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the future of batteries and associated technologies

THE BATTERY SHOW

AND

BATTERY TECHNOLOGY EXPO

FINAL CONFERENCE PROGRAM

San Jose Convention Center, CA, USA

OCTOBER 5, 6, 7, 2010



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If you are bored with the same old conferences about where batteries have been and what they were, you need to be part of something fresh and new in Silicon Valley this year! With exhibits representing the cutting edge in new and next-generation technologies, and a conference that promotes discussion and debate on battery futurology, you can be assured that this event is about where batteries are going.

Everyone is getting behind this state-of-the-art show in California.

Featuring the California Air Resources Board and companies like Tesla and other industry-leading manufacturers and suppliers with significant booth space all under one roof, this is the event of 2010 that has really captured the interest of the industry across a variety of energy-storage user groups.

To Book

Please visit www.thebatteryshow.com/conference or www.batterytechexpo.com/conference and go to the 'conference registration' button from the list to the left.

Your three-, two- or one-day pass gives you access to both tracks as you wish, as well as providing you with coffee breaks and a full, seated lunch each day.

Three-day pass: \$895

Two-day pass: \$670

One-day pass: \$447

The Conference

Our conference program is different too. With speakers including:

- Supervisor Ken Yeager, board member, **California Air Resources Board**
- Ali Nourai, chairman, **Electricity Storage Association (ESA)**
- Paul Beach, president, **Quallion**
- David Weinberg, **Wiley Rein LLP**
- Mary Ann Wright, VP, Global Technologies, **Johnson Controls Power Solutions**
- Brian Barnett, VP Battery Technology, **Tiax LLC**

THE BATTERY SHOW

TUESDAY OCTOBER 5

08.45 – 09.15
Welcome and opening address for conferences


Supervisor Ken Yeager – board member – California Air Resources Board

Supervisor Yeager is a member of the California Air Resources Board. He also serves as the county's representative to the Bay Area Air Quality Management District, the Metropolitan Transportation Commission and the Association of Bay Area Governments. He focuses much of his time on policies relating to public health, environmental stewardship and transportation.



Paul Beach – president – Quallion LLC

Paul Beach is president, general counsel and chief business officer of Quallion LLC. He manages all business operations, including business development, strategic ventures and developing key partnerships throughout the medical, transportation and defense industries. As general counsel, Paul oversees all legal matters including contracts and issues of legal compliance.



J.B. Straubel – chief technical officer – Tesla Motors

J.B. Straubel is chief technical officer at Tesla Motors, where he directs the overall technical and engineering design of the vehicle and powertrain systems, including the battery, motor, power electronics and high-level software subsystems. J.B. also leads the intellectual property efforts at Tesla; the company has been issued with 21 patents to date, with 90 more pending.



James Reader – managing director – Smarter Shows

James Reader is managing director of Smarter Shows, and has a notable history of significant sales achievements in the exhibitions industry. He has also built a respectable name for himself in transportation industry events, particularly in commercial aviation. James has responsibility for many aspects of the business, having a keen eye for innovation in the trade show marketplace.

09.15 – 10.45
Panel Discussion: Utility grid applications for batteries

Electrochemical batteries make a fast-growing sector of energy storage technologies and are being considered for different utility grid applications. In this panel session, four key areas of utility applications of battery storage are being addressed. Namely, community energy storage (CES), transportable substation batteries, ancillary services and enhancing renewable resources.

Moderator:


Ali Nourai – chairman – Electricity Storage Association (ESA)

Dr Ali Nourai, is an executive consultant with KEMA. He joined KEMA in 2010 after a 30-year utility career with American Electric Power (AEP), where he launched AEP's successful sodium sulfur (NaS) battery program and introduced the concept of Community Energy Storage (CES). Dr Nourai is chairman of the Electricity Storage Association (ESA), promoting development and commercial application of energy storage technologies as solutions to power and energy problems.

Panel Members:


Randy Moore – president – EaglePicher Technologies LLC

Randy A. Moore is president of EaglePicher Technologies LLC, which provides the most experience and broadest capability in battery electrochemistry of any battery supplier in the US. In his former roles, Randy was the executive VP and general manager of Kollsman Inc, a leading provider of advanced systems for the commercial aviation, homeland security and defense markets.



Charlie Vartanian – director, Grid Integration – A123 Systems

Charlie Vartanian is director of market development at A123 Systems (www.a123systems.com), a manufacturer of advanced lithium-ion batteries and systems. Charlie focuses on grid application development and market access advocacy to expand the use of advanced storage technologies for grid benefit. Previously he was distributed energy resource development manager at Southern California Edison.



Joe Heinzmann – senior director – Altairnano Inc

Joe Heinzmann is the senior director of utility sales and business development – West Region for Altairnano Technologies Inc. In this role he is responsible for driving profitable sales of Altairnano's high-performance batteries into smart grid applications in a manner that maximizes the sustainability, economics and efficiency of the power grid.



Haukur Asgeirsson – manager, Power Systems Technologies – Detroit Edison

Haukur (Hawk) Asgeirsson is manager of Power Systems Technologies at Detroit Edison, a DTE Energy Company. He is responsible for employing distributed energy resources (DER) into the T&D planning and operating process, managing all DER energy interconnections and grants related to plug-in electric vehicles, energy storage and the effect of resources interconnecting to the grid.

10.45 – 11.15
Coffee break
11.15 – 11.40
The role of batteries in air quality improvement and greenhouse gas reduction

Supervisor Ken Yeager – board member – California Air Resources Board

Incorporating advanced batteries into automobiles has been of great interest to the Air Resources Board for many years. This talk will describe the air quality benefits of automobile electrification and the Air Resources Board's current work in meeting California's 2050 climate change goals through advanced transportation technologies.

