Implement the building-wide energy metering network

Abstract:

While approximately 15% of total electricity are lost through the distribution, transmission and generator itself, the actual usage in residential and commercial buildings represent a more significant fraction. As part of the global “smarter grid” technical revolution, the concept of green building is being more and more discussed recently.

If the per-appliance energy usage can be shown to the occupants in real-time, the occupants can then understand their electricity usage behavior, thus improve it to reduce their energy bills. A wireless sensor network (WSN) can be deployed to monitor AC energy usage and even control the AC devices in a large and diverse building environment. The WSN, which composed of low-consuming microcontroller, 802.15.4 radios and power-saving network protocol, has seldom been applied into electricity monitoring yet.

This presentation will introduce the implementation of building-wide energy monitoring through wireless sensor network. Based on some open source operating systems, a complete network solution over the 802.15.4 MAC is now available to everyone. The next step is just to deploy the energy measuring components onto the wireless sensor board, which not seems to be a challenge.

About the presenter:

Wang Hao received his B.S. in Measurement/Control Technology from Nanjing, China in 2006, and is current pursuing his M.S. in Electrical Engineering at Michigan Tech. His professional engineering experience includes 3 years work in Hangzhou, China as a hardware engineer, during which he was designing insulation measuring machines for power equipments. Areas of interest include digital measuring, embedded system design, and more recently, smart grid.