

Technical Bulletin March 2020

Welcome to the ecmk quarterly Technical Bulletin

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Please do contact us if you would like any other subjects covered in future bulletins.

Many thanks and we hope you enjoy the bulletin.

Stephen Farrow Scheme Manager





Domestic: Micro-CHP

Micro combined heat and power (micro-CHP) is a technology which generates heat and electricity simultaneously, from the same energy source, in individual homes or buildings. The primary function of a micro-CHP system is to provide heat to a building, with a secondary function to generate electricity. Many micro-CHP systems are similar in size and shape to normal domestic boilers and are often interchangeable. Domestic micro-CHP systems are currently powered by mains gas or LPG. There are <u>three types of micro-CHP</u> boilers but the Stirling engine and Fuel cell CHP systems are the ones commonly found in domestic properties.



District / community CHP

(image source: http://www.greenspec.co.uk/building-design/micro-chp/)





Micro-CHP can be recorded several ways in RdSAP. If the boiler serves a single property, then it should be recorded as its main heating system. This can be done by either using the PCDB or manually entering the system. Currently, there is only six micro-CHP system listed on the PCDB:

Brand name, Model name, Model qualifier	¢	Output power (kW)	¢
Baxi, Ecogen 24/1.0		24.0	
EHE, Whispergen EU1		14.0	
EHE, Whispergen EU1A		12.5	
Baxi, Ecogen System		24.0	
FLOW, Flow 14H/1.0		12.8	
Viessmann, Vitovalor , 300-P		20.0	

If you encounter a micro-CHP system that is not listed on the PCDB then you will have to record it manually in the software. Fortunately, you are not required to identify which type of micro-CHP is present. However, please remember to include Addendum 3 that adds the phrase *"The performance characteristics of the micro-CHP system in this dwelling are not known and default values were used for the assessment."* Micro-CHP systems can also provide domestic hot water via an external or internal hot water cylinder.

Micro-CHP can also be found in community schemes that provide heat and power to several buildings. You will need to obtain documentary evidence to show a community micro-CHP system is present.

Capital costs to install micro-CHP systems can be high and payback periods can be long. However, the UK Government has introduced several fiscal and financial support mechanisms designed to improve the economics of developing and operating certified CHP systems. More information regarding these incentives can be found <u>here</u>.

Domestic: Community Heating

Community heating can appear in many forms when recording in RdSAP. It can range from large scale community schemes that serve hundreds of properties to small scale boilers serving a handful of properties. There have been several cases raised with our technical helpdesk that we are going to try and clarify in this bulletin.

Convention 4.05 defines community heating as "A system in which a heat generator provides heat and/or hot water to more than one premises". Community schemes can be recorded either via the PCDB or entering manually into RdSAP. However, currently there is only one community scheme in Lerwick, Shetland listed on the PCDB and therefore most systems will be recorded manually.







Below are a few examples of community schemes and how they should be recorded:

In the above example, you have a house containing a combi boiler on the left that also provides heating and hot water to a self-contained annexe. If you were to be instructed to carry out an EPC on each property, the heating in the main house would be recorded as the combi boiler, whereas the heating in the annex would be recorded as a community scheme. The same methodology would apply to a large property that has been split into flats with heating from one boiler, or a flat above a commercial premise where the boiler is located within the premises below.



(image source: https://www.vitalenergi.co.uk/hius-metering-and-billing/hius)

The example on the left shows a scaled down version of what might be found in a block of flats with community heating. There is commonly a plant room within the building that you will not be able to access. You should endeavour to determine the fuel type of the community scheme via on site observations or documentary evidence. However, if you are unable to assert the fuel type, convention 4.06 should be applied and mains gas recorded.





It is often the case that community schemes will provide heating and hot water for a property. In this scenario, hot water should be recorded as "from main heating 1". The option "Hot water only community scheme" is reserved for properties that have independent heating e.g. Storage heaters, but the hot water is from a community scheme.

