

THE DER UPDATE

www.eren.doe.gov/der

Volume 3, Number 16

June 7, 2002

Distributed Energy Resources...the Power of Choice

● Industry News

PowerCold Corporation's Energy Efficient Products

With the deregulation of the power industry, firms are under pressure to implement more energy efficient products to combat the increasing cost of public utilities. PowerCold Corporation addresses this trend and holds the exclusive rights to an array of environmentally friendly proprietary and synergistic products that work to dramatically reduce power costs in the energy-intense refrigeration, air conditioning (A/C) and power industries.

PowerCold's patented Nauticon evaporative condenser is the only self-cleaning, chemical-free, low-maintenance unit available for mid-sized commercial A/C and refrigeration systems, with a confirmed Energy Efficiency Rating outperforming other products by up to 40%. PowerCold's Ultimate Comfort Systems exclusive proprietary four-pipe HVAC technology uses a commercial building's hot water pipes for heating and its sprinkler system to supply cold water for air conditioning, saving up to 50% in energy costs.

PowerCold is also a major cogeneration provider that enables a site to go off public utility facilities during peak demand hours when power costs are 10 – 100 times more than normal. Through its proposed acquisition of Alturdyne Inc., the company will introduce a line of proprietary rotary natural gas engine generators that use natural gas instead of electricity, with an extremely low NO_x rating. PowerCold offers customers the ability to implement superior and complete system solutions that greatly reduce the costs of power in a supply/demand driven deregulated energy market.

Hess Microgen Starts Cogeneration System

Carson City, NV-based Hess Microgen announced on June 6 that it has officially started-up an ultra-efficient onsite cogeneration system for one of California's premier brick and tile manufacturers, Pacific Clay Products in Lake Elsinore, Calif. The advanced one-megawatt cogeneration system will produce approximately 65% of Pacific Clay's electricity needs and provide a substantial amount of cogeneration heat to offset existing gas-driven product dryers. The cogeneration plant is expected to reduce Pacific Clay's annual energy bill by \$400,000 or more and pay back the investment in less than two years.

The turnkey cogeneration system consists of five 200 kW natural-gas fired cogeneration packages operating in parallel with the grid. The system's overall efficiency is well over 80%. The system's efficiency qualified the project for a \$230,000 rebate from California's Self-Generation Incentive Program and exempts the system from any standby charges. The packaged system comes fully equipped, including ultra-efficient heat recovery equipment to convert heat from fuel combustion into usable heat for product drying. An innovative approach was developed by Hess Microgen to recover waste heat to replace natural-gas fueled dryers.

Group Signs Energy Technology Agreement

With a goal to "accelerate commercialization and deployment of advanced power and energy technologies," a consortium of energy organizations has signed a Memorandum of Understanding to collaborate on energy research projects. The Electricity Innovation Institute, also known as "E2I," the Electric Power Research Institute (EPRI), Hawaiian Electric Company (HECO), and the University of Hawaii School of Ocean and Earth Science and Technology's Hawaii Natural Energy Institute (HNEI) recently signed an agreement to focus on emerging renewable, energy-efficient, and environmentally sensitive energy applications, including distributed generation, on-site, central station, and transportation technologies.

While specific projects have not yet been finalized, the partnership is committed to jointly developing proposals for research, development and demonstration projects with a goal to more rapidly advance emerging energy technologies.

Iowa to begin DG Task Force

Staff with the National Renewable Energy Laboratory's DER program have been asked to serve on the Iowa Interconnection Task Force starting up with support from DOE's Chicago regional office. The Task Force intends to review and make recommendations regarding Iowa's DG standards and develop an interconnection agreement for utilities and customers to use. The Task Force, to be comprised of utility representatives, state officials, renewable energy experts, building code officials, etc, is planning to hold its first meeting in September. Chairman Diane Munns, of the Iowa Utilities Board, has been asked to participate on the Task Force. Chairman Munns is also a chairman of the NARUC Committee on Finance and

(Continued on page 2)

RealEnergy, Inc. has 32 onsite power generation installations in California that are either operating or under construction..

Connecting Distributed Energy Resources to the Grid: Their Benefits to the DER Owner/Customer, the Utility, and Society

The Oak Ridge National Laboratory has released a report to document initial project efforts to develop an assessment methodology for DER. This report is the first product in a study to quantify the value of DER. The focus of currently available, site-specific DER assessment techniques is typically limited to the customer and utility. The effects are seldom considered with respect to other stakeholders such as interconnected distribution utilities, transmission system operators, generating system operators, other local utility customers, local and regional industry and business, various levels of government, and the environment. The goal of the assessment is to quantify benefits and cost savings that accrue across a state or region.

