Merged Energy Labelling for Local Space Heaters, Air Conditioners and Comfort Fans: Position Paper

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Introduction

Topten welcomes the revision of the Regulations (EU) No 2011/626 regarding energy labelling of air conditioners and comfort fans and (EU) No 2015/1186 regarding energy labelling of local space heaters. We are convinced that it has the potential to give the market a strong push towards more energy efficiency and independence of consumers.

Specifically, **we support the merging of regulations** for room appliances with the same function into one energy label - this offers comparability for the significant percentage of consumers who do have a choice between technologies and gives the market a clear indicator on which technologies are sustainable and which are obsolete in the long-term. Designing separate labels for products of the same function that result in class A models for low efficiency as well as high efficiency technologies is misleading consumers and hindering an informed decision-making process.

The Working Document also rightfully proposes the **inclusion of electric joule room heaters** into the merged regulation. As the review study ascertained, electric joule room heaters represent more than 70 % of the sales volume of all local space heaters, adding importance to the inclusion of this highly inefficient technology into the scope.

One major change that we propose across all technologies within the scope of the merged regulation is **the elimination of the correction factors in the calculation of the energy efficiency index** (EEI); specifically of the correction factors for control features as listed in table 30 of the Working Document. The correction factors significantly increase the complexity of the calculation without a corresponding usefulness and at the same time decrease transparency for consumers. Most important, however, is the risk that such control features will be added in low quality by manufacturers in order to improve the calculated EEI; this would distort the labelling scheme as the energy consumption of the products would not truly be reduced – or would even be increased in the worst cases – while gaining a better efficiency declaration.

Lastly, we advocate the inclusion of a fixed **date of entry into force** into article 11 in order to prevent delays.

Local Space Heaters

Scope

To achieve maximum impact of the regulation under review, we propose increasing the scope of all local space heaters to 50 kW. This will also prevent misunderstandings on the market about which products fall within the scope of the regulation.

Biomass label factor

We strongly support the proposal in the Working Document to abolish the biomass label factor of 1.45 for local space heaters running on biomass. We agree that leaving it in would be going against the Zero Pollution Action Plan and Air Quality Directive and misdirecting consumers.

Label Information – Emissions
Air pollution is the "elephant in the room". Due to the current political and economic situation, sales of solid fuel heaters have gone through the roof in many European Countries. We agree with the proposal in the Working Document that the estimated particle emission levels be shown on the label; providing this information to consumers and official stakeholders at first glance will improve their ability to make truly informed decisions.

Benchmarks:
Current BAT models on the European market can be found on https://www.topten.eu/private/products/local_space_heaters. The calculation of the new EEI values includes many correction factors and requires knowledge of many additional features that are not declared for the products on Topten; due to this complexity, we could not calculate the future energy classes of the current BAT products. This example shows well why we recommend to reduce correction factors in the EEI calculation significantly.

Air Conditioners and Heat Pumps

For air conditioners, the capacity (kW) is currently calculated based on an outside temperature of 35°C for split units but based on a 27°C outdoor temperature for single and double duct units. This misleads consumers into assuming that ducted units have a larger capacity than split units, setting deceptive purchase incentives. We recommend that the **calculation of the capacity be adjusted** to the same outdoor temperature for all types of air conditioners.

Label Information
The selection of information displayed on the energy label for each product type has a direct influence on consumers' decision-making factors. In order to provide them with the most relevant information for air conditioners and heat pumps, we recommend the following:

1. **Display refrigerants**: While the F-Gas regulation for the phasing down of fluorinated refrigerants is already in place, many air-conditioners and heat pumps are still equipped with high GWP refrigerants. As a complimentary measure, the GWP of the refrigerant should be displayed on the label – or at the least a coloured pictogram informing consumers if the climate impact of the refrigerant is low (GWP < 5), medium (5 < GWP < 150) or high (GWP > 150) (cf. proposal in ECOS input paper[1]).
2. **Display heating efficiency on the label for air conditioners**: The proposed label design for reversible air conditioners / heat pumps includes the energy class for the heating capacity of the appliance. We agree that this information is an important decision-making factor for consumers – especially as the use of air conditioners for heating is becoming considerably more prominent – and that as such it should be prominently displayed.
3. **Size indicators (cooling function):** Especially for the cooling function of air conditioners and reversible heat pumps, it is important that size indicators – such as cooling power and room size – are included on the label as it is currently partially proposed. The latter is seen as the most tangible indicator for consumers. In general, size indicators are of highest importance to prevent loss of efficiency through the installation of oversized appliances. (For the heating function, the differences between building substances

