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Position of ECOS, INFORSE-Europe, EEB, Friends of the Earth Europe and WWF-European Policy Office

on the EC Working Document on possible Ecodesign and Energy Labelling requirements for BOILERS (document of 4 June 2009)

In the context of Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy using products.

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Cool Products for a Cool Planet is the NGO campaign for ambitious Ecodesign Policies. See www.coolproducts.eu

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Introduction

ECOS, EEB, Friends of the Earth Europe, WWF and INFORSE-Europe welcome the new Working Document from the European Commission on boilers and the efforts to simplify and clarify the methodology supporting the energy efficiency calculation.

However, we are still concerned by the low level of ambition for this top priority product group. As it stands, **the measure would certainly miss the ambitious potential outlined in the preparatory study**. It would jeopardise the overall ability of the Ecodesign Directive to go beyond just offsetting market trends in the energy-using product sector. We definitely need to see an absolute decrease of this sector carbon footprint by 2020, as new studies suggest that climate targets in advanced industrialised countries are even not sufficient to halt global warming[1].

Considering that the discussions on policies for boilers started back in the early 90's in Europe, the EU is inexplicably late in setting serious energy efficiency and energy labelling requirements. Despite the fact that enormous amounts of energy and CO_2 could have been saved already, the Commission's current Working Document is still not up to the challenge in our opinion. It is time to conceive **a policy package for heating equipment** which would revolutionise practices, accelerate innovation and fill the gaps by adequate funding.

The required comprehensive policy needs to **integrate product, system and building approaches in a consistent way and through interrelated policies (Ecodesign, EPBD…), impose tough construction and refurbishment codes in all Europe, overcome the usual barriers and provide the necessary financing mechanisms**. Funds should be made available from economic recovery plans and auctioning of carbon credits. Only a package of complementary measures may solve the problems that each of these policies will otherwise face at its level.

Such a concerted strategy on building equipment is unfortunately missing at the moment at the European level, and we do not see such an effort being reflected in the current approaches to EPBD, Ecodesign and most national policies.

We are fully aware of the hurdles and different interests to be conciliated, but we also remind that heating equipment represent half of the energy consumption and potential savings in the energy-using product sector. A bold approach on heating equipment could help us save more than 200 million tons of CO_2 in the EU-27 by 2020, which is probably more than what we can hope to achieve in any other sector.

[1] See for instance "Halfway to Copenhagen, no way to 2℃" in Nature from 11/06/09. "*National targets give virtually no chance of constraining warming to 2 ℃…*"

General opinion on the level of ambition

The Working Document specifies that the requirements are set to accommodate the possible problems occurring when replacing small boilers in some apartment blocks, which means that the overall requirement for XS and S sizes have been severely watered down from 76% efficiency to 64% in comparison to the previous Working Document from January 2008.
This is absolutely not an approach we support, since it would waste a lot of the potential savings. We expect a bolder vision from EU decision-makers: problematic dwellings should be treated differently, by providing funds for chimney transformation or shift to centralised/network heating, thus not hampering serious Ecodesign requirements for the rest of the stock.
Also, the requirements suggested for boilers above 70 kW look confusing, as they mix a requirement on the heat generator at full load (which is not very high), an installation requirement whose legal grounds could be challenged, and a "recommendation" for EPBD which we believe could be set in the Ecodesign measure.

We rather expect the measure to promote a switch to **renewables and best condensing boilers only**. The technologies are available and we cannot afford to wait some more when taking into account the slow replacement rate. This leaves us no choice but to go rapidly for maximum ambition. This is also in line with the least life cycle cost principle.

This suggests setting the minimum requirements for 2013 at the levels of best condensing:

- **80% of seasonal efficiency for small & medium boilers (up to 70 kW)**
- **96% for larger boilers with appropriate controls**

In addition, we note that the proposed requirements for 2011 are not much different than those in the EU directive on boilers from 1992! It would be unthinkable not to go higher than this 15 years later, when several Member States already have much more stringent policies in place.