The report includes a survey of nationwide DER projects, case studies of several installations, and identification of methodology objectives, requirements, variables, and data needs. Approximately 160 DER sites nationwide were characterized in a preliminary assessment. This characterization confirmed the benefits of DER in many diverse installations. The factors collected included:

- Facility ownership
- DER location
- DER type or equipment class
- Usage as a combined heat and power application
- Application specifics and purpose
- Usage in grid parallel operation
- Equipment vendor
- DER owner

Detailed case studies of several installations were prepared. They included a narrow coastal island with an aging transmission infrastructure and occasional high summer peak loads; a plant that provides steam to a food processing plant and power to a local power company; a cogeneration system used at a zoo to provide electric and thermal load during business hours; and a power system that supplies electric and thermal load to a university and a hospital.

The report begins with a time-series evaluation of a variety of DER technologies and utility grid situations to provide ideal values for regional econometric models. Multiple scenarios will be evaluated to consider the wide range of possible regulatory and technical environments. Since costs and benefits are not always evenly distributed, one sector may have relatively higher costs and lower benefits than another. This introduces important issues of cross subsidy, which needs to be fully understood when developing market rules. The markets, if properly designed to reflect these externalities, can be powerful tools to prompt desirable investment and operating responses. It is hoped that with the results of this study a more complete picture of the DER benefits will help provide invaluable guidance for future policy decisions that impact a host of market rules.

Technology, one of the three NARUC committee sponsors of the current Model Interconnection Project Commissioner.

offices, as well as businesses that support DER throughout the country. FEMP helps federal agencies to address their energy management issues—by promoting the use of distributed and renewable energy, advancing energy efficiency and water conservation, and improving utility management decisions—thereby reducing the cost of government. These one-and-a-half-day workshops will provide an overview of various DER technologies, as well as information on project implementation and financing opportunities. The first workshop was held in Atlanta on May 23-24 and was attended by over 80 people. The other workshops are scheduled in Chicago (June 25-26), Boston

● DOE NEWS

FEMP DER Workshop

DOE's Federal Energy Management Program (FEMP) and the Office of Distributed Energy and Electric Reliability (DEER) are co-sponsoring four regional workshops on distributed energy resources (DER) for federal facilities. Each workshop will also be co-sponsored by one or more of DOE's regional

RealEnergy has installed systems for large building owners and real estate portfolio managers like Arden Realty, CalPERS, RREEF Funds, Commonwealth Partners, Transwestern Investment Company, and DivescoWest Properties.

(October 23-25), and Los Angeles (September 27-29).

● Solicitations

RFP Issued for Energy System Architecture

On May 24, the Electricity Innovation Institute (E2I), released a Request for Proposals (RFP) to design an open, standards-based system architecture that will enable the energy industry to meet the emerging needs of a digital society. E2I is a new nonprofit organization that conducts strategic research and development in energy-related science and technology. Utilities will be increasingly relying on a wide variety of intelligent equipment and advanced data and network communications to perform a variety of system operation, pricing, and customer service applications. The system architecture will define an overall technical framework for the communications and intelligent equipment necessary to support the envisioned future power system. The envisioned electric system of the future will leverage the newest communications and distributed computing technologies available to provide an interoperable and interworkable foundation for advanced customer communications and a self-healing grid. The self-healing grid will integrate real-time information from embedded sensors with distributed intelligence and automated control in order to anticipate problems and quickly recover from disruptive events.

The system architecture will also include a data communications infrastructure that links energy users to markets and enables real-time pricing, customer energy management, and innovative energy services. This infrastructure will support advanced revenue metering, power quality monitoring, and two-way communications between utilities and customers.

The RFP calls for contractors to work with key industry stakeholders to develop a complete set of systems requirements and architecture documents, using standardized industry notation. Ultimately, project results will be made available to key standards organizations for use in developing robust infrastructure specifications.

For more information on the scope of work or to obtain a RFP package, visit www.e2i.org/rfp.

RFQ for Renewable Energy Trust

The Massachusetts Energy Trust has released a Request for Qualification (RFQ) in an effort to evaluate and pre-qualify firms capable of serving on an "on-call" basis to assist in outreach, technical assistance, proposal evaluation, project evaluation, and project management for distributed generation initiatives and projects.

