Consultation Response

27 March 2017

HEATING & HOTWATER INDUSTRY COUNCIL

HHIC response to Heat in Buildings, The Future of Heat: Domestic Buildings

About HHIC

The Heating and Hotwater Industry Council (HHIC) are the leading representative body for the UK domestic heating and hot water industry, worth £3-4 billion per year. HHIC's membership base covers approximately 94 per cent of heating and hot water solutions available in the UK. HHIC are a division of the Energy and Utilities Alliance (EUA).

Full Response

Timing and Implementation

1. Is a three month coming into force period sufficient?

HHIC welcomes the proposal for a quick transition period for these new requirements which we believe is sensible especially given that they will only affect new systems and existing systems where a boiler is replaced.

However, as detailed in the questions below, if solely wired weather compensation is a requirement the coming into force period would need to be longer to allow for product and literature changes and training. A number of members have expressed concern that if wired weather compensation is required and no flexibility on solution offered this will delay implementation by 18 months. Also larger installation companies would need time to train their staff and amend their systems. HHIC would prefer a flexible approach to weather compensation.

HHIC would like a clearer definition of what BEIS define a weather compensation device. It is hard to provide accurate implementation timings and potential costs to consumers without a more detailed description.

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We do want to stress, however, that for an imminent introduction to be successful, the communication of the changes needs to be clear, strong and justified from the outset. If installers and consumers are not well informed of the changes, then they will seem confusing and burdensome which could result in the sought-after cumulative improvements in efficiency not being achieved. Therefore the Department needs a clear strategy of how the final proposals will be communicated.

HHIC is also concerned that building regulations is not 'policed' adequately currently. In order for this policy to be successful then installers will need to see a step change in compliance policing from Local Authority Building Control.

Boiler Performance

2.a Do you agree the minimum standard for domestic boilers in England should be changed to 92% ErP?

HHIC agrees that this change would be in line with the trend for most boilers sold in the UK to be able to achieve this level. This ensures that new boilers are at a level of efficiency that is greater than the ambition in the original 2005 boiler regulations, whilst ensuring manufacturers are able to provide a product for consumers.

2.b If not, what ErP rating is appropriate for each fuel type, and are there risks?

92% efficiency would be suitable for natural gas and LPG. It would not be suitable for oil boilers. 89% would be more appropriate for these appliances.

2.c What can be done to further improve the efficiency of a boiler beyond 92% ErP and what are the technical and cost implications for the industry and the consumer?

Further efficiencies to a boiler are not currently possible without the addition of energy saving products and additional costs.

Control of space heating

3.a Do you agree that functional timers and thermostats should be a mandatory system component when a boiler is installed?

HHIC believes that as a minimum timers and thermostats should be a mandatory part of any boiler install. Consumers should always have the ability to control when their heating comes on and to what temperature.

3.b Will increased demand lead manufacturers to diversify designs to make it easier for consumers to find a product that suits their needs?

We believe that a natural consequence of the new requirements set out in this consultation will be a greater range of heating system products for consumers to choose from. By mandating certain controls, such as programmable timers and thermostats, the market for these products will inevitably be widened whilst consumer awareness of them and their benefits will also inevitably increase.

This will, in turn, lead the market to develop new products and improve existing ones to cater for the increased demand. The range of products available for controlling domestic heating systems is already rapidly developing, as evidenced by the significant increase in the number of smart home systems available in recent years. These changes will compliment and accelerate this trend by making consumers more aware of the many options for enhancing the efficiency of their system that are available to them.

3.c What would be the advantages and disadvantages of mandating that all relevant heating system components be capable of communicating using an open communication protocol (e.g. OpenTherm)?

HHIC does not believe that there would be any benefits for mandating that all relevant heating system components communicate with OpenTHerm.
OpenTherm is just a communication protocol between certain devices. All boilers can access controls and heating devices that can 'communicate'. There is no price or energy efficiency gain to be achieved by mandating OpenTherm.

We would draw a parallel with the world of computing, where Apple, Microsoft, Linux and Android operating system all operate. There has been no drive to mandate that all computer components can 'communicate'. Consumers can choose the system that is best for their needs.

For heating devices consumers are not penalised if the communication protocol of their chosen system is closed or open. HHIC also believes that this proposal could

disproportionally benefit certain products and brands over others, which would not allow for a freely operating market.