- **Requirements for 2011 should be 64% for small & medium boilers, and 75% for larger.**

We also believe that the proposed measure will not have a decisive effect to improve the heat pump market in the medium-size category. Low performing heat pumps would still flourish for long on the EU market.

- Therefore, **we request all heat pumps to meet the criteria of the new RES (renewable energy sources) directive.**

*We estimate that with these levels, the EU would save around **180 more TWh** of primary energy by 2020, about as much as **twice** the savings delivered by the ban of incandescent lightbulbs from all Europe. This is a saving we must not fail to take advantage of.*

- **The requirements for the water heating function of combi-boilers could be raised for small sizes**. However, we are pleased to see that the levels for larger sizes are more ambitious than in previous documents related to dedicated water heaters.

- We note that **the limits on NOx have been strongly weakened compared to previous official documents** (by 40% for gas and 300% for oil boilers). This new proposal could be justifiable only if these limits are made tougher in a further tier and the requirements on energy efficiency are improved in the sense we call for.

- Finally, we fully support a fuel-independent Energy Label, but recommend a simpler scale in order to avoid consumer confusion and facilitate a consensus on the layout. Instead of already introducing 3 classes on top of A (which will trigger controversy) and leaving 3 classes empty at the bottom, **we suggest using a 7-class A-G scale. Conventional non-condensing technologies would populate the E, F, G classes, while the upper ones will reward condensing and renewable technologies.**

Other comments on key aspects

➢ We question **the exclusion from the scope of boilers operating with 10% biofuels**. **This may create a major loophole in the legislation.** To us, it is not acceptable that boilers operating with a portion of (potentially unsustainable) biofuels escape any Ecodesign requirements. No loophole should be created without robust evidence.

➢ We still **do not see the reason to set a minimum threshold on boilers covered**. It would be surprising that low-output boilers (used for instance in passive eco-friendly houses) do not comply with any minimum efficiency requirement.

➢ We suggest relating the efficiency of cylinders to the surface rather than the volume, to avoid favouring large cylinders with thinner insulation (losses are function of the surface, not the volume). In practice, requirements and label could be linked to the volume to the power of 2/3 ($V^{2/3}$). We also believe that **the Energy Labelling of cylinders could be designed so that it includes more than 3 classes after 2011** (by raising the level of the A class and splitting the B).
The proposed bonus of one class for an extra heat exchanger seems too generous, a more reasonable bonus would be 5 Watt for each heat exchanger.
We also remark that there is no test method provided for cylinders.

➢ We are concerned that, contrary to what is envisaged in Lot 10 (air-conditioners), **the methodology does not address refrigerant leakages in heat pumps**. We recommend a **much more aggressive** approach to promote low-GWP fluids. The calculation methodology for requirements and labelling could be improved in a way to compensate for the additional effects on climate from refrigerant losses. *We also suggest other options in our position paper on the Ecodesign of air-conditioners from 17 June 2009* [2]*.*

➢ In document 8, a benchmark of +10% for distribution losses in a building with collective heating compared to central heating in a flat, seems way too much. 5% would be a more realistic value.
Also, a benchmark of +10% for fossil fuel in floor / wall heating instead of radiators is not justified: although this form of heating reduces fluctuation & stratification losses in the rooms, very often typical floor and wall heating increases the losses in a building, an effect that is at least as large as the benefit of better condensing mode operation of the boiler.