11.45 – 12.10
The regulatory challenges facing new battery technology

David Weinberg – Wiley Rein LLP

Conference Program

David Weinberg will provide an up-to-the-minute report on the challenges arising from the USDOT's pending lithium battery transportation rule, pending revisions in international rules and international governmental responses to the product stewardship movement, and prospects for further changes in the coming years.

12.15 – 12.40

A new paradigm for building medical, vehicle, military and space grade advanced batteries

Paul Beach – president – Quallion LLC

California has been a leader in adopting advanced green technologies for decades. Quallion serves as an example that we can also be a producer of these technologies by building batteries that power EVs and truck anti-idling solutions. We ask, why import these technologies when we can build them in California and create jobs at the same time?

12.40 – 2.00

Lunch

2.00 – 2.25

What will it take to build a sustainable hybrid and electric vehicle industry?

Mary Ann Wright – VP Global Technology and Innovation Accelerator – Johnson Controls Power Solutions

Today, nearly all the batteries for hybrid electric vehicles and plug-in electric vehicles, along with the materials and equipment to manufacture them, are made in Pacific Rim countries. As we begin to replace petroleum with electricity to power our vehicles, America must not swap today's foreign oil cartel for a foreign battery cartel. The time is now to build a US advanced battery industry that allows for long-term growth, new jobs and global leadership in the development and manufacture of today's hybrids, as well as future technologies like plug-ins and all-electric vehicles. Mary Ann Wright will walk us through the industry as it stands today, the hurdles that will need to be overcome, and the strategies that will be necessary to make the United States a global leader in the research, development and manufacture of an advanced battery industry.

2.30 – 2.55

Battery requirements for micro-hybrid vehicles

Edward Buie – VP and CTO – Axion Power International

New legislation being adopted in the US and Europe will result in significant reductions in passenger vehicle CO₂ emissions by 2015-16. As a result of this new legislation, the US EPA estimates that 30-40% of vehicles produced in the US by 2016 will feature an ISS system. The most cost-effective solution for ISS integration in a vehicle is through the use of a lead-acid or an advanced lead-acid battery. Current lead-acid battery technology can require up to 10 minutes to recover from a start/stop event. The main focus of this presentation is to present test results from VRLA batteries, advanced lead-acid batteries that contain carbon additives, and Axion's new PbC batteries tested using new test procedures. The results of this testing show that only the PbC battery can sustain charge acceptance at 100 A. VRLA and advanced VRLA batteries that contain carbon additives are limited to 5-10 A of charge acceptance under real conditions.

3.00 – 3.25

The next generation of ohmic testing: how to turn ohmic data into valuable information

Steve Dworkin – CEO – Battery Corp

Ohmic testers have rapidly become the standard testing tool and process in the telecom, UPS and utility industries for lead-acid stationary battery maintenance. Companies globally have selected ohmic testing because it is more cost effective than capacity testing and has proved to be accurate in identifying weak cells. In conjunction with highly advanced database technology, ohmic testing can also estimate runtime and battery state of health. How the data is collected, analyzed and used makes all the difference.

3.30 – 4.00

Advances in lithium-ion batteries for plug-in vehicles

Sankar DasGupta – CEO – Electrovaya

Electrovaya has been developing PHEV batteries for a number of applications. These batteries need excellent performance to accept charge as well as to discharge energy, good control on thermal aspects, intelligent battery management systems, and be able to handle shock and vibration with long life. Recent advances by Electrovaya in this area will be discussed.

4:05 – 4:30

Range Revolution of EV's - Zinc Frees EV from Range Limitation

John Lee – President & CTO – LEO Motors

Range limitation is the greatest obstacle in moving ahead towards an EV era. Zinc Air Fuel Cell has long been studied as a sustainable solution to the range limitation of EV's. Leo Motors has developed the ZAFV generation (ZAFVCG) system to be operated from inside of a zinc-hybridized Electric Vehicle (ZEV). By feeding zinc balls into the system automatically, sludge is collected in the filter, and stops the generation of electricity as soon as the battery is fully charged, or as soon as the driver does not want to charge the battery any further from the ZAFVCG. Dr Lee discusses how this technology came to fruition, and success and test results to date.

WEDNESDAY OCTOBER 6

09.00 – 10.30

Panel Discussion: The lithium-ion safety challenge and how to implement "safe" lithium-ion batteries

Battery safety is a critical issue that impacts virtually every application. This session will describe safety issues and challenges associated with lithium-ion batteries, discuss what is working and not working, and describe safety approaches taken by major participants in multiple applications.

Moderator:

Brian Barnett – VP Battery Technology – TIAX LLC

Brian Barnett is VP, Battery Technology at TIAX LLC and is a PhD electrochemist. At TIAX, Dr Barnett directs a highly multidisciplinary team that considers technical, manufacturing, strategic, environmental and market issues associated with batteries.

Dr Barnett has played a founding role in teams that have initiated a variety of important projects in the energy area. These projects have involved development of polymer electrolyte battery technology, carbon



anode materials, fuel processing technology, battery safety technologies and a high-energy, high-power cathode material. Prior to TIAX, Dr Barnett was a VP and member, Board of Directors at Arthur D. Little, where he also directed the company's battery activities.

Panel Members:



Kurt Kelty – director, Battery Technology – Tesla Motors

Kurt Kelty is director of Battery Technology at Tesla Motors. His team is responsible for setting and implementing Tesla's battery cell usage strategy as well as the basic module engineering strategy. He is particularly focused on evaluating the safety, performance and reliability of cells, and is responsible for the technical exchanges and negotiations with each of the battery suppliers.



Clint Winchester – group lead scientist, Battery Technology – System & Platform Safety Group

Clint Winchester joined the Naval Surface Warfare Center in 1990. He is currently supporting NAVSEA05Z supporting the safe integration of large lithium and lithium-ion battery systems in Naval applications and platforms, and leads a team of 15 in development of safe power systems.



