



EUCI Presents a Conference on:

UTILITY SCALE CSP

BREAKING BARRIERS AND LOWERING COST

August 25 - 26, 2009 • Hyatt Regency Convention Center • Denver, CO



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EUCI is authorized by IACET to offer up to 1.1 CEUs for this program.

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August 25 - 26, 2009

OVERVIEW

Solar power and the desert southwest seem like natural partners. But until the recent advent of Concentrated Solar Power (CSP) Thermal technology, realizing the benefits of solar power has been beyond the reach of utilities.

CSP-Thermal has emerged as the least cost - Utility Scale - renewable technology ideally suited for these vast, sun-drenched spaces in the U.S. Southwest. Three attributes have boosted CSP-Thermal into the generation arena:

1. Its power profile is most closely related to valuable "baseload" (as opposed to variable) power
2. It is significantly less expensive than Utility Scale PV
3. it produces a superior power curve

PPA's have been signed across the US for an incredible 6 Gigawatts of CSP-Thermal. It has the potential of being the dominant renewable energy source in the southwestern region of the U.S.

This conference presents a complete lineup of "players" who are making CSP-Thermal happen:

- a utility with a plant under development
- a developer who is operating the only solar molten salt operation in the world
- the supplier of the salts to that facility
- the only company that has constructed a USCSP facility in the past 25 years
- the principal author in the study of barriers throughout the Southwestern U.S.

The conference also features several groundbreaking companies that are creating innovations on temperatures, materials, and storage, which promise to significantly decrease costs and drive further efficiencies.

This CSP-Thermal event is a "can't miss" source of information for anyone with a financial interest in developing renewable energy in the southwestern U.S. It builds upon the very successful EUCI winter conference on CSP, but adds even more layers of detail from several new and key presenters.

WHO SHOULD ATTEND

Those interested in renewable energy development, and, in particular, Utility Executives with Renewable Energy Responsibilities

- Business Development Managers
- Climate Change Specialists
- Construction Companies
- Consultants
- Developers
- Directors of Renewable Development
- Energy and Tax Accountants
- Engineering Companies
- Financial and Investment Professionals
- Lawyers
- Lenders and Investment Managers
- Managers of Strategic Planning
- Procurement Managers and Analysts
- Renewable and Cleantech Project Developers
- Renewable Sourcing Directors
- Solar Power Purchasers
- State and Local Government Officials
- State Economic Development Professionals
- Strategic Planners
- Transmission and Generation Planners
- Utility Executives
- Venture Capitalists

IACET



EUCI has been approved as an

Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102. In obtaining this approval, EUCI has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice internationally.

As a result of their Authorized Provider membership status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standards.

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Requirements for Successful Completion of Program

Participants must sign in/out each day and be in attendance for a minimum of four hours to be eligible for any continuing education credit.

Instructional Methods

PowerPoint Presentations will be used in this Conference

Register Today! Call (201) 871-0474

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LEARNING OUTCOMES

This program will help attendees:

- Examine the broad CSP landscape and technologies, the huge leverage of scale, and the advantages of emerging innovations
- Identify and appraise the array of storage technologies, especially at Utility Scale, and in particular those unique to CSP Thermal
- Assess the success of the first molten salt operation, Andasol I, in Spain, and the lessons for the US
- Distinguish whether a competing large scale storage scheme, compressed air, will offer stiff competition for molten salt
- Identify and evaluate the EPC process and how a collaborative alliance is key
- Recognize the huge logistical hurdles that surround molten salt
- Review alternatives to the two tank molten salt method and discover the significant cost advantages
- Assess the values of "TES" (Thermal Energy Storage) and examine the elements surrounding integration into the solar field and power block
- Identify the feasibility and timeline to "sunlight direct to liquid hydrocarbon" storage
- Recognize the critical steps in the CSP process from an active utility perspective, and assess why certain developments are proceeding, and others are not
- Assess new developments on phase change materials and evaluate whether a game changer is peering over the horizon
- Review and classify the newly developed CSP Test Protocols
- Distinguish how decisions being made on attaining 33% Renewable Energy in California translate to adoption of CSP Thermal
- Interpret how California's goal of 33% renewables will be a boom to CSP

About EUCI

EUCI is a leading provider of conferences, seminars, workshops and courses designed exclusively for the energy industry. We seek to create a forum for professional communication and exchange knowledge and ideas among energy industry professionals and others interested in the industry.

Join the thousands of others who have attended our events since 1987 and see why they keep coming back.

