

Golden Valley Battery Energy Storage System Comes Online

On August 26 ABB and Saft brought the first three strings of the world's most powerful storage battery on-line to mark the official dedication of the new US\$30-million BESS (Battery Energy Storage System) for the Golden Valley Electrical Association (GVEA) in Fairbanks, Alaska.

The Golden Valley BESS is configured to operate in several distinct modes, each of them aimed at stabilizing the GVEA system if power supply problems occur. This is a critical feature for this type of system and is one reason why battery energy storage is widely regarded as a vital component of the electricity delivery infrastructure of tomorrow.

During commissioning tests the BESS set an unofficial world record by achieving a peak discharge of 26.7 MW with just two strings operational. This makes the Alaskan BESS over 27 percent more powerful than the previous record holder - a 21 MW BESS commissioned by PREPA (the Puerto Rico Power Authority) at Sabana Llana, Puerto Rico in 1994. When all four battery strings are in place, which is



A panoramic view of the battery array. Photo courtesy Saft.

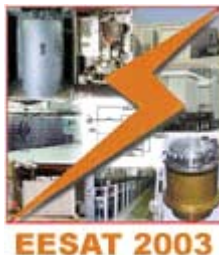
scheduled towards the end of this year, the available power will increase to the full converter capability of 46 MW.

The BESS can readily be expanded to six strings to provide a full 40 MW for 15 minutes. The facility can ultimately accommodate up to eight battery strings, giving considerable flexibility to boost output or prolong the useful life of the system beyond the planned operation for 20 years.

The ESA was represented at the dedication ceremony by Chairman Bill Hassenzahl and by board member Jim McDowall, who manages the BESS project for Saft. Also among those present were Imre Gyuk of the US Department of Energy and Steve Eckroad of EPRI. ◀

Electrical Energy Storage – Applications and Technology (EESAT) Conference

The Electrical Energy Storage Applications and Technologies Conference (EESAT) 2003 will be held October 27-29 in San Francisco at the Sir Francis Drake Hotel. This conference is sponsored by the US Department of Energy and Sandia National Laboratories in cooperation with the Electricity Storage Association.



Last year's conference was an outstanding event and was attended by over 150 people from many countries representing manufacturers, universities, research facilities, government agencies, consulting firms and utilities. The preliminary conference schedule, hotel information and registration details may be located at <http://www.sandia.gov/eesat/>.

ESA members are eligible for substantial savings off the registration fee until September 28. ◀

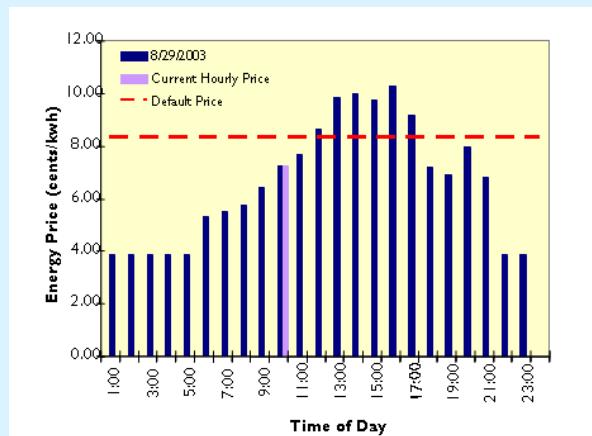
Dispatch from the Energy Frontier

by Mark Kuntz, Regenesys Technologies

As a proponent of new energy technologies, I'm always on the look-out for novel energy products and services. I was therefore among the earliest adopters when my electric utility introduced a real-time energy pricing program for residential users.

In exchange for accepting market/price risk, I receive hourly, day-ahead pricing, a digital recording meter, web site access to my energy usage, and the opportunity to benefit from low off-peak and mid-peak prices. As can be seen in the figure, daily pricing ranges widely, providing significant incentive to shift usage away from peak times.

