

Eurofuel: (i) Issues relating to the 19.4.2010 draft Implementing Measure Documents 3, 5 and 6 of Eco Design (EuP) Lot 1 (Boilers), and associated draft version of the “EcoBoiler” Model; (ii) Overall Workability, and Associated Lots

A. Fundamental Remarks

- As requested by the European Commission on 19.4.2010, in Part B of this paper Eurofuel gives further feedback comments on the present drafts of the Lot 1 Implementing Measure Documents 3, 5 and 6, and the latest 19.4.2010 draft version of the associated “EcoBoiler” model.
- However, **Eurofuel expresses strong support for a thorough, transparent examination of the alternative “modular” approach mechanism for Lot 1, recently proposed to the European Commission as a discussion document by the European Heating Industry (EHI).** Eurofuel strongly recommends that this alternative, simplified modular approach be examined in detail by the European Commission, and by all stakeholder organisations and Member States. It is Eurofuel’s belief that the EHI “modular” alternative approach could offer a workable, efficient, technology-neutral and transparent methodology, which could be much more easily utilised by all stakeholders, in order to expedite the Lot 1 EuP implementation process. The EHI “modular” approach could also expedite progression towards a “level playing field” across the related “Lots” associated with heating, such as Lot 10 (air-conditioning used for heating), and Lot 15 (solid fuels), either in the short- or in the medium-term.
- What the EuP Lot 1 implementation process presently seems to require is a solution which usefully utilises the technological lessons learned over the last three years during the development and refinement of the “EcoBoiler” model, particularly regarding newer technologies, but which is much less complex, and which is much more practicable to use, and to understand. Eurofuel understands that the proposed EHI “modular” approach under discussion combines the Boiler Efficiency Directive (BED) product efficiency methodology for heat generators/ boilers, with discrete “add-on” modules for controls technologies, and the incorporation of solar thermal hybrid technologies.
- Eurofuel summarises in Section C, for reference, its comments submitted on 11.12.2009, which are still pertinent regarding the overall procedural adoption of “Lot 1” measures, and which reinforce the need to examine thoroughly the EHI “modular” alternative to the “EcoBoiler” model, as a potentially viable route to implementing Lot 1, and related Eco Design Lots.

B. Technical Comments on Draft Implementation Measures Documents 3, 5 and 6, and Associated Draft of “EcoBoiler” Model, Version 19.4.2010

- (i) The Boolean component entitled “MOD”, and its effect on efficiency (approximately minus 2%) should be removed. The reasoning behind this conclusion is the following, about which Eurofuel can supply further supporting documentation to the Commission, as required:

- The effect on system efficiency of adjustments to the flow temperature through the system control is not significantly dependent on whether the burner is modulating or non-modulating.
- Burner modulation or non-modulation will affect the boiler heat exchanger efficiency and this is already accounted for in the appliance efficiencies, which are inputs to the “EcoBoiler” model.
- System controls which signal a required flow temperature coupled to an appliance which can respond to the signal will affect both boiler heat exchanger efficiency and fluctuation losses. Credit for these system efficiency improvements are accounted for in the “EcoBoiler” model through the “cctrl” variable.

(ii) The control options which are proposed appear to restrict choice and design options. The requirements for adjustment of flow temperature and modulation of the burner are linked in some of the control options.

An example is Control Option 6, where a modulating room stat signals the required flow temperature. This type of room stat could control an appliance with a modulating or non-modulating burner. However, the definition in draft IM Document 3 (19 April 2010) states that the burner modulates down to a minimum modulation level below which a cycling regime is typically imposed. Eurofuel therefore asks for clarification. Does the above mean, therefore, that:

- a modulating burner is required?
- or
- it would be acceptable to select this system control for use with an appliance that has a non-modulating burner, on the basis that for a non-modulating burner the minimum modulation level is 100%, and the burner will cycle?