Masato Komatsuki – group manager, Hybrid Vehicle Material Engineering Division – Toyota Motor Corp

Masato Komatsuki graduated from the Department of Engineering, Nagoya University in 1990. He majored in Synthetic Chemistry and studied catalysts for CO₂ reduction. Since he joined Toyota he has been working on battery design and evaluation. Currently he is working on the development of the Li-ion battery for commercial HV application.



Celina Mikolajczak – senior managing engineer – Exponent

A mechanical engineer by training, Celina Mikolajczak specializes in the thermal sciences. She has conducted studies on the specific fire hazards related to batteries, sources of smoldering ignition and oxygen systems, plus numerous investigations into the causes of fires initiated by batteries in consumer products.

10.30 – 11.00

Coffee break

11.00 – 11.25

Rechargeable metal-air battery systems for grid level storage, electric vehicles and portable electronic applications

Harvey Mancey – VP Business Development – ReVolt Technology

Rechargeable metal-air technology is set to revolutionize energy storage in grid level storage, electric vehicles and portable electronic applications. ReVolt has developed key technologies enabling the commercialization of its rechargeable zinc-air battery technology. Harvey will explain how rechargeable zinc-air batteries will compare with existing chemistries and how they will be applied in the real world.

11.30 – 11.55

Utilizing large-scale energy storage and management systems to overcome challenges in renewable energy integration

Carlos Coe – CEO – Xtreme Power Solutions

Renewable energy sources are fraught with intermittency problems, creating a roadblock in the quest to reliably integrate renewable resources into our national energy mix. However, recent advancements in the large-scale energy storage space are now tackling the intermittency issue head-on. This presentation will highlight the benefits of solid-state, dry-cell storage technologies, demonstrating how systems are currently being utilized around the globe to enable more efficient use of clean power.

12.00 – 12.25

Advances in portable device applications drive battery requirements

Stephen Christo – director, Product Management – Boston-Power Inc

As the functionality of portable devices increases, they have become an integral part of our daily personal and work routines. And with this increased dependence come the frustrations associated with relying on aging battery technologies for power. In this session we will explore the recent trends in portable power markets and their impact on battery requirements. Key features like increased runtime, longer life, faster charging as well as safety will be expected in the next generation of portable power solutions.

12.30 – 1.50

Lunch

1.50 – 2.15

What investments need to be made today to ensure a secure lithium supply tomorrow?

Jay Chmelauskas – president – Western Lithium

In 2008, just under 120,000 tonnes of lithium carbonate equivalent (LCE) was produced. The lithium market is projected to increase at least two or three fold by 2020, if 10% and 20% of consumers adopt electric and hybrid vehicles, respectively. Where will new sources of lithium come from? Currently 70% of the world's lithium comes from two deposits located on the Chilean/Argentinean border. Three companies produce lithium from these deposits and have publicly announced plans to ramp up their production. These existing producers will have powerful influence over the future production of lithium-ion batteries and electric transportation, and may be vulnerable to geological problems, natural disaster and weather, business and political risk.

2.20 – 2.45

Future grid applications for batteries

Haresh Kamath – strategic program manager – EPRI

While grid energy storage is widely recognized to hold great value, widespread adoption has been hindered by high cost. Costs are now falling, and grid storage is likely to become more common, initially in applications such as renewable generation support. But some of the most valuable benefits of storage are likely to be as yet unidentified. This paper will explore what those new applications may be and how they may come about

2.50 – 3.15

Bipolar lead-acid batteries – the cure for Li-ion blues

Stephen Clarke – CEO – AIC

At current prices of more than US\$2,000/kWh, Li-ion batteries are not economically viable for high energy capacity applications. This presentation will examine bipolar lead-acid batteries and show that these are now capable of delivering system-level performance and weight, which is equivalent to Li-ion, for high energy applications such as grid scale storage, urban EVs and HEVs, while offering compelling cost, footprint and recycle advantages over Li-ion technologies.

Conference Program

3.20 – 3.45

Design optimization process for HEV/EV batteries

Andreas Vlahinos – principal – Advanced Engineering Solutions

Although great advances have been made over the last two decades in the electric drive vehicle batteries development process, tradition and experience still govern many design decisions. In this presentation a computer-aided design process is presented. This process integrates electrochemical, power profile, thermal and computational fluid dynamics models in order to select optimum chemistries, geometries and thermal management strategies of automotive battery packs.

THURSDAY OCTOBER 7

09.00 – 10.30

Panel Session: Investing along the value chain

Moderator:

Richard Baxter – president – Mustang Prairie LLC



Richard Baxter is president of Mustang Prairie LLC, where he provides advisory services to management and investors in the energy storage industry. Most recently he was a principal at Charles River Associates' Energy & Environment Practice. Prior to joining Charles River Associates, he was a senior member of the equity research team for Ardour Capital, an investment bank focusing exclusively on alternative energy resources and energy technology; he also worked as a senior member of the investment banking team for the same firm. Before that, he was director of member affairs at the Energy Storage Council, where he was involved in raising the visibility of energy storage technologies for federal and state government officials. Prior to that he was an economist with Standard & Poor's DRI Energy Group, where he managed numerous analytical modeling efforts concerning power sector asset valuation and commodity price forecasts.

He holds a BS in Materials Engineering from Virginia Tech, and an MS in Energy Policy from the University of Pennsylvania. Richard is the author of *Energy Storage: A Nontechnical Guide*.

Panel Members:

Matthew Nordan – Venrock Associates



Matthew Nordan joined Venrock in 2009, focusing on energy, environmental and materials technologies. Prior to Venrock he was president of Lux Research, an advisory services firm for science-driven innovation, which he co-founded in 2004. Under Matthew's leadership, Lux Research became a widely recognized authority on emerging technologies stemming from the physical sciences, counseling corporations, investors and governments.