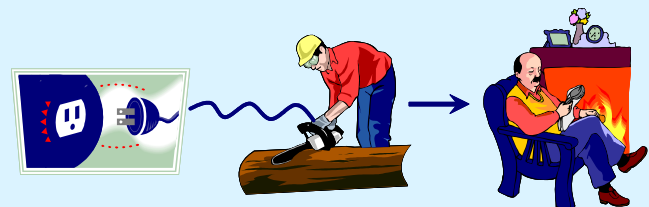
The program provides a price cap of \$0.49/kWh, and to date, the highest price experienced has been \$0.28/kWh. Fortunately, these "superpeaks" are infrequent and of short duration. Since joining the program in January, my total electricity cost has averaged \$0.060/kWh versus the utility's bundled rate of \$0.0825/kWh.



This wide daily variation opens up many tantalizing possibilities for energy storage. I've thought through a variety of scenarios, including flywheels, thermal storage or hydrogen generation using off-peak energy. Needless to say, at the residential scale these would be challenging from many perspectives.

Happily, however, I've hit upon a true inter-seasonal, multi-fuel arbitrage opportunity that is viable today with immediate payback, as shown in the following figure. By cutting firewood with my electric chainsaw during off-peak periods, I've created an energy store, enabling me to avoid peak winter heating costs.

If anyone would like to join me, I'll be out behind the barn tonight as soon as the prices go down!



California Energy Commission and DOE Publish Storage RFP

On August 1, the California Energy Commission (CEC) released a request for proposals (RFP) for electrical energy storage projects. The CEC's Public Interest Energy Research (PIER) program will contribute up to \$5 million in matching funds for four to five projects to demonstrate the value of electric energy storage. The U.S. Department of Energy's Energy Storage Systems program will offer

consultation and in-kind services.

Flywheels, mini/micro pumped hydro, and advanced battery systems are examples of the types of projects this proposal is designed to develop. The CEC's intent is to advance emerging technologies that have already been

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field-tested to some degree to get them ready for commercial applications by the end of the three-year demonstrations. Project cost should be approximately \$1-2 million. The development team is expected to contribute 20%-80% in matching funds.

The types of projects the CEC is seeking could include, but are not limited to:

- ▶ Transmission and distribution
- ▶ Renewable applications
- ▶ Industrial load support

Many ESA member companies were in attendance at the August 21 pre-bid conference in Sacramento, and are in the process of formulating responses to the RFP. The deadline to submit proposals is September 29, 2003. More information is available on the CEC Web site at: <http://www.energy.ca.gov/contracts>. ◀

ESA Endorses Battcon 2004

The ESA is pleased to announce its endorsement of Battcon 2004, a three-day, noncommercial, technical symposium for storage battery users from various industries, May 3-5, 2004, Ft. Lauderdale, Florida. In addition to presenting technical papers on batteries in traditional standby applications, this international battery conference highlights some of the latest advances in battery technology and applications, making it very relevant to the electricity storage community. The ESA joins the IEEE Power Engineering Society as technical co-sponsors of the conference. To learn more about Battcon, visit the conference Web site at <http://www.battcon.com>, or follow the link from the ESA Web site.

DOE's National Electric Delivery Technologies Roadmap Workshop

On July 8-9, 2003, approximately 200 experts on electricity technologies, markets, and regulation, representing various segments of the electric industry, equipment manufacturing companies, academia, interest groups, national laboratories, and federal and state government agencies, met for a National Electric Delivery Technologies Roadmap Workshop.

The purpose of the workshop was to discuss pathways for achieving the vision through the identification of near-, mid-, and long-term actions and setting priorities for research, development, and demonstration programs. The scope of the workshop covered electric delivery technologies and policies for a national electricity "backbone," regional interconnections, local distribution, and the regulatory framework and markets in which they function.

During the meeting, participants discussed:

- ▶ Targets that would need to be reached by the years 2010, 2020, and 2030 to achieve the vision;

- ▶ Grand challenges that need to be overcome to achieve the targets and achieve the vision;
- ▶ Research, development, and demonstration needs for overcoming the challenges;
- ▶ Timeframes for the research, development, and demonstration needs.

ESA was well-represented at the workshop, including participation by board members Bill Hassenzahl, Brad Roberts and Mark Kuntz. Electricity storage figured prominently in the workshop results, with seven of the eight subcommittees identifying some aspect of storage as imperative for the future of the grid.

