

Molten Salt Solar Energy Thermal Storage and Concentrated Solar Power (CSP) Market Shares Strategies, and Forecasts, Worldwide, 2010 to 2016

<https://marketpublishers.com/r/MEC3FE10973EN.html>

Date: June 2010

Pages: 309

Price: US\$ 3,500.00 (Single User License)

ID: MEC3FE10973EN

Abstracts

WinterGreen Research announces that it has a new study on Molten Salt Solar Energy Thermal Storage and Concentrated Solar Power (CSP): Market Shares and Forecasts, Worldwide, 2010-2016. The 2010 study has 309 pages, 103 tables and figures.

Large solar farms are part of the answer to implementing energy generated from capture of heat from the sun. Utility scale systems are complex implementations of aggregated capture devices. The value of utility scale build out is the sheer size of the projects.

It is easier to implement one large project in a controlled area than to implement multiple medium size project to achieve the same level of power generation.

Molten salt solar energy storage systems implement utility scale solar electricity systems. The large scale provides replacement for coal systems and supplements nuclear systems that are not feasible in many locations. Solar concentrators are able to run conventional steam generators, leveraging existing technology for renewable energy electricity use. Corrosion is an issue. The pipes that carry the molten salt need to be corrosion resistant, otherwise they need to be replaced every year. Heat is another issue. The high heat of the salt may cause chemical decomposition of the solution, creating the need to replace the solution at relatively short intervals.

There is growing global demand for cost-effective and reliable solar power. Molten salt storage and solar electricity generation by use of steam turbines are poised to achieve significant growth. The economies of scale have not yet kicked in and will do so after 100 projects have been built out. The technology promises to be significant because the

projects generate so much electricity.

Solar concentrators are efficient and leverage existing steam generation technology. The technology will succeed far faster and be far more wide spread than the vendor executives are now predicting. With rising prices of oil and the Gulf of Mexico oil well disaster, solar power begins to look good, because it is a sustainable energy source.

Aggregation of electricity generated from solar panels placed on commercial roofs is another aspect of utility scale electricity generation. The commercial roof electricity can be sold from electricity substations to the locality for use in data centers, powering electric vehicles, and general electricity usage.

Solar energy market driving forces relate to the opportunity to harness a cheap, long lasting, powerful energy source. Solar energy can be used to create electricity in huge quantity. Solar panels are mounted in a weatherproof frame, are mounted in areas with direct exposure to the sun to generate electricity from sunlight.

Solar power systems are comprised of solar modules, related power electronics, and other components. Solar panels are used in residential, commercial and industrial applications. Solar compositions of arrays that comprise electric utility grids appear to be the wave of the future.

The demand for solar energy is dependent on a lower prices for solar and higher prices for petroleum. A combination of economies of scale being realized in the manufacturing along with increases in the current prices for petroleum will drive solar energy adoption.

The overall solar market has attained enough critical mass to boost competitive technologies of thin film and monocrystalline, polycrystalline, and multicrystalline silicon based systems.

Concentrated thermal solar molten salt storage units at a level below \$100 million in 2009 are anticipated to reach \$13.6 billion by 2016. Vendors are well positioned to gain significant market share over the next five years as existing products are tuned as second and third generation products to achieve more economies of scale.

Companies Profiled

Abengoa

Acciona Solar Power

Areva / Ausra
BrightSource Energy
GE Energy
Asahi Glass
Battelle
Corning
Directed Vapor Technology
Siemens
United Technologies
Schott Solar
Hitachi
DuPont
Applied Materials
SEIA
United Technologies / SolarReserve
United Technologies / Hamilton Sundstrand

Report Methodology

This is the 444th report in a series of market research reports that provide forecasts in communications, telecommunications, the internet, computer, software, and telephone equipment. The project leaders take direct responsibility for writing and preparing each report. They have significant experience preparing industry studies. Forecasts are based on primary research and proprietary data bases. Forecasts reflect analysis of the market trends in the segment and related segments. Unit and dollar shipments are analyzed through consideration of dollar volume of each market participation in the segment. Market share analysis includes conversations with key customers of products, industry segment leaders, marketing directors, distributors, leading market participants, and companies seeking to develop measurable market share. Over 200 in-depth interviews are conducted for each report with a broad range of key participants and opinion leaders in the market segment.