When recording hot water from a community scheme, you are asked to record the cylinder details. The cylinder is only recorded if it is located within the property you are assessing. For example, the diagram on the left, "no cylinder" would be recorded as it is within a plant room outside of the dwelling. The option "no access" indicates that the cylinder is located within the property you are assessing, but you are unable to access its location. Therefore, the software uses default assumptions about the cylinder size and insulation.

Many large-scale community systems such as large apartment complexes have Heat Interface Units (HIU's) within the individual properties that act as a bridge between the central boiler and the heating and hot water systems of the individual apartments (see image on right). These can often be mistaken as electric boilers as there is no flue and they appear like a boiler.



(image source: http://www.buildingconstructiondesign.co.uk/news/evinox-energy-launch-cibse-accredited-cpd-seminar/)

Domestic: Portable heating

We have noticed through the audit process that some of our assessors have been including portable heating as part of their assessment, either as main heating or secondary heating. This is incorrect. Only fixed heating should be recorded. The following images are examples of portable heating that should **NOT** be included in any circumstance:







Convention 5.01 provides clarification on secondary heating. It also states that Electric focal point fires are included even if not wired by fixed spur. For example, a simple room heater may be attached to a wall by a fixed bracket but may be powered by a domestic socket and not a fused spur. This would still be included in the assessment as it is a fixed heating system.

Domestic: Electric Panel Radiators

Many landlords are being sold Electric radiator systems that are programmable with appliance thermostats and look like normal central heating radiators such as these. There are certain brands that are prominent – Fisher Radiators for example.

These systems are very expensive to install, typically over £4,000.

Whilst these offer more control for the Homeowner, they are basically, electric panel radiators operating at full rate standard electric tariff. So many Landlords and individual householders are shocked when the new EPC tumbles from a 65 to a 50, or even worse from an E rating to an F rating

The Suppliers make extravagant claims about these systems, but they do not work like storage heaters that basically use cheap night rate electricity and store this in the substantial mass of concrete blocks and thereafter release the heat stored during the day.







Domestic: Back Boilers / Secondary Heating

A back boiler is so called because they are usually located at the "back" of a fire and at the bottom of a chimney breast. The boiler and the fire work independently to each other and the boiler, due to the fire being in front, is not normally seen or easily visible except through removing the flap on the underside of the fire itself which will also reveal the boiler controls. The majority of back boilers are fuelled by main gas or solid fuel and normally provide the properties hot water supply as well as space heating.







Back Boiler

Where water heating is from a back boiler or room heater with boiler, and the boiler provides water heating only, the appropriate fire or room heater is identified in the data collection



process, and the water heating is identified as "from main system" or "from secondary system".

Where the back boiler provides space heating:

• if gas, the back boiler is selected as main heating, the associated fire is selected as the secondary heating, and the water heating is from main system.

• if oil or solid fuel, the combination of room heater and boiler is selected as main heating and the water heating is from main system.





Domestic: Cylinder insulation

Convention 6.05 covers the various types of cylinder insulation that you may come across during surveys and how they are recorded in RdSAP. Below are examples of the insulation described in the convention:



The above are all unvented pressurised steel or plastic encased hot-water storage units. Despite their differing appearance and volume, the insulation is recorded in the same way for each as 50mm factory-applied foam. Please also note that it is also assumed that there is a cylinder thermostat present.









Elson tanks are relatively old type of hot water storage units and are quite rare as many have been replaced. However, the convention states that the insulation thickness should be recorded where possible and entered as factory applied insulation. If you are unable to measure the insulation thickness, then "no access" should be recorded. There is also no assumption for a cylinder thermostat so you should check for its presence.



There may be some cases where you find a cylinder that has both spray foam and jacket insulation. The convention has been recently updated to explain how this is recorded. It explains that you should record the thickness of the spray foam, plus $\frac{1}{3}$ of the depth of the jacket.

For example, you might have a cylinder that has 25mm spray foam and an 80mm Jacket. Therefore, $\frac{1}{3}$ of 80mm is 26.7mm. Add that to the 25mm spray foam to get a total of 51.7mm. This is then inputted as 50mm. Please ensure that you always round down to the nearest entry value.

