

Abstract: Building Environment Analysis based on Temperature and Humidity for Smart Energy Systems*

Jaeseok Yun[†], Jaeho Kim, Sang-Shin Lee, and Kwang-Ho Won
*Embedded Software Convergence Research Center,
Korea Electronics Technology Institute,
68 Yatap-dong, Bundang-gu, Seongnam, S. Korea
{jaeseok, jhkim, sslee, khwon}@keti.re.kr*

Abstract

In this paper, we propose a new HVAC (heating, ventilation, and air conditioning) control strategy as part of the smart energy system that can balance occupant comfort against building energy consumption. We have developed ZigBee-based wireless sensor nodes and collected realistic temperature and humidity data during a month from a laboratory environment. With the collected data, we have built a building environment model using machine learning algorithms, which can be used to assess occupant comfort level. We expect the proposed HVAC control strategy will be able to provide occupants with a consistently comfortable work or home environment.

Acknowledgement

This work was supported by Energy Efficiency & Resources of the Korea Institute of Energy Technology Evaluation and Planning (KETEP) grant funded by the Ministry of Knowledge Economy, Republic of Korea (No. 2011T100200262). We also thank Min-Hwan Song and Dong-Yup Kim for generous support of hardware development and system integration, respectively.