EHI POSITION on Lot 1 and Lot 2 preparatory review studies

This document provides comments of the European Heating Industry on the draft final report of the review studies of the Ecodesign and Energy Label Regulations on Space and Combination heaters, Water Heaters, presented by VHK in March 2019 and following the 26 April 2019 stakeholders’ meeting. This document reflects on various points, to provide replies to the deep and extensive options for changes presented by VHK.

KEY HORIZONTAL MESSAGES

❖ The Energy Label and Ecodesign should promote energy efficiency gains; in particular, the energy label helps the modernisation of old and inefficient appliances; downgrading energy efficient products on the energy label scale will slow down the uptake of appliances that bring efficiency in the homes of Europeans. Therefore, a thorough assessment should be applied to the introduction of a new Conversion Coefficient (CC).

❖ Greening energy carriers, e.g. thanks to hydrogen and biogas, is important for the decarbonisation of buildings and should be supported; whether to apply it on Ecodesign and Energy Label needs further assessment and should not be used as a reason to downgrade technologies bringing efficiency in buildings.

❖ Today’s calculation methods are appropriate to establish the relevant Ecodesign and Energy Label values, both for boilers and for heat pumps; the Ecodesign and Energy Label for heating appliances take into account results from research and behaviour of appliances that are still valid today.

❖ Apply third party conformity assessment (TPCA) to all products in Ecodesign Lot 1, to space heating energy efficiency values and sound power level values; the aim is to ensure a level-playing field among technologies, while considering the specificities of the various product groups. TPCA should be applied under important conditions, which are listed below (section 4).

❖ Temperature controls for space and combination heaters and solar devices should be dealt with in Lot 1, as part of packages; the package label offers important advantages: it has helped many installers provide customers with complete, turn-key solutions, fit for their home or building; it gives installers freedom to combine certain products such as temperature controls from different manufacturers and generate their own package labels; it is easy to use.
Consider the extension of the Medium Combustion Plant Directive (MCPD) to heaters between 400 kW and 1 MW, because the MCPD compliance assessment is well suited for monitoring the emissions of boilers between 400 kW and 1 MW.

Investigate further the application of tolerances in the verification procedure for market surveillance; the current 8% tolerance to verify the seasonal space heating energy efficiency of boilers could be reduced. However, whether and by how much need to be determined, based on further assessment.

About EHI, the Association of the European Heating Industry

EHI represents 90% of the European market for heat and hot water generation, heating controls and heat emitters, 80% of biomass central heating, as well as 75% of the hydronic heat pump and solar thermal markets. Our Members produce advanced technologies for heating in buildings, including: heating systems, burners, boilers, heat pumps, components and system integrators, radiators, surface heating & cooling and renewable energy systems. In doing so, we employ directly more than 160.000 people in Europe and invest more than 700 million euro a year in energy efficiency.
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PART I. HORIZONTAL CONSIDERATIONS

1 The Energy Label and Ecodesign should promote energy efficiency gains.

The EU has set for itself ambitious climate and energy targets for 2030 and aims for decarbonisation by 2050.

The EU energy label for heaters is a key instrument to achieve these targets, because it allows people to identify at a glance the most efficient heating appliances, when they purchase them. Ecodesign plays also a crucial role, as it provides the minimum requirements for products to be installed in the homes of Europeans.

As recognised in the Energy Label framework Regulation (2017/1369 EU, recital 17) the current setting of the energy label scale for heaters helps the uptake of energy efficient appliances. Indeed, the Energy Label increases the efficiency awareness of consumers. And this is much needed, because currently more than 60% of all the heaters installed in buildings in Europe are old and inefficient, but uptake of new and efficient products is slow. Awareness is so important that in some EU countries there are specific programmes to label old appliances. The result? Many of these old and inefficient heaters end up in classes C, D or lower.

But the current proposal for a review of the energy label for heaters will slow down the uptake of appliances that bring efficiency in the homes of Europeans. Why? Because it downgrades new, efficient products on the energy label scale. In addition, in countries where already installed appliances are labelled, people will be further confused: they may see that a new, efficient heater will have the same label class of an old and inefficient appliance. This means that they will not see the potential energy efficiency gains from new appliances.

This is why, before introducing changes in Ecodesign and in the Energy Label, a thorough assessment is needed. This assessment should be applied also to the introduction of a new Conversion Coefficient (CC), based on the Primary Energy Factor (PEF, the change of which EHI supported in the framework of the Energy Efficiency Directive).

Once this analysis is done, any change to the energy label and Ecodesign limits should ensure that:

1) Appliances bringing energy efficiency in the homes of Europeans are promoted on the label. Listing condensing technology in classes C or D would downgrade them on the scale and give a wrong message to consumers, i.e. ‘these appliances are not efficient’. On the contrary, condensing technology increases energy efficiency by about 25% compared to old and inefficient appliances. Therefore, it would be counterproductive, to change the place of condensing technology on the energy label scale – currently classes A or B. This applies even with the introduction of a lower CC for electricity, because condensing uses very little electricity. Moreover, downgrading condensing boilers has the effect of relegating also solar thermal systems on the label scale. In this context, it is important to underline that the recent review of the Energy Label framework legislation has established that heaters should not be downgraded on the energy label scale before the 2026 review, in line with the need to promote the adoption of energy efficient appliances in Europe’s buildings. And the scale should be in line with the principle stated in the framework Regulation (2017/1369 EU, recital 17). Hence the scale
should rank heating technologies that use renewable energy, or produce energy, in classes above A.

2) Even more efficient appliances, including electric and thermally driven heat pumps, as well as micro-cogeneration, should be promoted in the top levels of the scale. EHI is working on proposals to this aim and will submit them when ready.

2 Greening energy carriers, e.g. thanks to hydrogen and biogas, is important for the decarbonisation of buildings.

The future greening of energy carriers (e.g. electricity, gaseous fuels) is a crucial development towards the decarbonisation of buildings and of the EU economy. It should therefore be promoted, also at the EU level.

Should the greening of gas be promoted via Energy Label and/or Ecodesign?

2.1 Evaluate the impact of referring to hydrogen and biogas on the Energy Label.

The review study draft reports propose to include bonuses on the energy label scale, for boilers which are ‘H2 ready’ or placed on the market to run exclusively with biogas. Such an option should be explored and defined further, while avoiding any unwanted effect of misleading consumers, who may think that boilers using these fuels are more efficient than other boilers and / or provide financial savings. Indeed, these are the two main dimensions of the energy label (Energy Label framework Regulation, recital 10). Moreover, any bonus cannot be used as a reason to downgrade technologies bringing efficiency in buildings – such as condensing – on the energy label scale.

As another option, we suggest evaluating with further assessment the addition of a specific indication or pictogram in the relevant documentation, for appliances able to use, as a first step, up to e.g. 20% percent¹ content of hydrogen in the gas mix (or a share to be defined of biogas / biofuel). This indication would bring an additional, visible signal to consumers: their appliance can run, for example, on 20% hydrogen in combustion². And this, coupled with the energy efficiency of the appliance, would be a new step towards full decarbonisation of buildings. As a second step, when more information will be available, the percentage of the green gas may be increased.