Domestic: Mechanical Ventilation

Mechanical ventilation

Mechanical ventilation systems use continually running fans. They can be input-only, extractonly or balanced (input and extract).

Mechanical ventilation systems

(a) **Positive input ventilation (PIV)**

Positive input ventilation is a fan driven ventilation system, which often provides ventilation to the dwelling from the loft space.

The SAP calculation procedure for systems which use the loft to pre-heat the ventilation air is the same as for natural ventilation, including 20 m^3/h ventilation rate equivalent to two





extract fans or passive vents. (The energy used by the fan is taken as counterbalancing the effect of using slightly warmer air from the loft space compared with outside).

Some positive input ventilation systems supply the air directly from the outside and the procedure for these systems is the same as for mechanical extract ventilation.

(b) Mechanical extract ventilation (MEV)

MEV is a fan driven ventilation system, which only extracts air from the dwelling. The SAP calculation is based on a throughput of 0.5 air changes per hour through the mechanical system.

MEV can be either:

- centralised: air is extracted from wet rooms via ducting and expelled by means of a central fan, or
- decentralised: air is extracted by continuously-running fans in each wet room.

(c) Balanced whole house mechanical ventilation

Balanced ventilation provides fresh air to habitable rooms in the dwelling and extracts exhaust air from wet rooms.

A balanced system without heat recovery extracts from wet rooms via ducting and expelled by a central fan.

Air is also supplied to habitable rooms, either via ducting and a central fan or by individual supply air fans in each habitable room. The SAP calculation is based on a throughput of 0.5 air changes per hour through the mechanical system, plus infiltration.

In a balanced system with heat recovery (MVHR) both the extract and supply air are provided via ducting, with a heat exchanger between the outgoing and incoming air.

Data required

Centralised MEV: The system's Specific Fan Power (SFP) and whether the ducting is rigid or flexible.

SAP 2012 version 9.92 (October 2013)

Decentralised MEV: SFP of each fan together with the fan's ducting arrangements (the fan can be in the ceiling of the room with a duct to the outside, or in a duct, or in a through-wall arrangement with no duct).

Balanced mechanical ventilation without heat recovery. SFP taking account of all fans and whether the ducting is rigid or flexible.

MVHR. SFP as a single value for the system as a whole, the efficiency of the heat exchanger, whether the ducting is rigid or flexible and whether the ducting is insulated (where outside the building's insulated envelope).

For systems that have been tested according to the SAP test procedures for mechanical ventilation systems (details at www.ncm-pcdb.org.uk/sap) the tested data from the Product Characteristics Database should be used for the calculations.

Applies to whole house ventilation system only. Otherwise natural ventilation is assumed. Intermittent extract fans (kitchen and bathrooms) are not a mechanical ventilation system for SAP calculations, but continuously running extract fans in wet rooms are treated as mechanical extract ventilation.





Domestic: Unheated Corridors

We have noticed through the auditing process that many of our assessors are not modelling unheated corridors to flats correctly.

The key point is to remember that the unheated corridor length is always included in the Heat Loss Perimeter (HLP). For example, if the unheated corridor length is 4.32m and the exterior wall is 11.68m, then the total HLP recorded is 16m.

The next point to remember is that the wall between the flat and the unheated corridor is <u>always</u> recorded as a sheltered alternative wall, even if the construction is the same as the main building construction. The alternative wall is recorded in the same way as a normal alternative wall in terms of construction and wall thickness. However, there is no need to calculate the wall area as when the alternative wall is selected as sheltered, the software calculates the wall area using the unheated corridor length and room height that you enter. A deduction is automatically made for a door into the corridor as well.

Please refer to conventions 2.03 and 2.13 for further guidance on modelling sheltered corridors and alternative walls.

CPD Uploading & Evidence of Completion

ECMK members are required to attend a minimum of 10 hours of Continual Personal Development per year in order to keep up with this constantly evolving industry. An additional 5 hours is required per additional qualification, for example a DEA and NDEA will require a minimum of 15 hours per year of CPD.

All ECMK members are also entitled to 4 hours of FREE CPD each year.

A recent audit of assessor CPD records has highlighted some inconsistencies with members' CPD and the records provided.

