Recommendations for professional refrigerated storage cabinets and blast cabinets

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Summary

EU energy labelling and Ecodesign regulations for professional refrigerated storage cabinets have been adopted in May 2015. The Ecodesign requirements cover professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers, while the EU energy label was introduced only for professional refrigerated storage cabinets. Labelling and tier 1 of Ecodesign – products shall comply with EEI < 115 – are mandatory since 1 July 2016. Tier 2 of Ecodesign – products except heavy-duty cabinets shall comply with EEI < 95 – is mandatory since 1 January 2018.

Positive aspects of the regulation currently in place:

- Label classes were tightened several times before the adoption in 2015 as a reaction to updated product data, as shown on www.topten.eu. With the final version implemented in 2016, no product available at the time of the adoption was better than class A, the classes A+ to A+++ were reserved for future products. This means that the label incentivises technological innovation and is able to reflect the market for coming years.
- Topten welcomes that the 2015 regulation stipulates two labels instead of the earlier planned four until the next revision. From July 2016 until July 2019 products may either be labeled with Label 1 (A to G) or Label 2 (A+++ to G) while after July 1st 2019 Label 2 will be madatory; with tier 3 – products except heavy-duty cabinets shall comply with EEI < 85 – coming into effect on July 1st 2019, the label will effectively cover energy classes A+++ to E. This has made the implementation easier and saved work for suppliers and dealers.
- Mandatory declaration of energy consumption was included for refrigerator-freezers and blast cabinets, when they are otherwise exempt from labelling and Ecodesign requirements. Now it is possible to consider both energy cost as well as purchase price when comparing products.

Further work is needed during the upcoming review:

- **Showcase products using green refrigerants on the EU energy label**: In the originally adopted regulation from 2015, this chance was missed. The F-gas ban in 2022 is coming and there are still barriers to switch to green refrigerants. Further activities to support the switch are needed to avoid any more sales of products using old, climate- damaging refrigerants. We recommend mandatory display of the refrigerant on the EU energy label to be implemented in the upcoming review. We also suggest the Commission to clearly define "green" refrigerants to prevent harmful artificial substances entering the market.

- **Topten recommends that the energy efficiency requirements should be stricter (min. class D, i.e. allowing only appliances with EEI < 75) from the first tier of the upcoming revision**, considering that the combined effect of the EU measures will neither stop nor reverse the trend that total energy consumption for professional refrigeration keeps increasing. From the expected increase in total annual electricity consumption for professional refrigeration of 38 TWh/year without measures, the current EU energy label and Ecodesign measures are expected to only save 15.6 TWh/year by 2030 – hence these measures should be reinforced.

- **Refrigerator-freezers should be included in the label. The declaration of energy consumption has been mandatory since 1. July 2016 so the market is mature for the next step**. A clear instruction for testing of the different compartments is strongly advised to avoid different interpretations.

- **Static-air storage cabinets should be included in the product information requirements**, unless they will be included in the revision of the Lot 13 household Ecodesign regulation together with commercial wine coolers and minibars. Currently there is an awkward gap and uncertainty in product information as it is at the discretion of suppliers and dealers to decide wether a product is intended for household or professional purposes and therefore should or should not be labelled.

- **Ice-machines should during the upcoming review be included in the scope of the regulation for Ecodesign and labelling.** The market for ice-machines is bigger than for blast cabinets and saving potentials are substantial (e.g. for water between 2 l/kg ice to 5 l/kg ice, for energy by a factor of 4 even for similar models by the same manufacturer). At least a mandatory declaration for energy and water consumption should be added to the Ecodesign documents to provide data that can be used as basis for the introduction of an energy classification in the next review; as no international test standard currently exists, we recommend that CEN /CENELEC are given a mandate to develop a test procedure.

- **Include mandatory declaration of energy data for professional refrigerated storage cabinets with a remote condensing unit**: remote cabinets are currently not covered by Ecodesign and labelling regulation. Buyers of a new unit for their remote system therefore have no reliable information available about the energy consumption and efficiency of the appliance they want to buy. This puts them unfairly at a disadvantage compared to buyers of plug-in cabinets and makes it impossible for them to make informed decisions.

- **Remove exemption for heavy-duty cabinets from minimum requirements in the Ecodesign**: "heavy-duty" cabinets are at the moment exempt from the Ecodesign requirements for energy efficiency after the first trier in 2016 (EEI < 115). This might be because in the initial phase they were measured at climate class 5 (40°C, 40% RH). However, energy consumption and EEI for heavy-duty cabinets is currently measured and calculated at class 4 (30°C, 50% RH) and the Topten database shows that most of the best available technology (BAT) models on the European market are currently heavy duty. Therefore, exempting heavy-duty cabinets from the minimum requirements is not justified anymore and the regulation must be adapted accordingly.