With regards to the aims of this consultation, reducing energy used to heat homes, the communication language will not affect this and so should not be considered in the final policy.

3.d Do consumers engage effectively with installed timers and thermostats to maximise efficiency?

Every consumer is different in the way they use their system and its additions to control their heating. Many that are conscious of the efficiency of their system will make full use of additions which require their input such as timers, thermostats, TRVs. Others will not make active use of theirs, especially when they are installed in a fixed location out of sight, such as in an airing cupboard or garage. A lack of usage is particularly prevalent when consumers move into a new property that has controls they are not familiar with, or when controls are installed in their home but not properly explained to them.

However, these changes will mean far more conversations between installers and their clients about the requirements set out in this consultation and the options that are available to meet them. This will clearly increase consumers' awareness of what controls are and how they can be used to get maximum efficiency from the new system they are having installed. Furthermore, modern controls are far more intuitive now than they ever have been, and the latest innovations such as smart home automation devices are enabling users to interact with their heating system in new and extensive ways.

3.e Please provide any additional information to support your answers to questions 3a-3d. In relation to question 6, what evidence is there to indicate how engaged consumers are, and to what extent does usability present a problem for any consumers, and particularly vulnerable and disabled persons?

BEIS studies have shown that there is a disconnect between consumers and heating devices, especially traditional heating controls. There has been an evolution in heating control design in the last few years, with new product placing usability at the core. HHIC therefore believes that there are fewer concerns with usability.

If the heating engineer takes into account the needs of the consumer then they will be able to receive an appropriate system that meets the requirements of this consultation.

According to our members a large number of customer call outs are regarded as 'Customer Education Visits' (CEV's) where an engineer is called out to explain to the customer how to operate their time/temp controls. CEV's are the 2nd largest reason for call outs, after water related problems.

Weather compensation

4.a Do you agree that weather compensation should be a mandatory system component when a boiler is installed in a domestic building in England?

HHIC believes that BEIS should provide a number of options and allow the installer to choose the most appropriate component for the installation. We would recommend either weather compensation, wired or GPS enabled or load compensating controls.

In conversations with manufacturers HHIC believes that a move to require weather compensation should be flexible to allow for properties and circumstances where certain products may not be suitable. Wired products will/may require additional floor boards and floor coverings to be lifted, so adds additional customer disruption, inconvenience and cost for minimal gains. If wireless, the battery will/may need changing at intervals and this can cause problems re gaining access to the external control. Wired solutions are not always appropriate dependent on the position of the house, the north facing wall, whether it is a high rise flat.

However there are a number of solutions that could lead to a greater number of weather compensation systems installed and other similar devices. These would be internet enabled weather compensation controls and load compensation controls.

Internet enabled heating controls can access weather data via GPS and so these systems should be considered. However not all homes have the internet.

UK consumers utilise heat in a unique way, unlike most countries we use heat mostly in the morning and then evening and then turn the heating off. In countries where weather compensation devices are mandatory consumers operate their heat over a 24 hour period so maximising the benefits of weather compensation control.

There is also a concern that the additional cost of these devices may lead to a situation whereby installers who abide by the new regulations are penalised as their price for an install

is higher than an installer who does not abide. For this reason communication of the policy and policing by local building control will be vital.

We believe that the future policy should be flexible to allow for either wired or internet enabled weather compensation or load compensation controls to be installed.

4.b Are boiler installers qualified and confident to install weather compensators and set compensation curves?

Modern weather control systems have a number of pre-set options that allow them to be easily installed. Therefore installers should be confident to install them. As the compensation curves are not complex to set this should not be a barrier. It should also be noted that weather compensation systems are installed in new build properties as a matter of course in order to gain maximum benefit under the SAP calculation framework.

Currently policing of building regulations compliance is considered poor and this could exacerbate the issue. A number of installation companies have communicated to us that they are concerned about compliance and so any mandated requirements must be achievable for the majority of heating engineers in order to ensure the requirements are met.

For this reason we favour offering the installer a tiered choice of products to meet the new standard, allowing for their skillset, whilst still increasing efficiency at the level set out in this consultation.