Members are reminded that:

- CPD must be relevant to the qualification.
- Any certificates must be uploaded with the claimed hours.
- If the CPD is self-learning or reading, then please use the CPD planner provided on Assessor Hub, ACC-105a, or a brief summary of the learning outcomes should be provided.

Please refer to the scheme guidance document ACC-104





PAS 2035 Retrofit

What is it?

A review carried out in 2015 by leading industry experts into how public and privately funded domestic retrofit projects were delivered, resulted in a report "Each Home Counts", which made recommendations covering:

- Consumer Protection
- Advice & Guidance
- Quality & Standards
- Skills & Training
- Compliance & Enforcement
- Insulation & Fabric
- Smart Metering
- Home Energy Technologies
- Application to Social Housing

From this report a number of workgroups were started to investigate the way forward in solving these recommendations.

The "Each Home Counts" report is geared to ensure the installed measures are the best and most appropriate for that particular property and its occupants as previous energy efficiency policies were criticized for taking little account of what is best for the home or occupants but to maximise the grant funding mechanism by installing costly and in some cases, unnecessary measures.

Energy Company Obligation was at the heart of this whereby new, energy efficient boilers or heating systems were installed in properties that were not insulated which made little sense. Properties were not checked for suitability before measures were installed which led to failures and in some cases remedial works being carried out to bring the property back to its original state due to bad workmanship and or the properties poor state of repair.

The governments Net Zero commitment by 2050 can only be achieved if each property's full potential is recognised. At present ECO has delivered on average just over 1 measure per household but for Net Zero to be successful and within the timescale set, this needs to be increased to 3 measures per household or dwelling.

PAS 2035 will ensure that consumers receive good advice and that properties are assessed by trained qualified and competent Retrofit Assessors who will consider the condition of the property and its suitability for improvement, not just the energy saving opportunities. This standard will also lay out a medium-term improvement plan for each property, detailing all works which will maximise the energy efficiency potential, including essential maintenance works to uphold the effectiveness and durability of the installed measure.





This will create a much greater chance of meeting the Governments policy within the timescales set. Costs will be reduced as more measures are installed. More preparation work will be required for improving the homes energy efficiency and by making sure only suitable properties have retrofit works carried out this will reduce the cost of failures and remedial works.



www.trustmark.org.uk

Shall I get involved?

Any dwellings requiring energy efficient retrofit works will need to be assessed by a Retrofit Assessor who will collect and provide property information and data for Retrofit Coordinators to enable a relevant improvement plan to be developed.

A little like the Green Deal process, dwellings will be assessed using RdSAP to support the data gathered along with a Property Condition report detailing the suitability of the property for any improvements and an Occupancy assessment after detailed discussions with the client, on how energy is used within that dwelling presently.

From this data, the Retrofit Assessor can determine which installation measures are most suitable for that particular property and also feed this data back to any other parties involved within the PAS 2035 process, ie: the Retrofit Coordinator, amongst other interested parties.

The transition to Retrofit Assessor is quite a simple one if you are already an acting DEA (Domestic Energy Assessor) or GDA (Green deal Advisor). This is due to many of the practices as a DEA being implemented as a Retrofit Assessor, so for example a Retrofit Assessor will need an RdSAP energy report as well as a detailed floor plan accompanied by a full property condition report recording a room by room account of the condition of the properties windows, walls and services etc. A full Occupancy assessment will also be required determining how the property is used and recording fuel bill data.

DEAs are well placed to becoming Retrofit Assessors as the knowledge and experience of carrying out energy assessments is forefront in the retrofit Assessor Training.



For further information regarding the RetroFit Assessor Training please visit https://www.ecmk.co.uk/training-courses/retrofit/retrofit-assessor-training/





Retrofit Coordinator

In order to comply with PAS 2035, all retrofit projects will be required to be managed by an approved Retrofit Coordinator, responsible for overseeing the assessment of dwellings as well as the subsequent specification, monitoring and evaluation of energy efficient measures. The Coordinator will also manage the retrofit project from inception to completion, liaising with all parties involved, ensuring effective project management. The building owner, Retrofit Assessors, Designers and Installers will all need to be a part of the overall development process to ensure a smooth retrofit package is installed in accordance with the PAS 2035 process.

