

Innovative Sensor Application for Achieving Deep Energy Savings

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ABSTRACT

Facility Managers and Designers face many challenges while bringing to bear the realities of Climate change concerns along with state sustainability mandated initiatives to reduce energy consumption. One of the largest yet relatively untapped opportunities to achieve energy reduction goals lies in the smart application of sensors. New sensor platforms and new wireless sensor solutions provide a “game changer” for achieving measurable, consistent, and significant load reductions in HVAC applications. Simply stated, the idea is to use energy only when it is needed, i.e. based on actual occupant demand. Specific applications include centralized demand control ventilation in academic buildings, “active sensing” in laboratories, and wireless energy management systems that deploy self-powered sensors in residential applications. As various codes and guidelines evolve, additional emphasis is placed on the embedded use of technology to achieve planned energy savings. Integrated with existing Building Automation Systems (BAS) or stand-alone BAS platforms, sensor applications have resulted in significant energy reductions – 30 to 50% - along with providing assurance for safety and indoor air quality. The presentation will provide a technical overview of sensor technologies and review the various implications for HVAC control applications. This technical overview will be largely supported by Department of Energy / Lawrence Berkley National Labs research and ASHRAE guidelines. To complement this research and industry experience, two case studies from SUNY campuses will provide a real-world glimpse of innovative sensor applications and their quantitative impacts. A better understanding of demand-based control strategies and the use of sensors will provide enhanced value for facility, energy and plant operations personnel who are looking to improve energy efficiency and move forward with achieving their energy efficiency and sustainability goals.

BIOGRAPHIES

Matthew Brubaker has over 17 years of experience in sustainable design, community building, and place making. Matt is the Campus Energy Manager for SUNY Cortland currently engaged in a number of initiatives from student engagement to energy master planning and measurement and verification programs of various energy efficiency measures. Matt along with many others, is overseeing the implementation of SUNY Cortland’s Climate Action Plan for carbon neutrality by 2050. To get there, we have been achieving many firsts, including first large scale solar development project, first residence hall to go LEED Platinum on a SUNY Campus, and first SUNY to achieve a Gold rating in the STARS sustainability assessment from the Association for the Advancement of Sustainability in Higher Education.

David Gordon has over 20 years of experience in the building industry with a focus on HVAC system improvements. Pioneering early stage technologies, he has managed over 2,500

projects, working with owners, subcontractors, utilities, and engineering firms to assure optimized HVAC performance and / or indoor air quality compliance. More recent projects have resulted in deep energy savings through the application of sensors and graphic interfaces that report measurements and verifications of real time energy consumption. David is a graduate of the school of business administration at the University of Vermont, and is a LEED Green Building Associate.