

Signatech Systems Times

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Signatech Systems

This is the fourth newsletter from Signatech Systems, a company dedicated to providing solutions to industries, especially the global electric power industry and its supply chain. This issue describes some key accomplishments. Send comments: rshankar@signatechsystems.com.

Sample Capabilities

Fleet-Wide Asset Management

Alternative & Renewable Energy

Reduction of Calibration of Nuclear Safety Instruments



Visualization for the Smart Grid

Vast amounts of data are available to quantify the supply and demand of electricity in a distribution system. However, distribution operators require more succinct depiction of the data through effective visualization. Signatech Systems has teamed with the world renowned Visualization Center at the University of North Carolina Charlotte www.viscenter.uncc.edu to develop, test and conduct user experiments of the impact of interactive visualization tools on a prototype of various distribution system models--such as rural, suburban, industrial models. The team has analyzed existing data collected by U.S. Department of Energy's Pacific Northwest Lab (PNNL) during their Gridwise Demonstration Project. The data consists of residential information collected from a number of households on electricity use, decisions made to optimize payment and customer response to market signals. The data will be aligned with PNNL's GridLab-D model data to allow what if analysis. These scenarios will consider greater penetration of distributed generation (Solar roof top arrays, small micro-turbines, etc.), increased load forecasting, and extreme weather conditions. The scenarios will also include capabilities to improve equipment monitoring to avoid expensive downtimes. In an expected follow on effort in April 2010, Signatech Systems will prototype the system for evaluation by several utilities and identify opportunities for improvement in performance.

U.S. Department of Commerce Trade Mission to India. November 16-20, 2009



Signatech Systems was part of a U.S. Department of Commerce delegation to India to promote energy efficiency and seek markets for U.S. products November 16-20, 2009, visiting 3 major urban centers-- New Delhi, Chennai and Mumbai... The delegation was headed by Rick Wade, Senior Advisor and Deputy Chief of Staff to the Secretary of Commerce. The market for energy efficiency products is vast and nuanced since the demand growth far outstrips the power supply for the coming decades.

India's rapid economic growth rate coupled with aging and inefficient energy infrastructure suggest dire environmental consequences if "business as usual" (BAU) continues. A combination of various energy efficiency measures -- including greener buildings, a smarter electric grid, more efficient home appliances and more advanced industrial and manufacturing processes -- have the potential to eliminate India's electricity shortage, reduce pollution and decrease its emissions of greenhouse gases, while boosting the country's economic output by as much as \$500 billion over the next eight years, according to a theme paper that was presented the week of November 16 in New Delhi at the Second U.S.-India Energy Efficiency Technology Cooperation Conference. The paper was co-written by researchers from Berkeley Lab, the U.S. Agency for International Development (USAID) and ECO III. Already,

the U.S. has assisted several Indian regulators and utilities in setting up demand-side management, including training staff, analyzing costs and monitoring savings. "By sharing best practices among technical experts and regulators, we were able to help selected Indian utilities initiate demand-side programs in less than one year, which only a handful of states in the United States have achieved in the 30 years since utility reform began," said Jayant Sathaye, head of Berkeley Lab's International Energy Studies group.

Separately, Energy Secretary Steve Chu was in India recently meeting with Indian leaders to discuss opportunities for partnerships on clean energy technologies. "Tackling climate change and moving toward a clean energy economy requires action both at home and abroad, and I am encouraged by the progress we are seeing on both fronts," he said in a statement from India.

India's electricity supply is dominated by coal, which provides nearly 70 percent of the total. Another 35,000 MW of new coal-fired power plants are planned to come online by 2012, representing 250 million tons of potential new carbon dioxide emissions, or about 20 percent of the country's total emissions in 2006. Much of the rising demand for energy comes from the emerging middle class, as more and more people purchase TVs, refrigerators, air conditioners and other appliances. As India progresses toward a smart grid capability, electricity will be viewed as value-added resource.



Copenhagen Summit on Climate Change

The BRIC countries Brazil, Russia, India and China—have swung the globe into a multi-polar world. In all aspects—wealth, energy production, global clout—the BRICs have been vociferous about their views. The stock market indexes among the BRICs compared to the U.S. S&P 500 demonstrates the disparity in wealth growth. For the electric power industry, the BRICs contribution to the CO₂ in the atmosphere is becoming a significant fraction of the total.

Who Won Who Lost? Nobody. The real winner was the fact that any agreement at all was reached. The summit drew a bright line on climate change solutions between the BRICs and the U.S. We need to be prepared for a more challenging threat that the growth of wealth has indicated. And that is new energy producing technologies. Without legacy equipment to deal with and fewer dissensions among the public, India and China have quietly adopted aggressive energy efficiency standards and renewable energy targets.

