

VISION

STRATEGY

REALITY

A global revolution

+ UTILITIES WORLDWIDE LEARN FROM ONE ANOTHER

By Carolyn Heinze

➤ A SIGNIFICANT CHALLENGE IS THAT THE CREATION OF THE SMART grid—and, consequently, the evolution of the intelligent utility—is that it is not a development that utilities can start from scratch. This is where lifespan plays a major role. In the telecommunications, computer and Internet industries, technology has an average lifespan of about three years, which allows for relatively smooth incorporation of new methods and systems as they come into being. Not so for the electrical distribution network, whose lifespan averages approximately half a century. Without the assistance of a crystal ball, how can utilities be sure that the devices they put on their networks today will be able to interact with the technology that will be available 15 years from now, taking into account demands and protocols that may or may not exist?

This is where the value of collaboration comes in, and a number of utilities across the globe are involved in initiatives designed to bring companies together to share their challenges, insights and knowledge base to assist one another in developing real solutions surrounding technology, human resources and regulation. By trading information with their counterparts around the world, companies in the United States stand to learn from other organizations facing similar challenges, as well as from those utilities that may be attacking specific issues using innovative technologies, processes and concepts.

Patrick Cooper, general manager of information and metering services at Country Energy in Sydney, Australia, said that Country Energy's involvement with the IBM Global Intelligent Utility Network Coalition—a group created in 2007 to speed up the adoption of smart grid technologies on a global basis—has enabled the company to learn from utilities such as India's North Delhi Power and Denmark's Dong Energy in order to challenge traditions and to start a dialogue with regulatory bodies. The coalition also boasts members based in the United States, such as North Carolina's Progress Energy, San Diego Gas & Electric and Southern California Gas Co.

"Our mission with the coalition is just that: to start getting the discussion happening, and to get the thinking happening," Cooper said. "The driving factor for us was about getting information from all sorts of sources across the globe, and working on things with others to come to a common understanding and goal." Cooper notes that his office is in regular contact with other members of the coalition via regular conference calls. "There are actually work strings going on between our businesses all of the time on building a maturity model that measures your progress and guides your journey to creating an intelligent network," he said. "We've been having debates about the uncertainties to get an idea of what's possible, what's impossible and why, and what will change to make things possible." Attempting

to achieve this in isolation, he adds, wouldn't be nearly as effective.

Jens Jakobsson, vice president of distribution of Dong Energy in Skaerbaek, Denmark, notes that his company's involvement in the coalition provides the opportunity to discuss the challenges the organization is facing with regard to renewable energy—more specifically, wind power, which makes up 20 percent of Denmark's electricity production. "It's important for us to get to the point where we can move consumption from one period of the day to another," he said. "Currently, it's not possible to move the consumption around."



Italian utility Enel, headquartered in Rome, gained renown—among other things—for its smart metering technology, and is active in a number of smart grid initiatives, such as The ADDRESS European Project, funded by the European Union. The goal behind ADDRESS, which operates in conjunction with the European SmartGrids Technology Platform, is to promote an active demand model, engaging consumers in the management of their energy consumption.

"We have to manage this topic with the regulators so that they can

understand this problem, and so we can establish some rules about who is asking to connect to the grid,” said Paola Petroni, head of networks technologies in Enel’s infrastructure and networks division. “We have to make an investment, and it’s something we hope is recognized by the regulators.”

The current state of the economy presents another layer of challenges to utilities worldwide, as it remains unclear how the funding for these projects will be affected. Industry insiders like Petroni, however, continue to underline the need for investment, as well as close examination on how this money can be used to its full potential. “Our network is aging and we have to renew it, so some money has to be spent,” she said. “That means spending in a smarter way—not just in laying new cable, but trying to use it in a better way.”

The grid is struggling to keep up with modern-day demands and forcing experts to conceptualize the adoption of a new model. “There has been so little investment that the infrastructure is almost rotting,” said Paul Kurchina, director of KurMeta, a consulting firm in Calgary, Alberta, Canada. “South Africa, for example, is having problems with lack of power, period. You’re going to start seeing similar problems in other markets, just due to generating plants and infrastructure across the board that is much beyond its intended life.”

With the climate changing and consumer demand continuing to increase, creating an intelligent network isn’t just about upgrading individual organizations, Cooper argues—it’s about bringing the industry together to lay the groundwork for the future. “It’s not just about transforming a company; it’s about transforming what is now the most critical industry in the world,” he said. “If we don’t build a network for the 21st century that supports all of that, then it’s almost a survival issue.”

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CHINA’S NEW BREED OF UTILITIES

SMEPC and others dive into a new energy era
By Jesse Gantz

Electric utilities are often stereotyped as stodgy, bureaucratic organizations that are perpetually behind the technological and political curve. Narrow that stereotype to Chinese electric utilities, and the image changes to one of aging, smog-belching coal plants and poorly planned distribution grids—the vestige of an inefficient, centrally planned economy.

However, these stereotypes are far from the truth. China’s new breed of electric power utilities are among the most dynamic and innovative in the world. Take Shanghai Municipal Electric Power Co. (SMEPC), which supplies electric power to 7.2 million customers in China’s fastest-growing city. Over the last three years, SMEPC has been engaged in an innovative three-part corporate initiative dubbed DigiUtility. The program has already accomplished:

- ▶ **Part one:** upgrade the distribution network with the latest in distribution automation and geospatial systems.
- ▶ **Part two:** develop advanced corporate applications based on SAP’s enterprise resource planning (ERP) to mine data, automate business processes and inform decision makers.
- ▶ **Part three:** connect real-time grid control systems with customer information, outage management and maintenance planning systems via an enterprise integration bus and a unified data platform.

Sound lofty? It is. But SMEPC’s pilot-based, piece-meal deployment approach has paid off, proving the benefits of a holistic and long-term corporate vision. By retiring legacy systems, digitizing workflow and breaking down information silos, the company now has the resources to focus on customer satisfaction and quality of service. For example, SMEPC is enabling customers to pay their bills online, in the supermarket, at the bank and with prepaid meter cards. Customers can even pay with a text message from their cell phone.



SMEPC is at the forefront of a new wave of savvy Chinese utilities that embrace change and new technology, and have money to pay for it. Backed by a pragmatic, infrastructure-centric national development policy and steady GDP growth, China’s two centralized national grid corporations understand that now is the time to realize national grid integration and industry standards. And they are capitalizing on the opportunity to upgrade the grid with the latest and greatest in remote telemetry equipment, communication networks and automation systems. Already, China is a leader in high-voltage direct current (HVDC) transmission lines, phasor measurement unit-based outage defense systems and protective relaying.

And now that the Chinese government has identified the urgency of a more environmentally sustainable development model, renewable energy and smart grid technologies are receiving major attention. So while utilities in some developed countries struggle with aging assets and departing expertise, keep your eyes open for a new breed of utility that’s leading the world into a new energy era.

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