Inspection of HVAC Systems through continuous monitoring and benchmarking Intelligent Energy Europe Project Number: IEE-10-272 Acronym: iSERV - May 7th 2011 to May 6th 2014





Quick Start Guide

Version 02.2013

22/10/2013





Dear iSERVcmb participant,

Welcome to the iSERVcmb project.

This guide was designed to help you get started with your participation to the iSERVcmb project.

The following pages demonstrate how to:

- Register on the iSERVcmb official website to ensure you receive all the latest updates and information on the project, as well as being able to download the latest iSERV spreadsheet.
- Upload your building to the iSERVcmb database.
- Advertise your organisation in the iSERVcmb official website and acquire the iSERVcmb logo.

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1 Registering on the iSERV official website

Open the website: www.iservcmb.info



If you have a username and password click on the link Log In and jump to chapter 2, page 6.

If you have no username and password, click on the link **Register** and follow the instructions on page 4.







Open the website: www.iservcmb.info

Click on the link **Register** (see chapter 1, page 3)

Now you can create your personal account through the **<u>Create new account</u>** page:

Username *	User login	Latest Tweets	iSERV cmb newsletter
Password * Password * Create new account Request new password Log in isERVomb Is	Username *	iSERVcmb 17h	Stay informed on iSERVcmb latest new
Create new account iSERVomb 11 Oct Create new account iSERVomb ugdate: 194 14 Oct iSERVomb gatases new password istice the	Password *	iSERVomb@BUILD UP Monthly News Alert Inkd.in/bSUppB3	Previous issues
Create new account Request new password Use the provided us with verified data. Inside the iSERVomb database we now have 1,169 HVAC systems, 4.210 HVAC iSERVomb Soct	·	iSERVcmb 11 Oct	
Log in Auver 1, 168 HVAC systems, 4,210 HVAC	Create new account Request new password	iSERVomb update: 194 buildings have provided us with verified data. Inside the ISERVomb database we now	
isERVcmb 3.0ct	Log in	have 1,169 HVAC systems, 4,210 HVAC	
		iSERVcmb 3.0d	*
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iSERV 9 ops 🎐 H.E.R.O. PARTIC PATING PARTNERS User account Create new account Log in Request new password iSERVcmb Forum Username * Have a question? -•

Please fill in your account information in the user account template.

The marked fields * are mandatory fields.

Confirm your information by clicking the button Create new account.

If all information is correct you will get the following email in the email address you have provided:

Name,

Thank you for registering at iSERV cmb. Your application for an account is currently pending approval. Once it has been approved, you will receive another e-mail containing information about how to log in, set your password, and other details.

-- iSERV cmb team

Now you are registered on the iSERV official homepage.





2 Uploading your building to the iSERV database

To upload your building to the iSERVcmb database you will need to complete the following steps described in details in pages 6 to 18:

- Send your sample data to the iSERV database for checking (p. 7)
- Download the iSERV HVAC Template Data Sheet (p. 8)
- Activate the iSERV HVAC Template Data Sheet's macros (p. 11)
- Insert your building data to the iSERV HVAC Template Data Sheet (p. 13)
- Send your data sheet and full metering data to the iSERV database (p. 18)





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2.1 Sending your sample data to the iSERV database

Before providing further details of your building and systems, please send a sample of your metering data to your local partner. The sample will be sent to the iSERV database in order to ensure that your metering data are in a compatible format. As a standard, we accept data files in .txt or .csv format. If your data is not in any of these formats, you can still send a sample to your local partner for them to check whether it is in a useable format.

The examples below show two potential data file formats. The 1st format is a utility bill (1st 6 hours) for a half hourly meter. The 2nd format is generated by quarter hourly meters attached to a set of chillers. K2n will be able to load any format as long as the date is in the form of a header followed by repeating rows. K2n will need unique identifiers for each meter being loaded.

In this first example the Unique ID is contained in the COREMPAN Column on every row. This type of file could hold multiple meters in it.