Contents

MOLTEN SALT SOLAR EXECUTIVE SUMMARY

Molten Salt Storage of Solar Energy Executive Summary
Molten Salt Utility Scale Storage of Electricity From Solar Energy
Nanotechnology Promises To Be A Significant Aspect Of Solar
Storage Market Evolution
Global Demand For Cost-Effective And Reliable Solar Power
Molten Salt Solar Utility Scale Steam Turbine Market Shares
Molten Salt Solar Utility Scale Energy Market Forecast

MOLTEN SALT SOLAR MARKET DESCRIPTION AND MARKET DYNAMICS

1. MOLTEN SALT THERMAL STORAGE AND

- 1.1 Molten Salt Stores Solar Energy As Heat
 - 1.1.1 Using Mirrors To Concentrate Sun Energy
 - 1.1.2 Compressing Air Or Pumping Water Uphill To Store Sun's Energy
 - 1.1.3 Round-Trip Efficiency
- 1.2 Molten Salt As Solar Heat Battery
 - 1.2.1 Salt Storage System Potential Issues
- 1.3 Utility-Scale Thermal Concentrating Solar
 - 1.3.1 Climate Change Is Predicted To Raise Global Sea Levels
- 1.4 Nuclear Power Plants
 - 1.4.1 Impact of Changing Water Supplies
- 1.5 Power Plans
- 1.6 Concentrated Solar Power (CSP)
 - 1.6.1 Components Of A Concentrated Solar Power CSP System
 - 1.6.2 Parabolic Trough
 - 1.6.3 Parabolic Dish
 - 1.6.4 Central Tower
 - 1.6.5 Solar Furnace
 - 1.6.6 Solar Radiation Types Of Receiver
- 1.7 Uses Of CSP Technology
- 1.8 Decentralised Generation
- 1.9 Solar Air Conditioning
 - 1.9.1 Solar Air Conditioning Sorbent

- 1.9.2 Refrigerant Circulation Systems Differentiated Processes
- 1.10 Go Solar California
 - 1.10.1 Power The World From Desert
- 1.11 Key Elements In A Solar Cell
 - 1.11.1 Emcore Magnifies Solar Energy
 - 1.11.2 CPV Utility Positioning

MOLTEN SALT SOLAR MARKET SHARES AND MARKET FORECASTS

2. MOLTEN SALT STORAGE OF SOLAR ENERGY MARKET

Shares and Market Forecasts

- 2.1 Molten Salt Utility Scale Storage of Electricity From Solar Energy
 - 2.1.1 Nanotechnology Promises To Be A Significant Aspect Of Solar Storage Market Evolution
 - 2.1.2 Global Demand For Cost-Effective And Reliable Solar Power
- 2.2 Molten Salt Solar Utility Scale Steam Turbine Market Shares
 - 2.2.1 Siemens' Environmental Portfolio Revenue
- 2.3 Molten Salt Solar Utility Scale Energy Market Participants
 - 2.3.1 United Technologies
 - 2.3.2 Solar Reserve Partnered With United Technologies
 - 2.3.3 United Technologies Pratt & Whitney Rocketdyne
 - 2.3.4 Abengoa Solar Commercial Operation of Solnova 3
 - 2.3.5 Areva / Ausra
 - 2.3.6 BrightSource Energy Ivanpah project
 - 2.3.7 GE Energy
 - 2.3.8 Schott Solar Utility-Scale Thermal Concentrating Solar
- 2.4 Molten Salt Solar Utility Scale Energy Market Forecast
- 2.5 Solar Steam Generators Market Forecast
 - 2.5.1 Concentrating Linear Reflectors
 - 2.5.2 Solar Thermal Molten Salt Storage Electricity Forecasts
- 2.6 Molten Salt Solar Storage Regional Analysis

