Small-sized Power Sensor and Wireless Display for Fine-grained Measurement and Presentation

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Introduction

This research is based on the concept that it is not easy to reduce the electric power consumption of the everyday life in homes and offices without the knowledge of the power consumption of each device. However, current power meters/sensors are not cheap nor network-connected, so it is hard to measure and gather the power consumption of each electric appliance. In this research, we have developed a cheap and networked power sensor which can easily measure the power consumption through the outlets. We also utilize wireless displays to present the current status of each appliance.

Fine-Grained Power Measurement

To measure the power consumption of each appliance, we have developed a simple wireless watt meter which can attach to each power outlet. The cost of the prototype is around $150, but our goal is aimed at around $20. We currently employ Bluetooth as a communication medium to upload and aggregate the current power usage because it is easy for use with usual PC. We tagged each appliance with “ID”, “Name”, “Owner”, “Location:Building / Floor / Room / Position”.

Fine-Grained Energy Management

By using tagged power sensors, we can aggregate and present the current power consumption of each person/desk/area or type of activities.

Wireless Display

We employ “Wireless Bitmap Price Tag” as a power consumption display. This small tag can keep showing any bitmap with very low power. So we can put the display anywhere.

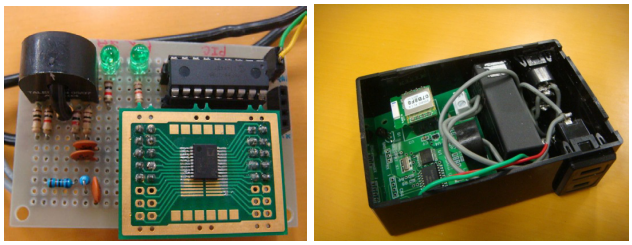

Figure 1: *Prototypes of Wireless Watt Meters*

Figure 2: *Wireless Bitmap Price Tag for Display*

References

[1] Paolo Bertoldi, Andrea Ricci, Anibal de Almeida eds. “Energy Efficiency in House hold Appliances and Lighting”, Springer, 2001.