[1] https://www.coolproducts.eu/wp-content/uploads/2022/08/CP_Space-Heaters_airco_fans_el_comments.pdf

resp. construction materials and outside conditions are too great to offer a reliable room size indicator.)

4. **Small corrections:**
    a. In Annex II of the Working Document, the label classes for room heaters are defined by seasonal room heating efficiency "***ηrh***"; however, the scale in the table uses the term "*ηs,h* ". For air conditioners, the label classes are defined by the seasonal room cooling efficiency "***ηrc***"; again, however, the scale in the table uses the term "*ηs,c* ". We request that the terms be harmonized.
    b. In Annex IV, Art. 17.1.2, the formula for the calculation of the ***ηrh*** refers to "Table 28" for the summation of the applicable Fcorr values. However, table 28 does not exist; the values for the Fcorr factors can be found in table 30.

Label classes:

We appreciate that the class thresholds – once for heating and once for cooling - for the merged label are set in a way that allows consumers to directly compare the efficiency of different technologies. We have done a short analysis of BAT models for air conditioners and heat pumps in order to see how the proposed class thresholds compare to the 2022 benchmarks. The new EEI values have been calculated according to the proposed calculation method.

Cooling function class thresholds

The data set shows the 84 BAT products by 8 brands for air conditioners currently listed on Topten.eu; for the reversible heat pumps on Topten.eu that will also be required to declare a cooling efficiency class in addition to their heating efficiency, no SEER values are currently available for the calculation of the new EEI values. Further efficient models exist on the European market.

Data source: https://www.topten.eu/private/products/air_conditioners

As the control features that influence the currently proposed correction factors are not declared in the product information, we calculated two scenarios. In the first (A), the sum of the correction factors for control features is set to 0 %, in the second (B) the sum of the correction factors for control features is set to 100 %. It can be assumed that the real distribution of future classes will lie somewhere in between.

A: Correction factors = 0 %				
	Classes (Cooling)			
	A	**B**	**C**	**D**
Split	0	6	51	1
Multi-Split	0	0	24	2
Sum	0	6	75	3

B: Correction factors = 100 %				
	Classes (Cooling)			
	A	**B**	**C**	**D**
Split	0	29	28	1
Multi-Split	0	18	8	0
Sum	0	47	36	1

Table 1: Future energy classes for the cooling function of current BAT products for air conditioners on the EU market (Source: Topten.eu). Lacking the declaration of integrated control features, the sum of correction factors has once been set to 0 % and once to 100 %.

For air conditioners, none of the products would reach energy class A with regards to their cooling function. If a correction factor for all control features is applied, up to 47 models already reach a class B rating. Most current BAT products would reach future classes B or C for both split and multi-split appliances. This means that the currently

proposed class A threshold for the cooling function aligns with the Energy Labelling Framework – it remains empty for future developments. However, **class B is already too populated** and is likely to be even more so upon entry into force of the regulation due to market improvements, so we ask that the class threshold for this class be tightened.

Heating function class thresholds

The data set includes a sample of BAT products for heat pumps as well as reversible air conditioners from Topten.eu only for models of which the SCOP is known. This results in a data set of 130 heat pumps by 11 providers and 83 reversible air conditioners by 8 brands.

Data source: https://www.topten.eu/private/products/heat_pumps

As the control features that influence the currently proposed correction factors are not declared in the product information, we calculated two scenarios. In the first (A), the sum of the correction factors for control features is set to 0 %, in the second (B) the sum of the correction factors for control features is set to 100 %. It can be assumed that the real distribution of future classes will lie somewhere in between.