The data in this example contains CONSUMPTIONS per interval. The HERO database will use this data directly. Accuracy is lost if any data is missing as estimates are then used for this missing data.

			00:00	00:30	01:00	01:30	02:00	02:30	03:00	03:30	04:00	04:30	05:00	05:30	06:00
COREMPAN	Date	Reading Type													
2100040172872	01/04/2011	kWh	196.10	199.90	197.80	198.80	199.20	195.50	197.90	196.80	199.00	194.50	201.30	221.00	222.70
2100040172872	02/04/2011	kWh	186.40	181.50	182.60	184.00	186.10	188.20	186.20	191.80	187.50	200.80	221.60	219.80	226.80
2100040172872	03/04/2011	kWh	193.10	193.50	191.40	192.10	195.20	194.50	193.90	196.80	197.40	196.80	196.00	192.50	211.00
2100040172872	04/04/2011	kWh	198.40	199.80	198.30	196.60	198.50	197.50	193.70	196.00	200.50	194.60	206.30	205.40	214.20
2100040172872	05/04/2011	kWh	204.30	207.60	202.00	207.90	210.70	209.50	214.70	211.00	207.40	211.30	221.00	216.30	232.30
2100040172872	06/04/2011	kWh	231.00	233.20	231.20	233.80	230.40	231.50	230.10	231.60	231.30	231.80	234.10	232.60	249.20
2100040172872	07/04/2011	kWh	203.50	198.90	199.40	206.40	206.40	207.30	208.10	206.10	210.70	210.90	209.90	210.20	223.40
2100040172872	08/04/2011	kWh	202.60	202.10	201.80	200.80	200.90	207.90	208.80	206.50	207.90	212.60	207.00	212.80	218.00
2100040172872	09/04/2011	kWh	193.20	190.60	192.40	190.00	191.40	185.00	187.90	188.80	186.30	190.10	188.40	189.00	204.80
2100040172872	10/04/2011	kWh	194.10	196.30	193.20	184.80	188.10	186.10	182.80	188.70	187.30	190.80	192.20	187.00	198.10
2100040172872	11/04/2011	kWh	193.80	192.60	193.40	194.30	193.20	191.90	192.40	195.50	196.50	196.30	207.30	209.10	212.00
2100040172872	12/04/2011	kWh	194.80	189.80	192.40	194.30	191.60	192.50	193.80	191.40	192.20	193.50	194.30	193.40	209.50
2100040172872	13/04/2011	kWh	193.40	191.50	191.80	192.30	193.80	192.40	192.30	192.80	193.10	196.20	194.40	191.70	206.70

In the second example below, the Unique ID is the name assigned for each column. This is not always generated by the meter and this example shows meter data generated by manual intervention. It is important the end user knows that if these Unique ID header names are altered then the names in the iSERV database must be updated to reflect the change (FROM the month of alteration only).

The data in this example contains meter READINGS. The iSERV database will convert these into interval consumptions. This type of data is most accurate for overall consumption as the readings allow any missing consumption from missing readings to be accurately known once the readings resume.

	SWB_A_Incomer	SWB_B_Incomer	SWB_A_Chiller_1	SWB_A_Chiller_2	SWB_B_Chiller_3
2009-Oct-01 00:00:00.000	6,164,825	3,565,660	431,465	461,417	733,169
2009-Oct-01 00:15:00.000	6,164,884	3,565,701	431,465	461,419	733,175
2009-Oct-01 00:30:00.000	6,164,940	3,565,739	431,465	461,421	733,180
2009-Oct-01 00:45:00.000	6,164,994	3,565,777	431,466	461,422	733,185
2009-Oct-01 01:00:00.000	6,165,049	3,565,817	431,466	461,425	733,191
2009-Oct-01 01:15:00.000	6,165,096	3,565,855	431,467	461,426	733,195

The final example of a Unique ID is for a meter where the Unique ID is the File name. In this case the file can contain data only for a single meter. The file can be with or without headers in the data provided it is clear what each column of data contains e.g. data, time, meter reading/meter consumption, etc.