4.c Please provide evidence to support your answers to questions 4a and 4b. In answering, please consider:

- **What technical factors have the greatest influence on effectiveness?**
- **The impacts on energy savings and costs of different types of device, e.g. sensor-based or internet-based**
- **The significance of different types of boiler burner control**
- **Specific circumstances in the home that might make a difference**

4.d What alternative solutions can minimise return temperatures in response to variations in heat demand? Please provide technical details of how alternatives might

work, alongside details of expected impact on heating system performance, equipment supply and installation labour costs.

A correctly installed and maintained system will ensure that return temperatures are appropriate to the heat demand.

HHIC would suggest that load compensation devices and TRVs be considered.

Load compensation systems check the internal temperature of the homes and adjust the info sent to the boiler about required flow temp.

As the set point is approached load compensation should back off the flow temp so that steady state is hit without overshoot. This helps ensure that return temperatures are kept at a suitable level for the system.

TRVs allow for consumers to regulate the temperature of specific parts of the house that may be prone to over or under heating, for example south facing parts of the building or rooms that are shaded. This reduces the level of heat emitted by specific radiators, therefore reducing overall heat demand. TRVs are widely understood by installers and consumers.

Going further

5.a Do you agree that Government should explore options to incorporate these additional technologies into minimum standards?

Passive flue gas heat recovery systems (PFGHR) are coming down in price and are also now being increasingly incorporated into the boiler unit itself. There are also developments in the product that mean it can operate with both combination and regular boilers. HHIC believes that BEIS should continue to explore its role within an efficient heating system. However as this product does not cover all product ranges today it would not be appropriate to mandate the product at this time. BEIS should continue to monitor its development.

Also to be noted that in paragraph 2.40. of the consultation it remarks that combination boilers make up two thirds of the market. This is true of new sales, but approximately 50% of homes have a hot water store.

Smart controls are currently evolving to a point whereby they could be considered in the next change in minimum standards.

TRVs are already installed in the majority of homes in the UK. However HHIC believes that BEIS should ensure that the benefits of TRVs are communicated to homeowners, even if they do not form part of the final minimum standards.

5.b Should the private rented sector be permitted to opt out of more costly policy options, if undertaken?

HHIC strongly believes that landlords operating in the private rented sector should not be exempted from any policy options set out in this consultation. The private rented sector has consistently lagged behind privately-owned homes and the social housing sector in terms of installed energy efficiency measures and privately rented homes have some of the worst EPC ratings in the country. This is mostly due to the fact that in the private rented sector the incentive to improve the efficiency of the home is with the energy bill payer (i.e. the tenant) whereas the means to do so is with the landlord.

Consequently, we believe that it is in the private rented sector that a large proportion of the cumulative carbon savings from improved efficiency sought by the Government can be found. It is for this reason that the private rented sector should be obligated to follow the mandated measures outlined in this consultation. Nobody, regardless of the nature of their tenancy, should be left without the ability to properly control a newly installed heating system which is why the private rented sector should not be given an opt out of any policy options.

5.c If an opt out is offered to the private rented sector should a similar opt out be extended to the social rented sector?

HHIC does not believe there should be an opt out. Households in rented accommodation are more likely to be in fuel poverty and so should expect the same high installation standards as a privately owned property.

Other Technologies

6.a Do installers have sufficient familiarity, training and experience to properly install each of the technologies listed above?

HHIC believes that they do. The current market demand means some may lack experience and confidence but manufacturers generally provide comprehensive instructions and

training as to how to install and commission these products. We feel the skillset of the average installer should not be underplayed, and in recent times this has become an increasingly technical job, requiring the analysis of combustion readings and calculating heat-inputs.

6.b Can installers and consumers make confident decisions regarding which technology is an appropriate solution for a given household?

Through manufacturer training and information portals such as the Energy Saving Trust we believe installers and consumers can make confident decisions.

A recent opinion poll[1] placed heating engineers as the most trusted tradespeople in the UK. In a 2013 DECC[2] report 42% of surveyed households consulted a heating engineer on what heating system to install. Government advice was only consulted by 1%.
This illustrates that consumers in general trust installers to give accurate advice on the most suitable heating system.

