Position Paper

COGEN Europe recommendations:

Lot1 Ecodesign/Energy Labelling revision

Brussels, 15 November 2021

COGEN Europe welcomes the work carried out for the revision of the Commission Regulations EU 811/2013 and EU 813/2013 with regard to energy labelling and ecodesign requirements of space heaters and combination heaters. While fully supportive of an ambitious approach to energy efficiency of space heaters, COGEN Europe considers that the proposals made for micro-cogeneration systems are inconsistent with the "energy efficiency first" principle and the broader EU Green Deal objectives.

1. Proposed micro-CHP energy savings methodology is not adequate

Identified issues:

- The proposed method for micro-CHP space heating efficiency disregards the value of micro-CHP in providing demand-side capacity, supporting overall system efficiency and significantly reducing primary energy[1].

- The proposed method for micro-CHP deviates from the approach taken on CHP efficiency in the Energy Efficiency Directive and the Energy Performance of Buildings Directive. No other Lot1 products require different methodologies to be applied for compliance with Energy Labelling, Ecodesign, EPBD and EED.

- The impact assessment of the micro-CHP methodology incorrectly concludes that highest efficiency micro-CHPs could attain classes B or C. When applying the proposed method, most micro-CHP systems (including packages) would be assigned to classes D or E.

- If the new method is applied, the Energy Labelling Regulation will likely exclude from funding micro-CHPs which qualify for support as "high efficiency CHP" under the Energy Efficiency Directive. This would render high efficiency micro-CHP ineligible for funding, even when it outperforms the best in class boilers and best in

[1] Ene.field project, 2017. Benefits of Widespread Deployment of Fuel Cell micro-CHP in Securing and Decarbonising the Future European Electricity System

class power plants (i.e. with efficiencies above 53% equivalent to a PEF of 1.9). Furthermore, this would lead to a lack of legal clarity and significant investor uncertainty.

Proposals

- ***Do not apply the proposed micro-CHP method to avoid that micro-CHP solutions are misrepresented to consumers and lose access to funding schemes***
  The proposed method, namely Eta_{son} = (P_{th}+2.65*P_{el})/Phs, combines heat output with electrical output multiplied by a conversion factor of 2.65. This approach deviates from the primary energy efficiency methods taken in other legislation, including the EED and EPBD. The choice of 2.65 as a conversion factor is not clearly explained.
  The results, when applying this method, do not reflect the full efficiency benefits of micro-CHP due to the low value associated with the electricity generated by micro-CHP.
  Under this framework, most micro-CHP systems and packages would be classified under "Class D". This would likely and unfairly disqualify micro-CHP from any support schemes.

- ***Use the "high efficiency CHP" methodology in the Energy Efficiency Directive to assess energy savings from micro-CHP systems in the context of Lot1 Energy Labelling and Ecodesign Regulations***
  Apply the method in the Energy Efficiency Directive to derive the energy savings of micro-CHP compared to the highest efficiency boiler (Ref Etath of 92%) and highest efficiency power plant (Ref Etael = 53%). This method is well recognised and validated to assess the real savings from micro-CHP compared to best-in-class conventional solutions.

$$\mathrm{PES} = \left(1 - \frac{1}{\frac{\mathrm{CHP\ H}\eta}{\mathrm{Ref\ H}\eta} + \frac{\mathrm{CHP\ E}\eta}{\mathrm{Ref\ E}\eta}}\right) \times 100\,\%$$