The application of any reference to hydrogen and biogas should take place within a time frame, long enough to evaluate, among others, the behaviour of appliances with these percentages of hydrogen / biogas, including their performance, effects on lifetime and safety. A definition of biogas quality should also be established, and it should exclude raw biogas. Positive projects to evaluate these effects are already ongoing (see below) and their final results will be instrumental in the abovementioned evaluation.

1 Field trials are ongoing, therefore the final percentage may need to be reviewed.

2 The joint standardisation group TC 109/WG1 – TC 58/WG12 for a standardised specification for ACF (Adaptive Control Function) is discussing an H2 maximum mix of 20% in the distribution gas grid.
2.2 **Assess the feasibility and possible impact on Ecodesign requirements.**

In order to determine whether, how best and when to promote the greening of gas via Ecodesign (e.g. a future feasible date for boilers to mandatorily accept a share of H2 or biogas / H2-ready or full-biogas boilers?), a full-fledged analysis is needed. The reason is that hydrogen projects, such as the Hy4Heat project, are still in their early stages; a trial of H2 boilers in a non-populated area will start soon in the UK. Therefore, the behaviour of these appliances in the field needs to be assessed, as well as the following elements:

- currently, the standards to test, and the certification process, for H2-ready and biogas / biofuel-only appliances need to be developed. Some CEN Technical Committees (TCs) have already started working on it;
- adaptation costs of H2 appliances should be further determined, as they seem to be underestimated in the draft report;
- the compatibility of appliances to new gas qualities needs further assessment, also across time (effects on lifetime of appliances of relevant H2 and biogas percentages safety and other);
- it needs to be determined when, how and where H2 and biogas (and of what quality) will be introduced in the gas grid, based on ongoing work.

This future-looking analysis should be extended to all appliances working with fuels: hybrid heat pumps, thermally driven heat pumps, micro-CHP, fuel cells, water heaters – and all other gas appliances – as well as to commercial products.

3 **Today’s calculation methods are appropriate to establish the relevant Ecodesign and Energy Label values, both for boilers and for heat pumps.**

The Ecodesign and Energy Label for heating appliances were introduced rather recently; therefore, they took into account results from research and behaviour of appliances that are by and large still valid today. Hence, to introduce a new calculation methodology for various technologies in such a short time after the first introduction of Ecodesign and Energy Labelling is unjustified, and the draft final reports do not provide a sound reasoning for it.

3.1 **For heat pumps, today’s test methods are valid; additional information requirements could be set.**

3.1.1 **Heat pump test and calculation methods used in the Regulation reflect the actual real-life seasonal average supply temperature.**

The test temperature of 55°C is accurate for the current and future building stock. This is also shown in the monitoring study measuring the real-life performance of heat pumps in single family dwellings in Germany done by Fraunhofer². When a heat pump is fitted in an existing building, this building is adapted to ensure the good functioning of the heat pump, for example by ensuring better insulation. Moreover, the EPBD implementation results in

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increased levels of insulation in buildings, which leads to an overall lower temperature needed to reach the comfort level.

In addition, national rules in the EPBD framework and/or national building codes already encourage a complete thermal study of the existing installation to optimise emitters with the heat pump water temperature range. For example, in France, an installer who does not control the compatibility of radiator capacity and heat pump water heat load cannot get the QualiPac or RGE PAC label, hence the installation cannot get public subsidies for the replacement of an old and inefficient boiler by a heat pump. The heat pumps installed for renovation are thus fully adapted to existing installations and the emitter capacity (emitters are also switched to low temperature). Moreover, a vast majority of heat pumps sold in France are low or medium temperature heat pumps.

3.1.2 Further investigate the ‘dynamic testing’ of heat pumps before applying it as this so-called ‘compensation method’ is not mature enough.

The proposed dynamic test method might bring about certain opportunities but is currently not yet mature enough to be implemented in this revision of Ecodesign Lot 1.

Additionally, the ECOTEST results show large deviations of measurement results between different labs. This implies that the current test method is interpreted in different ways by the labs. Therefore, the current test method should be clarified first, before going to a new method.

Finally, the dynamic test method should be further investigated in standardisation and, if the investigation is positive, it could be proposed in one of the next revisions.

3.1.3 Add information on heat pump reference hot water temperature.

Lot 1 & 2 Regulations would need further clarification on how heat pumps can achieve the peak temperature so that no FAQ on this topic is needed anymore and to enable fair competition. Indeed, the FAQ 57 of 2018 Guidelines for space heaters, water heaters and solid fuel boilers introduced a significant change to the former FAQ 40 of 2015 Guidelines, which would mean that assumed electrical back up is not allowed any more for reaching the peak temperature Tp. It was also indicated that, in case Tp cannot be achieved, the load profile shall be lowered. However, changing the load profile will not allow, in most cases, a heat pump to reach Tp.

In addition, the EN16147 standard leaves the possibility to reach the peak temperature Tp by using an assumed electrical resistance heater. This standard is referenced in the 2014 transitional methods, in line with the Ecodesign Regulations. The FAQ 40 of 2015 Guidelines was following the same principle: it was clearly stating that it is not required to physically reach the peak temperature Tp over a draw-off.

For the review of Lot 1 & 2, the reference hot water temperature reached by the heat pump (T_ref) could be declared in the product fiche to help clarify how heat pumps achieve the peak temperature.

T_ref is clearly defined in the standard EN 16147 as the average temperature of tapped hot water in the tank during V_40 test. The value is close to setpoint of the storage water heater and, as such, required to rate the declared efficiency and V_40: COP increases with lower T_ref and V_40 decreases in parallel. It thus gives a good picture of the temperature in the tank (it is already required in France in the new building code calculation).
3.1.4 Define a clear workplan to investigate sound power determination of heat pumps “at full load”.

EHI understands that there is a need to evaluate further the outdoor and system temperatures for measuring heat pump sound emissions. The declaration of heat pump sound power “at full load” is helpful for proper planning and installation. However, these conditions mainly occur at very low outdoor temperature and would require specific modifications of test rooms.

As such, standardisation work is needed to evaluate which conditions would best reflect the sound emissions of the heat pump in extreme outdoor conditions, considering the temperature limitations of the test rooms, creating additional test points, avoiding potential loopholes when defining the test conditions, checking then their reliability and reproducibility – especially for market surveillance purposes.

Such standardisation on heat pump sound power “at full load” will take time to investigate and should be revisited at the next revision of Lot 1 & 2 Regulations. Until then, heat pump sound power levels should continue to be measured under the test conditions defined in EN 12102-1.