However HHIC would recommend that BEIS engage with heating engineers extensively to explain the new policy, what it has been brought in the benefits for engineers. Due to the Green Deal and other recent unsuccessful policies and requirements like PAS2030, heating engineers are likely to be more resistant to change than in the past. BEIS need to work with industry stakeholders to ensure any change is viewed positively and therefore communicated to consumers correctly and with confidence.

6.c Is there evidence to suggest that any of these technologies are incompatible with each other or with any of the technologies mentioned in this consultation?

It is unlikely that homeowners would have both TPI and Automated Optimisation as separate controls unless built into the same control unit.

6.d Do consumers understand how to use TRVs effectively?

We believe that TRVs are a good example of an intuitive control system which consumers tend to understand well. Although there may be a lack of knowledge around how TRVs work in the technical sense, the majority of consumers understand the advantage of being able

[1] http://www.installeronline.co.uk/britains-most-trusted-traders/
[2] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191541/More_efficient_heating_report_2204.pdf

to control the temperature in individual rooms without adjusting the whole system. Most consumers would understand that they operate as a useful addition to other heating controls such as thermostats and timers.

6.e Are there other technologies that should be considered on an even footing with those listed above?

6.f Please provide any evidence in support of your answers to questions 6a-6e. In answering question 6a please consider any practical barriers affecting any of the technologies, and any steps that could be taken to address those barriers.

7 What evidence is there that TPI control can deliver energy savings in English households, and what is the range of energy savings (%) across various property types and circumstances?

8.a Do the functionalities of automation and optimisation effectively describe the 'smart' controls that offer the greatest benefit? Should there be greater focus on remote access?

We believe that when smart controls are discussed, the focus should be placed on automation and optimisation of heating systems as these are the primary benefits of those systems to the consumer. The ability of many smart controls to 'learn' consumers' habits means that maintaining an efficient heating system will become far easier for the average household in the future.

Whilst the ability to remotely access heating controls is a welcome innovation that many consumers are eager to take advantage of, it does not need any greater focus than that which is given to it currently. Additionally, many smart controls already have the ability to switch boilers on and off depending on the occupants' distance from their home, meaning that consumers may not need to devote much thought to this particular feature.

8.b In what ways could greater uptake of these functionalities promote smart control innovation?

As consumer engagement with Smart Controls grows, the manufacturers will be able to learn which features are valued the most by users. This will lead to greater innovation and development in these areas.

8.c What evidence is there to indicate how long a smart heating control lasts?

Heating controls are reviewed when a new boiler is installed. It is at this stage when they are normally upgraded.

Smart controls are new to market, therefore there will be no market data to accurately indicate lifespan. However as they are built upon existing heating control design there is no evidence that they will have a lifespan that is less than that of a boiler.

Information and advice

9. Is there demand for consumer advice, and how should it be delivered? What more can the industry do to encourage consumer engagement with heating controls and their heating system?

We believe that there is a significant appetite amongst consumers for a greater level of impartial advice on heating systems to be readily available to them. Many consumers feel baffled by the range of brands and product types available to them when they make the decision to update their heating system. We see a joint role for Government, manufacturers and installers in addressing this need for better information. The Government set the regulations that must be adhered to, like the proposals set out in this consultation, and the industry delivers the system to the consumer so it is the responsibility of all parties to ensure that consumers are empowered with the information they need to make informed choices about their heating system.

The Government must effectively communicate why greater efficiency of heating systems is both desirable and essential and how this can be achieved with the use of heating controls.

The industry can improve the engagement of consumers with their heating system and its controls by continuing to strive for maximum intuitiveness. The easier that controls are to use, and better they are explained to the consumer, the more engagement they will have with them at the time of purchase and beyond.

Evidence and analysis

10.a Do you agree with our understanding of the costs associated with each of these technologies?

HHIC agrees and understands the costs in the table.

10.b Do you agree with our understanding of the way costs may change, and the reasons why they may change?

HHIC agrees

10.c Would consumers be willing to accept the additional upfront costs of technologies listed in Table 1, on the basis of reducing their annual energy bills and benefiting the environment?

In the 2013 DECC report on consumer attitudes to heat[3] 62% placed cost as the most important issue when looking at replacing their heating system. Environmental issues were only important to 2%. Therefore any additional costs have to be seen as sensible based on payback and performance. The two other major reasons for customers keeping their old boiler are cost and 'my old boiler is working well'. So any additional cost, complexity and disruption will enhance the customer's resistance to invest in a new boiler, this is directly opposed to what the industry and government should be aiming for.