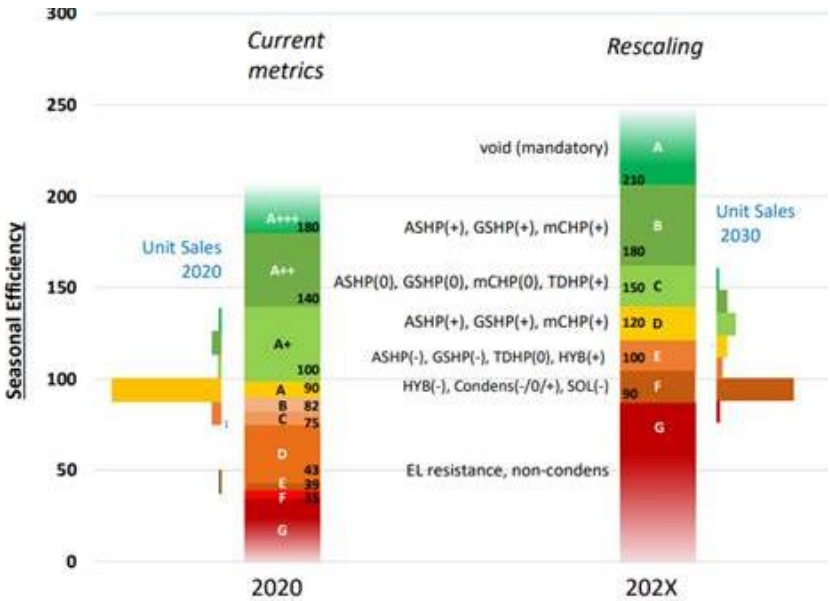
- ***Propose an energy label for micro-CHP within Lot1, reflecting the energy and cost savings delivered by micro-CHP systems, based on the EED method and in line with the Energy Labelling Framework Regulation, as well as the total, electricity and thermal efficiencies***
  In line with the "high efficiency CHP" framework in the Energy Efficiency Directive, top highest classes should be allocated to micro-CHP that saves at least 10% of primary energy (Classes B and C) between 0-10% (Class D). In addition, the ecodesign threshold should be set for primary energy savings of at least 0% compared to the reference best in class boiler (efficiency of 92%) and reference power plant (efficiency of 52%/PEF of 1.9).
  This is in line with the Energy Labelling Framework Regulation 2017/1369, which requires energy labelling to reflect energy savings and cost savings for consumers.
  Moreover, this approach would align the methods in EED, EPBD and Lot1 Energy Labelling and ensure consistency for support and other policy schemes.

Justification

Micro-CHP is a higher efficiency alternative for existing homes that need to change their non-condensing boiler or upgrade their condensing boilers. It is equally a viable option for consumers that need the extra electricity for their electric vehicles or even in a package with a heat pump.
Micro-CHP systems deliver "significant energy and cost savings for consumers" in line with the overall objective of the Energy Labelling Framework Regulation (EU) 2017/1369. In addition, micro-CHP provides multiple system efficiency benefits that go beyond the appliance efficiency level: 1) decentralised power production; 2) grid reinforcements avoided; 3) reduction in peak production requirements; 4) system resiliency. This non-intermittent flexibility capacity is key for space heating efficiency as heat electrifies.

Recognising this, **Regulation 811/2013 identified the top highest classes (A++ and A+) to "promote the use of cogeneration and renewable energy sources"**. Following this logic, most efficient micro-CHP systems and their respective packages should be assigned to classes B and C when rescaling is applied. Yet, this is not the case when applying the new proposed method, which allocates even the most efficient micro-CHP systems to a class D. COGEN Europe's calculations contradict the impact assessment of the method carried out in the preparatory study, which incorrectly concludes that highest efficiency micro-CHP could attain efficiencies above 150% and be classified as C or B (see comparison below).

VHK assessment: Micro-CHPs in classes B-D after re-scaling



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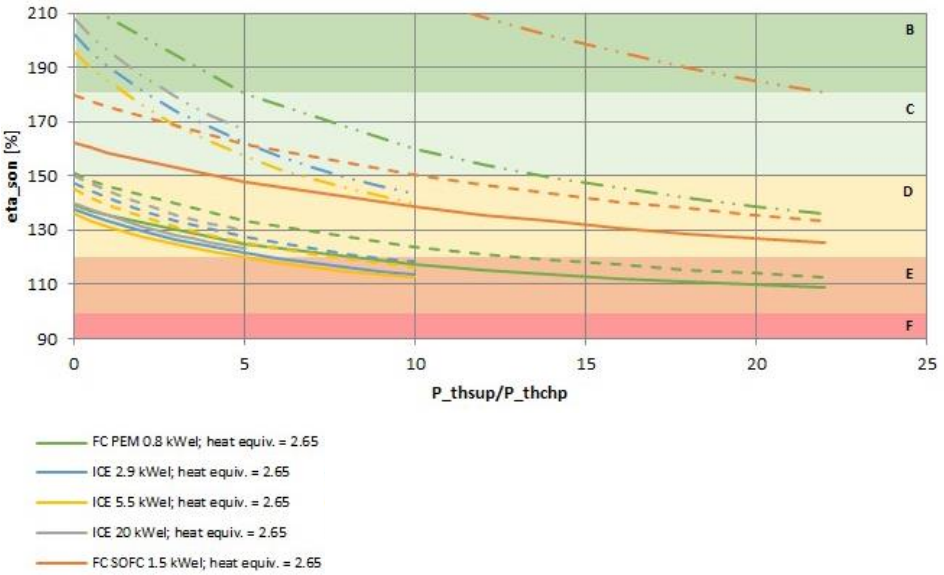
COGEN Europe calculations: Micro-CHP mostly in class D