David Wells – Kleiner Perkins Caufield & Byers



David's responsibilities at Kleiner Perkins Caufield & Byers include knowledge mapping and opportunity sourcing across the entire landscape of green technologies. Building relationships with scientists and entrepreneurs throughout the US and Europe, David has helped bring many ventures through the KP investment process including due diligence, investment structuring, goal setting and team building.

Ying Wu – manager, Market and Competitive Intelligence (North America) – BASF



Dr Ying Wu is manager of market and competitive intelligence for BASF NAFTA region. She works with various market and customer development groups as part of the BASF North America Strategy 2020 Implementation Team, as well as with all BASF North America business units in areas of market research, competitor assessments and technology scouting.

Ralph Wise – VP Business Development and Technology – Novolyte Technologies

Ralph Wise is VP of business and technology development at Novolyte Technologies, leading strategic business growth initiatives through market strategy planning and development, identifying and commercializing new energy storage materials technologies, managing external collaborations and structuring and managing Novolyte's energy storage materials IP portfolio.

10.30 – 11.00

Coffee break

11.00 – 11.25

Manufacturing thin-film batteries

Koukou Suu – general manager – Ulvac Inc

One of the major challenges associated with lithium thin-film batteries is to find a suitable electrolyte that is stable in contact with lithium. The fabrication process for a thin-film battery is based on sputtering and thermal evaporation. All elements of a thin-film battery can be deposited by a combination of DC and/or RF magnetron sputtering and evaporation. The cathode is typically sputtered LiCoO_2 , the anode evaporated lithium, and the electrolyte is RF sputtered lithium orthophosphate.

11.30 – 11.55

High-energy, rechargeable microbatteries: the advantages of silver-zinc batteries in medical and portable electronics applications

Troy Renken – VP Product Planning – ZPower Inc

Rechargeable silver-zinc batteries have a high energy density, a safe aqueous electrolyte and are easy to recycle. Because of these characteristics, silver-zinc batteries have been safely used for decades in military and aerospace applications. ZPower has scaled this technology down into button cell sizes to offer new power options in form factor-sensitive designs. This session will provide an overview of the silver-zinc chemistry and its performance characteristics. Silver-zinc batteries will be compared with existing microbattery chemistries in similar form factors currently used in medical and consumer electronics products.

12.00 – 12.25

Building a better motorcycle: applying the battery/electric drivetrain

Gene Banman – CEO – Zero Motorcycles

The battery/electric drivetrain has the potential to power a new generation of motorcycles that are not only "greener", but are more fun, more cost effective and easier to own. With motorcycles the "fun" part is key and the electric drivetrain delivers! Motorcycles, especially dirt bikes, are a tough environment for a battery: small battery, large current loads, lots of shock and vibration. I will discuss how we solved the problems and what we hope to see coming from the industry in the years to come.

- 12.30 – 12.55** **Eco-Energy City Osaka / Kansai**
JETRO Osaka: Japan External Trade Organisation
- 1.00 – 3.00** **Lunch and exhibitor networking**
- 3.00** **Show closes**

BATTERY

TECHNOLOGY EXPO

TUESDAY OCTOBER 5

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09.15 – 10.45 **Panel Discussion: Advances in lithium-ion battery manufacturing technology**

This session will discuss the significant challenges and developments in manufacturing technology related to electrodes, cell and battery pack manufacturing of Li-ion batteries for the EV and HEV automotive market.

Moderator:



Mohit Uberoi – president – Megtec Systems

Dr Mohit Uberoi is the president and CEO of Megtec Systems, a global industrial equipment supplier to the energy storage, solar, environmental and printing industries. Dr Uberoi holds undergraduate and doctoral degrees in Chemical Engineering. He started his career in research and development at W. R. Grace & Co, and has been employed with Megtec since 1997, where he has held research, business development and general management positions.

Panel Members:



Thomas J. Dougherty – president and CEO – Monolith Engines Inc

Thomas J. Dougherty is president and CEO of Monolith Engines Inc, a consulting company in the energy conservation and conversion field, which also offers assistance in the development, testing and use of lead-acid and lithium batteries. He holds 45 patents in chemistry, electronics, software, lead-acid battery test equipment, battery/capacitor system integration and motor/alternator design.



Raf Goossens – CEO – PEC North America

Raf Goossens is CEO and co-founder and owner of PEC companies, located in Europe, the US and Asia. He holds an MS degree in Electronics Engineering and is a director of several corporations worldwide. PEC offers completely integrated logistics, manufacturing and testing solutions for energy storage, such as batteries and ultra-caps; cash centers and print works; coated materials, such as graphical film, CTP plates and electrodes.



Michel Popovic – general manager – In Core Systèmes

Michel Popovic is co-founder and general manager of In-Core Systèmes, an established manufacturer of web inspection solutions serving quality-critical and high-value industries. He held a number of posts within the company before transitioning to a business development role for web inspection implementation in several high-value and security-critical application sectors.



William J. Kays III – technical account engineer – Extrusion Dies Industries LLC

William J. Kays has worked for Extrusion Dies Industries LLC in Chippewa Falls, WI for the last 10 years. Over this time he has held various positions ranging from manufacturing engineer to project manager, to his current position as technical account engineer. BJ has valuable experience in extrusion and coating process technologies. He is considered by many as a specialist in the field.

10.45 – 11.15 **Coffee break**

11.15 – 11.40 **How virtual battery technology lowers cost and speeds vehicle development**

Conference Program

Norm Newberger – manager of drivetrain R&D – Horiba

The future of HEV, EV and PHEV vehicles hinges on the industry's ability to produce a power-dense, high-performance, low-cost battery pack that keeps vehicle development on track. All easier said than done. The solution lies in intelligent battery simulation that removes the physical battery from the powertrain test cell. Virtual battery technology allows users to switch between a variety of chemistry models, environmental conditions and test schedules to develop and calibrate complete powertrain solutions.