As regards heat pumps that emit very low noise, it is questionable to allow a simple declarative approach as manufacturers need actually to perform noise tests before such declaration. And even if the unit is not equipped with a compressor or a fan, it can emit noise due to the circulation of the flow or the functioning of the circulator.

3.2 For boilers, today’s heating efficiency calculation reflects real-life operating conditions.

3.2.1 Today's weighted average of 30% part load and full load is a realistic way to measure energy efficiency

In today’s Energy Labelling Delegated Regulation (EU) 811/2013 and the Ecodesign Regulation (EU) 813/2013, the energy efficiency for fuel boiler space and combination heaters is a weighted average of the heater operating conditions at part and full loads. This weighted average is defined in the 2014 Commission communication establishing the transitional methods of measurement and calculation in the following formula:

\[ \eta_{\text{son}} = 0.85 \times \eta_1 + 0.15 \times \eta_4 \]

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4 Energy Labelling Regulation 811/2013, Annex I, point (13) and Ecodesign Regulation 813/2013, Annex I, point (11): "seasonal space heating energy efficiency in active mode (\(\eta_{\text{son}}\)) means, for fuel boiler space heaters and fuel boiler combination heaters, a weighted average of the useful efficiency at rated heat output and the useful efficiency at 30 % of the rated heat output, expressed in %;"

i.e. the seasonal space heating energy efficiency in active mode considers 85% of the efficiency at 30 % load ($\eta_1$) and 15% of the efficiency at 100 % load ($\eta_4$, the maximum heat output).

A 30% part load efficiency measurement, gives a good approximation of real boiler utilisation performance and real boiler use patterns. Why? Because it is close to the average annual load of a boiler throughout the whole year, as evidenced by various real-life investigations. Specific data to demonstrate this point are provided below.

In the formula, the efficiency at part load is combined with an efficiency calculation at the maximum heat output ($\eta_4$) that corresponds to heating use in the coldest days. The maximum appliance output (100% load) is not generally reached, but using it as a reference conditions, provides a conservative estimation of the actual energy efficiency achieved by the appliance during those coldest days.

Different real-life investigations from heater manufacturers demonstrate that the deviations between the results of this calculation method and average real use efficiency are marginal: manufacturers’ data from some 1400 heating appliances show that appliances operate most hours at around the 30 % load when these appliances are installed and operating at consumers / end-users sites in Germany and the UK. These data are obtained when connecting the heater via data link with the manufacturer showing the number of operating hours at each load.

In the following table, the on-site end consumer operating hours in specific load of three gas condensing boilers and one oil condensing boiler are shown (two gas combination boilers in UK; two condensing boiler in Germany, one gas- and one oil-fuelled). The table shows the average number of hours at which load the appliances are running when used by end-consumers (tracked over 1 year). The result is that boilers run most of the time at around 30% of nominal power.

1) gas condensing boiler with 19 kW nominal output (200 samples);
2) gas condensing boilers with 30 kW (539 samples) and 35 kW (596 samples);
3) oil condensing boiler 15 kW nominal output (40 samples).

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In summary, today’s efficiency testing conditions for fuel boiler space and combination heaters do reflect their average use by the consumer.

What’s more, the following factors help guarantee similar and reliable testing conditions of fuel boiler space and combination heaters:

- all products are similarly tested according to state-of-the-art test standards, which are referenced in the Energy Labelling and Ecodesign transitional methods for space and combination heaters;
- since 1992, pursuant to the EU Boiler Efficiency Directive 92/42/EC, Notified Bodies certify the efficiency of these appliances at part and full loads based on tests by accredited test houses and European harmonised standards;
- the consumer will benefit from standardised and transparent test procedures to compare the appliances based on the data sheet.

3.2.2 Combination boilers are well dimensioned to fit consumers’ needs and building constraints.

For combination boilers, the maximum production of hot water is one of the factors people consider when choosing a boiler. Why? Because many people want to know whether they can have two showers simultaneously before going to work or when they come back in the evening. They also want to know if they can host their friends for the weekend, without having to compromise on hot water usage.

Combination boilers are therefore dimensioned to fit consumers’ needs:

- for space heating, they modulate to adjust to the heat demand of the building – range rated boilers having the nominal heat input adjustable by the installer to suit the actual heat requirements of the installation;
- for water heating, combination boilers have a lower heat input for heating mode and a higher heat input for domestic hot water mode – e.g. instantaneous combi-boilers (such as wall hang) are dimensioned to adjust their performance to consumers' water heating comfort needs (in the absence of hot water storage tanks, e.g. because of space limits in flats).

Additionally, the local traditions lead to choosing different type of water heaters. For example, in the Netherlands instantaneous gas combi water heaters (with almost no standby losses) are the most used technology. These are needed because of the combination with biomass boilers or heat pumps. Hence, neither the application nor the losses of the cylinders are comparable.

As a result, many people look at (and purchase) boilers with XL consumption profile, for comfort reasons. Thus, the Energy Labelling and Ecodesign Regulations require...
information to be provided on the efficiency of the water heaters and combination heaters, when producing that amount of hot water.

**In a nutshell, combination boilers are well-dimensioned to fit consumers’ needs and building constraints.**

**Remarks on Task 4 study underlying the proposal to change boiler calculation method:**

The UK study dates back from 2009, i.e. about ten years ago. Since then, a significant majority of boilers placed on the market in the United Kingdom are modulating boilers. Hence, boilers are expected to condensate more. Additionally, more advance controls have been put on the market since 2009, which help boilers run more efficiently (as compared to on / off controls).

In terms of climate conditions, the United Kingdom is also very specific: a temperate oceanic climate with a design point of heating installations around 1°C with water temperatures of 81/71°C, i.e. a heating system not designed for -12 °C or -15°C. It implies that the heating curves in the UK over the heating season are lying usually higher than in the rest of Europe due to the fact that their heating systems are not designed for -12 or -15.

What's more, on the test day (at around 0°C), the installation was working under design conditions, but this does not reflect year-round operating conditions.

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4 Apply third party conformity assessment to all products in Lot 1, to space heating energy efficiency values and sound power level values.

The European manufacturers of space heaters welcome third party conformity assessment (TPCA) application to all space heaters in the Ecodesign Regulation 813/2013 to ensure a level-playing field among technologies, while considering the specificities of the various product groups. To this end, TPCA should apply to space heating energy efficiency values for all products, and sound power level values for heat pumps.

The practice over the past 20 years has shown that TPCA has resulted in bringing test houses up to the required standards.

For heat pumps, this will also facilitate the recognition of Ecodesign declared data for national subsidy purposes and help harmonise national certification requirements that are required in light of national requirements for EPBD.

Several specific conditions are important to consider in order to guarantee this level-playing field:

- the choice of modules, as described in Annex II to Decision No 768/2008/EC, shall be free except module A, which concerns self-declaration of data by manufacturers; this would help manufacturers chose the module options best suited to their way of working

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6 Energy Labelling Regulation 811/2013, Annex VII, point 5(c); Energy Labelling Regulation 812/2013, Annex VII, point 2(c); Ecodesign Regulation 813/2013, Annex III, point 5(c); Ecodesign Regulation 814/2013, Annex III, point 2(c): “the declared load profile shall be the maximum load profile or the load profile one below the maximum load profile.”