The Retrofit Coordinator will compile a risk assessment for each dwelling, as well as a project plan complete with a medium term improvement and maintenance plan covering a 30 year period from the installation of any retrofit measures.

Professionals from a range of backgrounds can ultimately train to become a Retrofit Coordinator and can then specialise in delivering whole house retrofit projects under the PAS 2035 guidance which is fully backed by TrustMark and the Governments 2050 Net Zero commitment. Demand within this area for qualified individuals, Coordinators and Assessors, will increase over time and with greater knowledge and exposure to the PAS 2035 derivative.

For further information regarding the RetroFit Coordinator Training please visit : https://www.retrofitacademy.org/



PAS 2035: Retrofit Assessor Training

ECMK will be delivering a range of courses and events based around the implementation of the PAS 2035 standard.

PAS 2035 is set to change the way domestic retrofitting is carried out in the UK.

PAS 2035 is the overall certification document within the retrofit standards framework and all TrustMark holders will be required to comply with this standard when carrying out any domestic retrofit work. Climate change targets suggest a substantial reduction of greenhouse gasses need to be made by us all. This means improvements must be made to the existing building stock within the UK which equates to around 27 million domestic buildings needing retrofitting works to be carried out.





New EU objectives means that PAS 2035 will be a major mechanism in achieving the Near Zero Energy Buildings target (NZEB)

Retrofitting is one mechanism that is proving crucial to improving quality in the built environment and there is an increasing opportunity to professionalise this type of work.

Though the PAS 2035 is still in its infancy, ECMK are developing formal training and certification to offer energy assessors.

As PAS 2035 develops, we will be informing DEAs of the updates to the certification and training.

ECMKs PAS 2035 Retrofit Assessor Scheme will deliver training and CPD sessions geared around the Retrofit Assessor Role where by DEAs will be authorized to carry out a Retrofit Assessment which is a non-intrusive on site assessment allowing a retrofit coordinator to carry out a Medium Term Improvement Plan based on the evidence gathered from the assessment.

> PAS 2035 Retrofit Assessor Training £499.00 + VAT 2 Day Intensive Course at our training centre in Solihull

If you do have any further questions or queries then please contact us via email: info@ecmk.co.uk





Upcoming CPD Webinars

	March	Cost (+ vat)*
Measuring & Modelling	Fri 6 @ 1600-1700	£15.00
Secondary Heating	Mon 9 @ 1300-1400	£15.00
Plan Up Floor Plan	Tues 10 @ 1000-1100	£15.00
Primary Heating Fundamentals	Fri 13 @ 1600-1700	£15.00
Lighting & Storage Heaters	Fri 20 @ 1600-1700	£15.00
Mini Audit: Tips & Hints – How Not to Fail	Mon 23 @ 1000-1100	£15.00
Aging Property	Tues 24 @ 1500-1600	£15.00
Advanced Heating	Fri 27 @ 1600-1700	£15.00
Conventions Quiz	Tues 31 @ 1500-1600	£15.00

Upcoming Courses

		March & April	Cost (+ vat)*
PAS 2035 Retrofit Assessor	2 Day Course, Solihull	Wed 11 - Thurs 12	£499.00
Cert DEA	5 Day Course, Solihull	Mon 16 - Fri 20	£1295.00
PAS 2035 Retrofit Assessor	2 Day Course, Solihull	Wed 25 - Thurs 26	£499.00
PAS 2035 Retrofit Assessor	2 Day Course, Paisley	Tues 31 – Wed 1	£499.00

*Costs listed are for ecmk members

Click <u>here</u> to find out more and to book your place!

If you are looking for something more bespoke, we can deliver courses nationwide.

For further information, more course dates and to book your place: Email: <u>training@ecmk.co.uk</u> or Visit: <u>www.ecmk.co.uk/training</u>



All ecmk members are entitled to 4 hours free CPD every year. Call 0333 123 1418 to make your claim and ask about our CPD courses.

