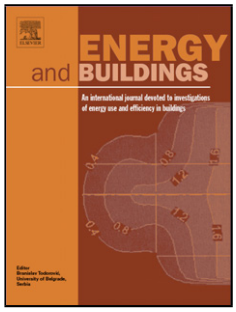
Accepted Manuscript



Title: Using CPS Enabled Microgrid System for Optimal Power Utilization and Supply Strategy

Author: Maneesha Vinodini Ramesh Aryadevi Remanidevi Devidas K. Athira Venkat Rangan

PII: S0378-7788(16)31390-1
DOI: http://dx.doi.org/doi:10.1016/j.enbuild.2017.03.068
Reference: ENB 7493

To appear in: *ENB*

Received date: 10-11-2016
Revised date: 17-3-2017
Accepted date: 29-3-2017

Please cite this article as: Maneesha Vinodini Ramesh, Aryadevi Remanidevi Devidas, K. Athira, Venkat Rangan, Using CPS Enabled Microgrid System for Optimal Power Utilization and Supply Strategy, *<![CDATA[Energy & Buildings]]>* (2017), http://dx.doi.org/10.1016/j.enbuild.2017.03.068

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Using CPS Enabled Microgrid System for Optimal Power Utilization and Supply Strategy

Maneesha Vinodini Ramesh, Aryadevi Remanidevi Devidas, Athira K., Venkat Rangan

Amrita Center for Wireless Networks and Applications, Amrita School of Engineering, Amritapuri Campus, Amrita Vishwa Vidyapeetham, Amrita University
maneesha@am.amrita.edu, aryadevird@am.amrita.edu, athirak@am.amrita.edu, venkat@amrita.edu

Abstract

Because the power grid experiences dynamic variations in energy generation and demand, inclusion of renewable energy alone will not assure self-sustainability of the grid system. Energy sustainability can be achieved by developing Cyber Physical System enabled smart buildings capable of dynamic energy management. In this research work, we propose the architecture for CPS enabled sustainable buildings integrated with Distributed Energy Generators (DEG). We have developed three algorithms, namely, Equipment Classification Algorithm (ECA), Context Aware Room Energy Utilization (CAREU), and Availability based Management Algorithm (AMA), for dynamic energy management to attain energy sustainability of smart buildings, and optimization models for profit maximization in smart buildings. Prototype of the smart buildings are developed with features such as realtime energy monitoring, renewable energy integration, dynamic rescheduling and reallocation of energy utilization of equipments to attain energy sustainability. The results show that the proposed method provides energy sustainability compared to the current state-of-the-art methods.

Keywords: context aware algorithms, microgrid, smart building, sustainability

Accepted Manuscript

Download English Version:

https://daneshyari.com/en/article/4914155

Download Persian Version:

https://daneshyari.com/article/4914155

Daneshyari.com