



AGENDA:

All portions of the program will take place at the Renaissance Austin Hotel, 9721 Arboretum Boulevard, Austin, Texas unless otherwise indicated:

Wednesday, January 16, 2013

NAATBatt Board of Directors' Meeting 11:30 a.m. – 1:30 p.m.

The Board of Directors of NAATBatt will hold a business meeting for board members only.

Registration 1:30 - 2:00 p.m.

Speakers and Symposium attendees may pick up name badges and Symposium materials at the Symposium registration desk in the Renaissance Austin Hotel.

Pre-Symposium Workshop on Maritime Applications for Advanced Battery Systems 2:00 - 4:00 p.m.

Moderator: Davion Hill, *DNV*

Speakers: Ingve Sorfonn, *Maritime Cleantech West (Norway)*
Nils Aadland, *Maritime Cleantech West (Norway)*
Arnstein Eknew, *DNV Class*
Doug Moorehead, *Earl Energy*
Donald Sandler, *Corvus Energy*

DNV will sponsor a two-hour workshop on issues concerning the use of advanced batteries in maritime applications. The workshop will highlight the market and regulatory drivers that are causing shipping interests around the world to consider adopting hybrid and full electric drive engine systems in maritime vessels. The workshop will discuss some of the special challenges when designing advanced battery systems for maritime applications and explore the market opportunity for battery manufacturers.



NAATBatt Members Meeting**4:00 - 4:30 p.m.**

NAATBatt member firms are invited to participate in the Third Annual Meeting of the National Alliance for Advanced Battery Technologies (NAATBatt). New members of the Board of Directors will be elected by eligible members and the new officers and board will be announced. NAATBatt officers will report to the members on NAATBatt's activities over the past year.

Welcome Cocktail Reception**4:30 - 6:30 p.m.**

Join us for the Welcome Cocktail Reception for all speakers and Symposium participants at the Renaissance Austin Hotel sponsored by Digitron Firing Circuits.

**Welcome BBQ Dinner****7:30 - 10:30 p.m.**

County Line on the Hill restaurant
6500 Bee Cave Road
Austin, Texas
(512) 327-1742

NAATBatt is a not-for-profit association, which shamelessly puts the profits from its programs into the stomachs of its members rather than into the pockets of professional conference companies. The Welcome BBQ Dinner will continue this tradition. NAATBatt has researched long and hard where the best BBQ dinner in Texas may be had for a party of the Symposium's size. We are pleased to announce the winner: County Line on the Hill. So trade your sports jacket for jeans, your wingtips for cowboy boots and come on down and join us. We promise you will have a great time, meet everyone you will want to meet in the industry, and have a chance to try what most BBQ aficionados know to be the best Texas cuisine this side of El Paso.

Thursday, January 17, 2013

Registration and Continental Breakfast**7:00 - 8:00 a.m.**

Registration and a Continental Breakfast will be offered to all Symposium participants in the conference area of the Renaissance Austin Hotel. Displays by Symposium exhibitors will be open for view and inspection.

Welcome by NAATBatt Executive Director and Introduction of Day One Chair, Dr. Imre Gyuk of the U.S. Department of Energy

8:00 - 8:10 a.m.

The Promise of Greater Efficiency in Battery Systems

8:10 - 8:40 a.m.

Speaker: Ankur Ganguli, *Eaton Corporation*

Increasing the power density and lowering the cost of advanced batteries is critical to the future of electric vehicles and electricity storage on the grid. Increasing the efficiency of battery systems may play just as important a role in meeting these goals as increasing the power density of their component cells.

Modeling and Monitoring the Performance of Cells within a Battery System

8:40 - 9:30 a.m.

Panelists: Brian Koch, *General Motors Company*
Godfrey Sihka, *Applied Materials, Inc.*
Robert Spotnitz, *Battery Design LLC*

The first steps to increasing the efficiency of battery systems is modeling the operations of those systems and monitoring the performance of their component parts in the field. This panel of battery designers, material designers, and battery customers will discuss methods for modeling, measuring and monitoring what is going on inside a cell.

Networking Refreshment Break

9:30 - 10:00 a.m.

Join Symposium participants for a Networking Refreshment Break adjacent to the Symposium conference room.

Measuring and Managing the Safety of Battery Packs

10:00 a.m. - 11:15 a.m.

Chair: Phil Gorney, *NHTSA*
Panelists: Keith Wilson, *Society of Automotive Engineers*
Said Al-Hallaj, *All Cell Technologies*
Brian Morin, *Dreamweaver International*

Two key issues in battery safety are preventing faults in battery cells and preventing propagation of faults in battery systems. The panelists will discuss efforts to deal with these issues at the cell, pack and regulatory levels.

