

Energy performance of HVAC systems – setting the benchmark

June 2011 – Do you know how much energy the Heating, Ventilating and Air Conditioning (HVAC) systems in your office building consumes during one year? If the answer is “no” you are not alone – even if you are responsible for the maintenance of the system. While it is becoming common, if not even fashionable, to analyse the energy consumption in a building and invest in energy efficient technologies, HVAC systems are lagging behind. Their energy consumption disappears in the general electricity bill with separate meters seldom installed. A new IEE project has now been funded by the European Commission to bring more light into this subject, encourage monitoring and establish energy benchmarks for HVAC systems.

It is estimated that HVAC systems consumed about 11% of all the electrical energy used in Europe in 2007. However, an investigation into more detailed figures or benchmarks for energy consumption of certain types of HVAC systems or components reveals very limited information. Partly this is due to the fact that the electricity consumption of HVAC systems components is not measured regularly and almost never compared with other systems on a larger scale. Also the complexity of the systems makes comparison difficult.

The new project iSERVcmb (Inspection of Services through continuous monitoring and benchmarking) builds on two other projects on the energy performance of HVAC systems and the European Commission's attempts to deal with this issue. For example the Energy Performance of Buildings Directive (EPBD) requires frequent physical inspections to decrease energy consumption. However, the forerunner project HARMONAC indicated that the EPBD inspection identifies less than 40% of the potential energy conservation opportunities. Some of the largest potential savings could only be identified and quantified through long term monitoring. This is where iSERVcmb comes into play.

By collecting sub-hourly energy use data from around 1600 HVAC systems in EU Member States the project's aim is to develop a range of activity-based benchmarks for good, average and below average HVAC system energy use. Poor systems will not only be identified but also the benefits from adopting a more energy efficient system can be demonstrated. The availability of the data should encourage owners to take action while at the same time help to make legally binding inspections more efficient. HVAC systems showing energy performance above a certain threshold should for example be able to avoid inspection, and thus get a reward for good HVAC design, maintenance and control.

In order to achieve these aims the project team is looking for system owners, facilities managers and HVAC system/component manufacturers who would like to contribute to the project. Appropriate systems should already have monitoring equipment in place – or their owners should take the opportunity to install monitoring equipment and gain knowledge on the energy consumption of their systems – and be able to contribute monitoring data to the project. In return they will be able to use the iSERVcmb database, learn more about possible improvements of their system(s) and contribute to the development of benchmarks relevant to their systems. Interested end users are invited to contact the iSERVcmb project partners for more information on benefits. Contact details are available on the website www.iservcmb.info.

For more information please contact the appropriate iSERV Partner on the iSERV webpage.