MOLTEN SALT SOLAR PRODUCT DESCRIPTION

3 MOLTEN SALT SOLAR STORAGE AND CONCENTRATED SOLAR POWER (CSP)

- 3.1 Abengoa SA
 - 3.1.1 Abengoa Solar Commercial Operation of Solnova 3

3.2 Areva / Ausra

3.2.1 Areva New Strategy

3.3 BrightSource Energy

3.3.1 Brightsource Energy \$1.4 Billion In Loan Guarantees From U.S. Department Of Energy

3.3.2 BrightSource Energy Ivanpah Project

3.3.3 BrightSource Energy Luz Power Tower 550 (LPT 550) Technology

3.3.4 Brightsource Energy Reduced Footprint Mitigation For Ivanpah Solar Electric Generating System

3.3.5 BrightSource Energy Mirrors

3.3.6 BrightSource Energy Heliostats

3.3.7 BrightSource Energy Heliostat Control System

3.3.8 BrightSource Energy Tower and Boiler

3.3.9 BrightSource Energy Power Block

3.4 United Technologies

3.4.1 United Technologies Hamilton Sundstrand Unit

3.4.2 United Technologies Hamilton Sundstrand

3.5 Solar Millennium Salts To Replace Oil In Parabolic Trough Power Plants

3.6 SolarReserve Power Towers

3.6.1 Solar Thermal With Molten Salt Energy Storage: SolarReserve Heads to Nevada

3.6.2 Solar Reserve Partnered With United Technologies

3.7 Siemens Energy Sector / Renewable Energy Division

3.7.1 Siemens Solar-Thermal Power Plant

3.7.2 Siemens Global Market Leader For Turbines In Solar Thermal Parabolic Trough Power Plants

3.7.3 Siemens Solar-Thermal Power Plant: Putting the Desert to Use

3.7.4 Siemens 123-MW Steam Turbine-Generator For Solar Thermal Power Plant In California

3.7.5 Siemens Solar Efficiency

3.7.6 Siemens Next-Generation Solar UVAC Receiver Increases Thermal Output Of Power Plants

3.8 Asahi Glass

3.8.1 Asahi Glass Flexible Solar Cells

3.9 GE

3.10 Hitachi

MOLTEN SALT SOLAR STORAGE TECHNOLOGY

4. MOLTEN SALT THERMAL STORAGE AND CONCENTRATED SOLAR POWER

(CSP) TECHNOLOGY

- 4.1 Molten Salt
 - 4.1.1 Salt Storage System Potential Issues
- 4.2 Molten Salts Store Solar Energy As Heat
 - 4.2.1 Salt System Efficient At Heat Storage
- 4.3 Parabolic Trough Thermal Energy Storage Technology
 - 4.3.1 Parabolic Trough
 - 4.3.2 Thermal Energy Storage Systems
 - 4.3.3 Thermal Energy Storage System
 - 4.3.4 Single-Tank Thermocline
 - 4.3.5 Direct Molten-Salt Heat Transfer Fluid
- 4.4 Thermal Stability Of Imidazolium Salts
- 4.5 Concrete Thermal Energy Storage Media
 - 4.5.1 Phase-Change Materials
- 4.6 Solar Cells Achieve Power Without Maintenance
 - 4.6.1 Internal Electrostatic Field
 - 4.6.2 Converting Sunlight to Electricity
- 4.7 Thin Film Material Layers

MOLTEN SALT SOLAR COMPANY PROFILES

5. MOLTEN SALT SOLAR GENERATED ELECTRICITY STORAGE COMPANY PROFILES

- 5.1 Abengoa
 - 5.1.1 Abengoa and Climate Change
- 5.2 Acciona Solar Power
- 5.3 Applied Materials
 - 5.3.1 Applied Materials Segment Analysis
 - 5.3.2 Applied Materials Silicon Segment
 - 5.3.3 Applied Three-Dimensional (3D) ICs
 - 5.3.4 Applied Materials Deposition
 - 5.3.5 Applied Materials Atomic Layer Deposition
 - 5.3.6 Applied Materials Chemical Vapor Deposition
 - 5.3.7 Applied Materials Applied Producer CVD Platform
 - 5.3.8 Applied Materials Low k Dielectric Films —
 - 5.3.9 Applied Materials Lithography-Enabling Solutions
 - 5.3.10 Applied Materials Gap Fill Films —