11.45 – 12.10 **Emerging trends and challenges faced in the design and construction of battery manufacturing facilities**

Battery manufacturing facility of the future

Lee Sellenraad – director of project development – Barton Malow

Extensive research was conducted to understand risks, challenges, idiosyncrasies of the market, and the impact of unknown variables of full-scale battery manufacturing supply, and correlation to market demand. A team comprised of architectural, mechanical, battery process and operations experts, controls, dry/clean room, electrical and structural specialists was assembled. An innovative battery manufacturing facility of the future that supports battery R&D, testing and manufacturing has been developed.

12.15 – 12.40 **The battery in your product failed – what now?**

Jan Swart – principal – Exponent Inc

Low cost, high energy density and high reliability have made lithium-ion batteries the preferred choice for powering rechargeable battery-operated products. The lithium-based chemistry is now finding its way into new markets such as power tools, mechanical, battery process and operations experts, controls, dry/clean room, electrical and structural specialists was assembled. An innovative battery manufacturing facility of the future that supports battery R&D, testing and manufacturing has been developed.

12.40 – 2.00 **Lunch**

2.00 – 2.25 **Development of an automotive battery pack – approaches, challenges, solutions**

Simon Schwunk – researcher – Fraunhofer ISE

In the Fraunhofer project FSEM dealing with electric mobility, one of the most important topics of course is the battery system. The basic concept of the battery system will be explained. This comprises the following points spanning all important points within the development of a battery pack: packaging, concept of module structure, thermal cooling and heating, battery and energy management, state of charge and state of health determination employing Kalman filters and the vehicle integration.

2.30 – 2.55 **Battery thermal simulation and energy management of hybrid commercial vehicles**

Gregor Breuer – sales engineer – Magna Powertrain ECS

The success of hybrid solutions for commercial vehicles relies on significant fuel savings, whereas energy management plays an important role. This paper presents a co-simulation model for longitudinal dynamics and thermal management to consider the thermal effects on a hybrid battery. Especially change of efficiency by temperature can be observed and operating strategies can be developed. Moreover this paper shows simulation results on a hybrid commercial vehicle with a lithium-ion battery.

3.00 – 3.25 **Designing cost-effective clean and dry rooms for lithium-ion battery manufacturing**

Tim Loughran – Preconstruction Services – Hodess Construction

Designing a clean and dry room for battery production is not cost effective utilizing concepts utilized on dry-only rooms. The scale-up and air-change rate requirements to meet cleanliness thresholds are significant in terms of initial and operational costs. The proper concept requires looking at the system as a whole and separating the cleanliness/filtration systems from the desiccant drying systems to achieve the desired result without compromising performance. This paper addresses that concept.

3.30 – 3.55 **Managing e-waste through product stewardship initiatives**

Carl Smith – president and CEO – Call2Recycle

Encompassing a wide range of obsolete products, from computers and televisions to batteries and cell phones, e-waste is poised to hit record levels in 2015, when 73 million metric tons of electronics will be ready for end-of-life disposal. It is vital for businesses and municipalities to understand the emerging responsibility for reducing the environmental impact of products. Carl's presentation will address how product stewardship has become the strategy du jour for managing e-waste.

WEDNESDAY OCTOBER 6

09.00 – 10.30 **Panel Discussion: Automobile micro-hybridization in Europe:**

Is VRLA battery technology good enough?

Can VRLA battery manufacturers cope with the battery demand from the auto makers?

What will be the impact on battery life of regular discharges/regenerative braking?

Will battery cost be acceptable to the auto makers?

Will this open up a market for the latest advanced lead-acid batteries (bipolar; lead-carbon) or ultracapacitors?

Moderator: Mike Weighall

Mike Weighall is currently an independent consultant with over 40 years' experience in the battery industry; prior to that he was technical manager for Cookson Entek/Entek International until 1998. He has spent most of his career associated with the battery industry, in a range of technical and managerial roles with major UK employers.

He has been chairman of the European Technical Committee of the Advanced Lead-Acid Battery Consortium (ALABC). A number of technical papers on battery technology and battery separators have been published in the *Journal of Power Sources* and other Elsevier publications. He has also been commissioned to write



market research reports concerning the global battery market, lithium-ion batteries and ultracapacitors.

Panel Members:



Bernd Engwicht – VP Global Product Engineering, Lead-Acid – Johnson Controls Power Solutions

Bernd Engwicht recently became VP, Global Product Engineering, Lead-Acid at Johnson Controls Power Solutions in Milwaukee. His first role within the company was leading the customer-related engineering group, and he later became the lead of the European lead-acid battery development activities. He has a Masters in Mechanical Engineering from Hannover Technical University.



Pat Moseley – Advanced Lead-Acid Battery Consortium

Pat Moseley is president of the Advanced Lead-Acid Battery Consortium and manager of Electrochemistry at the International Lead Zinc Research Organization in North Carolina. He worked for 23 years at the Harwell Laboratory of the UK Atomic Energy Authority, where he brought a background of crystal structure and materials chemistry to the study of lead-acid batteries



Karl Froelich – VP Sales and Marketing – Atraverda

Atraverda has advanced VRLA battery performance by integrating an electrically conductive ceramic powder into a bipolar battery design. The company has moved bipolar technology from the lab to production, providing the electrified vehicle market with a high-performing VRLA battery at high voltage and custom shapes. Prior to Atraverda, Karl was director of business development for Polypore International, a US\$500 million global company supplying microporous membranes to the battery, filtration and medical industries.



