

Two aspects of energy consumption reductions in real buildings: iSERV and nZEBs

Real energy reductions in real buildings

iSERV – serving up continuous monitoring and benchmarking

Keep it simple: operating nZEB buildings

iSERV – serving up continuous monitoring and benchmarking

Dr. Ian Knight had been involved in previous EU projects that indicated possible savings of up to 60% in individual HVAC systems with the help of detailed in-use energy data. The iSERV project ('iSERV' was derived from 'i' for Inspection and 'SERV' for Services, which is what HVAC systems are commonly referred to as) was therefore created with funding from the EU's Intelligent Energy Europe programme to quantify the existing energy performance of HVAC components and systems as achieved in practice. The Energy Conservation Opportunities (ECOs) uncovered will then be made freely available. The aim is to contribute to reducing the total EU electrical energy use by around 2%.

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There is a lack of real in-use energy use data for HVAC system components. iSERV has been designed to produce a large dataset of sub-hourly energy use in European HVAC systems and their components.

Dr. Ian Knight



Dr. Ian Knight

Dr. Knight, how will iSERV benefit participants and others?

IK: iSERV addresses the problem of improving the energy performance of HVAC systems in EU buildings **in practice**. We have developed the most straightforward process of entering buildings to the iSERVcmb database using the data entry spreadsheet, which is designed to link together in one space all the information about HVAC system components.

Participants need only enter the required data including:

- Consumption data on HVAC system components, sensors and utility meters
- Information regarding the floor area and activities served
- Ongoing sub-hourly data for at least the chiller, recorded over a full year.



With iSERV we now have the chance to look into the detail of the energy consumption of HVAC systems in buildings.

Dr. Ian Knight

The data collected by the iSERV project will be used to derive initial benchmark energy use ranges for the energy consumed by HVAC components servicing specified end-uses, areas and hours-of-use. This will enable bespoke benchmarks for, and a clearer understanding of, individual HVAC systems. At present we are recruiting HVAC system owners, operators and system or component manufacturers etc.

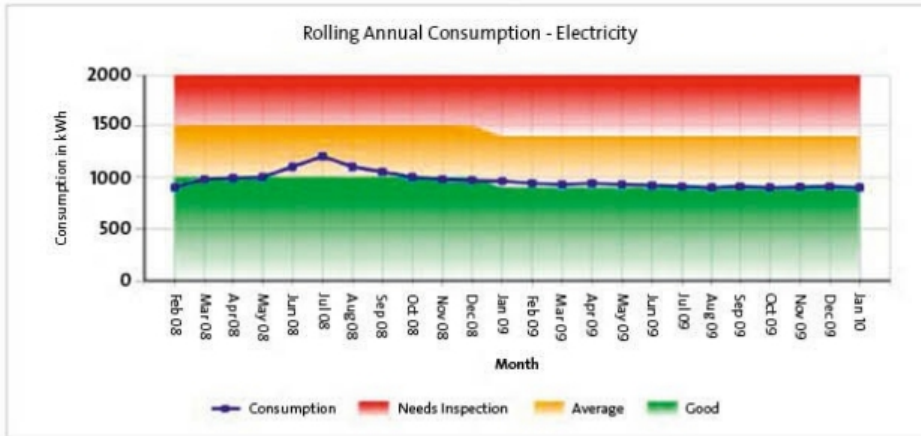
Will participants be able to gain a better understanding of their systems?

IK: Yes, as the data increases reports will begin to include comparison with other compatible systems. This will include reports on the bespoke performance of their HVAC systems and targeted feedback on potential energy conservation opportunities (ECOs) for their specific system.



HVAC Summary Report

McKenzie House - Main HVAC System
January 2012



Component	Total kWh per m ² per annum	Average W per m ²	% FLE	Performance
Packaged chiller 1	200	200	22.83	46.0% Good
Packaged chiller 2	250	250	28.54	57.0% Good
Boiler Room Supply Fans	4	4	0.46	23.0% Good
Hot Water Primary Circulator	6	6	0.68	34.0% Good
VAV AHU 1	150	150	17.12	57.0% Good
VAV AHU 2	200	200	22.83	76.0% Average
Chiller 1 - Heat Rejection Fans	90	90	10.27	86.0% Needs Inspection
Chiller 2 - Heat Rejection Fans	85	85	9.7	81.0% Needs Inspection

What about long-term benefits for participants?

IK: Understanding and managing their HVAC energy consumption more effectively. Understanding the causes of variations in HVAC system energy consumption in similar systems, which will deliver benefits such as:

- More confidence in investment in improving the energy efficiency of poorer performing systems
- Better choice of replacement components
- Financial benefits from more focussed investment in energy efficiency that is also easier to justify
- Greater savings than are possible from inspection alone.

Legislation

IK: There has been a lack of information on which to base policy decisions and future legislation regarding achieving energy efficiency in HVAC systems in the EU. This situation is now changing. The project hopes to contribute towards returning control over the delivery of energy savings to the actors in the sector, so that it would not matter how you reach the required energy use targets provided you can demonstrate that you have done so through the monitoring. This would

allow innovative techniques and approaches and acknowledge that all actors can play a role in highlighting good performance and helping move towards the near Zero Energy Buildings (nZEB) required for 2019 onwards.

All interested actors who wish to participate in the iSERV project can visit the project website at <http://www.iservcmb.info/>.

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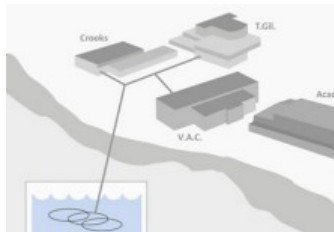
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