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and the products at stake (e.g. whether in small / large series, small / large capacity products, depending on existing auditing schemes and management systems, etc.);

- an appropriate transition period shall be set, for example to allow enough Notified Bodies to be accredited in Member States for the different technologies and for space heater manufacturers to adjust their assessment procedures;

- the TPCA should be applied to a unit of a new model before placing such unit on the EU market. Units of a model already placed on the EU market should abide by the current rules;

- the link with the other third party conformity assessment procedures applying to these different product groups should be analysed (e.g. from the Gas Appliances Regulation (EU) 2016/426 or the Pressure Equipment Directive 2014/68/EU);

- the mCHP calculation method should also be clarified (see section 11 below).

Please note that EHI does not consider the extension of third party conformity assessment procedure to water heating energy efficiency values because the additional testing procedure costs would outweigh the expected benefits. Indeed, in the Energy Labelling and Ecodesign Regulations, the energy efficiency of water heaters and combination heaters is a lengthy and complex measurement, which uses an average 24-hour measurement cycle with regular water draw-offs from 7:00 to 21:30, according to the declared load profiles.

5 Temperature controls for space and combination heaters and solar devices should be dealt with in Lot 1, as part of packages.

5.1 The package label of space heaters and temperature controls helps manufacturers promote high efficiency and smart space heaters ≤ 70kW.

The package label is much used by manufacturers who sell heating system packages, which include contributions from various heat generators and controls (and solar thermal). Therefore, the package label has helped many installers, to provide customers with complete, turn-key solutions, fit for their home or building, as they no longer need to go ‘shopping around’ to obtain subsystems from different manufacturers and combine them. Manufacturers use the package label of space heaters or combination heaters and temperature controls to position their efficient space heaters in the market.

The package label offers other important advantages. First of all, gives installers freedom to combine certain products such as temperature controls from different manufacturers and generate their own package labels. Secondly, the package label is easy to use: 8 classes of temperature controls – ranging from 1 to 5 % bonuses – offer a simple way of combining an efficient space heater with an advanced temperature control that can generate additional energy savings.

For space heaters with power ratings below 70 kW, the solutions chosen in the regulations 811/2013 have only been in full effect for three years, since September 2015. The heating industry has invested many resources in informing installers and the general public about the energy label for space heaters, including about the package label.

Therefore, at this stage, it not useful to plan an overhaul of this general approach, away from the package label to a different system, whereby there would be a different label for heat generators on the one hand and temperature/building controls on the other hand.
For EHI, the priority of the energy and the package label is informing consumers and installers about which heating appliances have the highest seasonal efficiency on the market. Smart controls have an important, but complimentary role in delivering energy savings. The package label should continue to push manufacturers to combine a very efficient space heater with an advanced control. Not enable inefficient appliances in combination with smart controls to make a comeback on the market.

In summary, the package label should go on promoting an efficient combination of efficient space heaters / combination heaters and efficient temperature controls in the Regulation (EU) 811/2013.

5.2 The temperature controls that are in the scope of the Commission Regulation (EU) No 811/2013 should remain outside the scope of Lot 38 on BACS.

The elements of a package label are very much interlinked, and the energy savings brought by a package depend on the combination of these elements. Therefore, it is important to determine the way to combine these elements in a comprehensive way, within the same Regulation. This is all the more important, given the importance of the package label to generate additional energy savings on top of the efficiency of heat generators, which often includes a control.

As a consequence, temperature controls for Lot 1 space heaters should remain within Lot 1 and outside the scope of the ongoing preparatory study for Ecodesign Lot 38 BACS. Ecodesign Lot 38 should develop Ecodesign and Energy Labelling measures for BACS that control multiple technical building systems in large buildings. For commercial buildings with typically many rooms, a supervisory management system consolidating the demand for the generation side and controlling distribution is beneficial. Why? Air is commonly used as the supply medium for heat, cooling and ventilation. In that case, a common demand control has advantages in terms of delivering energy savings.7

In contrast to commercial buildings, residential buildings in Europe mostly use hydronic heating systems with a rated heat output ≤ 70 kW, which are labelled according to Delegated Regulation 811/2013. Such smaller systems are often combined with hot water supply and managed by a single control. If those residential buildings are provided with air cooling and ventilation, then this would add air as a second supply medium. The two separate systems – water and air - therefore limit the need for an overall control system. In other words, the different domains in smaller buildings are equipped with their own domain-specific controls.

Therefore, the focus of Lot 38 should be on BACS that control technical buildings systems above that 70kW threshold. The heating systems that are in the scope of the Commission Delegated Regulation (EU) No 811/2013 should remain outside the scope of Lot 38 on BACS. Lot 38 on BACS can provide the most value-added for larger buildings, where the control functions can be based on controls shared by different domains.

5.3 The new maluses for temperature controls including weather compensation in the VHK study do not reflect the real-life energy savings.

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7 For example, a BACS can provide an interlock between heating and cooling control of emission and/or distribution, thereby avoiding simultaneously providing hot and cold air to the same room.
Return water temperature, and therefore feed temperature controls, are claimed to have a larger effect on the operating efficiency than is currently assumed by the default of -3%. As explained above, today’s efficiency testing conditions for boilers and heat pumps do reflect their average use by consumers. There is thus no sound justification to lower the malus below -3%.

In addition, the proposal to lower the malus for controls from -3% to -8% lacks coherence with the Ecodesign Regulation (EU) 2016/2281 for air heating products, cooling products, high temperature process chillers and fan coil units8 (Lot 21), which also uses a 3% malus for temperature controls.

EHI members disagree with the claim in the VHK study that weather compensation controls generally result in higher average system temperatures than room thermostat controlled systems. Indeed, in a study of BDH – the German association of the heating industry – on Digital Heating, using an operational control system with set-point temperature control of the flow temperature offers significant energy savings potential. This is the case when it is installed in existing buildings, which constitute the vast majority of the market. 9

A final point: the higher energy savings potential from more advanced temperature controls – and corresponding correction factors – remains to be further detailed based on manufacturers’ experiences. EHI will further assess this issue and provide a proposal, where relevant.

6 Consider the extension of the Medium Combustion Plant Directive (MCPD) to heaters between 400 kW and 1 MW.

For EHI, the Medium Combustion Plant Directive (MCPD) should be considered for heaters above 400 kW and up to 1,000 kW. The extension of Ecodesign to this product range however does not seem appropriate.

Why? Because the MCPD compliance assessment is well suited for monitoring the emissions of boilers between 400 kW and 1 MW. Indeed, the MCPD compliance assessment is based on a periodic monitoring of emissions (based on either environmental inspections or other measures10) on site. This monitoring is best suited for these tailor-made products, which are very different from one another. Accordingly, operators measure emissions of medium combustion plants (today: with a rated thermal input of 1 MW up to 20 MW), at least every three years and more frequently, depending on the Member State.