Per Svantesson – president and CEO – Effpower

Per Svantesson is president and CEO of Effpower AB. He has held several senior positions in vehicle manufacturing companies as well as in automotive supplier companies. Among these are president, Valeo North America; president, ESAB Europe; and senior VP, Volvo Bus AB. He also holds several board positions in clean-tech and IT-related companies.

10.30 – 11.00 Coffee break

11.00 – 11.25 Advanced cathode materials for Li-ion batteries for automotive applications

Kirill Bramnik – product technology manager – BASF Catalysts LLC

Lithium-ion battery is the enabling technology for electrical energy storage for the automotive industry in the future. A new generation of batteries is required for vehicles that use more electric energy for driving than today's mild hybrids, which recoup brake energy only. These batteries should be intrinsically safer, have a longer lifetime and store more energy per weight and volume. These requirements have to be met by all components of the Li-ion cell (cathode, anode, electrolyte, etc.) and by the whole system in general. The presentation will focus on cathode materials. Different existing technologies including materials recently developed by BASF will be compared, and the impact of their properties profile on battery performance will be discussed.

11.30 – 11.55 Advanced cathode material providing both high energy and high power for Li-ion

Brian Barnett – VP Battery Technology – TIAX LLC

Lithium-ion battery technology has come to dominate portable battery applications due to its high energy density, and now is broadly seen as an enabling technology for transportation applications. Transportation markets generally require higher power than portable applications. The LiCoO_2 (LCO) cathode material that has dominated the portable battery applications is not considered appropriate for mainstream automotive applications due especially to high cost and limited availability. New cathode materials for transportation applications have been under development, with some also targeting portable markets, even though they generally reduce energy density. This paper will review these issues and also describe a cathode material TIAX is commercializing that can provide increased energy density for portable applications, as well as outstanding power and energy for transportation.

12.00 – 12.25 Advanced materials for next-generation rechargeable Li-ion batteries

MuMu Moorthi – VP – NEI Corp

Batteries are used in a wide spectrum of applications. Applications can be as small as a hearing aid to as large as peak shaving in the utility applications. However, unlike other chemistries, lithium-ion batteries have a number of choices for cathode, anode, separator and electrolyte materials. Different application requirements include cycle life, small, lighter temperature extremes, safety, rate capability and charge rate. This paper will summarize the history of materials development, with a focus on recent trends in materials development.

12.30 – 1.50 Lunch

1.50 – 2.15 Tailoring specialist primary batteries

Pascal Haring – head of R&D – Renata SA

Depending on portability, function availability, disposable requirements, peak power demand and other factors, the battery solution will tend to a rechargeable, primary or mixed solution. For all these development activities it is recommended to decide the battery concept as early as possible. Renata has successfully released specialised Taylor cut products for various customers. A few examples will be shown, explaining the specialty, the application and the battery solution.

2.20 – 2.45 Improving battery productivity – adsorbing/desorbing of unique zeolitic material in desiccant wheel

Dr. Hiroyuki Kakiuchi. – AQSOA Project – Mitsubishi Plastics

For general HVAC purposes, AQSOA desiccant wheel coated with a unique/patented zeolitic material can lower the regenerating temperature to 40-60°C, a very common temperature of exhaust air/drain of many factories. The same kind of AQSOA desiccant air-conditioner with a single honeycomb wheel can supply 50° below zero C dew-point air. This level of humidity control can dramatically improve productivity of lithium-ion battery production processes.

2.50 – 3.15 Large-format nickel-zinc (NiZn) batteries – high performance, low cost, clean solution for HEVs and stationary storage

Conference Program

Richard Brody – VP of Business Development – PowerGenix

Rising interest in HEVs has created pressure to develop more powerful vehicle battery systems. PowerGenix has developed the first new battery chemistry in 20 years, nickel-zinc, with breakthrough performance for HEV applications. Richard Brody will address the performance merits of NiZn batteries for automotive applications as they compare with NiMH and Li-ion technologies, the growing market for HEVs and EVs, and the technical aspects that make NiZn ideally suited for large-format applications.

3.20 – 3.45

Monitoring and state-optimized charging of individual cells within a battery pack greatly improves battery pack efficiency for every application

Evgenij Gugel – assistant sales manager – PEUS Testing GmbH

Efficient charging and discharging of individual cells greatly improves the overall energy density of a battery pack. To be able to charge and discharge battery packs in an efficient way it is essential to be acquainted with the exact status of each and every battery cell. Therefore an innovative technique of data transmission from battery to signal detection unit will be presented to the audience. In addition to it, an independent charging of single battery cells which extends its service life will be introduced.

THURSDAY OCTOBER 7

09.00 – 10.30

Panel Discussion: EVs, PHEVs and hybrids – is it finally for real on the battery front or are we going to get burned?

There is unprecedented investment in battery factories in the USA thanks to the Recovery Act and renewed surge of interest in battery manufacture throughout Asia. Yet some of the most pessimistic forecasts have suggested that EVs and hybrids could still be just 1% of the global vehicle parc by 2020.

Moderator:

Gerry Woolf – editor and publisher – BEST Magazine



Gerry Woolf is editor and publisher of *Batteries and Energy Storage Technology* magazine – the leading global publication covering the rechargeable battery industry. Gerry has worked as a science and technology journalist for nearly 30 years, and has made a specialist interest of observing battery and electric vehicle development for more than a decade.

Panel Members:

Donald Karner – president and CEO – Ecotality



Donald Karner is president of Ecotality North America, specializing in the infrastructure development for on- and off-road electric vehicles. He is also project manager for the US\$200 million EV Project, deploying electric vehicle charge infrastructure in five metropolitan areas in the United States.

Raghu Das – CEO – IDTechEx



Raghu Das MA (Cantab) is CEO of IDTechEx. He has been closely involved with the development of RFID, printed electronics, energy harvesting and electric vehicles for over 10 years, carrying out consultancy in Europe, USA, Asia and the Middle East. He has lectured on these topics at over 300 events and conferences around the world, and is the author of several IDTechEx publications.