P_thsup/P_thchp is the ratio between the power of the supplementary boiler and the power of the micro-CHP system when combined in packages

The newly proposed method takes a "final energy efficiency" approach, by adding the heat output of micro-CHP and the electricity output converted into heat via a coefficient of 2.65. Such an approach underestimates the efficiency and energy savings delivered by micro-CHP, by assigning a very low value to the electricity generation by micro-CHP systems. The methodology does not capture the full benefits of micro-CHP, especially with respect to its support for system efficiency and power system adequacy, complementing the electrification of heat. Given the move towards system integration and the promotion of active consumers, especially for residential users, a siloed heat-focused energy label ignores the future trends in buildings efficiency and their impact to the overall energy system.

To address these issues, **COGEN Europe proposes to revert to the validated CHP method provided by the Energy Efficiency Directive 2012/27/EU and consistently used in the implementation of the Energy Performance of Buildings Directive**. The methodology to classify CHP as "high efficiency CHP", including micro-CHP systems, assesses CHP energy savings compared to best-in-class boiler and best-in-class power plants. The calculation is based on reference efficiencies (92% for a heat-only boiler and 52% for a power only plant), which are regularly revised. Such an approach is consistent with the Energy Labelling Regulation, which requires that each label "class corresponding to energy savings, in seven different colours from dark green to red, in order to inform customers about energy efficiency and energy consumption"

2. Greening of fuels/hydrogen readiness

Identified issues:

- Micro-CHP is excluded from criteria for renewable and hydrogen readiness under the Ecodesign proposals

- The requirement to have a hydrogen conversion kit accompanying all hydrogen-ready equipment goes against cost- and resource efficiency principles.

- The PEF for hydrogen disincentivises the development of hydrogen ready solutions and confuses consumers regarding the more environmentally friendly option.

Proposals

- ***Include incentives for the uptake of efficient RES-ready gas appliances through:***

1) *in 2023: the introduction of pictograms attesting compatibility with the use of biomethane, e-methane, LPG*
2) *in 2025: an ecodesign requirement for 20% hydrogen for all gas using appliances,* ***including micro-CHP***
3) *in 2029: hydrogen readiness attesting capability of all gas appliances,* ***including micro-CHP****, of operating safely and efficiently with 100 % hydrogen, either after a conversion or without*
4) *Change the definition of 'hydrogen ready' to avoid that the hydrogen kit needs to be placed on the market by the manufacturer together with the micro-CHP, this would lead to material loss in case there will be no conversion or in case of loss by the end-*consumer. Instead add the conversion kit to the list of parts that should be made available in the material efficiency requirements.

- ***Delete the PEF for hydrogen, to foster and not penalise the adoption of hydrogen-ready appliances***.

  COGEN Europe consider the suggested PEF correction of 1.65 on the energy label for hydrogen ready appliances will be counter-productive. Such an approach does not ensure that roll-out of decarbonized gases and roll-out of future-proof heating technologies is synchronized. Instead, we suggest ecodesign requirements ensuring that each unit is fit for decarbonization. Many Member States have not yet determined their full decarbonisation strategies considering the choice of energy carriers. The effect of the PEF will incentivise consumers to buy fuel appliances that are not hydrogen-ready. When Member States or specific regions do decide to go to 100% hydrogen (e.g. in so called hydrogen valleys), these consumers will end up with stranded investments, because their gas-fuelled space heating appliances will not be compatible with the decarbonised gas grid.

  In addition, the PEF as proposed does not take into consideration the evolution of the hydrogen market in Europe nor the priorities if the European Commission itself to heavily prioritise green hydrogen production. Hydrogen-ready appliances, will not convert immediately to 100 % hydrogen, they will only convert if sufficient hydrogen is available and on the basis of the above, this will mainly be renewable hydrogen.

Indeed, the hydrogen projects collected by the European Commission through the Hydrogen Alliance this spring revealed that 84% of the 1000 projects for hydrogen in Europe (across the hydrogen value chain i.e. production, transmission, distribution, use) are based on renewable hydrogen. Production of hydrogen in these valleys will be mostly based on renewable energy by means of electrolysis not on steam reform; this is also described in the EU hydrogen strategy.

Finally, the PEF for hydrogen ready products does not take into consideration the development of current geography/business models for the use of green hydrogen including for example so called "hydrogen valleys" and more in general the local production and use of green hydrogen. According to the EU hydrogen strategy, 100 % hydrogen for heating could be available in those valleys, meaning that also in these cases, hydrogen ready appliances will work with green hydrogen not the hydrogen mix suggested by the PEF in the proposal.

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