



ENERGY SOLUTIONS

powering M2M growth in China

China has a voracious appetite for power. Sustaining the country's phenomenal growth and its emergence as a global manufacturer requires steadily increasing supplies of electricity. Major projects are underway on all fronts to provide new generating capacity. China is also purchasing increasing volumes of oil and natural gas for electricity generation. Still, demand threatens to outstrip supply, thus limiting future growth.

As important as finding new sources of energy may be for China's continued economic growth, it is equally vital that the existing power grid is operated as efficiently as possible. Power losses in the grid can easily equal the capacity of several new generation plants. It is also essential to ensure that electricity distribution system is as efficient as possible, that customers are charged fairly for the power that they consume and that consumption patterns are changed wherever possible to avoid excess usage during peak periods when demand is highest.

As can be expected for a country with a population of well over a billion, China's power grid is vast and extremely complex. The national grid is owned and operated by the State Grid Corporation of China, which consists of about half a dozen large regional grid companies. These regional companies in turn serve smaller power companies generally covering a single province.

The State Grid Corporation with its 728,000 employees is naturally able to devote considerable resources and expertise to operating the national grid, managing its assets and ensuring that power transmission in the high-voltage grids is as efficient as possible. The greatest inefficiencies also do not arise in these grids, but rather in local networks and in the distribution sub-stations and transformer stations where the high-voltage power is stepped down to lower voltages and distributed to customers.

"In China, the local power companies all want to own their own networks," observes Bell Qi, general manager of Electric Power Technology in Beijing, which has partnered with Mobitex Technology to bring Mobitex to the power distribution system. "This is also where we saw an opportunity to increase efficiency by automating power distribution."

Potential for thousands of measuring points

Electric Power Technology and Mobitex Technology are now implementing two pilot projects to evaluate Electric Power Technology's concept. Initially, each pilot installation will consist of about 100 measurement points served by three or four base stations. There is a potential for thousands of measurement points and hundreds of base stations in each city where the system is installed.

The Electric Power Technology system measures power and collects data at different points in the local network from distribution sub-stations out to smaller

transformer stations and beyond. These readings make it possible to determine where power losses occur and analyze their causes. At each measurement point, readings are taken several times per hour, and the total amount of data to be transmitted may be as much as 100 kilobytes per day for locations at which data from several measurement points is concentrated before being sent over the Mobitex network.

In many cases, measurement equipment will be mounted on poles. One of the features of the Electric Power Technology system is that the company has been able to combine the unit used for collecting measurement data with the radio modem by using Mobitex Technology's M3080 OEM Mobitex modem and an onboard application (OBA), thus significantly reducing the cost of each measurement point.

Automated power distribution

Because power consumption is being monitored in near real time throughout the distribution network, it is possible to automate power distribution and dynamically reconfigure the network as consumption patterns change, thus increasing efficiency. The system naturally also meters consumption and provides the raw data for billing. "We see great potential in this system, not only for distribution automation, but also for remote meter reading and supporting electricity sales. So far, interest among local power companies has been substantial, and we are very excited about the future," says Bell Qi.

Mobitex is a relatively new technology in China that is still finding its place. At present, M2M applications for energy production and distribution systems are just one area in which Mobitex is being deployed, but its future in this area would seem bright. "We evaluated several alternatives for data communication, but in the end, Mobitex was the best choice for our application," emphasizes Bell Qi. "Mobitex offers proven and reliable technology at low cost. It can be deployed quickly and provides a large coverage area. These were compelling arguments."

A sign that Mobitex is gaining ground is that the partnership between Electric Power Technology and Mobitex Technology has attracted the attention of the North China Electric Power University in Beijing, which is the first choice among Chinese students for university studies in the field of electric power. Several employees of Electric Power Technology have experience as teachers or professors, and there is now considerable interest in establishing a test laboratory for Mobitex at the school.

"This represents a fantastic opportunity for Mobitex, and we will do everything we can to ensure that a test lab is created. We believe that Mobitex is the right technology for many M2M applications in the power industry, and we are proud to be working with such a foresighted and innovative partner as Electric Power Technology," concludes Dragi Atanasovski, business manager at Mobitex Technology.



Bell Qi, general manager at Electric Power Technology

“
**Readings make
 it possible to
 determine where
 power losses
 occur and
 analyze their
 causes**
 ”