PROGRAM AGENDA

TUESDAY, AUGUST 25, 2009

7:30 – 8:00 a.m. Registration and Continental Breakfast

8:00 – 8:15 a.m. Opening Remarks from the Chair

– *David Hicks, Development Director, Renewable Energy, NV Energy*

SESSION 1

8:15 – 9:00 a.m. CSP Overview: Technology Development

- Current technology status
- Technology development drivers
- Areas for technology progress
- Manufacturing and economies of scale
- DOE/Laboratory capabilities

– *Tom Mancini, Program Manager, Concentrating Solar Power, Sandia National Laboratories*

9:00 – 9:45 a.m. Electrical Energy Storage for the Grid

- Imperative of storage for renewable integration
- Storage technology options (advanced batteries, flow batteries, CAES, etc.)
- Range of applications of utility scale storage
- Examples of grid integrated storage systems
- Recovery Act storage initiatives

– *Imre Gyuk, Energy Storage Systems Program Manager, U.S. Department of Energy*

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PROGRAM AGENDA

TUESDAY, AUGUST 25, 2009 (CONTINUED)

9:45 – 10:15 a.m. Networking Break

10:15 – 11:00 a.m. Thermal Storage: The Spanish Experience

- The storage concept for the "Spanish" 50 MW CSP units
 - The Andasol process of construction, commissioning and operation
 - Other advantages of thermal storage, besides the storage capacity itself
 - Thermal storage for US conditions
 - SENER's next steps in thermal storage: high temperature storage, single tank storage
- *Jose Martin, CEO, SENER Engineering and Systems, Inc.*

11:00 – 11:45 a.m. Compressed Air and Utility Scale Storage

- Overview of CAES
 - General description
 - Existing installations
 - Second generation technology
 - Suitability and adaptability of CAES in the US Southwest
 - Beyond CSP, additional suitability to wind and PV
 - ISO requirements & premium payment structure
 - Challenges
 - Siting
 - Technology
 - Regulatory issues (Is CAES renewable?, emissions)
- *Matt Brinkman, PE, Project Manager, Burns & McDonnell*

11:45 a.m. – 1:00 p.m. Group Luncheon

SESSION 2

1:00 – 1:45 p.m. EPC Process: A Collaborative Approach

- Front-end planning/collaboration
 - Project goals and technology selection
 - Collaborative front-end engineering and design (FEED)
 - Contract form
 - Project contingency options
 - Pre-project planning
 - The field construction process
 - Start-up and commissioning
 - Project close-out
- *Lee Moore, P.E., Vice President of Business Development, Lauren Engineers & Constructors*

1:45 – 2:30 p.m. Molten Salt Logistics - Managing the Big Picture for Optimal Efficiency

- The process of melting salt
 - Supplying salt to the project site
 - Salt storage
 - Cost volatilities
 - Supply management/Logistics & key considerations
- *Mark McCostlin, North American Solar Project Manager, Haifa NutriTech Inc.*

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PROGRAM AGENDA

TUESDAY, AUGUST 25, 2009 (CONTINUED)

2:30 – 3:00 p.m. Networking Break

3:00 – 3:45 p.m. Thermal Energy Storage: Current Value and Future Directions

- Discussion of TES value (dispatchability, ancillary services potential, load peak coverage) and cost implications (TES requires more solar field, which is still the dominant system cost, TES cheaper for higher temp systems)
 - Status of thermocline designs
 - Phase change storage
 - Concrete, graphite
 - Status and goals of DOE contracts investigating TES
 - Integrating TES with the Solar Field and Power Block
- *Craig S. Turchi, Senior Engineer II, National Renewable Energy Lab (NREL)*
– *Greg Glatzmaier, Senior Engineer II, National Renewable Energy Lab (NREL)*

3:45 – 4:30 p.m. Solar Energy to High Energy Density Liquid Hydrocarbons ---> Sunshine to Petrol

- Liquid hydrocarbons direct from sunlight, CO₂, and water
 - Value-add of high energy density storage
 - Key barriers
 - Key breakthroughs and probable timelines
- *Ellen Stechel, Program Manager, Sunshine to Petrol, Sandia National Laboratories*

WEDNESDAY AUGUST 26, 2009

7:30 – 8:00 a.m. Continental Breakfast

8:00 – 8:45 a.m. Update on Utility Sourcing of Renewable Generation

- 2008 Renewable RFP
 - Final wrap-up of NV Energy's 2008 Renewable RFP
 - 2009 Integrated Resource Plan (IRP)
 - Role of renewable generation in the 2009 NV Energy IRP
 - Impact of projected load growth on the need for renewable generation
 - Impact of demand-side management and conservation on the need for renewable generation
 - 2009 Renewable RFP
 - Overview of NV Energy's 2009 Renewable RFP
- *David Hicks, Development Director, Renewable Energy, NV Energy*

8:45 – 9:30 a.m. Is CSP Ready for Thermal Storage?