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2.2 Downloading the iSERV HVAC Template Data Sheet

Open the website <u>www.iservcmb.info</u> and click on the link Log In (see chapter 1, page 2). In the Log in page, insert your username and password and click on the Log In button:

Username *	iSERVemb 17n ©SERVemb SERVemb@BUIDUP SERVemb@BUIDUP	Stay informed on ISERVcmb latest r
C	ISERVcmb@BUILD UP	Barris in the second
Password		Previous issues
	Inkd.in/bSUppB3	
	iSERVcmb 11 Ort	
	@iSERVcmb	
Request new account	ISERVcmb update: 194 buildings have provided us	
	with verified data. Inside the iSERVcmb database we now	
Login	have 1,169 HVAC systems, 4.210 HVAC	
	iSERVcmb 3.0ct	

After logging in, you will get an **overview** of your account:



To acquire the iSERVcmb HVAC Data spreadsheet, click on the link **Downloads** at the top right or click on the "**Click here to download HVAC data entry spreadsheet**" link at the middle of the page.





You will access a list of the available files you can download:

iSERVcmb Forum	View Edit	
BERVEINBTOTUNT		
Have a question?	Download files	for iSERV users
	Post date Public documents	User documents
	10-10-13	🛃 iSERVcmb Peak Electricity Load CLIMA 2013
	10-10-13	iSERVcmb Case Study CLIMA 2013
	10-10-13	引 iSERVcmb Building Envelope CLIMA 2013
	10-10-13	🛃 iSERVcmb Benchmarking CLIMA 2013
	10-10-13	闭 iSERVcmb REHVA Workshop Timisoara 2012
	10-10-13	ISERVCmb Presentation of Paper REHVA Workshop Timisoara 2012
	10-10-13	🕢 iSERVcmb Convegno Nazionale Padova 2012
	3-10-13	Instructions for exporting building from the database_v02
	16-05-13	How energy efficient are you?
	20-02-13 📓 iSERVcmb Press Release	
	18-02-13 iSERVcmb Best Practice: McKenzie House	
	10-01-13 🛃 iSERVcmb Mock Up Repo	rt
	9-01-13 📓 iSERVcmb Quick Start Gu	ide
	24-09-12 🛃 iSERVcmb Overview Pres	entation
	20-09-12 🕢 iSERVcmb Flyer	
	7-08-12	iSERV HVAC Template Data Sheet - v3_2b.xls
	14-12-11	iSERVcmb Spreadsheet EAO v1 11

To download the latest version of the iSERVcmb HVAC Data spreadsheet, click the following Excel file: <u>iSERV_HVAC_Template_Data_Sheet_v3.2b.xls</u> or click on the "**Click here to download HVAC data entry spreadsheet**" link at the top of the page.





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Once the download is complete, open the iSERVcmb HVAC Data spreadsheet:



Choose your language and click on the button Translate.

The iSERV spreadsheet requires MACROS to be enabled. These macros are required to help you connect your information together within the spreadsheet.

If you receive security warnings regarding macros and content, please accept them all. Then save the file to your hard drive and re-open it. All the macros should then work and you will be able to use the spreadsheet.

'Chapter 2.3: Activating macros in Excel 2010' provides a step-by-step guide for that version of Excel.

If you do not receive any security warning, please jump to chapter 2.4.





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2.3 Activating macros in Excel 2010

Open the iSERVcmb HVAC Data spreadsheet.

Click on File tab.