On the contrary, an extension of the Ecodesign Regulations to this range would entail the following challenges for testing and declaration:

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8 Commission communication in the framework of the implementation of Commission Regulation (EU) 2016/2281: “The correction F(1) accounts for a negative contribution to the seasonal space heating or cooling energy efficiency of products due to adjusted contributions of temperature controls to seasonal space heating and cooling energy efficiency, expressed in %. F(1) = 3 %” for comfort chillers, air conditioners and heat pumps.


10 Directive (EU) 2015/2193 on the limitation of emissions of certain pollutants into the air from medium combustion plants, article 8, point 2.
• Boilers in that thermal power range are mostly customised solutions, made for example of a boiler and a burner. Due to different and sometimes overlapping capacities in this high output range, the combinations boilers / burners are too many to be tested and declared by manufacturers;

• There are very few independent laboratories able to test such big capacity boilers – and apparently none for large heat pumps > 400 kW.

Moreover, any extension of the Ecodesign Regulation scope above 400 kW would require assessing in detail the impacts for example on the following points:

• Particular cases for which renovating the non-condensing boiler / burner with a more efficient alternative faces specific constraints: high temperature boilers / boilers covered by the Pressure Equipment Directive; applications where the heating is a critical requirement (hospitals, botanical collections etc.) and dual fuel back up; some smaller industrial processes;

For example, high temperature applications (i.e. about 90°C-110°C hot water media temperature and higher for steam boilers) make condensing technology inappropriate (such as for small district heating systems or steam boilers for process uses in industry). Such applications would require exemptions, which could be sources of loopholes or misapplication;

• Adaption of the test conditions (e.g. energy efficiency tested only at 100% of the rated heat output (at 80/60°C)) and adjustment of information requirements to fit the larger range of products, to take into account the specific use of these products;

• For third party conformity assessment, there is only a very limited number of test laboratories available in the EU for such large heaters;

• The relation with the Regulation (EU) 2016/2281 for air heating products, cooling products, high temperature process chillers and fan coil units (lot 21) should be clarified to avoid double regulation of heating energy efficiency;

In any event, the relation of the Ecodesign Regulation and the MCPD for the 400 kW – 1 MW range should be clarified to avoid double regulation and ensure fair competition for cascading boilers vs. single boilers.

7 Investigate further the application of tolerances in the verification procedure for market surveillance.

The current 8% tolerance to verify the seasonal space heating energy efficiency of boilers could be reduced, provided today’s test procedures are used. However, whether and by how much need to be determined, based on further assessment, including of already existing data (e.g., if relevant and accessible: data from the EEPLIANT project). Why? Because the assessment made by VHK relies on project results that have been made available only recently (the ECOtest project). Moreover, setting any new tolerance on space heating efficiency of boilers should rely on measurements carried out on several appliances; but the ECOtest project carried out tests on a limited number of boilers.

Furthermore, investigation is needed on whether tolerances should be applied to all input data, declared due to Ecodesign and Energy Labelling requirements. It is today unclear, when subject to market surveillance actions, which tolerances can be applied for those values that are declared but are not provided in the regulation with a tolerance.
In addition, for Lot 2, the verification tolerances for the water heating energy efficiency refer to single measured parameter, like $Q_{\text{elec}}$ and $Q_{\text{fuel}}$, that are present in the formula for the calculation of $\eta_{\text{wh}}$. We suggest maintaining the levels of these parameters (set at 5%), which still reflect the experience of test measurements.

**PART II. PRODUCT SPECIFIC CONSIDERATIONS**

8 **Assess further the impacts of proposed energy label class changes for low-temperature heat pumps.**

As explained above, any change in the Ecodesign limits and Energy Label class boundaries would need further impact assessment on the different technologies. It is also true for the proposed change in the class boundary of low-temperature heat pumps, which is not based on technology development or any least life cycle analysis.

Such assessment should also be comprehensive and look at the impact of all the changes proposed in the study, if they were to be introduced in a revised Regulation.

9 **Consider specifically thermally-driven heat pumps (TDHPs) for both space and water heating.**

Thermally Driven Heat Pumps (TDHPs), and in particular “sorption heat pump technology”, deliver substantial energy efficiency improvements, use of energy from renewable sources, CO$_2$, NOx and PM emission savings for space and water heating. TDHPs especially offer a solution to the “existing building stock” since they are designed to deliver their performance also at high temperatures (i.e. 65°C) required by the emission systems (i.e. radiators).

Tens of thousands of systems have been sold across Europe in residential building blocks and “light commercial” applications, and several new residential products are currently under development for introduction across Europe.

9.1 **Assess the introduction of a new ad-hoc classification for TDHPs.**

The VHK proposal to revise the Ecodesign minimum energy efficiency limits and the energy labelling class boundaries for heat pumps – as a correction factor for a lower PEF – would negatively impact TDHPs: the minimum thresholds become unreachable for all TDHPs and the energy labelling would see them falling down in “A” class.

- Under the current ErP legislation framework the minimum efficient limit (110%) is ambitious while reachable for all TDHP categories and the energy labelling class is representative of the major improvement in energy efficiency and operating cost savings for end users (A++). These two fundamentals aspects need to be maintained under the future regulation. The ranking on the label should also be in line with the principle expressed in the Energy Label framework Regulation, recital 17. Indeed, the scale should rank heating technologies that use renewable energy, in classes above A.

In the case the thorough assessment to the introduction of a new Conversion Coefficient (CC) would confirm the need for a new CC value with consequent impact on Ecodesign requirement and labelling, then we recommend to:

- Set a specific minimum Ecodesign threshold for TDHPs; it could be set at “etas = 110%” (consistent with the current Ecodesign minimum energy efficiency limit for heat pumps).
• Define the labelling threshold classes in order to have these technologies in the top range of the classification scheme. In this case a specific Ecodesign limit for their NOx emissions could also be explored.

Remark: these considerations are based on the assumption of today's ErP tests conditions and test methods (referring to EN 12309), which reflect real-life results (as acknowledged in VHK report) and today's contribution of temperature controls.

9.2 Include TDHP for water heating applications.
Lot 1 & 2 Regulations do not consider TDHP for water heating applications. Nevertheless, savings from TDHP for water heating applications have been demonstrated to be as large as the one achievable in space heating applications. Several manufacturers are already designing appliances or selling appliances for this specific application. Thermally driven heat pumps should thus be included in the scope of the Regulations 812/2013 and 814/2013.

9.3 Investigate specifically the verification tolerances for TDHPs.
The verification tolerance for TDHPs should be equal or higher than the verification tolerance for electric heat pumps as TDHPs are concerned by two tolerances: the heat pump's and the gas boiler's tolerance. The repeatability of the test methods is also affected by many parameters for testing the heat pump (e.g. defrost cycle, part load A or B, humidity, etc.). Further investigation on the verification tolerance for TDHPs is thus needed.

