



The Electricity Storage Association

Newsletter, October 2001

The Role of Electricity Storage in Providing a Secure Power Network

Electricity is often generated miles away from its point of use. The power is delivered over long transmission and distribution networks whose inherent risks reduce the reliability of supply. Faced with such concerns many individuals, businesses and industries may consider that the simplest and least expensive solution is to use on-site generation, such as a diesel genset, but these have their own problems:- on-site generation may improve security but raises reliability and environmental issues and limitations. In addition, the need to keep additional fossil fuels poses storage and safety issues.

The alternative is to store the electrical energy in a rechargeable system and use it as needed. While pumped hydro may be an economical option for power utilities, industrial, commercial, and even residential electricity consumers can now find a new generation of advanced batteries and supercapacitors that allow storage of enough energy to provide for hours of consumption. While the new storage technologies may still be expensive for all applications, some of them are approaching \$200/kWh of storage capacity and at this cost level new opportunities are opening up.

Using a rechargeable energy storage device for electricity provides three fundamental functions:

- 1) It can serve as the source of grid independent energy (hours)
- 2) It can serve as a bridge to local generation (minutes)
- 3) It can serve as a source of high quality power (seconds)

Mini meeting, Wednesday November 14, 2001: Electricity storage and security of electricity supplies

The ESA will be holding an additional meeting this year. This short meeting, to be held the evening of November 14, 2001, will run alongside the US Department of Energy Energy Storage Program Review and will be held at the **Doubletree Hotel in Arlington, Virginia**. The hotel is in the Crystal City area and is easily reached by the Washington Metro Rail system and by a shuttle bus from National Airport.

The November 14 ESA Meeting will consist of two events:

- 4:15 to 5:30PM Keynote Speaker and Panel Discussion on "**Electricity Storage and Security of Electricity Supply**"
- 6:00 to 8:00PM Wine, beer and snacks social event hosted by the Electricity Storage Association

Many ESA members will be present at the Energy Storage Program Review on November 14 and 15,. Any others who are interested in learning more about electricity storage and in talking with experts in this field, are invited to both the ESA events on November 14. There will be no registration fees for the ESA events on November 14. but we would like to know who is coming so that badges can be prepared. Please let us know by Email to crubino@ix.netcom.com

The ESA at the IEEE Power Engineering Society

Three panelists from the ESA took part in a discussion of "Distributed Energy Storage - Improving Reliability and Asset Utilization" at the IEEE Power Engineering Society meeting in Seattle in July. The session was jointly chaired by Jim McDowall of SAFT, and Phil Symons, our chairman, and Shinichi Miyake and Nobuyuki Tokuda of Sumitomo also participated. We used the opportunity to continue to raise the profile of the ESA, and to educate potential users on the usefulness of electricity storage.

Future Events

T & D EXPO, ATLANTA OCTOBER 28 – NOVEMBER 2

We will be participating in a panel session on **Electricity Storage—Realities and Opportunities** to show how electrical energy storage has begun to move out from R&D labs and demonstration projects towards implementation in real-life applications. You will find us in **Room 260** for session PN15 • **Thursday, November 1, 9:00am–12:00noon**

This session looks at new areas where electricity storage is being used, and examines some of the issues involved with interconnection of these devices to the utility grid. It also discusses opportunities for storage resulting from new trends in the use of distributed generation and renewables.

Chairperson: **Jim McDowall**, Saft America

Panelists:

Brad Roberts, S&C Electric Company *Applying Energy Storage for Large-Scale Power Protection Systems*

Mike Behnke, Xantrex/Trace Technologies *Application considerations for Interconnection of Distributed Generation and Storage*

Jim McDowall, Saft America *Opportunities for Electricity Storage in Distributed Generation and Renewables*

We are also expecting participation from Sandia National Laboratories and NGK / TEPCO

EESAT 2002

The ESA is supporting EESAT 2002 (Electric Energy Storage Applications and Technologies) to be held in San Francisco April 15 – 17th, 2002. The conference will cover a wide range of energy storage systems and technologies. The call for papers on systems, components, applications and research is now out. Papers on both technical and commercial topics are warmly welcomed. Abstracts should be submitted as soon as possible, (deadline October 31). ESA members will receive a \$100 discount on the conference fees. More details on the EESAT website www.sandia.gov/eesat

ESA meeting 2002

Our main meeting next year will be held in September. The date has yet to be confirmed.

European meeting

We are still looking at our diaries to see if we can arrange a meeting in Europe in the coming months. Watch this space!

Follow up from Tennessee

All members and those who attended the annual meeting in Tennessee in April should now have received their copy on CD of the proceedings. We are very grateful to Jim McDowall of SAFT and to the staff of Sandia National Laboratories who produced and circulated them.

