Introduction of flexible monitoring equipment into the Greenlandic building sector - DTU Orbit (27/02/2019)

Introduction of flexible monitoring equipment into the Greenlandic building sector

Greenlandic winters are long and cold so living inside the heated and properly ventilated space requires quite some energy. It is assumed that in mechanically ventilated buildings, significant amounts of energy for heating can be conserved by adjusting the ventilation flow rates according to actual demand of the occupants. Traditional solutions available on market consist of controller and sensors in the living space detecting the occupancy and activity (movement sensors, CO2 sensors, Humidity sensors, etc.). The controller needs to be programmed and maintained by an expert and sensors need to be hardwired to the controller. In Greenland where price of the labor is very high and availability of experts limited the installation of such control system becomes unacceptably expensive, particularly in case of renovation of existing buildings. One possible solution to the above is to introduce wireless sensor network (WSN) technologies. The design of a prototype wireless monitoring and control system is demonstrated in the new dormitory Apsisseq in Sisimiut, Greenland. The existing mechanical ventilation was running at a constant air volume even during unoccupied hours which resulted in a very high heat demand. It was estimated that installing the WSN system will bring annual savings of 1,600 € at the investment of 8,000 €. This paper describes the initial setup of the system and discusses its advantages and drawbacks.

General information
State: Published
Organisations: Department of Civil Engineering, Section for Building Physics and Services, Technical University of Denmark
Contributors: Kotol, M., Heller, A., Orthmann, C.
Number of pages: 5
Publication date: 2014

Host publication information
Title of host publication: Proceedings of ARTEK Event 2014
Electronic versions:
Paper_MRKO_Submission.pdf

Bibliographical note
Acknowledgement: The current work was supported by the Bjarne Saxhof Foundation. Thanks to their contribution
Source: PublicationPreSubmission
Source-ID: 93296111
Research output: Research - peer-review Article in proceedings – Annual report year: 2014