The other technologies are already relatively mature products and so have a track record of being accepted by consumers, either in the UK or in other European countries. Therefore HHIC believes that the additional cost would be accepted. According to our members payback period is a key customer consideration 2 to 4 years is acceptable, but when you get a payback of 5 years or longer, it becomes less attractive and is harder for customers to accept. We also believe that the consumer appeal of smart controls will help with consumer acceptance.

10.d What evidence is there on the impact of each technology on the performance of domestic heating systems? How might this change with further innovation?

3 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191541/More_efficient_heating_report_2204.pdf

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HHIC believes the table illustrates the current impact on the performance of domestic heating systems. Further innovation would help increase savings both on bills and on carbon emissions.

10.e Our Impact Assessment currently only considers natural gas. How might consequences be different for oil or LPG boilers?

The savings for oil and LPG should be comparable.

10.f Please provide any further information to support your answers to questions 10a-10e.

Hydraulic Balancing

11.a Do heating engineers share a common understanding of what hydraulic balancing entails, and is it undertaken regularly when a boiler is replaced or serviced?

Yes, this forms part of the commissioning process and relevant information is currently recorded on the Benchmark Commissioning Checklist. In conversations with installation companies they say that all radiators on a new/replacement boiler installation will be balanced to ensure an even heat up time across the system. If this is not carried out correctly, customers will complain about some of their radiators not heating up adequately.

11.b What practical barriers might prevent a central heating system from being hydraulically balanced (e.g. system size)?

Access to radiator valves, pump etc. will be required to make any necessary adjustments and/or take temperature readings. These could be a barrier if they not easily accessible. But this would not be a common occurrence and as the commissioning requirements of a new system require balancing it should still happen.

A larger system will be more time-consuming to "balance" but we would not consider this a "barrier".

11.c What is the average cost to a consumer when hydraulically balancing a central heating system?

Nominally nothing. This is entrenched in the commissioning process. The cost will generally be a labour cost, dependant on system size and configuration, and hence duration. This will be already built into existing costs.

11.d What evidence is there to demonstrate the impact that hydraulic balancing can improve the performance and/or carbon intensity of domestic heating systems?

As balancing is currently a requirement of commissioning, existing studies on the performance of domestic heating systems would already include the savings as part of the overall performance calculation. An unbalanced system would cause performance to deteriorate however this is no current research into this area. HHIC would help support BEIS if a study of the impact on balancing on heat system performance was required.

Return temperatures and radiator sizing

12.a What flow and return temperatures are typically set for a condensing boiler at the point of installation?

Flow and return temperatures are typically set as per the boiler manufacturers' instructions, including specific guidance on system design and configuration. These will be configured to ensure the boiler condenses in situ.

12.b Can lower return temperatures be implemented in the existing housing stock without upsizing radiators on a grand scale?

It is very likely that improvements have been made to the fabric of the majority of buildings since the original radiators were sized and fitted, therefore the radiators are oversized with potential to run at a low temperature.

12.c Should Government consider setting a maximum return temperature in the future?

HHIC would not object to a maximum return temperature being set for new installations. However the majority of installations would already be set at a level to ensure condensing mode.

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12.d Please provide any further information to support your answers to questions 12a-12c. Please consider what barriers might prevent lower return temperatures being set in the home, or which may prevent an installer carrying out a heat loss calculation.

Cleaner systems

13.a Do installers comply with requirements to treat systems for sludge and limescale when replacing a boiler?

Yes, there is often an attempt made to comply, but the quality of work carried out in this regard is often variable. A system-cleansing procedure such as a "Powerflush" is often a time-consuming (and hence costly) measure. This cost may well be a barrier as consumers often purchase on price. Greater awareness of the necessity and benefits of appropriate water-treatment, correctly undertaken, may be useful for both installers and consumers alike.

There are now lower costs solutions available based on magnetic technology that are proving effective in treating sludge and are popular with installers.

Clean and treated water is required by the boiler manufacturers, failure to do this can/will be a cause of boiler breakdowns, noise and reduce the lifespan of the boiler and associated components.