Academic Flash Panel #1: Leading U.S. Research in Advanced Battery Technology

11:15 - Noon

Chair: Dr. Arumugam Manthiram, *University of Texas at Austin*
Presenters: Brett Lucht, *University of Rhodes Island*
Ratnakumar Bugga, *Jet Propulsion Laboratory*
Yuri Gogotsi, *Drexel University*
Jun Liu, *Pacific Northwest National Laboratory*

A unique aspect of NAATBatt Symposia is academic flash panels. NAATBatt has identified some of the top battery researchers at U.S. universities and national laboratories, who are working on technology that should be of interest to industry. Each panelist will make a 10 minute "flash" presentation to the Symposium about a technique or technology that is available for license or purchase and which should be of immediate interest to industry. This is the best format

we know of to encourage the transfer of technology from first class U.S. research institutions to the private sector—a key mission of NAATBatt.

Networking Luncheon

Noon - 1:30 p.m.

Join speakers, sponsor and Symposium participants for lunch at the Renaissance Austin Hotel.

Electricity Storage, Energy Trading and Risk Management

1:30 - 2:00 p.m.

Speaker: Davion Hill, *DNV*

Davion Hill of DNV's energy trading group will discuss how electricity dispatchable on demand from distribution systems might affect the trading markets, how it might be different than other forms of dispatchable electricity, and what its value to load serving utilities and other owners of DES systems might be. DNV has done extensive work using micro grid models to scale energy trading schemes. This presentation will explain how and why DES technology may prove disruptive to the electricity trading market.

The Challenge of Aggregating Distributed Energy Storage on the Grid

2:00 - 2:30 p.m.

Speaker: Tom Walker, *S&C Electric Company*

Storing electricity proximate to the consumer, at the “tips” of the grid, is the most effective way of using electricity storage technology. The full value of such distributed systems, however, will only be realized when it becomes possible to network multiple distributed storage units together and dispatch their power on an aggregated basis, either within a single distribution system or upstream into the interstate transmission system. How close are we to being able to do that? Tom Walker of S&C Electric, formerly Principal Engineer for Grid Management at American Electric Power (AEP), will speak to that question.

Battery Research at the University of Texas - Past and Present

2:30 - 3:00 p.m.

Speaker: Arumugam ("Ram") Manthiram, *University of Texas at Austin*

Dr. Ram Manthiram will review the history of advanced battery research at the University of Texas and talk about where Texas researchers are now placing their bets as to the future of advanced battery technology.

Networking Refreshment Break

3:00 - 3:30 p.m.

What We Have Learned from DES Demonstration Projects and What We Still Need to Know

3:30 - 4:00 p.m.

Speaker: Dr. Imre Gyuk, *U.S. Department of Energy*

Over the past two years, utilities around the country have deployed distributed energy storage systems as part of DOE-funded demonstration projects. What have we learned from those projects, and what new questions have those

projects identified that utilities and battery producers still need to learn? Dr. Imre Gyuk of the U.S. Department of Energy will talk about the successes, the failures and the mountains left to climb in order to make DES technology an attractive tool for grid operators.

The Confluence of Energy Storage and Information Technology

4:00 - 4:30 p.m.

Speaker: David Kaplan, *1Energy Systems*

David Kaplan, CEO of 1Energy Systems and a former senior executive at Microsoft, will discuss the recently-announced MESA Project, a partnership among leading utilities and technology suppliers. MESA enables modular, scalable energy storage systems (ESS) built from standard components – batteries, power conversion and software – and a robust market in which utilities buy more and suppliers sell more energy storage products.

Lessons from Measuring 2nd Life Batteries, and Whatever Comes Next

4:30 - 5:00 p.m.

Speaker: Dirk Spiers, *ATC New Technologies*

Second use of automotive lithium-ion batteries has long been recognized as a possible means to improve the economics of EV's. Dirk Spiers will discuss the work that ATC New Technologies and its partners have been doing in the area of second use and the prospects for that technology.

Day One Networking Cocktail Reception

5:00 - 7:00 p.m.

The Day One Networking Cocktail Reception for all Symposium attendees will be sponsored by Bitrode Corporation, Cincinnati Sub-Zero and A & D Technology Inc.



Gala Dinner and Lifetime Achievement Award

7:00 - 9:00 p.m.

Symposium attendees will attend the Symposium Gala Dinner and witness the presentation of the NAATBatt Lifetime Achievement Award in Advanced Battery Technology to Professor John B. Goodenough of the University of Texas at Austin. Dr. Goodenough is a legend in the advanced battery industry and a good part of the reason why the United States is a center of advanced battery technology today. NAATBatt is honored to present this, its first Lifetime Achievement Award, to Dr. Goodenough in Austin, his home town. EnerSys is the Symposium's Dinner Sponsor.



Friday, January 18, 2013

Continental Breakfast

7:00 - 8:00 a.m.