A: Correction factors = 0 %				
	Classes (Heating)			
	A	**B**	**C**	**D**
Heat pumps w/o inverter	0	31	44	0
Heat pumps w/ inverter	8	5	41	1
Revers. air conditioners	0	2	71	10
Sum	8	38	156	11

B: Correction factors = 100 %				
	Classes (Heating)			
	A	**B**	**C**	**D**
Heat pumps w/o inverter	18	24	33	0
Heat pumps w/ inverter	8	33	14	0
Revers. air conditioners	0	26	57	0
Sum	26	83	104	0

Table 2: Future energy classes for the heating function of current BAT products for heat pumps and reversible air conditioners on the EU market (Source: Topten.eu). Lacking the declaration of integrated control features, the sum of correction factors has once been set to 0 % and once to 100 %.

If a correction factor for control features is applied, up to 26 models (all heat pumps) already reach a class A rating with regards to their heating function. The best of those models reaches EEI values of 343 (Fcorr = 0 %) resp. 381 (Fcorr = 100 %). That is 53 EEI points resp. 91 EEI points above the class A thresholds. It should be noted that the currently proposed classes B and C span 50 EEI points each – that means the *best model on the market already reaches the level that is one class span better than class A.*

Reversible air conditioners mostly reach classes B and C with regards to their heating function.

We recommend that the Commission re-scale the proposed classes A, B and C with regards to the heating function according to the current benchmarks in order to allow for future technological improvements even for most efficient technologies such as heat pumps – ideally **leaving class A empty** (in accordance with the Energy Labelling Framework); i.e. we propose for class A "$\eta_{s,h} \geq 400$", for class B "$300 \leq \eta_{s,h} < 400$", for class C "$200 \leq \eta_{s,h} < 300$" and for class D $120 \leq \eta_{s,h} < 200$".

Additional remark regarding ecodesign:

Uniform use of minimum requirements. The use of reversible air conditioners for heating has become considerably more prominent. While regular space heaters have a clear set of MEPS for heating in the form of the minimum seasonal space heating efficiency, no such minimum requirements are currently set for the heating function of reversible air conditioners. Especially against the backdrop of the merged regulation for appliances with the same function, it seems unequal to set minimum requirements for some appliances with heating functions and none for others with the same function. As such, it is our recommendation to set minimum heating efficiency requirements for reversible air conditioners.

Label Design

We appreciate the attempt to improve the energy label design in order to make it more intuitively understood by consumers. In our opinion the following input would serve to further improve the labels and support consumers:

1. **QR Codes**: The proposal by the Commission to include a broad set of information in the European Product Registry that the QR code will link to from the label – such as repair and maintenance instructions, technical data sheet information – is forward thinking and a great service to consumers. We support the proposal by ECOS to further add a link to the product entry in EPREL and even more importantly to permanently embody the QR code into the product.
2. **Review currently proposed icons:** In our opinion, not all currently proposed icons on the new label design will be easy to understand by consumers. While the flame and snowflake icon are clear indicators of "heating" and "cooling" operation modes especially on the label for reversible appliances, the mountains and palm trees are not as intuitively connected to the climate zones they are supposed to represent. The Commission has already announced their intent to live-test the current label design proposals. We ask that they include the old label design as well as alternative icons for the different climate zones into this consumer research – such as using regionally marked maps for the different climate zones in the new design.
3. **Display of efficiency values – include and add percentage symbol:** Especially with regards to the granularity of the label classes, we strongly support the display of the efficiency values in addition to the energy class on the label. Consumers will be able to better select best products within one energy class. Consumers are well able to compare numbers if they are aware what they represent. As such, we ask that a unit in the form of a "%" character is added to the efficiency values – this is helpful for the immediate understanding of the consumer.
4. **Display of power input and output:** The proposal shows the power output (kW) as size indicator on the label. Adding – and labelling – the power input (kW) will serve as an additional and important size indicator for consumers and installers that will enable them to choose the optimal size and efficiency for their individual requirements. Consumers like to know the power consumption and to calculate their electricity cost.
5. **Smartness:** Supplying consumers with additional information about the smartness of an appliance in the form of an icon on the energy label can be a helpful supplement. However, we oppose the initiative that wants to upgrade the efficiency class of a

product by one for the addition of smartness. Smart products should not get a bonus; energy classes are – and should remain – based on the energy efficiency.