- 5.3.11 Applied Materials Strain Engineering Solutions
- 5.3.12 Applied Materials Epitaxial Deposition
- 5.3.13 Applied Materials Polysilicon Deposition —
- 5.3.14 Applied Materials Tungsten Deposition —
- 5.3.15 Applied Materials Physical Vapor Deposition
- 5.3.16 Applied Materials Etch
- 5.3.17 Applied Materials Rapid Thermal Processing
- 5.3.18 Applied Materials Chemical Mechanical Planarization
- 5.3.19 Applied Materials Metrology and Wafer Inspection
- 5.3.20 Applied Materials Critical Dimension and Defect Review Scanning Electron Microscopes (CD-SEMs and DR-SEMs)
- 5.3.21 Applied Materials Wafer Inspection
- 5.3.22 Applied Materials Mask Making
- 5.3.23 Applied Materials Display Segment
- 5.3.24 Applied Global Services Segment
- 5.3.25 Applied Materials Fab Services —
- 5.3.26 Applied Films Vacuum Coating Technologies
- 5.3.27 Applied Materials Energy and Environmental Solutions Segment
- 5.4 Areva / Ausra
 - 5.4.1 AREVA Leads Global Nuclear Power Industry
- 5.5 Asahi Glass Co Ltd
 - 5.5.1 Asahi Glass Fuel Cell
 - 5.5.2 Asahi Glass Fuel Cells Close To Practical Use
 - 5.5.3 Asahi Glass Fuel Cells In Daily Life In 2010
 - 5.5.4 Asahi Glass Chemicals Business as Core Business to the AGC Group
 - 5.5.5 Asahi Glass ETFE Film With High Transparency And Flexibility
 - 5.5.6 AGC Asahi Glass Revenue
 - 5.5.7 Asahi Glass Revenue
- 5.6 Battelle
- 5.7 BrightSource Energy
 - 5.7.1 BrightSource Energy \$1.4 billion In Loan Guarantees From The U.S. Department of Energy
 - 5.7.2 BrightSource Energy Ivanpah Project: Clean Energy, Union Jobs, Environmentally-Responsible Design
 - 5.7.3 BrightSource Energy Luz Power Tower 550 (LPT 550) Technology
 - 5.7.4 Brightsource Energy \$150 Million Of Equity Financing
- 5.8 Corning

- 5.8.1 Corning Display Technologies Segment
- 5.8.2 Corning Revenue
- 5.8.3 Corning Display Technologies Segment
- 5.8.4 Corning Telecommunications Segment
- 5.8.5 Corning Environmental Technologies Segment
- 5.8.6 Corning Specialty Materials Segment
- 5.8.7 Corning Life Sciences Segment
- 5.9 Directed Vapor Technology
 - 5.9.1 Directed Vapor Deposition Next Generation Coating Technology
- 5.10 du Pont
 - 5.10.1 DuPont
 - 5.10.2 DuPont™ Kapton®
 - 5.10.3 DuPont™ Kapton® Polyimide Films
 - 5.10.4 DuPont Teonex
- 5.11 GE Energy
 - 5.11.1 GE Steam Turbines to Boost Output, Efficiency of Saudi Electricity Company's Qurayyah Power Plant
 - 5.11.2 GE Emissions Testing Team Becomes Early Adopter of Future EPA Standards
 - 5.11.3 GE Smart Grid Technologies Transform Ireland's Energy
- 5.12 Hitachi
 - 5.12.1 Hitachi America
 - 5.12.2 Hitachi America, Ltd. Focusing On Smart Grid Energy Storage for Solar Farms
 - 5.12.3 Hitachi Long Life Lead Acid Batteries
- 5.13 SCHOTT Solar
 - 5.13.1 Schott Electronic Packaging GmbH
 - 5.13.2 Schott AG Flat Glass
- 5.14 SEIA:
- 5.15 Siemens
 - 5.15.1 Siemens Business Areas
 - 5.15.2 Siemens Steam Turbine-Generator to England – Delivery Scheduled In 13 Months
 - 5.15.3 Siemens Energy Sector
 - 5.15.4 Siemens Revenue
 - 5.15.5 Siemens' Worldwide Network
- 5.16 United Technologies / SolarReserve
 - 5.16.1 United Technologies
 - 5.16.2 United Technologies / Hamilton Sundstrand
 - 5.16.3 Hamilton Sundstrand Technologically Advanced Aerospace And Industrial Products