Summary of Day One and Introduction of Day Two Chair, Steve Vechy of EnerSys

8:00 - 8:10 a.m.

Duke Energy: A Case Study in DES Deployment

8:10 - 8:45 a.m.

Speaker: Zak Kuznar, Duke Energy

Duke Energy has deployed multiple DES systems within the past year. Learn of Duke has learned, where improvements need to be made, and Duke's assessment of the future of DES technology.

AMPED: ARPA-E's Battery Management System Project

8:45 - 9:15 a.m.

Speaker: Amul Tevar, ARPA-E, U.S. Department of Energy

Dr. Amul Tevar of the U.S. Department of Energy will discuss ARPA-E's AMPED initiative, which is attempting to bring together the information technology, controls and energy storage industries. Where the AMPED program is going and what opportunities it offers for advanced battery industry participants will be covered by this presentation.

Communications between the Battery System, the Vehicle and the Grid

9:15 - 10:15 a.m.

*Panelists: Pablo Valencia, General Motors Company
David Robertson, Argonne National Laboratory
Mark Gunderson, Johnson Controls, Inc.*

A panel of representatives from automotive OEM's, systems integrators and electric utilities will talk about how vehicle batteries communicate with other systems on the vehicle, charging stations and the grid. New approaches and systems for facilitating those communications are critical to the commercialization of electric vehicles will be discussed.

Networking Refreshment Break

10:15 - 10:45 a.m.

Academic Flash Panel #2: Leading U.S. Research in Advanced Battery Technology

10:45 - 11:30 a.m.

Chairman: Arumugam ("Ram") Manthiram, University of Texas at Austin

Presenters: Miroslav Krstic, *University of California, San Diego*
George Andrews, *Oak Ridge National Laboratory*
Bruce Dunn, *University of California, Los Angeles*
Gleb Yushin, *Georgia Institute of Technology*

The Academic "flash" presentation portion of the program continues with presentations by four more leading researchers about technologies under development at their institutions that commercial companies should have an interest in acquiring or licensing today. Don't miss this opportunity for a "first look" at some of the next, next things in advanced battery technology.

Monitoring the Health and State of Charge of Cells in a Battery System

11:30 - 12:30 p.m.

Panelists: Nolan Wright, Southwest Research Institute
Rob McHenry, *PARC*

One of the keys to improving the efficiency of battery systems in vehicles and on the grid is the ability to monitor and control the state of charge of individual cells within the system and to detect and isolate possible faults in individual cells. This presentation will review some of the technologies that are being developed to perform these functions.

Lunch

12:30 - 1:45 p.m.

What the New Battery Hub Means for Advanced Battery Technology in the United States

1:45 - 2:15 p.m.

Speaker: Jeff Chamberlain, *Argonne National Laboratory*

The U.S. Department of Energy has designated a consortium led by Argonne National Laboratory, known as the Joint Center for Energy Storage Research (JCESR), as our nation's battery and energy storage research hub. A representative of JCESR will talk about what the award means and how commercial partners can take advantage of the grant.

Using Storage to Buffer Distributed Generation and EV Charging

2:15 - 2:45 p.m.

Speaker: Don Karner, *ECOtality*

Allowing consumers to put electricity generated by rooftop solar arrays and distributed wind systems onto the grid is the dream of every alternative energy visionary and the nightmare of every utility executive, second only, perhaps, to the prospect of every electric vehicle recharging at 6:00 p.m. This presentation will examine the role of storage in buffering new distributed generation and load and the role of new communications systems in facilitating that buffering.

Networking Refreshment Break

2:45 – 3:05 p.m.

Join speakers and other Symposium participants for refreshments during the Networking Break.

Issues in Power Electronics for On and Off Grid Storage

3:05 – 4:15 p.m.

Moderator: Steve Vechy, EnerSys

Panelists: Eric Apfelbach, ZBB Energy Corporation

Michael Kulesky, EnerSys

The ability to prioritize and optimize multiple generating assets, while eliminating the chaotic impact of renewables and minimizing the use of diesel generators, is critical to accomplishing numerous value streams, including power quality, security, reliability, efficiency, return on investment and reduced carbon emissions. Panelists will discuss new approaches and new products that will help utilities and large industrial customers better use electricity storage to manage their power needs.

Electricity Storage: The Texas Experience

4:15 – 4:40 p.m.

Speaker: Bert Haskell, *Pecan Street Inc.*

Texas is actively examining the function and economics of electricity storage on the grid. The experience with electricity storage in ERCOT may offer useful lessons for utilities, RTO's, ISO's and electricity customers around the country. This presentation will focus on the Texas experience with electricity storage.

Summation and Adjourn

4:40 – 4:45 p.m.

Closing Reception

4:45 – 5:45

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