



**Inspection of
HVAC systems
through
continuous
monitoring and
benchmarking**

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Introduction on a new HVAC project

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Einstein II Workshop, Vienna
6. July 2011**

iSERV Partners



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<p>University of Pecs Hungary</p>		<p>Austrian Energy Agency Austria</p>	
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Context for iSERV



- ➔ iSERV addresses the problem of practically improving the energy performance of Heating, Ventilation and Air Conditioning (HVAC) systems in EU MS buildings.

- ➔ HVAC systems in the 27 EU Member States were estimated to consume
 - around 313 TWh electricity in 2007,
 - or about 11% of the total 2,800 TWh of electricity consumed in Europe in 2007[EC Joint Research Centre, Institute for Energy, 2009]:

IEE HARMONAC findings



- ➔ The IEE HARMONAC project showed that a number of significant Energy Conservation Opportunities were only identifiable for AC systems throughout Europe through knowledge of **long-term sub-hourly energy use profiles for the equipment.**
- ➔ HARMONAC has also shown this information is persuasive in prompting action from owner/operators to reduce consumption.
- ➔ Quantified savings in the HVAC plant energy consumption obtained during the HARMONAC project range up to 45% for components of HVAC plant, with observed savings in the range of 3 – 15% being common once the end user can see where the energy is going.

iSERV aims



- ➔ To show the energy savings achievable from continuous monitoring and benchmark in up to 1600 HVAC systems in over 16 EU MS
- ➔ To highlight remote data monitoring capabilities already existing and to identify new ones needed – especially for existing systems
- ➔ **To generate benchmarks of achieved energy performance by ventilation and air-conditioning systems for specified end use activities served**
- ➔ **To show this approach is an effective complementary activity to Inspection that can reduce the overall costs of inspection to HVAC system owners (and hence the EU).**
- ➔ To show that the approach can potentially ‘reward’ system owners for good design, operation and maintenance of their HVAC systems by allowing them to highlight good performance in relation to specific activity-based benchmarks, and also to avoid the cost of Inspection where there is clearly no need for one.
- ➔ To leave Inspections targeted only at those systems which showed poor performance or which chose not to provide this information. Both should expect more costly and detailed Inspections in future.

iSERV methodology



- ➔ Fully web-based database able to collect and analyse detailed consumption and operation data
- ➔ Uses existing data collection protocols and systems, e.g. existing manufacturers on-board data collection systems or BEMS sensors, as well as new systems
- ➔ Data to be collected from up to **1600 individual HVAC systems** serving described end use activities
- ➔ Concurrent physical Inspections and IAQ measurements will be undertaken on a subset of HVAC systems which the data suggests represent good, average and poor energy performers.
 - The aim of the Inspections is to establish whether the data analysis findings are matched by the physical reality.
 - The aim of the IAQ measurements is to ensure that the benchmark boundaries do not come at the expense of poor IAQ.
- ➔ HARMONAC tools will be integrated
- ➔ Support to all MS HVAC system owners participating

iSERV outputs



- ➔ To establish a range of **benchmarks** for energy consumption by HVAC systems for specified end use activities
- ➔ Assess the energy savings achieved in the iSERV HVAC systems as a result of feedback from the project
- ➔ Explore data collection techniques for the HVAC industry to adopt this approach for future and existing HVAC systems
- ➔ To show this approach is an **effective complementary activity to Inspection** that can reduce the overall costs of inspection to HVAC system owners (and hence the EU).



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**Thank you for your
attention**

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