The final Vision document and draft proceedings for the National Electric Delivery Technologies Roadmap Workshop can be downloaded from <http://www.energetics.com/electric.html>. ◀

ESA Web site usage data available to members

The ESA has prepared a statistical analysis of the ESA Web site usage for the information of its members. This analysis can support members' ongoing marketing efforts by tracking interest by Web site page and technical area, Web site entry and exit points, demographics, and a host of other information.

Based on the "WebTrends" commercial package, data is provided for July and August 2003. The data will be updated in the future according to the interests of the members.

This analysis is provided as a member benefit. For instructions on how to access this data, please contact Ben Norris at ben@gridwise.com. ◀

New Members Welcome

The ESA would like to welcome **Composite Power** and **Taratec Corporation**.

Composite Power Corporation is a technology based manufacturing and services company with interrelated interests in power generation

and transmission, energy storage, data storage, and composite component manufacturing. The company integrates new environmentally friendly power and composite materials technologies to meet the demands of the competitive deregulated centralized and distributed electricity marketplace of the 21st century.

Taratec helps its clients meet manufacturing, commercial and economic objectives by wisely and creatively employing technology and technical capabilities. Through a combination of strategic analysis and the development of appropriate

Future Events

IIR Global Business Continuity Congress 2003

London, October 6-9, 2003. Supported in part by ESA. Features a session on critical infrastructure protection. Go to <http://www.iir-conferences.com/gbcc> for further information.

Battcon 2004

Fort Lauderdale, Florida, May 3-5, 2004. The ESA joins the IEEE Power Engineering Society as technical co-sponsors of the conference. To learn more about Battcon, visit the conference Web site at <http://www.battcon.com>, or follow the link from the ESA Web site.

ESA 2004 and 2005

Our next meeting will be held in Columbus, Ohio on May 19-20, 2004.

We will hold our 2005 meeting in Toronto, on May 23-25. Details will follow in subsequent newsletters and on the ESA Web site.

Flemish Engineers

A major European meeting on energy storage will be held at the Technical Institute of Royal Flemish Engineers in Oostende on June 21-23, 2004. The ESA is a sponsor of this event and will host a reception during the meeting. The EPRI European office is also assisting in its organization. Visit <http://www.ti.kviv.be/conf/ess/index.html> for further details.

relations among technology creators, developers, producers, and financing resources, both in US and international markets, Taratec has developed a reputation as a catalyst in the successful exploitation of technology. ◀

Energy Storage and the Blackouts of 2003

Late summer 2003 was witness to widespread power outages in Malaysia, London, and of course, North America, where the eastern seaboard experienced the worst blackout in US history.

It is postulated that these outages are symptomatic of a fundamental problem: Power systems have become so complex that they exceed man's ability to react to them. In his book, "Inviting Disaster: Lessons from the Edge of Technology," James R. Chiles insists that complex systems must be designed to give people adequate time to manage failure. In addition to its more well-know benefits, electricity storage does just that: ***it provides enough flex in the system to allow human beings the time to manage properly.***

This is a message the ESA is committed to bringing to the policy and decision makers tasked with creating the next generation grid. ◀



Technicians do a final check on the Golden Valley BESS. Photo courtesy Saft.

About the ESA

Our Mission

To promote the development and commercialization of competitive and reliable energy storage delivery systems for use by electricity suppliers and their customers, thereby bringing financial and technical benefits for energy storage operators.

Membership Benefits

- ▶ Gain early knowledge of the latest developments in energy storage technology and field/customer applications of new/innovative storage technologies, and information on how these can be used for member's business advantage
- ▶ Early notification of upcoming business leads in US and abroad
- ▶ Enhanced exposure to potential customers for energy storage products and services
- ▶ Ability to network with users, manufacturers, and researchers in the energy storage field
- ▶ Access to ESA contact list of more than 800 names of industry leaders interested in energy storage
- ▶ Ability to actively interface with key representative from government and industry to receive insights into energy storage markets and strategic directions of key industrial firms

Join Now

General Membership is \$750 per year which includes attendance at meetings, conference proceedings, special tours, and social events.

To join the ESA, complete our on-line membership form. You will be asked to provide credit card information over our secure transaction server.

For questions about membership in the ESA, contact Brad Roberts at +1 (262) 642-7200 x109 or membership@electricitystorage.org.