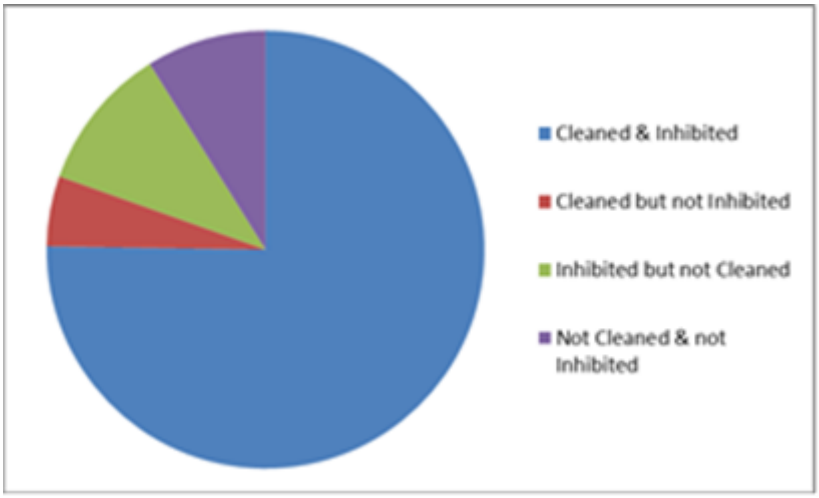
Additionally, poor water quality can/will invalidate the manufacturer's warranty leaving the customer unprotected.

So a Cleanse or Flush should be carried out on nearly every installation, the exception is for a sealed system which is in good condition and has no signs of sludge (may already have a magnetic filter).

BS7593:2006, a code of practice that's adopted in the Domestic Heating Compliance Guide, supports this requirement

An HHIC member company has a service that, after cleaning and treating a system after installation, component replacement or repair, installers send water system water samples to an independent lab to verify that the system has been properly cleaned and treated.

The results can give a good indication of compliance levels. Of approximately 143,000 submissions in the member's database- 75% passed.



Looking at those that failed:

- Around 11% failed because the system is not clean but inhibited evidence perhaps of under dosing water treatment.
- Around 5% failed because they were clean but not inhibited, it is unlikely that an engineer went to the trouble of carrying out a labour intensive clean but then did not add inhibitor.
- Around 9% failed because the system was neither cleaned or inhibited, clear evidence that no water treatment was carried out.

However this data will be collected from larger installation companies who will have more comprehensive quality procedures in place. Therefore industry estimates that only approximately 50% of installations have any form of water treatment and anything up to 50% of those may be inadequately treated.

Under dosing is a significant issue. Most inhibitor manufacturers provide an inhibitor that is designed to treat up to 100 L (maximum of 10 radiators). The installer survey showed that systems up to 100 L only covered 74% of installations that they worked on. Given that installers typically work to a rule of thumb of one bottle of inhibitor or cleaner per system, this means that 26% are likely to be undertreated and therefore not operating at their maximum energy efficiency. Additionally inhibitor levels will be seriously depleted by sludge within the heating system as the inhibitor coats the magnetite sludge leaving less product available to protect the metal surfaces within the heating system. Analysis of

heating system magnetite sludge shows that the surface area of 1g of dispersed sludge could produce as much as 0.75m2 of additional surface area to inhibit.

Within commercial systems this is recognised in both BISRIA BG 50 and BS 8552

BISRIA BG 50 Water Treatment for Closed Heating and Cooling Systems - Section 4: Chemical Water Treatment, recognises that chemical inhibitors can degrade and also that chemical inhibitors are used up through absorption onto the surface of debris within the system. Consequently they make the recommendation that systems should be checked and topped up at least every 3 months. This recommendation is also written into BS 8552 Sampling and monitoring of water from building services closed systems – Code of practice

The only difference between commercial water treatment solutions and domestic ones is system size. Both operate at equivalent temperatures and pressures and formulations of 4 chemical inhibitors are based on the same materials. Consequently system monitoring needs to be undertaken in domestic systems for the water treatment regime to remain efficacious. However it is not practical to have such strict servicing requirements within the domestic sector, but it is perfectly feasible to extend the annual boiler check to an annual system check. Government should consider implementing a system check with the minimum requirement of:

1. An annual system check for inhibitor levels, and top-up to optimum level if necessary.
2. Re-dosing after a maximum of 5 years intervals

A simple and cost-effective methodology has been developed by BEAMA members for annual inhibitor testing.

