Smart Meters, bright prospects for smart EDEs

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Abstract

Smart Metering is gearing up to be a truly transformative new technology. There are around 250 active smart metering projects worldwide, with 49 million meters already installed and a further 800 million planned for installation. With staggering annual growth rates, it is anticipated that the leading economies in the Asia-Pacific region will have close to 100 percent penetration by 2020.

As well as potentially enabling consumers to make more informed choices and better manage their energy use and greenhouse gas emissions, smart metering will also reduce demand for peak power, leading to potential infrastructure savings. In addition, it will offer Electronic Design Engineers (EDEs) and the electronics industry the prospect of having a significant impact on the future of energy consumption.

After years of being relatively static, the climate is now ripe for innovation in the area of electronics. Many businesses will be seeking their slice of this 'new' sector and Farnell is well placed to support new businesses and ideas in this space.

With plans for such large scale uptake of smart metering technology, and the subsequent electricity savings that will ensue, Smart Meters, and the devices smart EDEs will develop to fit with this technology, could really hold the key to significantly de-carbonising our electricity networks.

Smart Meters, bright prospects for smart EDEs

Smart Metering is gearing up to be amongst the most promising and truly transformative new technologies. With around 250 active smart metering projects worldwide, including the smart metering rollout project that is well under way in Victoria, and the mandatory rollouts being considered in other Australian states and territories, it is set to dramatically change our energy consumption. It will also offer Electronic Design Engineers (EDEs) and the electronics industry the prospect of having a significant impact on the future of energy consumption.

As worldwide demand for electricity soars, the cost to consumers is also set to soar. Energy companies are coming under increasing pressure when trying to meet periods of peak demand and governments are facing pressure to reduce greenhouse gas emissions. It is these factors that have led to the evolution of smart metering.

As well as potentially enabling consumers to make more informed choices and better manage their energy use and greenhouse gas emissions, smart metering will also reduce demand for peak power, leading to potential infrastructure savings, and drive efficiency and innovation amongst EDEs and the electronics industry.

Australia's Smart Metering trials in Victoria, NSW and WA will indicate that the time for smart metering to take on the mass market is drawing near. Many businesses will be seeking their slice of this 'new' sector and it will be up to EDEs to design the next generation of utility meters to entice market demand.

Substantial opportunities lie in creating designs with:

- LED/LCD displays
- new interfaces, including touch sense and wireless connectivity
- new ways of billing
- tamper prevention
- simplified meter calibration

As a major player in the electronics industry, Farnell is poised to offer designers the leading edge in creating the next generation of smart meters. We have the latest semiconductors optimised for smart metering, as well as all the components that integrate into designs in this section – eg displays, interfaces, communications and MCU. We are also working closely with our suppliers to be able to offer more and more 'green' technology – products that are perfect when trying to minimise power consumption in electronic/electrical designs.

As well as designing the next generation of smart meters, EDEs will be involved in manufacturing, installing and maintaining smart meters. And, of course, Smart Meters will not be isolated entities. One of the key cross-over areas for smart meters will be home automation systems. In the past, much hype surrounded the concept of home automation systems. They were billed as the way of the future and it was envisaged that a central computer would control everything within the house, from the garage door, to lighting, to operating the fridge and oven. Due to the expense and associated installation difficulties, home automation systems in this format did not eventuate to any great degree. However, in the past few years, there have been several great technical advances that have dramatically altered our perceptions of and philosophy towards home automation systems. These are:

- Bluetooth low energy wireless technology;
- Mobile broadband;
- Flash memory; and
- Social networks, such as Twitter

These new technologies have enabled home automation systems, or Home Automation Networks (HANs) as they are now called, to have a new, much more viable structure. Home automation no longer requires every system to be individually hard wired to the control unit.

Smart meters are central to the HAN. And of course Smart Meters will need to be increasingly interactive. They will need to be able to provide real-time information to the home owner and the utility provider and they will need to communicate with 'Smart Grids'. EDEs must ensure that new smart metering technologies provide the 'best fit' with current and proposed infrastructure. After years of being relatively static, the climate is now ripe for innovation in this area of electronics and Farnell is well placed to support new businesses and advancement in this space.

Smart Metering statistics

By any standards, Smart Metering really is the 'next big thing'. There are currently around 250 active smart-metering projects worldwide, with 49 million meters already installed and a further 800 million planned for installation[i]. According to a research report from analyst firm Berg Insight, the installed base of smart electricity meters in Asia-Pacific will grow at a staggering compound annual growth rate of 91.0 percent between 2009 and 2015, to reach 116.5 million at the end of the period. Berg Insight anticipates that the leading economies in the region will have close to 100 percent penetration by 2020.

Australia and New Zealand commenced with massive installations of smart meters at the end of the last decade. Victoria will become the first Australian state to achieve full penetration by 2013 and mandatory rollouts are being considered in other states and territories. In New Zealand, the adoption of smart metering is driven by the energy industry. While many other countries have introduced regulations for the new technology, New Zealand's government has decided not to interfere with the process.

Earlier this year, the federal government approved the country's first commercial-scale smart grid project in an effort to help Australians save power and connect domestic renewable energy to the grid. The Smart Grid, Smart City demonstration project will commence in the second half of 2010, in both Newcastle and parts of Sydney, and run until 2013.

Newcastle residents will be able to access usage information online and will have the capability to disable certain appliances in their homes remotely via the internet. Additionally, the pilot project will utilise a small fleet of electric cars to assess the best places to locate plug-in recharge points. The Australian government estimates that if smart grid applications are adopted throughout the country it would potentially reduce carbon emissions by 3.5 megatonnes a year.

With plans for such large scale uptake of smart metering technology, and the subsequent electricity savings that will naturally follow, smart meters, and the devices smart EDEs will be

developing to fit with this technology, could really hold the key to significantly de-carbonising our electricity networks.

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[i]According to the Meterpedia.com blog