5.16.4 United Technologies Revenue

List Of Tables

LIST OF TABLES AND FIGURES

MOLTEN SALT SOLAR EXECUTIVE SUMMARY

Table ES-1 Solar Energy Molten Salt Storage Market Driving Forces

Figure ES-2 Solar Power Steam Generator Market Shares, 2009

Figure ES-3 Molten Salt Storage Receiver Market Forecasts Dollars, Worldwide, 2010-2016

MOLTEN SALT SOLAR MARKET DESCRIPTION AND MARKET DYNAMICS

Figure 1-1 Molten Salt As Solar Heat Battery

Figure 1-2 Heliostat Sun Tracking Mirror

Table 1-3 Components Of A Concentrated Solar Power (CSP) System

Figure 1-4 Parabolic Trough Collectors Producing Superheated Steam

Figure 1-5 Solar Parabolic Dish With a Stirling Engine

Figure 1-6 Central Tower Installation Spain

Figure 1-7 Solar Furnace

Figure 1-8 Solar Chemical Reactor Under Solar Operation

Figure 1-9 Main Components Of The System At The University Clinic Of Freiburg:
Adsorption Refrigeration Machine

Figure 1-10 Solar Thermal System

Table 1-11 Key Elements In A Solar Cell

Table 1-12 Key Main Categories Of Technology In A Silicon Based Solar Cell

MOLTEN SALT SOLAR MARKET SHARES AND MARKET FORECASTS

Table 2-1 Solar Energy Molten Salt Storage Market Driving Forces

Figure 2-2 Solar Power Steam Generator Market Shares, 2009

Table 2-3 Solar Power Steam Generator Market Shares, 2009

Figure 2-4 Siemens Steam Turbine

Figure 2-5 Solar Collector Assembly

Figure 2-6 Molten Salt Storage Receiver Market Forecasts Dollars, Worldwide, 2010-2016

Table 2-7 Solar Power Thermal Market Shipment Forecasts, Molten Salt Storage Units and Dollars, Worldwide, 2010-2016

Table 2-8 Solar Power Thermal Market Shipment Forecasts, Molten Salt Storage Units,

Worldwide, 2010-2016

Table 2-9 Selected Steam Generator Vendors

Figure 2-10 Installed Concentrated Solar Energy Market Forecasts Gigawatts, Worldwide, 2010-2016

Table 2-11 Solar Energy Concentrated Molten Salt Storage Installed Megawatts Market Forecasts Units and Dollars, Worldwide, 2010-2016

Table 2-12 Steam Generator Installed Base Units Market Forecasts Units and Dollars, Worldwide, 2010-2016

Table 2-13 Advantages Of Steam Turbine Machines

Table 2-14 Disadvantages Of Steam Turbine Machines

Figure 2-15 Solar Steam Generator Regional Market Segments, 2009

Table 2-16 Solar Steam Generator Regional Market Segments, 2009

Figure 2-17 Solar Molten Salt Storage Regional Market Segments, 2016

Table 2-18 Solar Molten Salt Storage Regional Market Segments, 2016

MOLTEN SALT SOLAR PRODUCT DESCRIPTION

Figure 3-1 Abengoa SA Solar Positioning

Figure 3-2 Abengoa SA Solar Parabolic Trough

Figure 3-3 Abengoa SA Solar Parabolic Trough ISCC

Figure 3-4 Abengoa SA Solar Parabolic Trough

Figure 3-5 Abengoa SA Solar Parabolic

Figure 3-6 BrightSource Energy Mirrors

Figure 3-7 BrightSource Energy Heliostats

Figure 3-8 BrightSource Energy Heliostat Control System

Table 3-9 BrightSource Energy Control System Functions

Table 3-10 BrightSource Energy Control System Conditions Controlled

Figure 3-11 BrightSource Energy Tower and Boiler

Figure 3-12 BrightSource Energy Power Block

Figure 3-13 Molten Salt As Solar Heat Battery

Figure 3-14 Siemens Solar-Thermal Power Plant: Putting the Desert to Use

Figure 3-15 Siemens Turbines for Solar Thermal Parabolic Trough

Table 3-16 Siemens CSP Solar Receiver (Universal Vacuum Air Collector UVAC 2010) Features

