar and wind power, are increasingly being adopted for self-consumption by the commercial and industrial (C&I) sector. But renewable energy is an intermittent source of power, and the C&I sector is failing to make full use of these resources. The C&I sector is therefore expected to increasingly adopt energy storage systems to increase the utilization rate of renewable energy sources, which in turn, will create significant opportunities for thermal energy storage providers in the future.

Restrain

Lack of awareness about technology and High Initial Cost

Factors such as the lack of awareness of storage technology, the additional costs associated with the use of the thermal energy storage system, and the need for highly qualified technicians to maintain the system are expected to hinder the market growth. Thermal storage is a relatively new technology that has been introduced to the market. There are different components in the energy storage system, each having its own

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associated cost. The cost of generating electricity using this system is currently around four times the cost of generating electricity using traditional fossil fuels, such as coal and natural gas. Besides the initial investment is quite high for setting up this system. The heavy costs associated with this system, therefore, result in its low utility adoption, which in turn restricts the growth of the market for thermal energy storage.

Thermal Energy Storage Market: Key Players
BrightSource Energy Inc.

Company Overview, Business Strategy, Key Product Offerings, Financial Performance, Key Performance Indicators, Risk Analysis, Recent Development, Regional Presence, and SWOT Analysis.

SolarReserve LLC
Abengoa SA
Terrafore Technologies LLC
Baltimore Aircoil Company
Ice Energy
Caldwell Energy
Cryogel
Steffes Corporation
Trane Technologies plc
Thermal Energy Storage Market: Regions
Thermal Energy Storage Market is segmented based on regional analysis into five major regions. These include North America, Latin America, Europe, APAC, and MENA.

Thermal Energy Storage Market in Europe led the market with a lion share of more than 30% in 2019 and is projected to maintain its lead over the forecast period. A large number of thermal energy storage systems that are used for space heating, water heating, district heating, and cooling, and power generation characterize this region. Due to a large number of operational TES projects across the country, along with the presence of major players, Spain is the largest contributor to regional market growth. The Asia Pacific market is expected to expand over the forecast period at the highest CAGR of 14.3%. The urbanization and population of developing nations such as China, India, South Korea, Japan, Indonesia, and Malaysia are experiencing rapid growth. There are many unreliable power grids and fundamental infrastructure systems for these developing nations. This factor is expected to force industry participants to invest in these countries and thus increase the growth of thermal energy storage facilities and distribution grids.

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Competitive Landscape:
The Thermal Energy Storage market, which is highly competitive, consists of several major players such as Abengoa Solar, Burns & McDonnell, Solar Reserve, BrightSource Energy, Calmac, MAN Energy Solutions, and Baltimore Air Coil Technology hold a substantial market share in the Thermal Energy Storage market. Other players analyzed in this report are Cristopia Energy, Cryogel, Caldwell Energy, Dunham Bush, Goss Engineering, Steffes Corporation, DN Tanks, Turbine Air Systems (TAS), Evapco Inc., Fafco, Sunwell Technologies, DC Pro Engineering, CB&I (McDermott), and LIME among others.

Key players are adopting inorganic growth strategies such as product launches in the global nutritional supplement market. For instance, In August 2018, Solar Reserve signed an agreement with the South Australian Government (Australia) to build a 150 MW solar thermal power station. It will use molten salt for its storage and uses parabolic tower systems.

Thermal Energy Storage Market is further segmented by region into:
North America Market Size, Share, Trends, Opportunities, Y-o-Y Growth, CAGR – United States and Canada
Latin America Market Size, Share, Trends, Opportunities, Y-o-Y Growth, CAGR – Mexico, Argentina, Brazil, and Rest of Latin America
Europe Market Size, Share, Trends, Opportunities, Y-o-Y Growth, CAGR – United Kingdom, France, Germany, Italy, Spain, Belgium, Hungary, Luxembourg, Netherlands, Poland, NORDIC, Russia, Turkey, and Rest of Europe
APAC Market Size, Share, Trends, Opportunities, Y-o-Y Growth, CAGR – India, China, South Korea, Japan, Malaysia, Indonesia, New Zealand, Australia, and Rest of APAC
MENA Market Size, Share, Trends, Opportunities, Y-o-Y Growth, CAGR – North Africa, Israel, GCC, South Africa, and Rest of MENA
Thermal Energy Storage Market report also contains analysis on:
Thermal Energy Storage Market Segments:

By Product Type:
Sensible Heat Storage
Latent Heat Storage
Thermochemical Heat Storage
By Technology:
Molten Salt Technology
Electric Thermal Storage Heaters

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7. PRODUCT LAUNCH

2. SOLARRESERVE LLC

3. ABENGOA SA

4. TERRAFORE TECHNOLOGIES LLC

5. BALTIMORE AIRCOIL COMPANY

6. ICE ENERGY

7. CALDWELL ENERGY

8. CRYOGEL

9. STEFFES CORPORATION

10. TRANE TECHNOLOGIES PLC

Consultant Recommendation
**The above-given segmentations and companies could be subjected to further modification based on in-depth feasibility studies conducted for the final deliverable.

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