

Plataforma solar de almeria thermal energy storage





Overview

The Solar Platform of Almería (PSA) is the largest concentrating solar technology research, development and test centre in Europe, situated in the , Spain in Tabernas.

What is the Plataforma Solar de Almera (PSA)?

The Plataforma Solar de Almería (PSA), a dependency of the Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), is the largest concentrating solar technology research, development and test center in Europe. PSA activities are integrated in the CIEMAT organization as an R&D division of the Department of Energy.

What is thermal energy storage system?

The thermal energy storage system was designed to deliver thermal energy at full-rated duty of the steam generator for three hours at the rated hot and cold salt temperatures of 565 and 290 °C. The total capacity storage of the plant was 105. The average efficiency from solar energy to electricity was about 19%.

What is the thermal energy storage media used in solar two?

In Solar Two, the chosen thermal energy storage media was molten salt, composed of a mixture of 60% of sodium nitrate (NaNO) and 40% of potassium nitrate (KNO).

How can storage systems help a solar power plant?

Daily, the peak energy consumption takes place after the sunset, as seen in . Storage systems can help to solve part of this problem, dispatching the energy stored during the day in cloudy or night periods (Several experiences of TES systems have taken place until the moment in solar power plants.

What does the thermal storage and solar fuels unit do?

Through its experts, the Thermal Storage and Solar Fuels Unit participates actively in several scientific networks (Energy Storage JP of EERA, Task II and



III of SolarPACES IA of the IEA, Spanish association for Hydrogen -AeH2-) and national (AENOR-GT3) and international (IEC- CTN 206/SC 117/GT 03 and ASME-PCT52) standardization committees.

How do solar thermal power plants work?

Solar thermal power plants produce electricity in the same way as other conventional power plants, but using solar radiation as energy input. This energy can be transformed to high-temperature steam, to drive a turbine or a motor engine.



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[Eurodish parabolic concentrator with 56.5 m](#)

Eurodish parabolic concentrator with 56.5 m² projecting area, slats shutter or attenuator, and test table with three axis movement, and has a peak concentration of 7000 kW/m². The vertical axis solar furnace (SF5) reaches concentrations over 6000 kW/m² and operates in a ...

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A 400-kW air-cooler able to dissipate the thermal energy in the fluid delivered by the collectors. It has two 4-kW motorized fans. A blower driven by a 15-kW motor which supplies the gas flow rate necessary to cool the receiver tubes adequately.

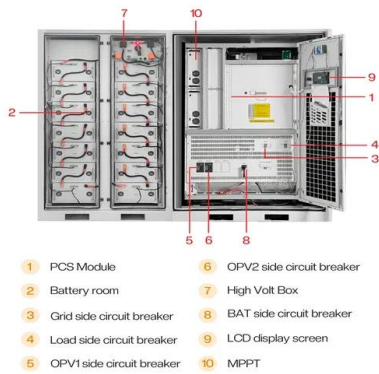


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Thermal Storage Facilities MOSA installation. Formed by a molten salt storage system (40 tons), heating and dissipation of the thermal energy of salts (290-380°C) system, thermal oil system and interconnection systems. Central receiver installations

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Thermal energy can be transferred from the solar field primary circuit to a thermocline oil storage tank with a total volume of 176 m³ and 115 m³ of Santotherm 55 oil with a maximum working temperature of 300 C.

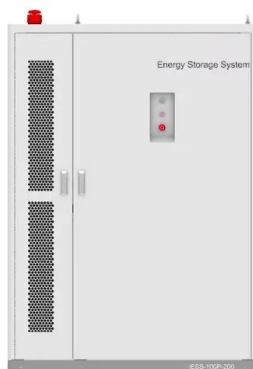


State of the art on high-temperature thermal energy storage for ...

A new test experience was done in 2004 at the Plataforma Solar de Almeria. The thermal energy was provided by a parabolic trough loop with a maximum thermal power of 480 ...

Margarita RODRÍGUEZ-GARCÍA , Doctor of Engineering , Plataforma Solar

Thermal energy storage (TES) plays a crucial role improving the efficiency of solar power utilization (Plataforma Solar de Almeria) facilities. This plant was designed to evaluate components



Aurelio GONZÁLEZ-PARDO , Researcher , Plataforma Solar de ...

The "holy grail" of solar chemistry and solar engineering, is the technical storage of solar energy into a more easily transformable and transportable form, namely an energy carrier such as H2.



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Eduardo Zarza Moya - Professor Ph.D. Industrial Engineering, University of Seville, Spain. Technical coordinator of Plataforma Solar de Almería. Senior researcher in concentrating solar thermal energy. With expertise in the technology of parabolic trough collectors



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Advanced MED solar desalination plants. Configurations, costs, ...

From 1988 until 1994, the Plataforma Solar de Almeria developed a unique experience in the desalination of sea water with solar energy. The system developed and still ...



The Plataforma Solar de Almería (PSA), a department of the ...

The Plataforma Solar de Almería (PSA), a department of the Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), is the largest and most complete ...



