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by project coordinator Dr. Ian Knight

Welcome to the first newsletter from the iSERV project.

This project is about showing the practical operation and benefits of an automatic monitoring and feedback system, as now allowed for in the recast EPBD, applied to Heating, Ventilation and Air-Conditioning (HVAC) systems in EU Member States (MS). It is important, as no information is publicly available on the achieved benefits of operating such a system, or the procedures that it should encompass.

The project has the support of the two main professional bodies for HVAC systems in Europe – CIBSE and REHVA – as well as input and interest from HVAC component manufacturers and property developers.

iSERV achieved its first major milestone in November 2011 with the release of the first version of the data entry spreadsheet for describing an HVAC system and its relationship to the activities and spaces it serves. This stand-alone spreadsheet has been endorsed by both REHVA and CIBSE as an ideal means of collating the data needed to better understand HVAC systems in buildings as well as being beneficial for mandatory inspections. It can be downloaded from the project website.

The iSERV automatic monitoring and feedback system will start accepting data from HVAC systems in early 2012. It is intended that all actors with an interest in the energy efficient operation of HVAC systems will start seeing useful information on what helps achieve energy efficiency in practice by the Summer of 2012, and that iSERV will be seen to be helping HVAC systems achieve the 35- 40% energy savings that HARMONAC found were likely to be available.

I hope you enjoy this newsletter and would like to wish you a Happy and Festive Christmas period,

*I.P. Knight*



about iSERV – about iSERV – about iSERV – about iSERV – about iSERV – about iSER  
Inspection of HVAC systems through continuous monitoring and benchmarking

The IEE-project iSERV has been set up to act as a potential model for automatic monitoring and feedback systems, as now allowed for in the recast EPBD, and to demonstrate that continuous monitoring and benchmarking of HVAC systems will provide energy saving benefits equivalent to or better than those achievable by physical inspection alone. For this purpose detailed energy consumption data for up to 1600 heating, cooling and ventilation (HVAC) systems in Europe will be collected and analysed. The project is now recruiting HVAC systems to be monitored.

iSERV builds on the results of the previous HARMONAC and AUDITAC projects, one of the conclusions of which was that many energy conservation opportunities would only be identifiable through continuous monitoring. The iSERV project will also explore how allowances could be made for automatic monitoring systems in the new regulatory framework being developed by European Member States for the recast Energy Performance of Buildings Directive (EPBD). Moreover the development of benchmarks to aid comparison between HVAC systems is an essential part of the project.

**iSERV - FACTS**

Contract period: 3 years (May 2011 – April 2014)

Budget: 3.3 M € (the largest single grant for an IEE project)

Background: findings from AUDITAC and HARMONAC, Energy Performance of Buildings Directive (EPBD) – Recast, Articles 8, 14, 15, 16

Intended number of monitored systems involved: 1600

For more information on the relevant articles of the EPBD and their implications on iSERV please visit our website: <http://www.iservcmb.info/iservcmb-project-details>

## PROJECT AIMS

- To establish that the continuous monitoring and benchmarking of HVAC processes will provide **energy saving benefits** equivalent to or better than those achievable by physical inspection alone.
- To **improve the cost-effectiveness** of regulatory measures to reduce the energy consumption of existing systems by:
  - Showing that 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).
  - Allowing inspections to be targeted only at those installations which show poor performance or which choose not to provide this information.
- To **produce benchmarks** of energy consumption by HVAC systems against end use activities derived from measured data around Europe
- To provide a means of **rewarding HVAC system owners/operators and manufacturers** for addressing the energy efficiency of these systems in their operation and design
- To encourage the **rapid adoption of more energy efficient HVAC systems** through demonstrating their in-use benefits
- To show the **energy savings achievable from continuous monitoring and benchmarking** in up to 1600 HVAC systems located in over 16 EU Member States.
- To highlight remote data monitoring capabilities already existing and to identify new ones needed – especially for existing systems.

By rewarding HVAC system owners/operators and manufacturers for addressing the energy efficiency of their systems in operation and design, iSERV will move the emphasis on improving the energy efficiency of these important energy consumers back to the people who can best influence this.

To achieve its aims the project partners are looking for the following actors to support the project:

### → Owners and operators of HVAC systems

We are looking for installed and operating HVAC systems to participate in iSERV. A suitable system would have a cooling capacity of greater than 12kW.

