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Energy Efficient Hospitals

Hospitals consume enormous amounts of energy. Just think about all the equipment and processes in hospitals; 24 hour heating and lighting teamed with ventilation, sterilisation, laundry and food preparation among others.

Energy savings and the environment are also high on the political agenda across Europe and beyond. But how exactly do we go about introducing energy saving techniques and materials into our hospitals? This article will present several programmes and initiatives for energy saving in the healthcare sector. On closer inspection it is apparent that paying attention to energy and promoting sustainable healthcare is not only a good way of maintaining corporate social responsibility. Energy savings and sustainable healthcare are also drivers of innovation and cost effectiveness. Reducing our energy bills is good for us as well as the environment. Energy savings can come from initial design (for best results) but also in updating and refurbishing certain areas.

An interesting introduction to energy efficiency in hospitals can be found at www.leonardo-energy.org/hospitals. Leonardo Energy is the global community for Sustainable Energy Professionals. An application note published in 2008 describes the use of energy and energy saving potential in hospitals and some of the figures are quite shocking.

The Green Guide for Healthcare (GGHC)

The Green Guide for Healthcare (GGHC) markets itself as "the healthcare sector's first quantifiable sustainable design toolkit integrating enhanced environmental and health principles and practices into the planning, design, construction, operations and maintenance of healthcare facilities."

A joint project between Center for Maximum Potential Building Systems and Health Care Without Harm, the guide began in 2004 and focuses on patient care and safety, environmental sustainability and public health. Through the website members have access to health focused tools, educational resources and technical guidance to help them improve the design and processes of their institutions to become more sustainable "healing environments".

Users include healthcare executives, medical and design professionals, engineers, constructors, manufacturers, facility managers, government agency staff, academics and researchers, and service providers. GGHC recognises enormous energy consumption of hospitals with their 24/7 operating time, chemical use, high use of water and infection control understands that this often makes the implementation of sustainability protocols difficult. With this in mind, GGHC has three main objectives:

- To support healthcare's fundamental mission to protect and enhance individual and community health;
- To acknowledge the intrinsic relationship between the built environment and ecological health; and
- To use the precautionary principle to underpin decision-making.

The Green Guide believes in health-based design principles but it is not a regulatory body. It is not about creating regulatory requirements or minimum standards for design, construction or operations. It is a voluntary educational tool that promotes continuous improvement in our sector.

There are currently 34,424 registrants on the website and the Green Guide supports 278 registered projects. This informative guide is growing fast with around 500 new registrations every month. Although based in the US there are more and more international registrants from 113 countries. The creators describe the guide as an "evolving document" as it is constantly updated with new information, pilot projects and the latest green building best practices. Members are sent the latest information via email.

The Green Guide is designed specifically for institutional occupancies such as acute care hospitals, "where continuous occupancy and specific regulatory requirements lead to energy intensive, complex buildings that cannot be approached with the same sustainable design and operation strategies as commercial office structures." It can be used for new facilities, renovations to existing facilities, and existing facilities can use it as a best-practice guide.

More information on the Green Guide to Healthcare is available at: www.gghc.org.

HosPilot

HosPilot is a European initiative for intelligent energy efficiency control in hospitals. Co-funded by the Competitiveness and Innovation framework Programme (CIP), the project started in March 2009 and will run for 36 months. As an ICT Policy Support Programme its main focus is ICT for energy efficiency in public building and spaces, including lighting.

The Action Plan for Energy efficiency adopted by the European Commission in 2006 aims at achieving 20 percent reduction in energy

consumption by 2020. Buildings have been identified as one of the areas where the biggest energy savings can be made. Heating and lighting in buildings count for nearly 40 percent of the energy used in the EU and it is expected that this can be reduced by 27 percent.

The project was started on the belief of the need for a clear focus on energy efficiency specifically in hospitals. Previous projects have focused on schools and offices but hospitals use considerably more energy. They are also extremely complex institutions with many different types of users and demand several different comfort levels. Therefore HosPilot will focus on the two main technology areas of Lighting and HVAC (Heating, Ventilation and Air Conditioning), the largest energy consuming areas. It is their hope that ICT will play an important role in reducing energy consumption in hospitals.

The main objective of the project is "to prove that the proposed energy reduction service leads to reduced energy consumption and improved level of comfort for the end users." This will be achieved by identifying the key requirements for hospitals regarding the building itself, its surroundings and usage and then designing a generic methodology addressing the needs, yielding the most energy efficient solution. Existing energy technologies will be grouped together to offer one holistic energy saving device.

To prove the efficacy of the proposed service, HosPilot will execute three pilots in operating hospitals. As a demonstration project, HosPilot will showcase advanced ICT technology for future replications at regional, national and European levels.

The project will enable energy saving scenarios in two key areas: Patient/nursing wards and surgeries and Hospital surroundings (parking lots, arriving patients and visitors.) Wards and surgeries are in constant use and HVAC is controlled to comfort level according to night and day. With the project, lighting is at (dimmed) comfort level by default and the patient can make individual adjustments. Incoming daylight will be used to limit the artificial light component of the comfort level. During medical procedures the artificial light will be raised to the functional level.

Lighting in hospital surroundings will also be dimmed to orientation level during night time and raised to functional and safety level when ambulances arrive, people enter the parking lot, or patients find their way to First Aid.

The new, energy saving service will provide advice on how to reduce energy consumption, the installation of the system and the monitoring and tuning of energy the consumption, settings tailored to individual hospitals. The proposed service will tailor, install and tune an ICT based system that will significantly reduce the energy consumption in the hospital. This service will then be disseminated to the open market, so the total service can be exploited as one package by the consortium and/or other organisations, e.g. SMEs, consultancy agencies specialised in energy efficiency.

The benefit of this proposed service is that the hospital is in contact with one expert for advice on the complete solution, bypassing the time consuming process of contacting a number of experts for the various technologies. It is an integrated system encompassing both lighting and HVAC.

For information about the three pilot systems in the Netherlands, Spain and Finland or HosPilot in general, please visit: www.hospilot.eu

Other Projects and Resources

There is a plethora of information on energy efficiency and sustainable healthcare online. Health Care Without Harm (HCWH) have submitted articles to (E)Hospital in the past focusing on waste management and sustainable healthcare. HCWH is an international coalition of hospitals and healthcare systems, medical professionals, community groups, healthaffected constituencies, labor unions, environmental and environmental health organisations and religious groups. The group shares a vision of a healthcare sector that does no harm, and instead promotes the health of people and the environment. (www.noharm.org)

The European Union have been actively involved in promoting energy efficiency in hospitals for many years now. The BUILD HEALTH Project is an example of this. Cofunded by the European Commission within the Sixth Framework Programme (2002- 2006) the BUILD HEALTH project was the first European project to provide the foundation for making the right decisions regarding energy use and optimisation of comfort in the healthcare sector. Aware that the healthcare sector is one of the most energy intensive in Europe, the project focuses on the early design period during which there is huge potential for improving energy efficiency in the sector. On a theoretical and practical level energy efficiency gains are demonstrated in three hospitals in the UK, Moldova and Italy.

BUILD HEALTH also provides comprehensive reports and information for the key actors within the healthcare sector. Design reports, monitoring reports and information on other projects can be found on their website, including a design handbook on energy conscious hospital and healthcare building designs: www.buildhealth.eu.

We hope that this brief introduction to projects and resources on energy efficiency in hospitals will help to inform you on the options available for your hospital.

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