

MECHATRONICS

BOOK SERIES

SYSTEM DESIGN AND SIGNAL PROCESSING

VOLUME 2

Editors

Md. Raisuddin Khan

Md. Mozasser Rahman

Muhammad Mahbubur Rashid

Shahrul Na'im Sidek



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CHAPTER 37

DEVELOPMENT OF WIRELESS HOME POWER MONITORING SYSTEM

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37.1 Introduction

Nowadays, the development of technology gives impact to our everyday life and it will become more and more spreading later on. Because of using the high technology, of course there will be a lot of power usage that will give harm to the earth. Wireless home power monitoring system is a system that is can control the electrical appliances from a certain distance by using universal remote control (URC). This system can also measure the power usage of the electrical appliances.

The main advantages of using wireless home power monitoring system are firstly it can reduce power consumption where people are able to switch on or off the electrical appliance whenever they want at a certain distance. Moreover, by using this wireless home power monitoring system, people can save their time to switch on or off their electrical appliances. In addition, this system can be applied in industrial sector such as factory. According to Masjuki H.H and Jahiril M.I., It was found that electrical motors consumed the highest amount of energy (47.05%) followed by pumps (13.75%), air compressors (8.85%), air-conditioning systems (7.21%), workshop machines (6.00%), lighting (5.65%), overhead cranes (3.00%), ventilation (1.96%), furnace (1.26%), conveyor systems (1.00%), boilers (0.88%), refrigeration systems (0.49%), dust collecting equipment (0.30%), lift/escalators (0.20%), and other equipment (3.38%).

This end-use electricity can be reduced by using this system to the industry. Even though it cannot solve the problem, but it still can reduce power consumption thus can reduce the cost of electricity for the industry.

37.2 System Design

Generally, the wireless home power monitoring system is designed to measure and control the electrical appliance in the house or building using universal remote control (URC). This system is capable to measure the power usage of the electrical appliance. At the same time people can control the status of electrical appliance whether it is on or off using the remote control or through internet. From Fig. 37.1, shows how the wireless home power monitoring system is connected between the master and the slaves. The remote control will connect with the master to give command from the user. Besides using the control, user also can give instruction through internet using wireless ZigBee. ZigBee is a wireless technology developed as an open global standard to address the