These recommendations are consistent with those given in the Westminster sustainable business forum report “Warmer & Greener: a guide to the future of domestic energy efficiency policy”

Consequently in order to ensure that systems operate at their maximum efficiency it is essential to include an annual system check for inhibitor levels, and re-dosing after an appropriate time period to ensure that the inhibitor is not been depleted.

13.b What evidence is there to demonstrate the impact that these treatments can improve the performance and/or carbon intensity of domestic heating systems?

A report by Gastec CRE entitled the 'Final report on efficiency effects of addition of "sludge" to a boiler and radiator system & subsequent cleaning options & efficiency effects' demonstrated the effects on heating effectiveness and boiler efficiency of a typical amount of sludge in a system. It showed that a typical amount of sludge reduced heat transfer to a space to be heated by about 15% and reduced boiler efficiency by about 3%.

There is also clear data to support the theory that the lack of, or poor water treatment has a major effect on system reliability and breakdown. There is a clear link between cleanliness (as measured by system water turbidity) and boiler reliability.

Research and testing by a major boiler manufacturer revealed that 87% of boiler call-outs were to systems without correct water treatment. HHIC would be willing to assist BEIS with further research in this area and our members would be able to share additional data.

There is clear evidence that sludge circulating within a heating system has a serious detrimental effect on system performance as stated above. Consideration should therefore also be given to installing an effective magnetic filter within a heating system to remove circulating sludge to ensure that the system is run at optimum efficiency.

Cold 'spots' on radiators, blocked heat exchangers and pipework, sludged up pumps and valves, noise, slow heat up time etc are all very common causes of customer call outs. These are a nearly always a direct result of dirty water (and/or poor system design) in a system

Targeting buildings off the gas grid

14 What action should Government take to reduce the use of coal and oil in buildings? Over what period of time should the transition occur? Which levers should be deployed to support homes that are harder to heat?

We believe that the focus of the Government, in the first instance, should be to eliminate the use of coal as a primary heating source as soon as is practically possible. The Government has already committed to ending the use of unabated coal for electricity production by 2025 and so this is a logical goal which should be pursued in tandem.

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Oil is a much more commonly used and less polluting heating fuel, particularly for rural households. The Government should therefore focus on providing connections to the gas grid where practical and providing alternatives to coal given that it is a far more polluting heating fuel.

For homes in remote locations and where it is not practical or cost effective to connect to the gas grid, the use of a high efficiency oil or LPG condensing appliance would provide an immediate low cost option for consumers in reducing carbon emissions. Modern oil and LPG boilers can also achieve efficiencies of up to 93% and the installation, to meet building regulations, would also trigger the mandatory fitting of modern controls, which would further increase the overall efficiency of an existing system.

Innovative solutions

15 What other innovative solutions or opportunities exist that may have a tangible impact on emissions from heat in buildings, either in the next two carbon budgets or out to 2050? Please provide any supporting evidence.

HHIC believes that the key focus of this consultation should be on the simple changes that are needed to improve heating installations in the UK.

As we detailed in our report 'Boiler Plus: The next step in boiler regulations' Simple regulation using the Energy Related Products Directive (ErP) can lead to significant carbon savings… it is recommended that all new boilers should be installed alongside compensating controls. Doing so could reduce 2020 greenhouse gas emissions by 710,246 tCO2e at no net cost to the government or consumer.

We believe that the simplicity of this solution would entail programmer, timer and ensuring the system is flushed and free of sludge. There are also options around automated weather compensation with load compensation which can be added to this, but these should be flexible.

These changes should be made first. BEIS can then look in the future at additional measures. If we try and complicate the regulation now it may never come into force effectively or fairly and this will set the UK and the industry back.

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HHIC also believes that 'Green Gas' is the innovative energy solution that will have the potential to transform the energy debate in this country and the one technology that can allow us to actually meet our 2050 decarbonisation targets.

Contact

If BEIS wishes HHIC to clarify any of the points outlined in this consultation please contact Isaac Occhipinti, Head of External Affairs at isaac@eua.org.uk, 01926 513746 or HHIC, Camden House, Warwick Road, Kenilworth, Warwickshire, CV8 1TH.