10 Clarify further test methods for hybrid heat pumps at both standardisation and regulatory levels.

10.1 Develop a unique test method for hybrid heat pumps at standardisation level.
Since the Regulation publication, manufacturers have further developed hybrid heat pumps with complete solutions integrating the heat pump, the boiler and a combined control, which help optimise how the two generators work together according to outdoor temperature variations.

Further evolution of the test method for hybrid heat pumps is thus welcome in the medium-term as it could reduce testing efforts, improve real-life measurement, etc. It should be defined by the joint CEN TC 113/TC 109 Working Group, not an external consultant. Such calculation method could be adapted to all types of hybrid heat pumps without the need to specify a preferential generator.

This will help calculate the efficiency of hybrid heat pumps, which are delivered by manufacturers as a complete product integrating the heat pump, the boiler and a combined control. Hybrid heat pumps could then be tested in laboratories at various outdoor temperatures with real seasonal energy efficiency values, not virtual ones.

Moreover, the following considerations should be taken into account when applying the method:
• Hybrid heat pumps are sold as one product, as one order, by the manufacturer;
• They should not be limited by geometrical criteria's as “in one compact device” or “in one casing”;
• They should be tested according the EN14825:2018 in a "black box" approach;
• They should keep using the current heat pump energy label;
• Assess whether to create a dedicated hybrid heat pump product category in Ecodesign, with dedicated limits, based on the current discussions in the joint CEN TC 113/TC 109 Working Group.

This would contribute to a better recognition of hybrid heat pumps and a better communication of their characteristics to consumers (fit for renovation purposes, grid balancing contribution during winter, etc.).

10.2 Clarify that the declared energy efficiency values of hybrid boilers is the combined energy efficiency of the boiler and the heat pump.

Recently new space heating technologies have appeared on the European market: gas boiler assisted with an active heat recovery unit operating with the thermodynamic principle of an electrical absorption heat pump using outdoor air as heat source, and placed on the market in one casing.

Due to their features, they cannot be traced back to those already existing and, consequently, they are not completely covered by the current product standards, nor by the indications reported in the transitional methods and in the European Commission Guidelines although covered by Ecodesign Regulation. An official interpretation of how to evaluate their electrical consumption should be published before the revision of Lot 1 and Lot 2 to ensure fair competition and application of energy efficiency requirements.

This new product can be considered as a hybrid appliance, for which the heat recovery unit is able to operate only simultaneously with the boiler and it is not able to independently satisfy the requirements of the Regulation for electric heat pumps. In other words, the heat pump helps preheating the boiler return water, but does not recover the heat. And the gas boiler is the preferential heater.

It should be clarified in the Regulations that, as for other hybrid boilers, the declared energy efficiency values of these products should be the combined energy efficiency of the boiler and the heat pump and the product should only have one energy label.

It means that, for the evaluation of the electrical consumption, the electrical consumption generated by the heat recovery unit for the purpose of water heating, should be considered as part of the total consumed energy. Therefore, it should be included in the formula for the calculation of Etas within the Etason parameter and not as part of the auxiliary electrical consumption, related to parameter F(2).

11 Develop further the assessment for micro-CHP appliances’ calculation methods.

11.1 Expand the comparison and assessment of micro-CHP calculation methods.

The study proposes to replace the conversion coefficient with an allocated factor independent of the share of low carbon electricity in the grid. This may not be appropriate, as the merits of micro-CHP (mCHP) as a local generator are tied to the generation efficiencies displaced in the grid. Fixing the conversion coefficient will not reflect the potential savings, as the share of low carbon (renewable) electricity generation increases. Moreover, the ‘COP Carnot’ method is based on several questionable assumptions: ‘virtual
The study compares several different calculation methods for mCHP with each other, but has not included in this assessment the Specific Energy Consumption (SEC) described in EN 50465 Annex K. This method follows the principle of comparability based on the same outputs and takes into account all the primary energy savings caused by the cogeneration heaters:

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SEC = \frac{(Q_{gas} - CC \cdot Eel)}{Q_{heat}} = \frac{(1 - CC \cdot \eta_{el})}{\eta_{th}}
\]

EHI therefore invites VHK to:

- include this method in the comparison and assessment of mCHP calculation methods, both for the efficiency / specific energy consumption calculation principle and the weighted average calculations;
- base this comparison on the effects and consistency of the resulting efficiency / SEC values not only of the CHP part alone, but also of the CHP module including the supplementary heater (either in an integrated appliance or in a package, which represents the final total heating solution);
- incorporate in the report again, as well as in this assessment, the considerations which were included in pages 114 – 116 of the Task 1 Draft interim report dated 15 December 2017, but which were deleted from the draft final Task 1 report.

11.2 Introduce a new energy label for cogeneration combination heaters or packages with cogeneration heaters.

EHI welcomes VHK proposals to add the energy label for cogeneration combination heaters and the package with cogeneration heaters to the list of package labels in the Energy Labelling Regulation (EU) 811/2013, as they are missing today.

To determine the package label consisting of a cogeneration space heater combined with one or more supplementary space heaters where one of them is a heat pump space heater, the factor “II” should be the one calculated according to Table 6 of Annex IV for heat pumps of Regulation 811/2013 (in line with FAQ 38 of Lot 1 & 2 Guidelines).

12 Type B1 boilers: develop solutions to building renovation. Until then, specific conditions may be needed.

12.1 Buildings need to be renovated to allow the move to efficient alternatives.

In the Ecodesign Regulation (EU) 813/2013, the minimum seasonal space heating energy efficiency is specific for type B1 boilers with rated heat output ≤ 10 kW and type B1 combination boilers with rated heat output ≤ 30 kW (i.e. 75% instead of 86%).

The replacement of B1 boilers is an installation issue and should be tackled by finding solutions to:

- the financing of the renovation of buildings;
  - If one boiler must be replaced in a flue shared between multiple dwellings, it shall switch to a condensing boiler together with all the other boilers sharing the chimney. Why?
    - The masonry chimney made out of concrete needs to be renovated because a condensing boiler installation means a decrease in the temperature of the flue gases
within the flue gas system (from 250°C to 30-70°C), which in turn reduces the stack effect. If the stack effect is insufficient, the flue gases cannot be vented vertically outward through the roof. This implies a risk of flue gas spillage and CO poisoning, especially going through kitchen hoods and ventilation systems.

- What’s more, if the flue gas system is insufficient, the combustion gas temperature would fall below the condensation point before the flue gases leave the exhaust system. The water vapour in the flue gases would then condense and moisture risks damaging the concrete chimney and its stacks.

- market surveillance to ensure correct installations;
- the decision-making process in multi-family blocks – where the owner of each dwelling needs to agree to renovate their heater together with the chimney at the same time.