A second example is Control Option 9, regarding a modulating controller and satellites. The description in IM Document 3 describes a variable capacity boiler. Eurofuel sees no reason why the controller could not control a boiler with a fixed capacity (non-modulating burner). It is only necessary to adjust the flow temperature to match boiler output to system demand (ie, as per Option 4).

In addition, Eurofuel also sees no reason why there should be a different credit for the same system control, but where a different type of burner (non-modulating or modulating) is used. Therefore it is not necessary to separate Control Options 3 and 4, or Control Options 7 and 8.

(iii) For a fossil fuel appliance without a buffer or solar support, there are buffer losses in the calculation results (please refer to the “Qbuf” cell D60, on the GUI page of the “EcoBoiler” model).

Eurofuel recommends that equation 24 be reviewed. The relevant question is: should “Qsolbuf” be multiplied by the Boolean component “SOL”, in order that that this loss only occurs if there is solar support?

- (iv) For kerosene, the nitrogen fraction is typically zero to 10 mg/kg, rather than the figure of 140 mg/kg which is suggested in Table I.3 of IM Document 3, page 7. (However, note that the nitrogen fraction value quoted for gasoil in the above table is in the correct range.)
- (v) The “open protocol” credit of 0.5% could cause uncertainty, and extra upfront costs for the associated boiler. This is because the connections required on the boiler circuit board and the electrical power required to support future control software cannot be predicted. Therefore, this credit is questionable, and should be removed.
- (vi) As Eurofuel already pointed out in its 5th March 2010 comments, there are four option types of “ λ ” value/ air-fuel mixture (AFM) currently cited in the “EcoBoiler” model, namely: 1. “Atmospheric”; 2. “Pneumatic”; 3. “Ionisation” and 4. “Next generation”. The above options are largely specific to gas-fired boilers. The nearest equivalent technology options which are currently available for oil-fired boilers can be approximately covered by two technology options:
 - “yellow-flame” burners correspond to option “2. Pneumatic”, approximately; and
 - “blue-flame” burners correspond approximately to “3. Ionisation”.

If the model component regarding air-fuel mixtures is to remain in the “EcoBoiler” model, then there must be viable and credible options available to input for oil boilers, and Eurofuel again recommends the inclusion of the above two technology options.

- (vii) At present there is no methodology available within the “EcoBoiler” model to correctly incorporate two-stage burners for oil boilers. Since the “EcoBoiler” model should be forward-looking, it should be amended to facilitate the inclusion of two-stage burners.
- (viii) Oil boilers are frequently sold without an integrated pump; normally, a high-efficiency pump is subsequently added on by the installer. (Indeed, Ecodesign/ EuP Lot 11 (circulators) will prohibit poorly-performing pumps to be placed on the market in the next few years.) For present conditions, the “EcoBoiler” model must be amended to give the option to select the incorporation of a high-efficiency pump in conjunction with an oil boiler, and then to assign an appropriate efficiency credit for the installation of such a pump.
- (ix) The “EcoBoiler” model is supposed to represent accurately a simulation of currently-available technologies, including Best Available Technology. However, according to simulations done in the UK by Eurofuel’s members, it should be noted that variations in the recent versions of the EcoBoiler model from June 2009 - April 2010 alone have accounted for the same best condensing oil boiler to be simulated via EcoBoiler to have a “system efficiency” varying from 65.4% to 74.9% (note that no change has been made to the actual boiler technology during this period).

When one considers the tight draft suggested “Lot 1” labelling specifications from the 24/25 June 2009 Consultation Forum IM Documents, the above “system efficiency” variations are very large by comparison, with equally potentially very large technological, socio-economic and policy implications for the oil heating industry, and for Europe’s heating industry as a whole, since these variations will be similarly replicated across different technologies. The scale of the variations reflects the continued unstable nature

of the EcoBoiler model, which has still not reached a stable state despite a constant process of revisions since 2007.