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La Plataforma Solar de Almería, the largest solar energy research centre in Europe, opens its Doors to you. This centre contributes to spreading the knowledge acquired by PSA exploration since it was opened 25 years ago, ...



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Plataforma Solar de Almería: The European Solar Thermal Test Centre. Geneva. 30 March, 2006 SOLAR FURNACE 9Tool for achieving high flux and high temperatures ($T > 2000\text{ }^{\circ}\text{C}$). 9Peak flux: 3000 suns. Power: 58 kW. Concentrating area: 98,5 m². 9Focus diameter: 23 cm. Gaussian energy profile.

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Rocío Bayón, Esther Rojas. Analysis of packed-bed thermocline storage tank performance by means of a new analytical function. AIP Conference Proceedings 2033, 090002 (2018); doi: ...



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La Plataforma Solar de Almería (PSA), perteneciente al Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), es el mayor centro de investigación, desarrollo y ensayos de Europa dedicado a las ...



Plataforma Solar de Almería

Plataforma Solar de Almería - PSA, A laboratory of CIEMAT, Spain. At present, the main test facilities available at the PSA are : CESA-1 and SSPS-CRS central receiver systems, 7 and 2.7 ...



Esther ROJAS , Plataforma Solar de Almería, Almería , Energy

Many industrial thermal demands range from 120 to 250 C, which are difficult to supply using solar energy because of the lack of specific solar thermal conversion devices.

Solar Thermal Seawater Distillation Activities at the Plataforma Solar

Plataforma Solar de Almería: Increasing the Thermo-Economic Process Efficiency D. Alarcón, J. Blanco, S (see figure), water is the working fluid that transfers the thermal energy supplied by the solar field to the storage tank. A gas-fired backup system is



What is Solar Energy? The Plataforma Solar de Almería

The Plataforma Solar de Almería (PSA) makes for an incongruous sight: row after row of hi-tech solar panels amidst the hot, thermal storage systems and solar receivers. The objectives that fuel all of the research enterprises include: Contributing to the



Plataforma Solar de Almería

Since 2021, he is a research fellow within Solar Thermal Applications Unit at Plataforma Solar de Almería (PSA)-CIEMAT. By June 2022, he is co-author of 17 scientific articles (first author in 10 of them), co-author of one book in international publishing, and has 12 ...

50KW modular power converter



Plataforma Solar de Almería (CIEMAT)

At Plataforma Solar de Almería (PSA), owned and operated by the Spanish research center CIEMAT, DLR researchers test high-temperature solar technologies in practice and investigate innovative approaches in the fields of photovoltaics and agricultural integration. Europe's largest test center for concentrating solar technologies is located in the sun-rich ...

GENERAL INFORMATION PLATAFORMA SOLAR DE ALMERÍA

For over ten years, the Plataforma Solar de Almería (CIEMAT-PSA) served the 9 countries of the International Energy Agency (IEA) as its solar test centre. During that first stage of its development, at the beginning of the 80's, the main objective was electricity



Plataforma Solar de Almería

This molten salt test loop is a replica of a thermal energy storage system with molten salts and a two-tank configuration. With 40t of molten salts plant, this facility consists basically in: Two tanks, one vertical, for hot molten salts, and another horizontal, for cold molten salts.



Eduardo Zarza

Concentrated solar power is the main solar technology for large-scale power generation and can offer thermal energy storage capacity, (CIEMAT) through its Plataforma Solar de Almería (PSA)



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THERMAL ENERGY STORAGE RECENT PUBLICATIONS M.Rahjoo, G. Goracci, J. J. Gaitero, P. Martauz, E. Rojas, J. S. Dolado, 2022, Thermal Energy Storage (TES) Prototype Based on Geopolymer Concrete for



Esther ROJAS , Senior Researcher , PhD in Physics , Centro

Esther ROJAS, Senior Researcher , Cited by 935 , of Centro Investigaciones Energéticas, Medioambientales y Tecnológicas, Madrid (CIEMAT) , Read 52 publications , Contact Esther ROJAS



Solid media thermal storage for parabolic trough power plants

Two storage systems with a storage capacity of about 350 kW h each and maximum temperatures of 390 °C have been developed. The test storage units of WESPE are ...





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La electricidad termosolar, historia de éxito de la investigación. Protermosolar, Sevilla, 2012. ISBN 978-84-614-0778-1 Plataforma Solar de Almeria. Annual Report 2012. NIPO 721-13-016-4. Annual Technical Report 1994, Plataforma Solar de Almeria. ISBN 84-7834-283-4.



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Guillermo ZARAGOZA , Senior Researcher , PhD in Physics , Plataforma

Researcher , Cited by 4,036 , of Plataforma Solar de Almería, Almería , Read 143 publications Thermal energy storage tanks are habitually combined with solar thermal fields to improve the



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Plataforma Solar de Almeria - PSA A laboratory of CIEMAT, Spain (Research Centre for Energy, Environment and Technology) SSPS-OCS 1.2-MWth parabolic -trough collector system, with associated thermal storage system and water desalination plant an





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