- **Mandatory labelling online, in print and at trade fairs should be required without limitation to when price and energy information is also displayed**: requirements prescribing the product declaration on the internet were formulated without taking fully into account the fundamental differences between B2C and B2B markets. Making the label mandatory near the presence of price-related or energy-related information on advertising materials is not sufficient to guarantee that the energy efficiency class is shown online because many manufacturers do not mention this information in the first place. Trade fairs should also be explicitly listed as "point of sale" as high sales volumes are generated during trade fairs.

- **Topten strongly encourages CEN/CENELEC to continue eliminating grey areas in definitions and test standards** (example: placement of m-packages during the testing for energy

consumption now that the area behind pillars is officially part of the net volume) and to proactively communicate about existing and coming EU energy labels and rules. Discussions with manufacturers have shown that further support is needed in interpreting the new EN testing standards (EN 16825:2016). Ideally questions and answers should be officially communicated by the EC or CEN/CENELEC. Topten will help to spread know-how to manufacturers.

The **"FAQ related to Regulation (EU) No 2015/1094 with regard to the energy labelling of professional refrigerated storage cabinets and regulation (EU) No 2015/1095 with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers**" of April 2018 is a good example of such communication. It answers questions about the scope of the label, which test conditions should be applied and the visibility and content of the energy label.

Table of content

1. Label

The regulation that was adopted in May 2015 stipulates two labels instead of earlier panned four labels until the next revision of the regulation. This had made the implementation easier and saved work for suppliers and dealers (see Table 1). The chance to showcase products using green refrigerants on the EU energy label was so far missed for professional refrigerated storage cabinets.

Final label May 2015:	1st July 2016	cancelled	cancelled	1st July 2019
Proposal Jan. 2014:	1st Jan. 2016	1st July 2017	1st Jan. 2019	1st July 2020
Proposal June 2013:	1st July 2015	1st July 2016	1st July 2018	1st July 2019
Proposal June 2012:	July 2014	Jan. 2015	Jan. 2016	Jan. 2018

Table 1: Process of changing the draft from four to two energy labels

Label class thresholds have been tightened several times before the adoption of the regulation in 2015 as a reaction to updated product data about best available technologies (BAT) on the market (see below Figure 1) as shown on www.topten.eu. With the final label of 2015, the best available models at the time of the adoption were in class A and the classes A+ to A+++ were reserved for future products (the first A+ models have entered the market in 2016). Advantage: The label incentivises technological innovation and is able to reflect the market for coming years.

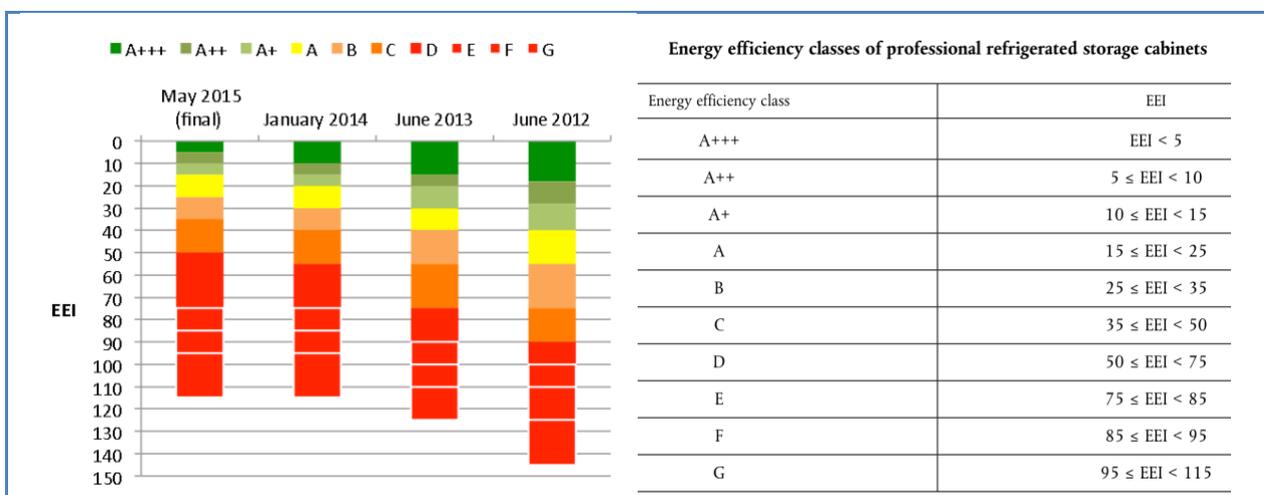| Energy efficiency class	EEI
A+++	EEI < 5
A++	5 ≤ EEI < 10
A+	10 ≤ EEI < 15
A	15 ≤ EEI < 25
B	25 ≤ EEI < 35
C	35 ≤ EEI < 50
D	50 ≤ EEI < 75
E	75 ≤ EEI < 85
F	85 ≤ EEI < 95
G	95 ≤ EEI < 115

Figure 1: Development of the label class thresholds from drafts to the final version (right: final label classes)

Refrigerator-freezers were covered in the scope of the Ecodesign, making the declaration of energy consumption mandatory since 1. July 2016. As the data is now available on the market, refrigerator-freezers should during the upcoming revision (starting 2018) be included in the label. A clear instruction for testing of the different compartments is strongly advised to avoid different interpretations.