10.30 – 11.00

Coffee break

11.00 – 11.25

Safety and reliability in Chinese-manufactured lithium-ion cells

Steven Ruth – VP – China BAK Battery Inc

With safety and reliability of lithium cells considered givens in today's portable device market, how does the designer know the cell manufacturer has control over its processes? An analysis and control methodology, focused on measured continuous improvement, is presented.

11.30 – 11.55

Large-format lithium battery recycling – challenges and solutions

Todd Coy – executive VP – Toxco Inc

Toxco is the only company to receive DOE funding to build out a large-format lithium battery recycling facility in the United States. This facility will address the challenges of managing multiple battery chemistries that are to be used in future HEVs, as well as managing and recycling the current generation of NiMH batteries in use today.

12.00 – 12.25

Secure digital authentication of battery packs

Jonathan Dillon – applications engineer – Microchip Technology Inc

Third-party, unauthorized batteries may offer reduced system performance and reduced built-in protection, which impacts system safety. Battery packs can authenticate themselves to the system via the addition of software to an existing battery-monitoring processor, or by embedding a small microcontroller, to prevent the use of unauthorized packs. Authentication prevents the use of counterfeit batteries and allows electronic tracking of battery serial numbers for warranty and safety reasons.

12.30 – 12.55

How the use of process-ready silicon composite materials can increase Li-ion cell capacity by as much as 40% without cycle life compromise

Jason Hartlove – CEO – Nanosys Inc

Lithium ion batteries are the only secondary cells in large scale production which offer eco-friendly chemistries. However, the storage capacity of Li+ cells has been doubling at a very slow rate over the last 2 decades. With new application opportunities in both future portable electronics and power hungry electric vehicles, Li+ cells must make more rapid capacity improvements to meet user demands, or face replacement by new, higher capacity technologies. How the use of process-ready silicon composite materials can increase Li-ion cell capacity by as much as 40% without cycle life compromise

1.00 – 3.00

Lunch and exhibitor networking

3.00

Show closes

THE BATTERY SHOW ANNOUNCES THE INDUSTRY'S FIRST-EVER INTERNATIONAL BATTERY SHOW AWARDS

The Battery Show, which takes place at the San Jose Convention Center, California on October 5 to 7, 2010, will be hosting the first-ever Battery Show Awards at a presentation on October 6.

With the countdown to the big day now underway, the organizing committee behind The Battery Show Awards 2010 is delighted to announce that it has had an overwhelming response across all categories. The Industry Supplier category was so fiercely contested that the organizing committee felt compelled to divide the award into two separate categories reflecting those who assist the manufacturing process and providers of battery components.

James Reader, managing director of the event, says: "The Battery Show Awards are set to become the most sought-after energy storage accolades in the industry, and will certainly become an effective and highly respected marketing tool for the winning brands. We will be judging the best products and technologies in the sector, and awards recognition will be the sign of outstanding achievement."

THE FINAL SHORTLIST HAS NOW BEEN SELECTED AND SUBMITTED TO THE JUDGING PANEL:

GREEN INNOVATION OF THE YEAR:

Highlighting environmental innovations from and for the battery industry

- SAFT: Sol-ion, Europe's largest PV energy conversion and storage project
- RECUPYL BATTERY SOLUTIONS: New alkaline and lithium-ion battery recycling center
- RAW MATERIALS COMPANY: The RMC 3500 battery recycling system
- QUALLION: Li-ion-based anti-idling HVAC system

INDUSTRY SUPPLIER OF THE YEAR – MANUFACTURING:

Recognizing outstanding service providers

- ARBIN INSTRUMENTS: Battery, fuel cell and supercapacitor testing equipment
- CINCINNATI SUB-ZERO: Tundra II refrigeration system
- WILDCAT DISCOVERY TECHNOLOGIES: Bulk synthesis to fuel-cell testing
- MEGTEC SYSTEMS: High-speed integrated coating, drying and solvent recovery process

INDUSTRY SUPPLIER OF THE YEAR – COMPONENTS: Recognizing outstanding material producers

- BASF: Advanced cathode materials and innovative plastics for battery packs
- ENTEK INTERNATIONAL: SLI battery separators
- NEI CORPORATION: LTO, MLCNA and LMNC battery range and lithium-ion spinal
- DARAMIC: Separator technologies for idle stop system batteries

BATTERY MANUFACTURER OF THE YEAR:

Awarding excellence and contributions to safety, cost, performance and innovations in the following categories:

LITHIUM-ION BATTERY MANUFACTURER OF THE YEAR

- COMPACT POWER: Suppliers to the Chevrolet Volt
- ELECTROVAYA: NMP (n-methyl pyrrolidone)-free manufacturing
- EAGLEPICHER TECHNOLOGIES: Over 85 years of lithium-ion battery experience
- SAFT: Jacksonville lithium-ion manufacturing plant

LEAD-ACID BATTERY MANUFACTURER OF THE YEAR

- NARADA POWER SOURCE CO: Quality management, TM-9000, ISO-14001, OHSAS18001, SA8000
- PANASONIC OEM BATTERIES: The LC-WTV and LC-WTP battery series for wind turbine applications
- NORTHSTAR BATTERY COMPANY: Leading global producer of high-performance lead-acid batteries
- TROJAN BATTERY COMPANY: Alpha plus paste with T2 technology

ALL OTHER CHEMISTRIES BATTERY MANUFACTURER OF THE YEAR

- GOLD PEAK / EVB TECHNOLOGY (HK): A worldwide supplier of Ni-MH batteries
- EAGLEPICHER TECHNOLOGIES: Expertise in more than 25 specialty battery technologies
- RENATA: Zero percent mercury, silver oxide watch batteries
- POWERGENIX: Rechargeable nickel zinc (NiZn) batteries

So, which battery manufacturers stand out in 2010? The Battery Show Awards provide the answers. Don't miss your opportunity to visit the show and see many of these exciting new technologies first hand.