Product Information Sheets

The **product information sheet** should always contain the **energy efficiency index of the products as well as all information necessary to calculate the energy efficiency index** for all product types; this supports dealers and consumers by providing transparency about the different efficiency aspects and supports market authorities by making it unnecessary to request additional information from manufacturers in order to check compliance and correctness of data.
Should they remain in the final regulation, we request that the product information sheet shall include a field to list all applicable control features that are subject to correction factors (Fcorr) as listed in Table 30 of the Working Document.

For the **cooling function of air conditioners and reversible heat pumps**, the cooling power (input and output) as well as the room size should be visibly included in the product information sheets.

Comfort Fans

The history of environmental dumping of comfort fans into Europe has recently been documented (https://storage.topten.eu/source/files/EEDAL22_Rochat_Comfort_Fans.pdf). Recognizing that the current EU market does not reflect the global availability of best available technologies for comfort fans places an extra importance on an ambitious energy labelling scale for these products. According to UN Comtrade (2020), 95% of comfort fans (by volume) that are being imported into the European Union are produced in China; as a result, the market uptake of truly efficient products into the European market – if incentivized – will pose no problem.

Differences in technology, function and efficiency between ceiling fans and all other types of comfort fans are of such significance that in this case we recommend the **use of two separate scales** respectively, as already suggested in the Working Document. In most European countries, ceiling fans are primarily used in the commercial sector, non-ceiling fans in the private sector. The dual scale can be made clear to consumers by using the term “ceiling fan” in the label below the QR code for ceiling fans and “comfort fan” for non-ceiling fans.

Energy Label Classes

According to the energy labelling framework, the **A-class shall be empty** to allow for technical developments. In the case of comfort fans, the currently proposed class thresholds are set significantly too low in the Working Document.
A review of products already on the European market (available on https://www.topten.eu/private/products/comfort_fans) compared to the proposed energy class thresholds for the EU shows that:

1. For non-ceiling fans, BAT products on the EU market (across all types) are **already much more efficient than the proposed class A** threshold (**Figure 1**)

2. For non-ceiling fans, multiple products are already **by many factors** more efficient than the proposed class A threshold (**Figure 1**)
3. Thresholds for classes B to G also need to be adjusted to allow for truly informed decision making by consumers. That includes making sure that lower classes are set in a way that does not render them obsolete **when taking into account the proposed MEPS** for comfort fans (see Annex I below)
4. For ceiling fans, the **need for a separate label** is made abundantly clear as the BAT models are so far out of range of the proposed scale for non-ceiling fans that they render it moot for the decision-making process of consumers (**Figure 2**) – i.e. all products would be in class A

Notes:

- Topten only shows a selection of BAT models on the EU market. Many more BAT models are already available on the EU market and even more on the Chinese and other global markets.
- The display of proposed energy class thresholds for comfort fans in Figures 1 and 2 uses the service value (m^3/min/W) instead of the seasonal service value. However, the differences caused by the correction factors included in the seasonal service value are so minor that they have no visible impact on the data distribution in the figures.