The regulation should during the upcoming revision be amended to additionally specify that the label is required on manufacturer websites showing the product regardless of the price as there is an intent to sell (one of many forms of distance-selling).
The intent of the EU regulation No 2015/1094 was to

> *"specify requirements for the information to be provided in any form of distance-selling of prefessional refrigerated storage cabinets and in any advertisements and technical promotional material for such products".*

Annex VII on *"Information to be provided in the case of sale, hire or hire-purchase through the internet"* sets forth product declaration requirements in case of distance-selling. The regulation requires that the Energy Label is presented prominently next to the price. However, websites of manufacturers that just showcase their product range without exposing the price do not have to comply with the energy labelling requirements even if there is an intent to sell. As such, if the price is not exposed, there is not a clear obligation to show the Energy Label next to the product, due to the poor adaptation to the B2B market practices.

The future regulation should mention that professional storage refrigerators at trade fairs shall declare their energy efficiency class and show the Energy Label in a clearly visible manner.

For points of sale, the Energy Label mentions that

> *"each professional refrigerated storage cabinet shall bear the label provided by suppliers in accordance with Article 3(1) on the outside of the front or top of the appliance, so that it is clearly visible ".*

The category in which trade fairs fall into is not defined. While the primary function of a trade fair is for manufacturers to showcase their product range, they also intend to sale their products, which they may do during the event. It is therefore not considered as a classic "point of sale".

2. Ecodesign

EU regulation No 2015/1095 defines Ecodesign requirements for four product categories: professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers. These recommendations only concern the first two categories for which Topten is the more knowledgable.

Product information requirements

It is positive that in the 2015 regulation, for two product types it was made mandatory to at least declare energy consumption from 1 July 2016, when they are otherwise excempt from labelling and Ecodesign requirements:

- For **refrigerator-freezers** the indicative daily energy consumption must be declared.
- For **blast cabinets** it is the full load capacity (kg of foodstuffs), the standard temperature cycle, meaning from which temperature in °C down to which temperature in °C foodstuffs are intended to be cooled and in how many minutes, the energy consumption in kWh per kg and type, name and GWP of the refrigerant for integral equipment.

This creates transparency on the market. Now the electricity costs of these products can easily be compared and asked for in offers. Users are able to reduce costs. Product data well depicting the current market is available and allows definition of measures for the upcoming revision of the Ecodesign regulation.

For the same reasons, **static-air storage cabinets** should in the future be covered by product information requirements, unless they will be included in the revision of the Lot 13 household Ecodesign regulation together with commercial wine coolers and minibars. **Ice-machines** should be covered as well – their market is substantially bigger than for blast cabinets and saving potentials are substantial (machines can produce the same ice-cubes using 4 times more electricity and 5 times more water).

The Ecodesign and Labelling regulation aims to make it possible for buyers to make informed decisions. As **professional refrigerated sotrage cabinets with a remote condensing unit** are not currently covered by either regulation, buyers of a new unit for their remote system have no reliable information available and are unable to make informed decisions. Future adjustments to the Ecodesign should work to include remote cabinets in the mandatory declaration of energy data to close this information gap.

Energy efficiency requirements

Positive: The energy efficiency requirements of the regulation that was adopted in 2015 are aligned with the label classes. This facilitates their implementation.

1 July 2106	EEI < 115	bans products worse than class G
1 January 2018	EEI < 95	bans class G
1 July 2019	EEI < 85	bans class F

Table 2: Energy efficiency requirements for professional refrigerated storage cabinets

The energy efficiency requirements should in the upcoming review be stricter, considering that the combined effect of the measures will neither stop nor reverse the trend that total energy consumption for professional refrigeration keeps increasing. While total annual electricity consumption would increase from 116.5 TWh (terawatt hours) in 2012 to 154.5 TWh in 2030 under a business-as-usual scenario (+ 38 TWh), the EU energy label and Ecodesign measures are expected to only save 15.6 TWh/year by 2030.

