New research into hospital infection control, overheating and ventilation

Two key pieces of research into hospital ventilation and environmental management are in the process of setting out new ways of thinking about how future healthcare building designs will need to manage indoor air quality more precisely to improve infection control, patient comfort and energy efficiency.

The recent study by Leeds University, led by Dr Cath Noakes, into the effect of airflow in open plan and partitioned 'Nightingale' style wards in Bradford has shown that when windows are closed to reduce heat losses and energy costs, there is an increased risk of infection due to a four-fold increase in airborne pathogens.

In addition, the findings and recommendations of a major research study are to be published shortly, which examines how hospital environments, ventilation strategies and energy management will need to evolve to ensure the long term effects of climate change have no impact on patient care standards.

The Design and Delivery of Robust Hospital Environments in a Changing Climate (De2RHECC) project is investigating economical and practical strategies for the adaptation of the NHS to increase its resilience to climate change while meeting national carbon dioxide (CO2) emissions targets. The related risk of summer overheating together with the use of energy intensive cooling systems and the need for adequate ventilation for patient well-being, are also being explored by the research team.

Dr. Chis Iddon of SE Controls is directly involved in the (De2RHECC) project, led by Cambridge University's Professor of Architecture, Alan Short and Professor of Building Simulation at Loughborough University, Kevin Lomas.

"The NHS currently generates around 18 millions tons of carbon and carbon dioxide every year, which accounts for around 30% of public sector emissions of which 22% represents the energy used to light, heat and cool its buildings," explained Dr. Iddon. "As highlighted in the Leeds University study, if the stringent energy reduction targets are to be met, which demand a 60% reduction on 1990 levels by 2050, then hospitals will need to reduce energy use while maintaining high levels of patient care."

Professor Kevin Lomas of Loughborough University also supports this view. "Adequate ventilation is critical in hospitals both for infection control and for controlling internal temperatures in the summertime," he said. "The work of Dr Iddon, his colleague at Loughborough, Dr Renganathan and myself, clearly shows that traditional Nightingale wards, which have natural ventilation, provide much more stable internal summertime temperatures than modern mechanically ventilated wards."

SE Controls already has wide ranging experience in the healthcare sector having undertaken a range of natural ventilation projects in major hospitals around the UK. In a number of cases the natural ventilation system is linked to integrated smoke ventilation strategies, which not only reduce energy consumption and enhance patient comfort by managing temperatures effectively, but also provide protection in the event of fire.