### Efficient heating technologies to replace type B1 boilers exist, but buildings need to be renovated so as to allow the move to efficient alternatives. Until then, an exception may be needed not to have a negative impact on the weaker groups of society which cannot afford the renovation.

The renovation of buildings should be accompanied by reinforced measured aiming to:

- maintain the mandatory sticker ‘type B1 boiler’ or ‘type B1 combination boiler’ on the heater; maintain the mandatory statement in the technical parameters as one of the first points that the heater is a B1 boiler;
- clarify the mandatory statement that shall be included in the instruction manuals for installers and end-users, and free access websites as follows:

  This natural draught boiler is intended to be connected only to an existing multi inlet-chimney, flue shared between multiple dwellings in existing buildings, that evacuates the residues of combustion to the outside of the room containing the boiler. It draws the combustion air directly from the room and incorporates a draught diverter. Due to lower efficiency, it is forbidden to connect this boiler to any other type of chimney or products of combustion evacuation system (either new or existing) any other use of this boiler shall be avoided and would result in higher energy consumption and higher operating costs.

- implement national installation rules that support the switch to more efficient heating technologies (e.g. chimneys on façade in Spain).

In addition, the capacity of the type B1 combination boiler clause should not be lowered to 10 kW. Why? Because 30kW is needed for combi-boilers to adapt to consumers’ sanitary hot water needs, especially for families who have an instantaneous gas combi boiler. In addition, there is no space in many flats to fit an additional hot water storage tank. The misuse of the exception can be discouraged by the measures above,

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12 Regulation (EU) 813/2013, Annex II, point §5(a) 1st bullet point.
13 Regulation (EU) 813/2013, Annex II, point 5(a) 4th bullet point.
together with strengthened market surveillance, not by restricting the maximum capacity for combi-boilers.

As regards C4 and C8 boilers, there are efficient replacement and renovation solutions available.

12.2 Revise the exemption, and the related definitions, on heat generators and heater housings in the Ecodesign Regulations 813/2013 and 814/2013

Boilers placed on the market and already installed shall be repaired and have spare parts available for replacement during their average lifetime (i.e. at least for 10-15 years). It is in line with the circular economy principles and the spare part guarantee commitment from heater manufacturers.

Replacement of burners shall thus be guaranteed during the average lifetime of the heater they are designed for:

- for burners (“heat generators designed for heaters”): the average lifetime is 10-15 years for gas and oil boilers; manufacturers are committed to replace the burner if it breaks down before the average lifetime of the boiler with an identical burner; burners are in the scope of the Ecodesign Regulations 813/2013 and 814/2013 through the definition of ‘heat generator’;

- for heater housings (“part of a heater designed to have a heat generator fitted”): the average lifetime is 20-25 years for gas and oil boilers; manufacturers are committed to replace parts of the heater housing (e.g. cast iron segments or heat exchangers), but manufacturers cannot guarantee that identical heater housings are available after 10-15 years because production may have ceased in the meantime; heater housings are in the scope of the Ecodesign Regulations 813/2013 and 814/2013 through the definition of ‘heat generator’.

In addition, the exemption shall be limited to burners to prevent that both the burner (or heat generator) and the heater housing are replaced together at short intervals.

However, the components of heater housings are not in scope of the Ecodesign Regulations according to the Blue Guide since they are not finished products (heaters) – for example a heat exchanger, a cast iron boiler segment or a heater casing. This exemption of components of heater housings is also valid for their replacement as spare parts to ensure the repair-as-produced principle. And this is true for any spare parts of heaters.

In summary, the article 1, § 2 (g) of the Ecodesign Regulation 813/2013 and the article 1, § 2 (g) of the Ecodesign Regulation 814/2013 should respectively be amended as follows:

- “burners heat generators designed for heaters and heater housings to be equipped with such heat generators placed on the market before [1 January 2018 + minimum period for making available necessary spare parts under Ecodesign] to--as replacement for identical burners heat generators designed for heaters--and identical heater housings, which were placed on the market and/or put into service before 1 January 2018. The replacement product or its packaging shall clearly indicate the heater for which the burner it is intended and the burner intended to be replaced.”

- “burners heat generators designed for water heaters and water heater housings to be equipped with such heat generators placed on the market before [1 January 2018 + minimum period for making available necessary spare parts under Ecodesign]
to as replacement for identical burners heat generators designed for water heaters and identical water heater housings, which were placed on the market and/or put into service before 1 January 2018. The replacement product or its packaging shall clearly indicate the water heater for which the burner is intended and the burner intended to be replaced.”

These exemptions of Regulations 813/2013 and 814/2013, article 1 point 2(g) shall not apply, in line with Lot 1 & 2 Guidelines:

- to like for like replacements of entire heaters (as sold product) units. In this case, the requirements for placing a new heater on the market shall apply;
- when an entire heater is replaced with another new heater which has been assembled and placed on the market using a replacement heater housing and a replacement burner at the same time. In this case, the requirements for placing a new heater on the market shall apply.

For this purpose, the heater housing should be understood as the sum of the heater components designed to have a burner fitted (i.e. the heat exchanger and the casing).

In addition, these exemptions should not apply if a “refurbishment kit” to renovate existing heaters is provided without any clear indication of the heater for which it is intended.

12.3 Define identical burners in the Regulations.

“Identical burner” means a burner that has the same design characteristics as the original item, but which may require some adjustments to external connections.

To ensure the possibility to replace (and repair) a part of the heater, burners should be considered identical to – and therefore fit for the replacement of – a burner when either:

- the new burner intended for replacement bear the same product code of the one that it is intended to replace; OR,
- an appropriate matching allows for equal or higher energy efficiency values and equal or lower CO2 and NOx emissions, than the ones of the burners that they replace. The new burner should have an appropriate size, output range, fuel and NOx specification (low or high), to match the existing burner. The practical matching should follow the procedure already established in the context of the Boiler Efficiency Directive (92/42/EEC) and the standards EN 267, EN 676, EN 303 and EN 304, until these standards are updated according to the requirements of the Ecodesign Regulations (EU) 813/2013 and 814/2013.

13 Today’s calculation method for solar packages is accurate and fit for purpose.

In the so-called ‘installer label’ for solar packages, four input parameters (Asol, Vsol, fsol, ηcol) are part of the installer calculation of the energy saving for the customer. Since these are needed to specify the installation, the same variables can also be used to fill in the energy label. Such calculation method thus does not seem too difficult and allows at least a differentiation of the different technical / product solutions.

The proposal to give 1 percentage point of efficiency for every m² of collector surface in an average climate risks pushing the oversizing of solar thermal panels, even with the conditions proposed by VHK. And the size seems to be independent of the cylinder capacity.
Furthermore, such oversizing could lead to overheating in summer, which would activate the safety devices (operation of pressure relief valve), lower the efficiency of the installation and even damage it.