The main benefits for owners and operators are:

- feedback on their HVAC energy use patterns and comparison with similar systems,
- understanding of their HVAC energy consumption relative to bespoke benchmarks,
- suggestions on how to improve the in-use energy efficiency of their HVAC systems,
- potentially avoid HVAC system inspections when identified as performing well.

If you have an HVAC system that is suitable for iSERV, and you would be interested in knowing how energy efficient it actually is, then please register on the iSERV website and an iSERV Partner will contact you.

### → HVAC system and component manufacturers

The main benefits for manufacturers are:

- information, comparison and analysis of the in-use energy consumption of systems and components
- the potential to add value to product offerings by making on-board diagnostics data valuable to the client as well.

iSERV is interested in monitoring systems with manufacturers to help improve system and component efficiency, anonymously benchmarking your products in-use energy consumption, automatic monitoring of energy consumption and other relevant parameters. If you are interested then please contact the relevant iSERV Partner through the iSERV website.

### → Building owners/operators and facility managers

One of the main benefits for building owners/operators and facility managers will be obtaining better information on the energy performance of the HVAC systems in the buildings they are responsible for. In particular participants in iSERV will be provided with monthly bespoke HVAC energy consumption benchmarks for the mix of activities served for each HVAC system they enrol in iSERV. This information and the monthly reports on potential energy conservation opportunities based on the energy profiles provided should help clarify the energy saving opportunities and cost benefits to be obtained in their specific system.

### → Legislators or policymakers

The main benefits for legislators and policy makers are:

- firstly, and probably most important in achieving practical energy savings, the ability to write legislation that works with and rewards the end user for good energy efficient design and practice
- the ability to write legislation which requires physical inspections only when they are likely to be effective in achieving energy savings,
- an opportunity to achieve more energy savings in HVAC systems than are possible from inspection alone, and thus to improve the cost-effectiveness of the EPBD transposition.

iSERV is intended to help support and shape the implementation of articles 8, 14, 15 and 16 of the Energy Performance of Buildings Directive (EPBD) recast. The project team is prepared to provide support to MS legislators on any aspect of implementing such a scheme. The first support will be provide in December 2011 when the iSERV Coordinator has been invited to present at the Concerted Action 3 meeting in Vienna for implementation of the recast EPBD.



Further information on the benefits and conditions of participation is available from the project infosheet: [http://www.iservcmb.info/sites/default/files/iserv\\_flyer.pdf](http://www.iservcmb.info/sites/default/files/iserv_flyer.pdf)

Participation is possible in all red (iSERV partner countries) and green (iSERV partner supported countries) coloured countries on the map. Participation for all other countries can be arranged through the Coordinator. For more information, please contact your appropriate Partner as shown in the table below, or the coordinator Dr Ian Knight ([knight@cf.ac.uk](mailto:knight@cf.ac.uk))

PARTNER	COUNTRIES responsible for	PARNTER	COUNTRIES responsible for
<b>Austrian Energy Agency</b>	Austria Germany Denmark	<b>University of Pecs</b>	Hungary Slovakia Czech Republic Poland
<b>Cardiff University</b>	UK Ireland	<b>Univerza v Ljubljani</b>	Slovenia Romania
<b>National and Kapodistrian University of Athens</b>	Greece Cyprus Bulgaria	<b>Université de Liège</b>	Belgium Netherlands
<b>Politecnico di Torino</b>	Italy Malta	<b>University of Porto</b>	Portugal Spain

## reminiscing HARMONAC – reminiscing HARMONAC – reminiscing HARMONAC – re Harmonizing Air Conditioning Inspection and Audit Procedures in the Tertiary Building Sector

HARMONAC was an IEE project carried out from 2007 to 2010 addressing the practical issues arising from the need for regular inspections of air-conditioning systems of over 12 kW cooling capacity as required by the EPBD. The main objective was to examine and quantify the energy savings to be identified through the inspection process and provide a guideline on the cost of the inspection (mainly inspection time).

400 inspection trials and 40 more in-depth case studies were carried out – all of them available on a database. The project was able to identify and analyse 141 different Energy Conservation Opportunities (ECOs). Most of them were related to maintenance and operation of the system, followed by the system itself and its components. A significant energy saving potential by system (between 10 and 50 %) was identified that could lead to considerable electricity and CO<sub>2</sub> emission savings throughout Europe. However, one of the major findings was that many ECOs would only be identifiable through continuous monitoring. This finding led to the idea for the iSERV project.