Once on the File tab, click the **Options** button:



Once on the Excel-Options window, click the Trust Center (or Security Center in older versions) tab:

el Options	-2 <u>-</u> 2
Seneral	Conserol options for working with Evral
ormulas	B deneral options for working with Excer.
roofing	User Interface options
ave	Show Mini Toolbar on selection
anguage	Chable Live Preview
dvanced	Color scheme: Silver ·
astomize Ribbon	screening style: show reature descriptions in screenings
ick Access Toolbar	When creating new workbooks
dd.Ins	Use this fogt: Body Font
and Contex	Font sige: 11
un center	Default view for new sheets: Normal View
	include this many pheets: 3 +
	Personalize your copy of Microsoft Office
	User name: Administrator
	OK. Cancel

Once on the Trust Center tab, click the Trust Center Settings button.





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Once on the **Trust Center Settings** window, click the Macro Settings Tab:



Once on the Macro Settings tab, click the Enable all macros option.

Confirm your settings by clicking the **OK** button and close the Excel file.





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2.4 Inserting your building data

Open the iSERVcmb HVAC Data spreadsheet.

You will find yourself in the Introduction Tab:

	A B C D E F G H I J K L M N O P Q I	R
	Inspection of HVAC Systems through continuous monitoring and benchmarking	
1	Intelligent Energy Europe Project Number: ISE-10-272	
2	Account (SFR)	
4	Transit English	
6	Spaces, activities and HVAC systems data spreadsheet	
7	Building:	
9	Data applicable from:	
11	Created by K2n Ltd	
13	NO 1	
14	Fyou have any questions or issues related to this spreadsheet then please check the iServ website at http://www.iservcmb.info/, the K2h website at http://www.is	
15	x send an email to info@k2nenergy.com	
17	This spreadsheet can be used to collect and maintain data required for mandatory Inspections of Heating, Ventilation and Air-conditioning systems	
19	is well as to collect data for use within an ISCHY type denomination process for assessing the performance or these systems	
21	The sole responsibility for the content of this spreadsheet lies with the authors. It does not necessarily reflect the opinion of the European Union.	
23	tenther the EACL not the European Commission are responsible for any use that may be made of the information contained therein.	
24	Disclaimer	
26	SERV wishes to allow all potential participants to minimise the time they need to spend to enter their initial data into the ISERV database, as well as help consolidate information of value to them during HVAC inspections.	
27 28	ISERV therefore freekuprovides this Excel Workbook for these purposes subject to the following canditions:	
29 30	1 The Liber shall not market, sell, distribute or transfer the software or any part thereof without the prior written consent of the ISERV Coordinator;	
31	2. The User acknowledges that the ISERV software is new and may therefore have inherent defects, errors or deficiencies;	
32	 The User uses the ISERV software at the User's own risk, and on the strict understanding that the User will not hold ISERV or its agents engaged in the software development liable for any loss or damage arising from the use of the ISERV software 	a
33	4. To the fullest extend permitted by Inv. (SERV excludee any and all liability in nespect of loss or damage, whether personal (including cleath or personal injunt) or to property and whether direct, consequential or ppecial (including consequential financial loss) of the Loss or any third party, however caused, arrang directly or indirectly out of the Lost's use of, or installity to use, the ISERV software	
34	5. ISERV makes no warrantino, express or implient, as to the merchantability or fitness of the ISERV software for any particular purpose	
26	6: Although upgrades of the ESERV software may be made available from time to time, ESERV cannot undertake to email or notify users of the software of any such upgrade, and it shall be the responsibility of users assure degrades where the software to the software of any such upgrade, and it shall be the responsibility of users assure degrades where the software to the software of any such upgrade, and it shall be the responsibility of users assure degrades and the software to the software of any such upgrade, and it shall be the responsibility of users assure degrades.	310
14	🕑 M 🛛 Introduction 🖉 Main / Schedules / Example - Single Space / Example - Complex Space Min / Example - Complex Space Full / Certiflash / Cha	nge Lo

Choose the **Main** tab to bring up the sheet shown below:

∢ ► ►I In	troduction	lain / Sche	dules 🖉 E	xample - S	Single Space	e / Exa	mple - Com	plex Space	Min / I	Example - C	omplex Sp	ace Ful	Certiflash	Chang	e Log 🦯	
It is important th To enable macros 1 Accept all secur 2 Save the file to 3 Re-opening the	at you read these in do the following: ity warnings and enabl a location on your hard file from your hard driv	structions for us e macros drive and close th re will now enable	e file all the macros	sheet before t	r first use:	U.	n		J	, K	L	R	N	U	P	u
Data applies from this	: date (ddinmlyyyy):]	19/08	Brow manuform	143	ingost from CBV									
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			10		_		_			_	_	_		_	_	
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Space			296				ALC IN LIGHTS									
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	1			060	645	0.60	060	040	4465	Schubble - Wale Building	045	0940	045	0.65		

Fill in the details of your building. A suggested methodology is presented in the next few pages but you can complete the sections on the sheet however you wish.





2.5 Suggested methodology for completing the iSERV spreadsheet

To describe your building using iSERVcmb spreadsheet, please complete the following steps:

• **Describe the building spaces** and **the main activity** that occurs in each of them by acquiring a list of all conditioned spaces in your building. To describe each space you will need to provide its name, gross floor area, and activity.

You should treat a space as conditioned by a HVAC system if it is clear that its temperature and ventilation will be achieved by the HVAC system either directly or indirectly e.g. a small store room/cupboard may not have any direct connection to the HVAC system but may be heated and ventilated indirectly from the adjoining space.

It is not mandatory to list unconditioned spaces, however, it is advisable to record and list all spaces in each building so that all areas are accounted for when the Gross Building Area is calculated.

Describing the spaces first allows you to then locate meters and HVAC components in the spaces they occupy as you describe them in the next stages.



• **Describe the building HVAC components** including their physical locations, by listing all the elements of your HVAC system noted individually i.e. pumps, fans, boilers, chillers, etc., with their attendant data such as nominal power ratings, manufacturer, serial numbers, etc..



ALL Components should be recorded e.g. if you have 500 Fan Coil Units they must each be recorded individually. The reason for this is that they collectively form an important and controllable load.

For some components you can check the HVAC component data with Eurovent Certification by using the following link: <u>http://www.eurovent.com</u>

The more technical specification details you can provide for each HVAC component, the more ECOs you will potentially have access to.

As a minimum you should provide the 'nominal power rating' where possible i.e. the amount of power this system would normally expect to draw when running at full speed.

• **Describe the building HVAC SYSTEMS.** These are simply aggregations of individual HVAC components into the individual HVAC systems that serve the building. Only an HVAC SYSTEM can be connected to a Space. A System will normally be described at the level of e.g. an AHU or an individual split Air-Conditioning Unit.

An HVAC component can serve more than System e.g the Heat Generators will probably serve most of the major HVAC systems in a building.

An HVAC component can also be a system e.g. a toilet extract fan.

• **Describe the building utility meters**, including their physical locations by acquiring a list of list all meters and sub-meters in your building including the main incomer meter. When describing your meters and sub-meters, you will need to define their type and units and the unique meter ID which describes the header of the sub-hourly data files for each meter.

After the meters, spaces and HVAC components are described, you should proceed to connect them by connecting:

- the meters to the HVAC components and other processes, such as lighting and small power, that they serve,
- the HVAC components to the systems they serve,
- the HVAC systems to the spaces they serve.
- the lighting and small power processes to the spaces they serve





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Once the MAIN tab is complete, press the VALIDATE button and amend any errors highlighted.

Choose the Schedules tab:







Fill in the details of your building's schedule(s). This is only to give the system an indication of schedules in the building as a whole. More detailed schedules can be entered if required within the online system.

If you need help to fill in the information of your building:

- Have a look at the **Example Single Space** tab of the iSERVcmb spreadsheet.
- Have a look at the **Example Complex Space Min** tab of the iSERVcmb spreadsheet.
- Have a look at the **Example Complex Space Full** tab of the iSERVcmb spreadsheet.
- Download the **iSERVcmb_FAQ_vx.xx.pdf** from the iSERVcmb website available in the download area. The iSERVcmb FAQ document is available in English and contains 56 questions and answers regarding the spreadsheet's function and content.

