

Central receiver solar thermal power system phase i erda contract

The receiver subsystem consists of an elevated quad-cavity receiver, a concrete tower to support the receiver, riser and downcomer piping within the tower to transport the salt to and from the thermal storage sub-system, heat adsorption panels within the receiver cavities to absorb the incident radiant energy, and the pumps, tanks, piping ...

Of all the technologies being developed for solar thermal power generation, central receiver systems (CRSs) are able to work at the highest temperatures and to achieve higher efficiencies in electricity production. The combination of this concept and the choice of molten salts as the heat transfer fluid, in both the receiver and heat storage, enables solar collection ...

ducing portion of the Central Receiver Solar Power Pilot Plant. 3. Integration of the solar power plant with the electrical network and testing of the system as directed by ERDA. 4. Operation and maintenance of the pilot plant for a minimum of two years, and up to five years, following total facility test, checkout and acceptance.

After an introduction to solar thermal power plants concepts, a detailed survey of developing technologies that been done on external central receivers design, the last section contains the ...

Results of analysis and design efforts by McDonnell Douglas Astronautics Company (MDAC), Rocketdyne, Stearns-Roger, Inc., Sheldahl, Inc., and the University of Houston between 1 July 1975 and 30 June 1977 are summarized. This is the Final Technical Progress Report published on the Phase 1 Central Receiver Solar Thermal Power System contract.

Central Receiver Solar Thermal Power System, Phase 1: preliminary design report. Volume VI. Electrical power generation/master control subsystems and balance of plant. [150 MW commercial tower focus plant and 10 MW pilot plant]

Using concentrated central receiver system to produce thermal power which could be converted to electricity, is a promising technique and one of the most feasible options to use clean energy ...

Volume II of the Preliminary Design Report presents the results of the overall system effort that went on during this contract. The effort is assumed to include not only the total system ...

This paper reviews central receiver designs for concentrating solar power applications with high-temperature power cycles. Desired features include low-cost and durable materials that can withstand high concentration ratios (~1000 suns), heat-transfer fluids that can withstand temperatures >650 °C, high solar absorptance, and low radiative and convective ...



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Solar power receivers are a specific type of heating systems that convert solar radiation into the heat capacity of the transport media. The major part of a solar-based system is a solar receiver, which collects solar energy, transforms it to the desired location, and transports that heat to a fluid passing through the collector (usually air, liquid, or oil).

This summary introduces the McDonnell Douglas Astronautics Company (MDAC) Central Receiver System Preliminary Design and reports the results of the Subsystem Research Experiments (SRE) recently completed. The baseline central receiver concept defined by the MDAC team consists of the following features: (A) An external receiver mounted on a tower, ...

The basic EPSC cycle selected is a regenerative cycle that uses a single automatic admission, condensing, tandem-compound double-flow turbine. Specifications, performance data, ...

CENTRAL RECEIVER SOLAR THERMAL POWER SYSTEM PHASE 1 CDRL ITEM 10 Second Quarterly Technical Progress Report MCDONNELL DOUGLAS ASTRONAUTICS COMPANY / MCDONNELL DOUGLAS CORPORATION LIMITED M D A C o Rocketdyn e u Sheldahl o Stearns -Roger o University of Houston .

Modifications to the test program may be required during the experimental test phase; if so, this document will be updated accordingly. (ERA citation 08:025878) ... the U.S. Government Publishing Office's Federal Digital System website, or through search engines. ... 10-MWe Central-Receiver Solar-Thermal Pilot-Plant Test Operation Plan ...

The baseline central receiver concept defined by the MDAC team consists of the following features: (A) an external receiver mounted on a tower, and located in a 360° array of sun ...

The 10 MWe Solar Thermal Central Receiver Pilot Plant (also known as Solar One) located at Barstow, California, (Figure 1) is a scale ... cost data to support private-sector decisions to invest in solar central receiver energy systems, and identify areas where research ... Power Production Phase / .. Figure 2. Solar One Schedule - 38-

The solar receiver is the most important component of any central solar tower power plant (CSP) system. A numerical analysis of four billboard geometry designs of the central tower receiver was ...

An active system analysis and integration effort was conducted. Initial program requirements were transformed into a preliminary system design. Subsystem requirements for subsystem design and test activity were generated. The final preliminary design was reviewed to ensure that the subsystems were operationally compatible and capable of producing electricity at the lowest ...

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The implementation of advanced control systems to optimize the overall performance of Central Receiver Solar Thermal Power Plants is nowadays a priority research line. The development of dynamic models for use in simulation and control of this kind of power plants is presented in this article, focused on the CESA-I solar plant of the Plataforma Solar de Almería (Southern Spain).

Deployment of the first generation of grid-connected plants for electricity production, based on Solar Thermal Power Plants with Central Receiver System technology using large heliostat fields and ...

Detailed cost and performance data for the proposed tower focus pilot plant and commercial plant are given. The baseline central receiver concept defined by the MDAC team consists of the following features: (A) an external receiver mounted on a tower, and located in a 360° array of sun-tracking heliostats which comprise the collector subsystem.

CENTRAL RECEIVER SOLAR THERMAL POWER SYSTEM, PHASE 1 Volume 7: Pilot Plant Cost and Commercial Performance ... Colorado) in accordance with ERDA Contract EY 76-C-O3- ... Kaplan, ERDA Division of Solar Energy. Robert Hughey of the ERDA, San Francisco field office was the contract administrator. Sandia Laboratories technical direction was ...

Central receiver solar thermal power system, Phase 1. CDRL Item 5, thermal storage subsystem research experiment conceptual design report Technical Report #183; Wed Oct 01 00:00:00 EDT 1975 #183; OSTI ID: 5266573

Initial calorimeter and radiometer data have been obtained and have demonstrated good correlation with the projected performance. The 5 megawatt thermal experiment receiver has ...

Keywords: Central receiver system, Heliostat field, solar receivers, tracking system, concentrating solar power. I. INTRODUCTION This paper provides a review of previous researchers and studies that investigated the main effecting parameters on the central tower solar power system performance. Solar receivers are the main part of a solar

In Concentrated Solar Power systems, direct solar radiation is concentrated in order to obtain (medium or high temperature) thermal energy that is transformed into electrical energy by means of a thermodynamic cycle and an electric generator. ... both at a commercial and at a research stage. As it was previously mentioned, solar power towers ...

Solar thermal power plants with central receiver and thermal storage are expected to be one key technology in future electricity generation, because they are renewable and due to the thermal ...

The current definition of a 10-MWe pilot plant preliminary design base line is presented, as well as a summary of a 100-MWe commercial plant base line. The subsystems described for the plants include the collector,



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receiver, thermal storage, and electrical power generation. A master control concept employing a centralized computer is also described. The subsystem research ...

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