The awards ceremony will be open for all to attend, so don't hesitate – register for your visitor pass at: www.batterytechexpo.com or www.thebatteryshow.com.

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Gerry Woolf, **BEST** magazine

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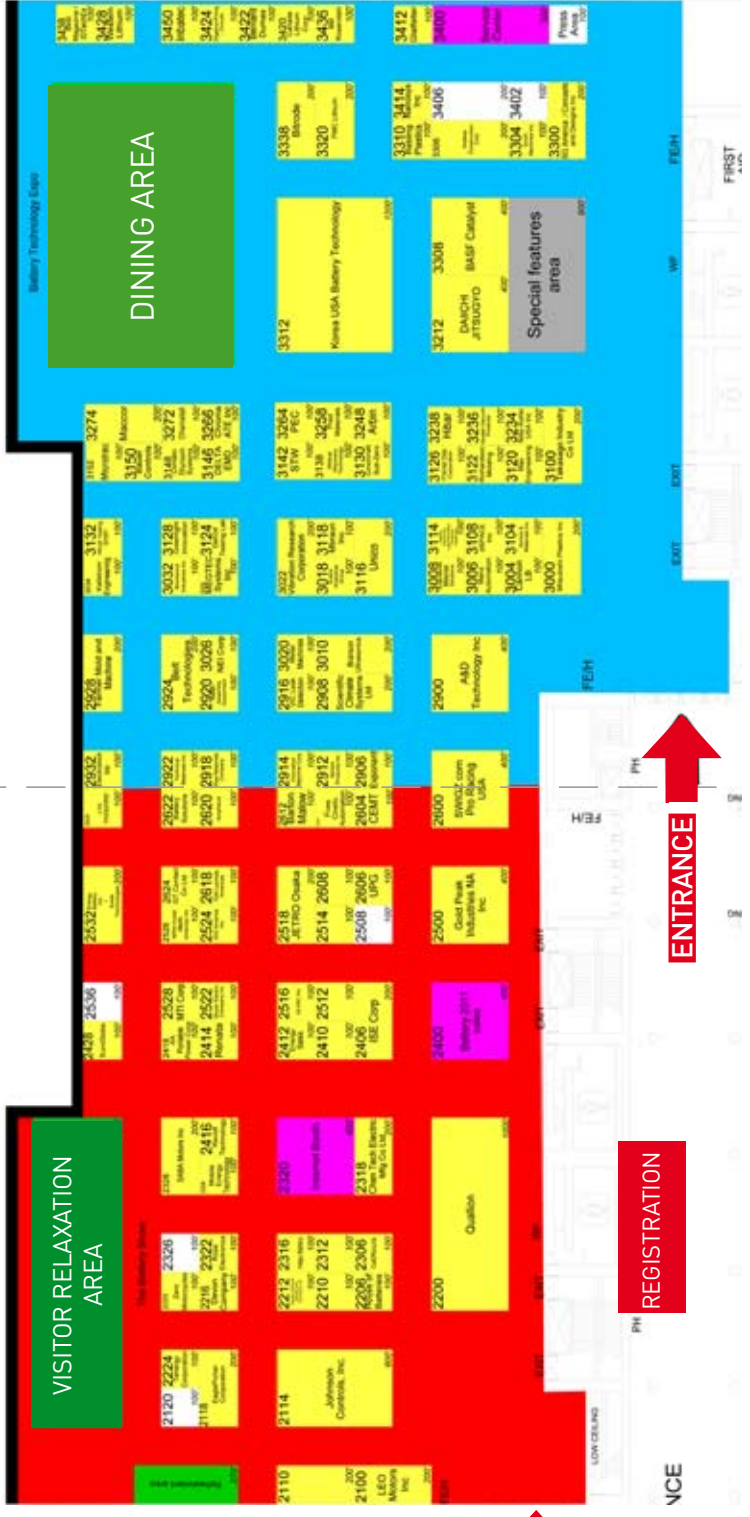
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THE **BA+TTERY** SHOW

2010 Floor Plan Key

- RESERVED STANDS
- VISITOR RELAXATION AREA
- REGISTRATION
- DINING AREA
- CONFERENCE CENTER



ENTRANCE

REGISTRATION

ENTRANCE

VISITOR RELAXATION
 AREA

DINING AREA

CONFERENCE
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The San Jose Convention Center provides a world-class venue for both The Battery Show and Battery Technology Expo in the heart of Silicon Valley. It has been selected as host city due to its proximity to cutting-edge technology companies and leading global research in energy storage. We look forward to welcoming you to the Bay Area and San Jose. Fabulous dining and entertainment are also on your doorstep, including one of the finest coastal regions anywhere on earth. For more information on the local area please visit www.sanjose.org

Useful information

Exhibition Hours



Tuesday October 5, 2010
12.00pm - 5.30pm
Wednesday October 6, 2010
12.00pm - 6.30pm
Thursday October 7, 2010
10.00am - 3.00pm

Hotels and Flights



Special rates for hotels and flights:

There are various special rates available for local hotels through a link on our home page. Please visit www.thebatteryshow.com and look to the left of the front page. We are currently offering discounted air fares from Europe with Virgin Atlantic too.



Venue Address

San Jose McEnergy Convention Center
150 West San Carlos Street
San Jose, CA 95113, USA

Press

All press inquiries to be directed to **Peter Haynes**:
peter@torquepr.co.uk
There will be a welcoming address at 8.45am on Tuesday Oct. 5, and a press area onsite.

Information

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