Storage Technologies Resource Site

Ali Nourai of American Electric Power joined the board and immediately declared an interest in producing some comparative information on the various forms of energy storage. After some considerable work in collating information, Ali and Ben Norris of Gridwise have updated the ESA website and it now has a link to a resource site and “tutorial” on storage technologies. There is information and a comparison of a variety of electric energy storage options. We list nine different large

scale storage technologies ranging from the existing lead acid batteries and compressed air options to more advanced and evolving batteries and supercapacitor technologies. The technical and commercial status of each technology is briefly explained, with hot links to the sites of manufacturers and suppliers of these technologies for more detailed information. These technologies are also compared from different view points including cost, size, power ratings and application ranges.

We would like your help in making sure that the information is accurate so if you have any comments please let Ali know by e mail on anourai@aep.com

Do visit our website and see the work that has been done at www.electricitystorage.org.

News from our members

Supercapacitors

Professor Rufer of the LEI, Laboratoire d'électronique industrielle of the EPFL, Ecole Polytechnique Fédérale de Lausanne, (Switzerland) has published his team's research on Supercapacitive Energy Storage and Applications. Undergraduate students have produced a Supercapacitor-Fed Train-Model and Demonstration System.

Videos are available of the Supercapacitor-Fed Train-Model and Demonstration System and can be downloaded from the lab's web-site <http://leiwww.epfl.ch>

Technical publications also available in pdf-format from: http://leiwww.epfl.ch/publications/barrade_rufer_iqses_01.pdf
http://leiwww.epfl.ch/publications/barrade_rufer_evs_18.pdf



New EPRI Working Group Formed to Guide Research on Superconductivity Applications for Power Delivery

EPRI's new working group to guide research related to superconductivity applications for electric power delivery is open to all EPRI funders. The group will also engage government and industry stakeholders and vendors to facilitate cross-pollination of application ideas and elucidation of industry needs.

Superconducting magnetic energy storage (SMES) has been identified as a potentially beneficial technology for the enhancement of power delivery systems, both for transmission stability and distribution power quality. Beyond SMES, however, the introduction of other superconducting components (cables, transformers, current limiters) into power delivery facilities, such as substations, is expected to yield benefits in greater efficiency (lower losses), extended life, lower maintenance costs, increased throughput, reduced environmental hazards, and reduced space requirements.

The first meeting of the working group was held July 31, 2001 at Florida State University (FSU) in Tallahassee, Florida. The meeting was convened following a one-day

workshop on Superconductivity Applications in the Electric Power Industry, cosponsored by EPRI and FSU's Center for Advanced Power Systems (CAPS). The workshop examined the issues and benefits associated with incorporating superconducting equipment into the utility power grid and power systems in general, and reviewed efforts at EPRI, CAPS, and nationwide.

The working group will meet twice a year. The next meeting is planned for February 2002.

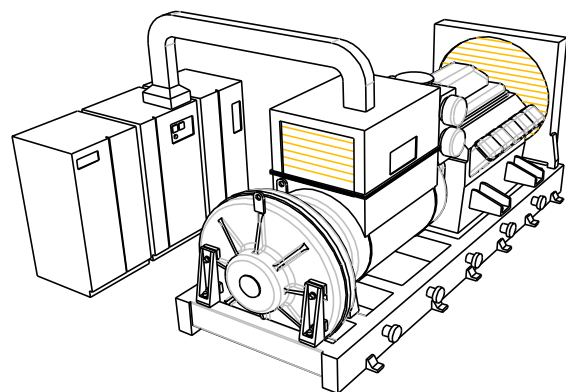
To participate in the working group or obtain further information, contact Steven Eckroad, 650/855-1066, seckroad@epri.com.

Groundbreaking event for the TVA Regenesys Reference Plant

Joe Hoagland reports that TVA will be building their *Regenesys* Reference Energy Storage Plant on a site adjacent to the Columbus Air Force Base in Mississippi. Groundbreaking on the 120 MWh project took place on October 15th.

Satcon Power systems launches a new rotary UPS

Vince Scaini of Inverpower (now owned by Satcon) says that they are launching a 2.2 MVA three phase rotary frequency Injected UPS System. The system offers a continuous connection of UPS to load and grid for instantaneous transfer on grid fail. There is Automatic or manual operation of a UPS bypass contactor for direct connection of the grid to the load without interruption to the load in emergency or for maintenance. More details are available on www.satcon.com



Board of Directors activities

Your board has continued to hold regular telephone conferences to discuss the work of the ESA and how we can improve our outreach and serve our members better, to everyone's advantage. John Hawkins of Telepower and Ian Grant of TVA have been co-opted onto our sub committees. Bill Hassenzahl is continuing to support us in our outreach activities. Besides making arrangements for future meetings, we are now actively looking at how we can promote the benefits of energy storage to a wider audience, including state and federal energy agencies and corresponding organizations overseas.

We are always happy to include some short items from members for this newsletter. If you have that you would like published in this format please send them to newsletter@electricitystorage.org



ESA website www.electricitystorage.org

**The Energy Storage Association
1295 Kelly Park Circle
Morgan Hill
CA 95037
USA**

telephone +1 408 607 2899