C. Summary of Eurofuel Comments from 11.12.2009 for Reference - Procedural Transparency, Related Implementing Measures Documentation, and Related Legislation

1. Importance of Resolving Problems associated with the “EcoBoiler” Model, Testing Methodologies and Assumptions - re. Both EuP and Energy Performance of Buildings (Recast) Directive. The Energy Performance of Buildings Directive (Recast) now formally embeds the principles of the EuP directive - regarding heating and cooling systems - at Member State implementation level. It is therefore even more important to rectify anomalies in the “EcoBoiler” model and associated Implementation Measures (IM), or to decide on an alternative implementation route to the “EcoBoiler” method, which can achieve consensus regarding “best practice” amongst the external stakeholder experts providing input, from industry and NGO bodies.

2. IM Documents 3, 5 and 6 being reviewed are inherently related to IM Documents 7,8 and 9, and to the associated “EcoBoiler” model. IM Documents 7, 8 and 9 must therefore be revisited in the light of drafting progress made to IM Documents 3, 5 and 6, and all the documents must subsequently be simultaneously reviewed together as a coherent package. The IM Document 7 from June 2009, as updated and amended, must be cross-checked by an independent third party entity, to ensure that the “EcoBoiler” model, or the EHI alternative model - if adopted - utilises accepted CEN procedures, and that any departure from CEN procedures is firstly fully documented, and secondly is justified.

3. Once all EuP Lot 1 IM Documents have been revised, and the “EcoBoiler” Model - or Similar Model - amended, the whole complete package must be revised in its entirety, with sufficient review time being given to stakeholders and Member States

All IM Documents regarding EuP Lot 1, plus the associated “EcoBoiler” or other model utilised, ***are reciprocally related, and must be reviewed together***, for procedural transparency, as a “draft final” package, once subsequently prepared in “draft final” format. This review process must allow sufficient time for external stakeholders and Member States’ representatives to make any additional comments.

4. It is unacceptable for the EuP Lot 1 IM Documents and associated “EcoBoiler” model amendments to proceed in isolation from associated heating and cooling technology “Lots” in the wider EuP process

Member States’ national and/ or regional implementing or advisory bodies, which address building and heating/cooling codes, and the implementation of the EuP directive, will require some form of “EcoBoiler” model, or preferably a simpler, more stable, reliable type of model. The model chosen must have a set of EuP IM Documents which provide all stakeholders with consistent and fair guidance, and which ensure equal technical treatment when assessing heating and cooling system options via EuP, which will now be “nested” within the EPBD, via the acceptance of the EPBD Recast.

Eurofuel has already called for (on 24.07.2009, and on 11.12.2009) equal and common application across all heating/ cooling-related EuP “Lots” of the system process for assessing the “seasonal efficiency” (or “specific efficiency”), presently under discussion with regard to IM in EuP Lot 1. This means that a common approach, using the same modelling and efficiency parameters, must be applied to, inter alia: Lot 1 (“boilers”), Lot 2 (“water heaters”), Lot 11 (“circulators”), Lot 15 (“solid-fuel boilers”), Lot 20 (“local room heating products”) and Lot 21 (“central heating products using hot air”).

Eurofuel once again reiterates and emphasises the need for a consistent and practicable approach for stakeholders to make comparisons between different heating/ cooling-related Eco-Design/ EuP “Lots”. This could potentially be offered in a transparent manner by the simplified “modular” approach being proposed by EHI, and Eurofuel reiterates its support for further exploration and discussion of the EHI modular proposal involving all stakeholders. In this way the present impasse on Lot 1 Eco-Design implementation might be resolved, enabling the actual energy-saving potentials of Lot 1 to be realised more quickly, more understandably, and more transparently.

Eurofuel looks forward to comments from DG Energy with regard to the above points concerning the Lot 1 implementation process, and related Lots, and hopes that these comments are useful in attempting to push forward the EuP Lot 1 process, and to achieve scientific rigour balanced with pragmatism.

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Luxembourg: Mazout-info Luxembourg ASBL (M.I.L.), www.mazoutinfo.lu

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UK: OFTEC (Oil Firing Technical Association), www.oftec.org

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