

A 'SMART' WAY TO GO GREEN

**Times Journal of Construction and Design
discovers how ZigBee's Smart Energy is a great
way to implement green energy initiatives**

Increasing energy prices and new regulatory norms compel utility companies, consumers and Original Equipment Manufacturers and product manufacturers alike to introduce efficient energy monitoring and control systems. Often, the introduction of power harvesting solutions such as solar energy and alternate forms of energy generation add new requirements and challenges to existing consumer and grid networks. A smart and adaptable electrical grid is needed to dynamically control energy consumption, improve responsiveness to load and price variations, handle current and future demand, increase efficiency and manage costs.

With its modern wireless technology, Smart Energy provides intelligent communication infrastructure that is applicable to residential, commercial and industrial segments. A smart grid supplies electricity to consumers using digital technology that saves energy, reduces cost and increases reliability and transparency. It provides two-way communication between homeowners' premises and utility companies' back-end IT infrastructure. The smart grid quantifies demand habits so that utilities can better predict their base and peak loads. It enables additional high-value functions, including flexible pre-paid metering solutions, demand side management and rapid, automatic outage detection and restoration. Consumers have the facility of altering energy usage based on time of use and peak pricing. Smart grid initiatives are gaining traction across the world, stimulated by growing energy demand, increasing costs and climate change. Smart grid technologies are enabling homeowners and utility companies to work together to reduce household energy consumption, save money and better manage the grid.

The key enabling technology for Smart Energy management is ZigBee wireless networking standard based on an ultra low-power IEEE 802.15.4. ZigBee Smart Energy

is an advanced metering technology designed for efficient generation and consumption of energy such as electricity, gas and water. The energy-consuming appliances in a typical home are refrigerators, electric ovens, water heaters, A/C equipment and washing machines. ZigBee Smart Energy helps consumers to create home networks with the devices and electricity (or water and gas) meter to monitor real-time energy usage and save money on utility bills. It provides a standard, easy and affordable way to communicate energy-related information such as price, over-wireless home automation, commercial building automation, and other sensing and monitoring applications. It offers utilities and energy service providers secure, easy-to-use wireless home area networks for managing energy by direct communication with thermostats and other smart appliances.

Since they consume very little energy, ZigBee-based devices are typically battery-operated. Their long battery life, self-healing, self-forming mesh network and in-built support for security and smart energy applications score high compared to other sensor network protocols. Since the technology is based on a wireless system, its installation and maintenance becomes easier while resulting in savings in the range of 30 per cent as compared to wired devices.

Mindteck has been a member of ZigBee Alliance since 2004 and provides engineering services on ZigBee protocol stack and Smart Energy profile development, network management systems, network configuration tools and Smart Energy management products and systems. Mindteck has a field-ready solution for energy management, featuring demand management and load control activities through timelier information and forecast. Mindteck's smart energy initiative can provide commercial and industrial businesses ways to eliminate energy waste and become more responsive to the dynamic energy market. 