Any alternative single calculation method would need a deeper assessment to validate its accuracy when used by installers and manufacturers, and to ensure that it would not entail unintended effects.

**14 A method for calculating the efficiency of heat generator and hot water storage tank packages is under development.**

For packages of heat generator and hot water storage tank, work is ongoing on a method that would allow the calculation of the energy efficiency / energy class for the “solar packages” of water heaters in the case of (“heating only”) boiler-cylinder-solar combination and all (“heating only”) heater-cylinder-solar combination. It can be applied to all heat generators, such as heat pumps and mCHP.

EHI will provide further information on this point, if and when available.

**15 Review the estimation of the energy savings from the Passive Flue Heat Recovery (PFHRD) option for combi boilers.**

The savings of a PFHRD with storage quoted from the Delta and Enertek report look overstated because results gathered from numerous tests have shown that the savings from Storage PFHRD vary depending on the boiler it is connected to and the heating system that the boiler supplies. This is independent from the technical design of the PFHRD. This variability relates to the amount of energy that remains in the flue gases as they leave the main heat exchanger(s), which is then delivered to the Storage PFHRD: a condensing boiler fitted to a low temperature central heating system will show lower savings from fitting a Storage PFHRD than a conventional boiler supplying heat to high temperature radiators because there is much less energy available in the flue gases.

The conclusion is that the more efficient the boiler, the less heat in the flue gases, and so the less heat can be recovered by a Storage PFHRD. There will be further variance dependent on the sequence alignment of heating and domestic hot water draw offs tested and the size of the hot water draw offs.

As a result, today’s expected efficiency gains from this technology are actually smaller.

This has been confirmed by test results with a small storage PFHRD (0.4 litre) and a large one (2.8 litre) on an XXL tapping pattern:

- The 2.8 litre version gave a 3x times higher benefit than the 0.4 litre, while the volume is 7 times bigger. The reason is that the bigger PFHRD is not fully charged before each tapping;
- Based on the XXL tapping pattern, the energy savings are 2.3% - 7% only.

If you would have an XL, L or M pattern, you have less tapping, but more charging time for the PFHRD. Energy savings could get up to 30%, but this should not be generalised as ecodesign and energy labelling require a water heater / combi heater to be tested on the highest tapping pattern that it is capable of meeting (or the next lowest). For combi boilers, this is typically XXL (Tapping Pattern 5) and XL (Tapping Pattern 4). However,
in the UK for the Standard Assessment Procedure, testing is done with M (Tapping Pattern 2).

Moreover, the proposal to extend PFHRD credits to recovery of space heating losses may be overestimated if this is just in proportion to the number of months of the heating season e.g. 7/12 months. The heater is not always on when hot water is required in the winter, and whether it is likely to be on is affected by the temperature control on the heating system.

As regards standardisation, there is no standard officially available yet: prEN 13203-7 is neither finalised nor published.

Besides energy savings, other topics linked to PFHRD should be answered: test description / procedure to test all risks regarding gas safety, e.g. leakage of combustion products, behaviour of gas appliances within modulation and combustion product evacuation, pressure losses of the PFRHD to be considered in dimensioning the evacuation ducts, etc.

Last but not least, heater manufacturers use alternative methods to take advantage of the possibility of transferring heat to the cold water inlet in combination condensing boilers. These alternatives help get higher efficiencies and higher condensing rates than when boilers would operate with returning water from the heating system.

In summary, we support the consideration of PFHRD in Ecodesign, provided there is further standardisation work to gather more robust data, estimate better their energy savings, assess safety-related impacts and guarantee comparability with current test methods.

16 Introduce specific correction factors for the NOx limits of 3rd family gases.

EHI supports VHK proposal to give different correction factors to the NOx emission limits for G30 (butane) and G31 (propane) respectively. This is indeed in line with the most recent proposal of experts in the relevant EN 15502-1 standard.

Being a clean burning fuel and having much lower CO\textsubscript{2} emissions than most energy options available in rural areas, LPG has a role to play in the decarbonisation of the heating sector. Simply switching from a conventional coal boiler to a condensing LPG appliance can reduce CO\textsubscript{2} emissions by 50% or 25%, respectively, without compromising on the house’s thermal comfort. At the same time, LPG boilers emit 80-99% less particulate matter than boilers relying on solid fuels. These benefits further increase when LPG is used in cutting edge appliances, such as micro-CHP’s, or in combination with renewable technologies, such as solar panels and gas heat pumps. Last but not least, renewable LPG, which has recently been launched into the market, may further increase these benefits: according to Liquid Gas Europe, it has up to 94\% less CO\textsubscript{2} emissions compared to its conventional equivalent.

17 Water heaters and hot water storage tanks

17.1 Today’s Ecodesign limits for water heaters take various cases into account.

With regard to possible “specific Ecodesign limits”, there is no need to introduce them because of the structure of current Regulation (EU) 814/2013:
• It already differs between load cases (the existing minimum efficiency requirements per load case are aligned – as far as possible – with the common technologies used in that load case range);

• It also includes specific, technology related regulations – e.g. usable loadcases (“max” or one below), ambient correction factor Qcor.

17.2 Today, use comparable standards for hot water storage tanks standing losses

As of today, there are several standards to measure heat losses of hot water storage standards. While it would be preferable to have only one standard in the future, currently both standards 12897:2016 and 15332:2016 should be considered as default, as proposed in the draft report, Task 6, chapter 3.2. In addition, EN 12977-3 might be used for solar storage tanks only. Standard EN 60379 should not be used for the rating of standing losses of the storage tank.

The coexistence of various standards is important at this stage, because EN 12897 and EN 15332 are comparable. Moreover, while the finalisation of 15332 is under way, the document is still a draft. Once the drafting process will be over, the standard will need to be employed on the field in order to understand the results that it will produce. This is why, using only 15332 as default standard would not work at the moment.

17.3 Pilot flames fulfil Ecodesign requirements.

It should first be noticed that the market of permanent pilot flames is very small in Europe (e.g. in Eastern Europe and Portugal).

As regards their test procedures, pilot flame consumption is included in the efficiency test and during testing the permanent pilot flame is always ‘on’. In practise, they can reach even better energy efficiency when consumers switch off the pilot flame after their bath or shower.

They effectively fulfil the Ecodesign requirements. And the role of the Ecodesign Regulation is not to prohibit certain technologies, but to set energy efficiency requirements “to make the internal market operate better and to improve the environmental performance of these products.”

17.4 EHI will examine the rating of bivalent storages.

Bivalent storages give the possibility to integrate renewable energies and operate them in an efficient way when, for example, replacing the heating system. How to rate their losses is a relevant point: EHI will examine it and provide further remarks, where relevant.

18 EHI is ready to contribute to future discussions on emitters’ systems.

Emitters’ systems are important technologies for EHI and emitters manufacturers are represented within the association. Therefore, EHI stands ready to participate in future discussions on any proposed inclusion of emitter systems in the Ecodesign work programme.