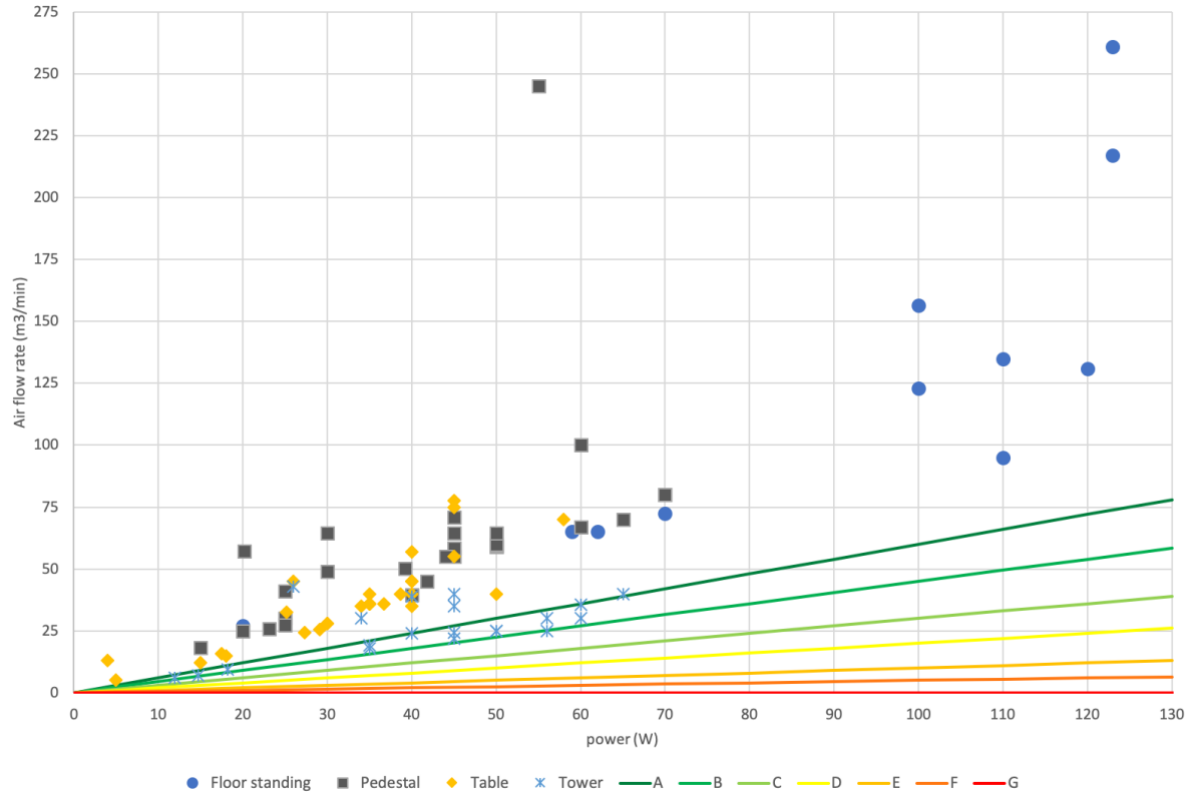

Figure 1: Proposed energy class thresholds for non-ceiling comfort fans in the EU (cf. notes), combined with the distribution of BAT products on the European market (according to construction types) in relation to the air flow rate (data gathered by Topten, August 2022).