What will the end of the next decade reveal for the power industry? Coal- and nuclear power are expected to be the bulwarks for base-loaded power. Less developed countries-- UAE, Jordan, Vietnam-- are likely to adopt smaller more modular passively safe units, perhaps under strict compliance regimes by the U.N. IAEA. China and India are going to have larger fractions of their generation portfolio in renewable energy, even larger than many of the Western countries. It is also likely that by the end of the next decade the entire populations of China and India will be electrified, an event that will spur economic growth

What about poorer nations? Maldives, Bangladesh, etc.—came out at the short end of the stick. Other than a vague commitment from the West, there was nothing concrete offered.

Anything good come out? No doubt any cooperative agreement has much to be lauded. But a treaty was too ambitious.



EPRI Project on Fleet-Wide Performance

EPRI has tasked Signatech Systems to assist member utilities in fleet-wide asset intelligence planning. These methods utilize sensor technologies and advanced algorithmic techniques to improve enterprise-wide safety and performance, monitor equipment health, and develop better situational awareness of operations. Successful implementation of these capabilities is expected to result in cleaner and safer operation of electric power plants. EPRI is an independent, non-profit organization which conducts research and development relating to the generation, delivery, and use of electricity for the benefit of the public. Owners and operators of electric utilities are demanding more efficient operation and effective maintenance to assist in achieving lower production costs, reduced emissions, and improved availability. At the same time, equipment is aging, the workforce is constrained in terms of availability and experience, and maintenance dollars must be used efficiently.

Signatech Systems will assist EPRI and its member utilities to develop requirements to implement fleet-wide monitoring that leverages advances in sensor technologies, communications and data mining software for more reliable asset management and plant operations.

The work will demonstrate the benefits of

advanced data management technology, establish methods and criteria for assessing cost-benefit of enterprise-wide implementation, and collaborate with member utilities to integrate effectively with operations, maintenance, and engineering, including technology implementation and organizational requirements. Upon successful completion of a full-scale implementation, member utilities are expected to realize improved safety, improved situational awareness during all phases of operations, improved reliability, lower emissions and improved performance.

EYE ON: Nuclear Power

Nuclear power is emerging as a “green” source of base-loaded power. With its in-depth safety culture adopted by many countries, and vendors launching passively safe reactors, a number of less developed countries are attracted to its potential. Signatech Systems is part of a United Nations consultancy panel developing requirements for nuclear power plants and grid stability considerations. The team will publish its draft report by December 2010.

EYE ON: Smart Surveillance

Safety threats, theft and endangerment of utility personnel are some of the hazards faced by power delivery facilities that are sometimes subject to unlawful intrusion, especially those remotely located. Signatech Systems in partnership with Cornet Technology offers a variety of solutions that provide reliable and inexpensive surveillance. The products vary from a minimum 4-camera, wireless system with continuous recording and event capture to a more sophisticated analytics-based "at the edge" technologies. **Watchman** features include:

- Wireless technology – eliminates wire runs thus speeding and simplifying installation
- Web-based network architecture – allows you to keep an eye on your facility from anywhere on the Internet
- Digital IP camera technology minimizes network costs since all video is compressed within the camera
- Infrared night vision up to 5m.

Frequently Asked Questions

Q: What is Signatech Systems mission and vision?

Our mission is to provide practical and economical technology solutions to the global electric power industry and the companies in that value chain. Our strengths are in sensor technologies and asset intelligence.

Q: What is Signatech Systems expertise?

- Technology to improve asset maintainability and reliability
- Benchmarks through analytics to measure and track success
- Change management consulting.

Q: What are the top problems confronting the electric power industry?

- Transforming the industry to carbon-neutral generation
- Use of energy efficient technologies
- Improving asset reliability
- Building smart grid infrastructure
- Acceptance of Nuclear Power



UPCOMING EVENTS

- Tech Advantage 2010 Expo, Atlanta, GA. February 12-15, 2010.
- 2nd Asset Management Conference for Utilities, Toronto, Canada. February 24-25, 2010.
- Electric Power Conference & Expo, Baltimore, MD. May 18-20, 2010.
- Green Business Africa, Nairobi, Kenya. June 2-4, 2010.
- Smart Electricity World, Melbourne, Australia, June 7-10, 2010.
- EPRI Condition Based Maintenance Conference, Buena Vista, FL. July 12-16 2010.
- The Fourth International Conference on Sensor Technologies and Applications, Venice, Italy. July 18-25, 2010.
- Power-Gen International, Orlando, Florida. December 14-16, 2010.

Training Courses



- Wireless Technology for Asset Monitoring
- Equip. Condition Monitoring for Improved Reliability (2 days)
- The Intelligent Grid (1 day)
- ISA 67.04 Requirements for Instrument Set Point
- Renovation and Modernization of Power Plants

SIGNATECH SYSTEMS

Solving Tomorrow's Energy Problems Today™

PO Box 614

Matthews, NC 28106-0614

www.signatechsystems.com

704.771.1400