Remarks on the model and definitions

- The methodology only covers standby losses during the heating season, whereas it is the full year standby in the Lot 10 “Air-conditioners” methodology. We recommend using the yearly overall standby losses in both methodologies, and we call for a mandatory 0 Watt mode on reversible air-conditioners / heat pumps for off-season periods.
- The definition of the “heat generator” on page 3 is unclear: is the heat exchanger (which converts the heat in the flue gas to heat in the water) part of it or not?
- It is not very clear to us which methodology is concerned in the “efficiency of the heat generator” mentioned on page 22.
- On page 10, the "Annual carbon emissions C" are not carbon emissions, but rather greenhouse gas emissions.
- On page 14 (Ambient heat energy contribution), the water-source temperature of 10°C looks too high, we recommend to reduce it to average outdoor temperature during heating season (6.5°C), which is an average of water from deeper ground sources and from surface water.
- On page 15, as far as we see the method does not clearly show how to distribute ventilation air to space heating demand and water heating demand, leaving a risk of double-counting it.

[2] *Available on: http://www.ecostandard.org/downloads_a/air-co_eup_environmental_ngos-june09.pdf*

- On same page, the tank losses for a tank used for electric back-up should be included, also when the electric heating is not the only heat source. Any tank that is kept warm by the boiler system should be included (with the heat loss of the tank), either in the testing of the whole system or separately.
- On page 16, external pumps are included with higher consumption than internal pumps. This is only correct if they are not controlled by the boiler control; if controlled by the boiler control they could be included with same consumption as internal pumps, highest value. Pump control is included in the calculation in Document 6, so external pump consumption could just be set to least efficient internal pump, assuming that plumbers typically take the cheapest option.
- On page 17, the benefit of multi-zone outlets (multi TV) is not clear. Are there any documentation for this?
- On same page, it does not seem justified to have a default value of 40*Asol for the solar tank heat exchanger (UAsol). As an alternative to a test, there should instead be the option of calculating UAsol based on the heat exchanger properties.
- On same page, it is unclear if the declared minimum heat output for heat pump in "turndown ratio" should be for +12℃ (as maximum heat output).
- On page 18, regarding the collector loop loss (Upipesol), how can suppliers provide this in case the piping is not part of the solar collector system supplied? (the pipe is often standard plumber supply with heat resistant insulation.)
- On page 27, the parameter 26 should be "HP min. outdoor temperature" and not "HP max. outdoor temperature" as in the text.
- On same page, in parameters 40-57, the conditions for efficiency values 1-5 are not specified.
- On same page, the formula for dCOP seems to be missing for staged capacity units.
- On page 35, in the variable capacity units, what is the "required part load ratios"? If it is the part loads that will occur for space heating with Tout given in Table IV.2, this should be clearly stated.
- On page 40, in the formula 19, the setting of parameter "cband" to 0.1 for systems with buffers should require a minimum buffer size.
- In formula 24, including a solar buffer with the heat loss characteristics equal to the system buffer (heat loss during winter) does not see reasonable. The heat loss only occurs when the solar buffer is warm, i.e. after a period with solar insulation higher than the heat demand. It could for instance be reduced to 16.3% as Qsolaux in formula 171.
- In formula 34, the hot water demand (parameter "Lw") for solar and heat pumps is 50% of the hot water test pattern, whereas it is 60% in the water-heater methodology (v.2, Sept. 2008).
- In formula 87, the part on back-up electric heating is only valid for heat pumps and solar, not for fossil fuelled units. At present electric back-up is mostly used for heat pumps, but that could change with the development of micro-CHP, where some manufacturers might want to use electricity for heating in extreme cold weather, rather than having a separate extra boiler that is hardly used.
- If electric back-up is present (ELBU=1) then fossil contributions Lfos and Lfosb becomes zero in formulae 89 and 91. This cannot be right.
- In the “primary energy loss accounting”, It seems that the default of "Tsysoff" at 28℃ can only be reached if a control system switches off the boiler when there is no heat load. This value is not likely for boilers with simple controls (line 103 - 106). It also seems that the default of "Tsysoffb" at 28℃ can only be reached if a control system switches off the boiler without cycling, to keep the boiler at the set temperature (line 137 - 139)
- As we mentioned previously, no penalty for refrigerant losses in heat pumps is included in the model.

END.