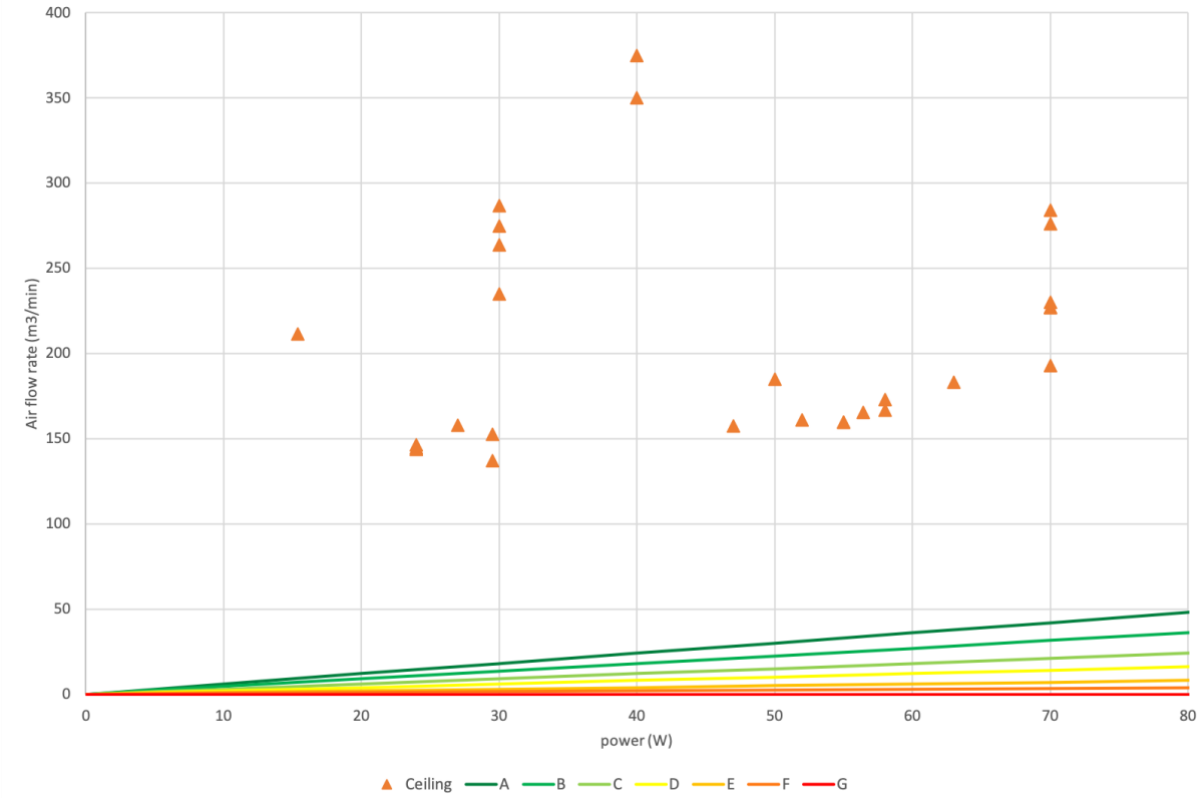

Figure 2: Proposed energy class thresholds for comfort fans in the EU (cf. notes), combined with the distribution of ceiling fan BAT products on the European market in relation to the air flow rate (data gathered by Topten, August 2022).

We strongly recommend basing the class thresholds for all comfort fans on the service value (m^3/min/W) and to exclude the correction factors for standby and control features that are included in the proposed seasonal service value. General requirements for standby modes are already covered in horizontal regulation and besides only partially relevant for comfort fans: most ceiling fans are equipped with a light-switch-like on-off switch while all other types are only plugged in when needed during the cooling season. For the calculation, the correction factors – especially with regards to the control features, not even required to be listed on the product information sheet (Annex V, Art. 19.7) – are of such complexity, that incorrect declarations are to be expected; in addition, consumers prefer values that are understandable and offer transparency. Keep it simple.

Label Information and Design

We appreciate the proposed design for the new energy label for comfort fans. In addition to the information already included in the proposed design, we recommend also including the following information:

1. An ABCDE **label for lighting** on the bottom could be added **for ceiling fans** much in the same way the noise level classes within the label design are set up. This is already in place for range hoods in regulation (EU) No 65/2014 and can easily be copied.
2. **Air purifying features** are likely to increase in comfort fans as a result of the pandemic; an **extra icon** denoting this function could be added to the label design. The products would remain within the scope of the regulation and consumers would be able to make informed decisions.

3. As the **air displacement (m3/min)** is a deciding size parameter for consumers, it should be **included on the label**.
4. The diameter of the models is a vital parameter for the MEPS. In order to make sure dealers can easily comply with the MEPS, the **diameter (if applicable) should be included on the label**.
5. For consumers it would be very helpful to be informed about **the power consumption (W)** of the comfort fan. This value should be displayed prominently on the energy label.

Annex I: Reference for lower Energy Class Thresholds -> proposed MEPS for Comfort Fans

While the MEPS are set in the Ecodesign regulation, they are of significant importance to the proposed energy class thresholds in the Energy Labelling Regulation as the lower class thresholds need to be set in a way that does not render them obsolete with the entry into force of tier 1 of the MEPS.