- Brief overview of an operating CSP plant
 - Thermal storage design challenges
 - Significance of thermal storage
 - Material innovations
 - Value of phase change
 - Financing thermal storage
- *Gilbert Cohen, President and CEO, Eliasol Energy, LLC*

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PROGRAM AGENDA

WEDNESDAY AUGUST 26, 2009 (CONTINUED)

9:30 – 9:45 a.m. Morning Break

9:45 – 10:30 a.m. Acceptance Testing of CSP Plants

- Test requirements are important part of contracts with EPC contractor and solar field supplier
 - Variable energy source makes acceptance testing more difficult than for fossil fired plants
 - No standardized test method currently
 - NREL and ASME supporting development of test procedures
 - Methods and durations of testing being investigated
 - How to get involved
- *Kelly Beninga, Global Director, Renewable Energy, WorleyParsons Group*

10:30 – 11:15 a.m. CSP and Transmission: Planning for Solar Expansion

- Lessons learned from RETI and WREZ transmission planning processes
 - The value of time of day: Ensuring solar is given capacity and energy value in planning processes
 - The value of storage: Getting the most out of transmission capacity
 - Does transmission trump DNI? Does CSP need transmission?
- *Ric O'Connell, Renewable Energy Project Manager, Black & Veatch*

11:15 a.m. – 12:00 p.m. Integration of Large Scale CSP Facilities into California's Power Grid

- Complementary or competitive with wind generation for transmission access?
 - CAISO's renewables program in the implementation of the 33% analysis
 - Potential renewables scenario, consequences, and timelines
 - Benefits of storage and supplemental gas firing – shaping and firming
- *Dave Hawkins, Lead Renewables Power Engineer, California ISO*

12:00 p.m. Conference Adjourns

PROCEEDINGS

A copy of the conference proceedings will be distributed to attendees at the event. If you are unable to attend or would like to purchase additional copies, flash drives are available 2 weeks after the conference is complete. The cost per Flash Drive is US\$295 [add US\$50 for international shipments]. Flash Drives include visual presentations only. Upon receipt of order and payment the Flash Drive will be shipped to you. NOTE : All presentation flash drive sales are final and are non-refundable.

CONFERENCE LOCATION

A room block has been reserved at the Hyatt Regency Convention Center, 650 15th Street, Denver, CO, for the nights of August 24-25, 2009. Room rates are \$160 plus applicable tax Call 303-436-1234 for reservations and mention the EUCI conference to get the group rate. Make your reservations prior to August 3, 2009. There are a limited number of rooms available at the conference rate. **Please make your reservations early.**

REGISTRATION INFORMATION

REMEMBER, EVERY 4TH REGISTRANT IS FREE

For instant registration, call (201) 871-0474 or fax the Registration Form to (253) 663-7224.

Register 3, Send 4th Free!!

Any organization wishing to send multiple attendees to this conference may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.

All cancellations received on or before July 24, 2009 will be subject to a US\$195 processing fee. Written cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI conference or publication. This credit will be good for six months. In case of conference cancellation, Electric Utility Consultants' liability is limited to refund of the conference registration fee only. For more information regarding administrative policies such as complaints and refunds, please contact our offices at (201) 871-0474.

EUCI reserves the right to alter this program without prior notice.

MAIL DIRECTLY TO:

The Power Marketing Association (PMA)
P.O. Box 2303
Falls Church, VA 22042

FAX TO: (253) 663-7224 **PHONE:** (201) 871-0474

PLEASE REGISTER THE FOLLOWING

- UTILITY SCALE CSP – Breaking Barriers And Lowering Cost, August 25 - 26, 2009, \$1395
Early Bird on or Before August 14, 2009, \$1195
- I'm sorry I cannot attend, but please send me the conference proceedings at \$295. (Please add \$50 for international shipping)

ENERGIZE WEEKLY

When you sign up for "Energize Weekly" you will receive a new conference presentation each week via email on a relevant industry topic. The presentations are selected from a massive library of over 1000 current presentations that EUCI has gathered during its 22 years organizing conferences.

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How did you hear about this event?
(Direct email, Colleague, Speaker(s), etc.)

Name _____ Title _____

Name Preferred for Badge _____ E-Mail _____

Company _____ Telephone _____

Address _____ City _____ State _____ Zip _____

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