

***Abstract: An Empirical Study of an Effective Gas Safety Management using wireless ZigBee Modules***

Gyoutae Park<sup>\*</sup>, Jeongseok Oh<sup>\*\*</sup>, Younggyu Kim<sup>\*\*</sup>, Inchan Kim<sup>\*\*</sup>,  
Inchul Yoon<sup>\*</sup>, Jongboo Eun<sup>\*</sup>, Juhoon Park<sup>\*</sup> and Hiesik Kim<sup>\*</sup>

*\*University of Seoul, Korea Republic, \*\*Korea Gas Safety Corporation, Korea Republic  
gtparkgs@kgs.or.kr*

**Abstract**

In this paper, we developed and tested the performance of our proposed effective gas safety management system using wireless intelligent gas safety appliances to monitor gas flow and pressure, earthquake in a micom-gas-meter, to check combustible gas leaks and temperature (upper 100°C) in an automatic extinguisher and to detect smoke and CO gases. We developed ZigBee modules with JN513, equipped to gas safety appliances and configured wired and wireless sensor network. Mechanisms of all gas safety appliances are intelligently operated by inner firmware according to the procedure of our safety management scenario when a risk event is occurred. And then those warnings are transmitted to users and managers via home gateway to server. Users are able to connect to sever via internet network (BcN) and to check the states of a micom-gas-meter, an automatic fire extinguisher, smoke detectors and CO sensors in their house. That proposed system will protect an incident in advance and minimize risk ranges

**Acknowledgements**

This research was supported by the “Research Group of Energy Safety for Next Generation (2010201010095C-21-1-000)” project from MKE (Ministry of Knowledge Economy, Korea) under the program of Energy Technology Innovation.