Figure 3-17 Asahi Glass Solar Curve Factor

Figure 3-18 Asahi Glass Textured Finish To Solar Panel

Figure 3-19 GE10 MW Solar Park Caceres, Spain 2008

MOLTEN SALT SOLAR TECHNOLOGY

Figure 4-1 Parabolic Trough Collectors Producing Superheated Steam

Table 4-2 Parabolic trough thermal energy storage technology

Table 4-3 Thermal Energy Transfers Technical Feasibility Of The System To A Series Of Heat Exchangers

MOLTEN SALT SOLAR COMPANY PROFILES

Figure 5-1 Abengoa International Presence

Figure 5-2 Abengoa Projects in Spain

Figure 5-3 Abengoa US Projects and Presence

Figure 5-4 Abengoa Algeria Projects and Presence

Figure 5-5 Abengoa Algeria Siting

Figure 5-6 Abengoa Morocco Projects and Presence

Figure 5-7 Abengoa Moroccan Firm ONE Projects

Table 5-8 ACCIONA Business Divisions

Figure 5-9 Asahi Glass Transparent Conductive Film Glass Substrates

Figure 5-10 Asahi Glass Fuel Cell

Figure 5-11 AGC Asahi Glass Ecoglass Sun Balance

Figure 5-12 AGC Asahi Glass Comparison Between Ordinary Windshield and Coolverre

Figure 5-13 AGC Asahi Glass Effects of Coolverre

Figure 5-14 Asahi Glass Revenue

Figure 5-15 Asahi Glass Sales Ratios

Figure 5-16 AGC Asahi Glass New Glass Products

Figure 5-17 AGC Asahi Glass New Glass Products

Figure 5-18 Asahi Glass Segments

Figure 5-19 Asahi Glass Sales

Figure 5-20 Asahi Glass Performance Trends

Figure 5-21 Asahi Glass Growth Positioning

Figure 5-22 Asahi Glass Production Technologies

Figure 5-23 Directed Vapor Technology

Figure 5-24 DuPont Photovoltaic Encapsulant Functions

Figure 5-25 DuPont Photovoltaic Encapsulants

Table 5-26 DuPont Kapton® Features:

Table 5-27 DuPont Technical Data for Standard Kapton® Polyimide Film

Table 5-28 DuPont Teonex

Table 5-29 Hitachi Industrial Systems

Table 5-29 (Continued) Hitachi Industrial Systems

Table 5-30 Hitachi Large Generator Positioning

Table 5-31 Hitachi Product Positioning
Figure 5-32 Schott Products Glass-to-Metal-Seals and Ceramic-to-Metal-Seals
Figure 5-33 Schott Automotive Glass
Figure 5-34 Schott Defense Seals
Figure 5-35 Schott Industry Special Products
Figure 5-35 (Continued) Schott Industry Special Products
Figure 5-35 (Continued) Schott Industry Special Products
Table 5-36 Schott Electronic Packaging Product Benefits:
Figure 5-37 Schott A Flexible Glass Fiber Light Guides Transmit The Light
Figure 5-38 Schott Ultra thin Glass Flexible Substrates
Table 5-39 Siemens Business Areas
Table 5-40 Siemens Industrial Portals
Figure 5-41 Siemens Generator Turbine
Table 5-42 United Technologies Operating Segments

I would like to order

Product name: Molten Salt Solar Energy Thermal Storage and Concentrated Solar Power (CSP) Market Shares Strategies, and Forecasts, Worldwide, 2010 to 2016

Product link: <https://marketpublishers.com/r/MEC3FE10973EN.html>

Price: US\$ 3,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/MEC3FE10973EN.html>