### More information on HARMONAC

Website:

<http://www.harmonac.info/index.php?id=283>

Final report (240 pages):

<http://www.harmonac.info/fileadmin/downloads/docs/home/HARMONAC%20FINAL%20Report%20-%20Public%20Version.pdf>

Summary – Newsletter 7 (17 pages):

[http://www.harmonac.info/fileadmin/downloads/newsletter/HARMONAC\\_Newsletter7.pdf](http://www.harmonac.info/fileadmin/downloads/newsletter/HARMONAC_Newsletter7.pdf)

Database:

<http://paginas.fe.up.pt/~harmonac/site/?option=case>



## iSERV public workshop – iSERV public workshop – iSERV public workshop – iSERV Results of the first public workshop in Pécs/Hungary

Public workshops for stakeholders (building owners and administrators, HVAC system designers, manufacturers and inspectors and legislators) are a key part of the iSERV communication strategy. The concept is to briefly introduce the work previously done, with focus on relevant tools and findings for the audience. Afterwards the participants are split into discussion groups, each supported by iSERV researchers, where they can ask questions and discuss about the applicability, ideas and concerns related to the project. This helps them to learn more about the methods used and at the same time provide valuable feedback to the project team.



Each internal iSERV project meeting is combined with such a public workshop. The first of these public workshops took place in Pécs in Hungary on 15<sup>th</sup> September 2011.

At the workshop in Pécs participants got a first impression on the iSERV application, how it will work and look like and what will be needed to use it. Afterwards they split into three groups (end users, system designers and manufacturers, legislation and inspection representatives) to discuss their requirements on and concerns about the tool.

Participants especially liked the ability of the iSERV application to check the performance of their own system against benchmarks, that it encourages energy savings and life cycle calculations and can be used as an alternative approach to inspection. Concerns were usually related to the time it takes to enter all required data into the application, the cost of installing the meters (and how to convince people in charge that this investment is necessary and reasonable) and the benefits for designers and manufacturers.



The iSERV project team reacts to both positive and negative feedback. In terms of reducing the time needed to implement the iSERV application, the project team is eager to improve the data entry and support participants in a way that makes it easy for them to use the iSERV tools. Following the Pecs meeting the project has now completed an initial data entry spreadsheet for iSERV that can also be used as a standalone tool to simply collate all the information on an HVAC system and how it serves a building.

Costs for meters to participate in iSERV cannot be covered by the project, but the findings from HARMONAC suggest these costs may be more than covered by energy savings achievable from a better knowledge about the energy consumption patterns of the system.

Participating manufacturers and designers will also benefit from a better knowledge about the performance of systems in use in different countries and the findings on possible energy savings.

The next Workshop will be in Torino on Thursday the 2<sup>nd</sup> February 2012.

Further workshops will be organised in Portugal, Belgium, Greece, Slovenia, Austria and the UK (to be announced on <http://www.iservcmb.info/events>, Newsletter subscribers will receive invitations in advance).



## announcements – announcements – announcements – announcements – announc

**Newsletter 2:** The second issue of the iSERV newsletter is expected to be released in **early 2012**. It will inform you about:

- Details of the iSERV online application – what it looks like, how it can be used, first results
- Required input data from participating HVAC system users
- Possibilities for analysis and recommendations

**Next public workshop:** Torino, ITALY  
Date: 2<sup>nd</sup> February 2012  
Location: Politecnico di Torino. Exact location to be announced on website  
Registration: [marco.masoero@polito.it](mailto:marco.masoero@polito.it); [jacopo.toniolo@polito.it](mailto:jacopo.toniolo@polito.it)



## project partners – project partners – project partners – project partners – project p

Welsh School of Architecture, Cardiff University UK (Project co-ordinator)		K2n Ltd UK	
MacWhirter Ltd UK		National and Kapodistrian University of Athens Greece	
University of Porto Portugal		Politecnico di Torino Italy	
Université de Liège Belgium		Univerza v Ljubljani Slovenia	
University of Pecs Hungary		Austrian Energy Agency Austria	
REHVA EU		CIBSE UK	

For contact details please visit: <http://www.iservcmb.info/partners>



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