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	iSED	
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	LM	PROJECT
	Post	
	date Public documents	User documents
	10-10-13	iSERVcmb Peak Electricity Load CLIMA 2013
	10-10-13	🔀 iSERVcmb Case Study CLIMA 2013
	10-10-13	🕢 ISERVcmb Building Envelope CLIMA 2013
	10-10-13	iSERVcmb Benchmarking CLIMA 2013
	10-10-13	📓 iSERVcmb REHVA Workshop Timisoara 2012
	10-10-13	iSERVcmb Presentation of Paper REHVA Workshop
	10 10 12	Timisoara 2012
	10-10-13	Instructions for exporting building from the
	3-10-13	database v02
	16-05-13	How energy efficient are you?
	20-02-13 📓 iSERVcmb Press Releas	e
	18.02.13 iSERVcmb Best Practice	8
	McKenzie House	
	10-01-13 📓 iSERVcmb Mock Up Reg	port
	9-01-13 📓 iSERVcmb Quick Start 0	Suide
	24-09-12 JiSERVcmb Overview Pre	esentation
	20-09-12 🛃 iSERVcmb Flyer	
	7-08-12	IN ISERV HVAC Template Data Sheet - v3_2b.xls
	14-12-11	G iSERVcmb Spreadsheet FAQ v1.11
	14-12-11	ⓓ ISERVcmb Spreadsheet FAQ v1.11
	14-12-11	G ISERVcmb Spreadsheet FAQ v1.11

• Contact your local iSERVcmb Partner





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2.6 Sending your data sheet and full metering data

After completing the iSERV HVAC Template Data Sheet, please send it to your local partner. You will then be notified if any corrections are needed. Once your local partner confirms that your data sheet is ready, he/she will send it to the iSERVcmb database along with your metering and sensor data for verification and configuration.

Once the building and data have been added to the database, you will be notified by your local partner who will also provide you with:

- a username and a password to access the iSERV online application,
- an email address for the meter and sensor data files to be sent on a monthly basis.

F	Benchmarks		- CIVIB
SERV Reports - Building Reports	Home AssetManagement DataEntry Re	ports Admin	Cardif University • kopow
htpot Nangato 44 Isolations - University Hall 44 Isolations - Cartering Hole Native 44 Science - Cartering Hole Native 44 Packaters - Cartering Hole Native 44 Residence - Science Native and Human Hole Haldings 44 Residence - Science Native and Human Hole Native 44 Native - Science - Science Native And Human Hole Native 44 Native - Science - Science Native And Human Hole Native 44 Native - Science - Science Native And Human Hole Native 44 Native - Science - Science Native 44 Native - Science - Scie	McKenzie House Die Kage* Conungeon Die Kage* Conungeon Die Kage* Conungeon Repris Modely Rolling Annual Conungeon per rel Utter Provin Executive * rom Die emder * rom Die emder<	Description Shows recording annual consumption values are calculated by taking the taking the subscription of the subscription of the subscription of the subscri	prem2 for a fluiding over a configurable date range. The samethy notify group and dividing it by the same the previous 2 months consumptions and dividing it by the same the previous 2 months consumption. It alreads the same the previous 2 months consumption is alreads to constrain the previous 2 months constrained to the previous 2 months con





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3 Advertising your organisation

If you want to share your logo for publication to the iSERVcmb official website, send the logo to your local iSERV partner. Your logo will be published here:

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	The ISERVcmb project is now looking for interested ac (owners or operators of HVAC systems. HVAC system or compone facility managers. legalators or policymakers) to participate in the ISERVcmb project.	tors I I I I I I I I I I I I I I I I I I I	
ل	atest version of HVAC data en g in or Greate an account to download latest HVAC data entry spreadshe	ntry spreadsheet «	
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Inspection of HVAC Systems through continuous monitoring and benchmarking

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