Professional service providers that are successfully pre-qualified under the Trust's RFQ will automatically be considered by the Trust for assignments related to new solicitations under development by Trust staff. Current program development includes a planned program supporting the installation of commercially available fuel cells in stationary, distributed applications; the budget for this program has not yet been determined, but will likely be similar in size to the \$16,000,000 program initiated in March 2001.

The Trust is seeking qualification submittals under the RFQ by 3PM on Thursday, June 27, 2002. A detailed description of the required materials is contained in the full RFQ document. The document also details all procedures related to submission, the evaluation process and criteria, and other general conditions related to the RFQ and working with the Trust. The RFQ is available at www.masstech.org.

● Materials Tech Briefs

Higher Efficiency in Gas Turbines with Advanced Materials

At a recent annual meeting of the American Ceramic Society, Karen More, from Oak Ridge National Laboratory, presented a paper summarizing the test results of an advanced materials project. The collaborative work has recently focused on the microstructural and mechanical characterization of a set of engine-tested continuous fiber ceramic composite combustor liners removed from a Solar Turbines gas engine after the ~14,000 hour Chevron field test. The FCC liners with environmental barrier coatings were installed in a Solar Centaur 50S SoLoNOx engine at the Chevron engine test site in Bakersfield, CA. The talk was entitled "Environmental Barrier Coatings for Ceramic Matrix Composite Combustor Liners Used in Stationary Gas Turbines." Co-authors of the paper were P. F. Tortorelli and L. R. Walker (Oak Ridge National Laboratory), H. E. Eaton, E. Y. Sun, and G. D. Linsey (United Technologies Research Center), J. B. Kimmel, N. Miriyala and J. R. Price (Solar Turbines, Inc.).

Reciprocating Engine Exhaust Valve Testing

Several stainless steel and nickel-based superalloy exhaust valves from Waukesha Engine Dresser, Inc. natural gas reciprocating engines were shipped to Oak Ridge National Laboratory for characterization and analysis. The valves made by TRW, Inc. included fresh as-fabricated valves as well as identical valves run in natural gas reciprocating engines for significant periods of time without failure. The characterization and analysis will help define efforts to improve the performance and lifetime of stainless steel and nickel-based superalloy valves.

Calendar of Events

JUNE 2002			
16-18	National Accounts Conference and Exhibition (American Gas Association)	Nashville, TN	TheGasChoice.com
23-25	IDEA 93rd Annual Conference & Expo	Baltimore, MD	www.districtenergy.org
25-26	DER Federal Energy Management Program Workshop	Chicago, IL	www.eren.doe.gov/femp/techassist/der_resources.html
26-29	Building Energy 2002 and the Mid-Atlantic Sustainability Conference	East Brunswick, NJ	www.nesea.org
27-28	The Business Case for Cogeneration Regulatory Initiatives	Chicago, IL	www.cbinet.com
JULY 2002			
11-12	Powering E-Business Part 3: Exploring Energy, Deregulation, and the Digital Society	San Francisco, CA	www.epri-peac.com/ebusiness3/index.html
21-25	IEEE Power Engineering Society Summer Meeting 2002	Chicago, IL	www.ieee-spm2002.org
AUGUST 2002			
18-23	Summer Study on Energy Efficiency in Buildings	Pacific Grove, CA	www.aceee.org
SEPTEMBER 2002			
19-20	Energizing America's Cities	Chicago, IL	www.gastechnology.org/pub/aboutgri/2000ar/eac/eacindx7.htm
27-28	DER Federal Energy Management Program Workshop	Los Angeles, CA	www.eren.doe.gov/femp/techassist/der_resources.html
30-Oct. 2	7th National Green Power Marketing Conference	Washington, DC	www.eren.doe.gov/greenpower/conference
OCTOBER 2002			
9-11	Combined Heat and Power Expo	Atlanta, GA	Ted Kurklis; 770-449-1595
23-25	DER Federal Energy Management Program Workshop	Boston, MA	www.eren.doe.gov/femp/techassist/der_resources.html
29-30	15th NREL Industry Growth Forum	Albany, NY	www.cleanenergyforum.com
NOVEMBER 2002			
6-8	AGA/EEI Energy Information Technology Conference and Expo	Las Vegas, NV	720-548-5442

One of the installations is a 400kW cogeneration system for the California Public Utilities Commission building in San Francisco.