

Tutorial: Overview of Combined Heat & Power and Energy Storage Technologies

Date: Monday, December 6, 2010
Time: 1:00 pm to 4:00 pm
Cost: \$100/person thru the end-October, \$125/person after October
Tutorial Registration Limit: None

Description: This tutorial will be broken up into two distinct segments to discuss: 1) CHP technologies; 2) energy storage technologies.

Combined Heat and Power (CHP) Tutorial Segment

CHP solutions represent a proven and effective near-term energy option to help the United States enhance energy efficiency, ensure environmental quality, promote economic growth, and foster a robust energy infrastructure. As an efficiency technology, CHP lowers demand on the electricity delivery system, frequently reduces reliance on traditional energy supplies, makes businesses more competitive by lowering their costs, reduces greenhouse gas and criteria pollutant emissions, and refocuses infrastructure investments towards a next-generation energy system. Already used by many large industrial, commercial, and institutional facilities, CHP is a proven and effective energy resource, deployable in the near term that can help address current and future US energy needs. Incorporating commercially available technology, CHP can provide an immediate solution to pressing energy problems.

This tutorial will present CHP systems and options in the context of real-world applications. Availability of application screening tools, designs, technologies involved, energy and emissions savings, among other topics, will be presented. Distributed energy generating equipment such as reciprocating engines, turbines, microturbines, fuel cells, Stirling engines, along with waste-heat driven equipment such as absorption chillers, Heat Recovery Steam Generators (HRSGs), Organic Rankine Cycle equipment (ORCs), desiccant dehumidification, and thermal storage options will be addressed. The importance of simultaneous electrical and thermal matching of CHP systems to particular applications will be discussed, and examples of existing installations as well as references will be shared.

Energy Storage Tutorial Segment

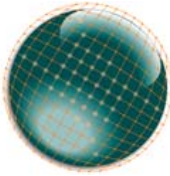
This session will cover technology overviews of grid-scale energy storage devices, with specific focus on flow batteries for grid applications and Lithium-ion batteries. A flow battery discussion will explore various aspects of redox flow batteries including a historical perspective, types of flow batteries and their attributes, challenges to development and deployment, economic aspects of implementation, and impact on the grid at generation, transmission, distribution, neighborhood and load levels. Finally, the future of Redox flow batteries from both R&D and deployment perspectives will be addressed. Separately, an overview of Li-ion battery technology will be presented; topics will include degradation, unique methods for characterization, and challenges to processing cell fabrication.

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Agenda:

Time Slot	Topic	Speaker	Session Description
01:00 – 02:00 pm	CHP Description	<i>Bob DeVault,</i> Oak Ridge National Laboratory	CHP systems and options in real-world applications, including description of various CHP technologies and approaches
02:00 – 02:30 pm	CHP Barriers & Demos	<i>TBD,</i> CHP Regional Application Center	
02:30 – 02:45 pm	Break		
02:30 – 04:00 pm	Energy Storage	<i>Georgianne Huff,</i> Sandia National Laboratory <i>Tom Zawodzinski,</i> University of Tennessee <i>Claus Daniel,</i> Oak Ridge National Laboratory	Technology overview of utility scale, both transmission and distributed, energy storage technologies. The tutorial will also include more technical detail on flow batteries and Lithium-ion batteries.
04:00 pm	Adjourn		

For more information: Thomas King Jr., Director, Energy Efficiency and Electricity Technologies Program at Oak Ridge National Laboratory, (865) 241-5756, kingtjr@ornl.gov.

To register for this event: <http://4thintegrationconference.com/register.asp>