Figures Figure **3** and Figure **4** show the proposed MEPS for comfort fans in the EU in comparison to the Chinese MEPS coming into effect on November 1st, 2022 along with comfort fan models already on the market in Europe. Before re-defining the lower energy class thresholds for comfort fans according to the proposed MEPS, **we strongly suggest harmonising the future EU MEPS with the 2022 Chinese MEPS**. This simplifies matters for international manufacturers and dealers as well as ensuring a suitably extensive market supply.

A direct comparison of proposed EU MEPS and 2022 Chinese MEPS in numbers can be seen in **Table 3**.

NOTE: Analogous to energy class thresholds, we strongly advocate ensuring the MEPS for all comfort fans are based on the service value (m^3/min/W) instead of the seasonal service value (see above). This also facilitates the harmonisation of EU and Chinese MEPS.

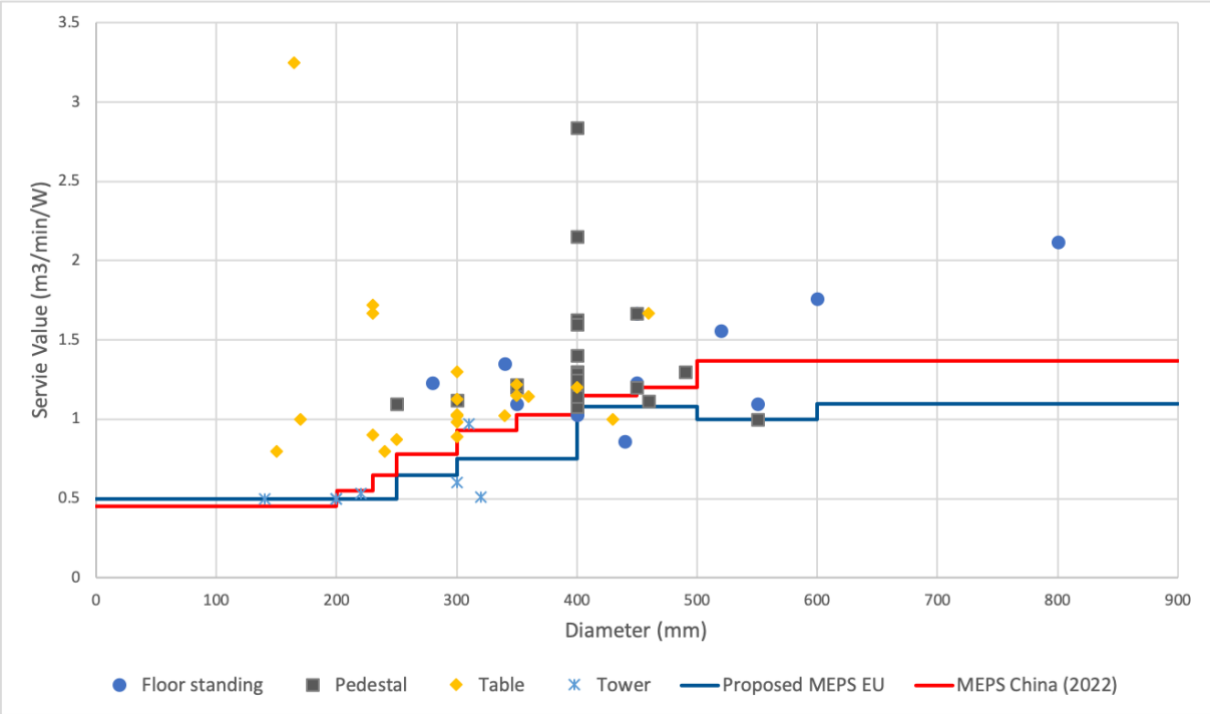

Figure 3: Comparison of non-ceiling comfort fans with the proposed EU MEPS and Chinese MEPS (data gathered by Topten, August 2022).

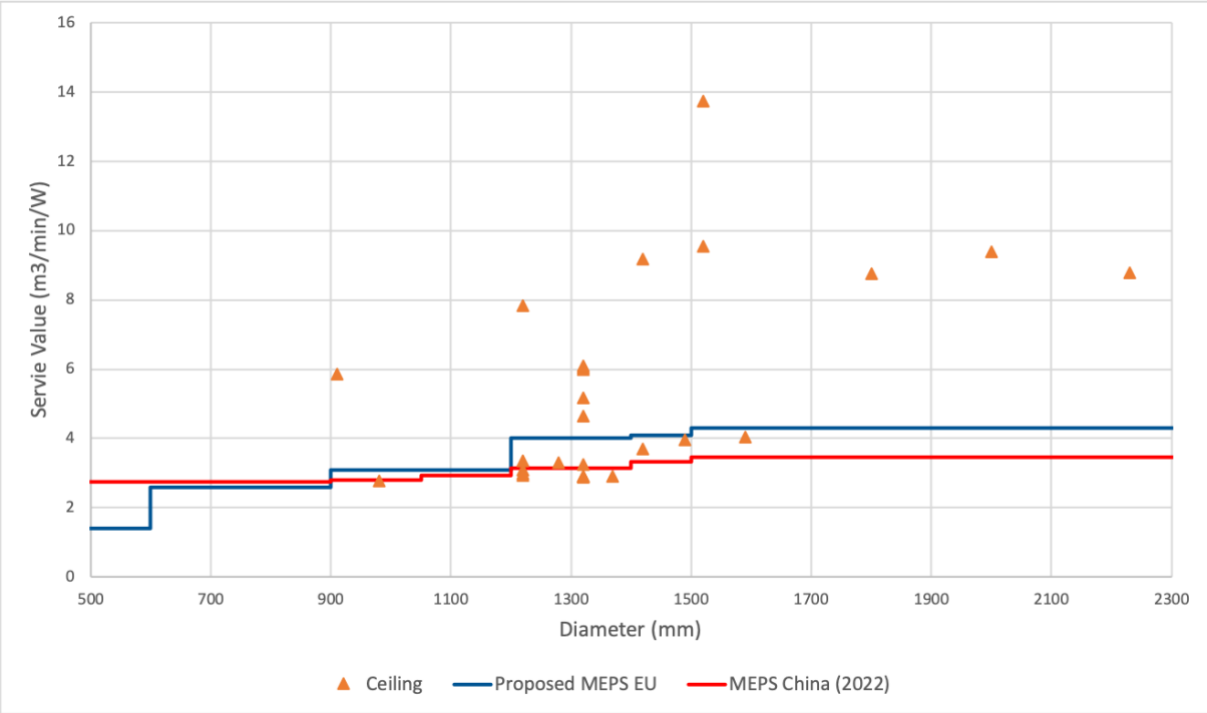

Figure 4: Comparison of ceiling fans with the proposed EU MEPS and Chinese MEPS (data gathered by Topten, August 2022).

Type	Size (mm)	EU Proposal	China (2022)
Table fans Rotary fans Wall fans Box fans Stand fans	200	0.5	0.45
	200 < X ≤ 230	0.5	0.55
	230 < X ≤ 250	0.5	0.65
	250 < X ≤ 300	0.65	0.78
	300 < X ≤ 350	0.75	0.93
	350 < X ≤ 400	0.75	1.03
	400 < X ≤ 450	1.08	1.15
	450 < X ≤ 500	1.08	1.20
	500 < X ≤ 600	1	1.37
Ceiling Fans	900	3.1	2.75
	900 < X ≤ 1050	3.1	2.79
	1050 < X ≤ 1200	3.1	2.93
	1200 < X ≤ 1400	4.0	3.15
	1400 < X ≤ 1500	4.1	3.33
	1500 < X ≤ 1800	4.3	3.47

Table 3: Comparison of draft European regulation MEPS and Chinese MEPS from 2022

Comment on information requirements:
In order to facilitate market surveillance and support dealers in checking their own compliance with MEPS, the information requirements need to include the energy efficiency index (in form of the service value) in the product fiche.

A large part of the technical source material in this document is based on the following project:

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