The choice of products with EEI < 75 (class D or better) is already large on the market. The product lists on Topten.eu present 16 different brands (Adande, Afinox, Alpeninox, Angelo Po, Cool Compact, Coreco, Desmon, Efficold, Electrolux, Friulinox, Gemm, Gram, Ilsa, Liebherr, Mercatus, Sagi Spa) with 100 model types (not counting similar models with different configurations) that are all at least class D or better (Table 3). Cross bars in the table represent where Topten was able to tighten its selection criteria because the market progressed between 2015 and today.

Category	A+	A	B	C	D	Total
Storage counter refrigerators	1	12				13
Storage refrigerators 1-door	0	20				20
Storage refrigerators 2-doors	0	4	0	8		12
Storage counter freezers	0	1	4			5
Storage freezers 1-door	0	0	3	23		26
Storage freezers 2-doors	0	0	0	7	5	12
Storage refrigerator-freezers	0	0	0	1	1	2
Total	**1**	**37**	**7**	**39**	**6**	**100**

Table 3: Number of professional refrigerated storage cabinets listed on Topten.eu

The energy efficiency requirements of the second and third tier do currently not apply to **heavy-duty cabinets**. 'Heavy-duty cabinet' means a professional refrigerated storage cabinet capable of continuously maintaining chilled or frozen operating temperature in all its compartment(s) in ambient conditions corresponding to climate class 5 (40 °C, 40 % RH) but where energy consumption is measured at climate class 4 (30 °C, 55 % RH). 74 of the 100 BAT (best available technology) models listed on Topten are heavy-duty cabinets. Therefore, concerns that heavy-duty cabinets measured at climate class 4 can not comply with the energy requirements are not justified anymore and the regulation must be adapted accordingly in the upcoming review.

3.   Market development and impact of the energy label

The introduction of EU regulations for professional refrigerated storage cabinets has lead to a jump in best available technology (BAT) models. Even before the regulations came into force, new models were introduced on the market that reached the best energy efficiency classes A, B and C. Positive developments have occurred especially in the product groups with the highest demand on the market: 1-door refrigerators and 1-door freezers as well as counter refrigerators. The first A+ storage appliance on the market (counter refrigerator) was listed in 2016.
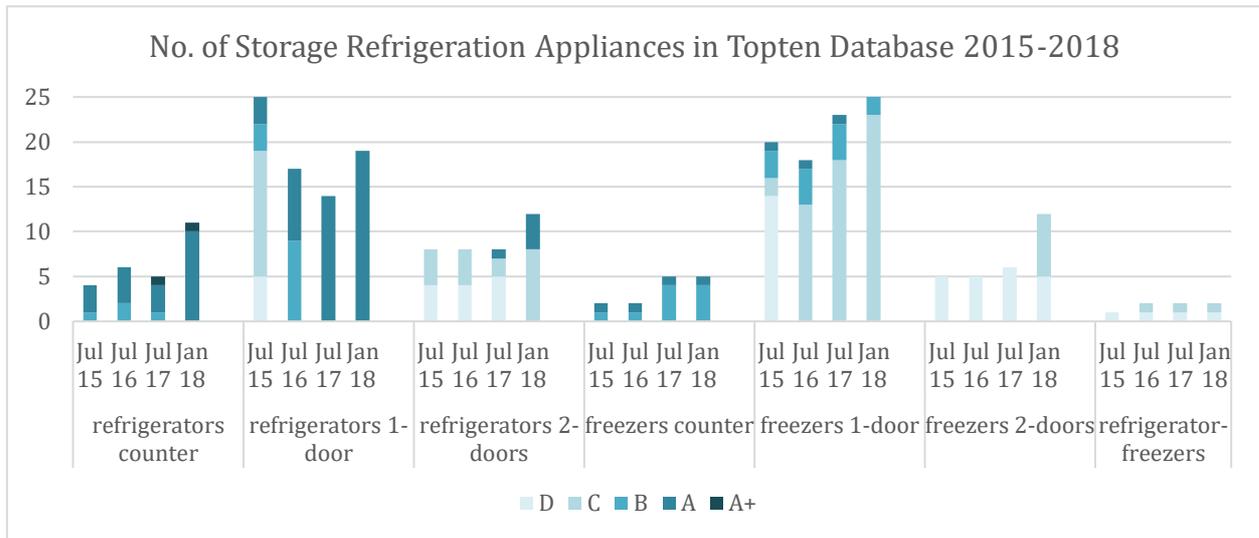
Graph 1 Development of professional refrigeration BAT products from July 2015 to January 2018

Overall the number of BAT products was rather stagnant from the start of the Topten lists for professional refrigeration in 2015 until January 2016 - half a year before the EU labelling and eco-design regulations came into effect. Taking into account the time from development and testing of new products to the time the new products came on the market, it is obvious that the adaptation to the May 2015 regulations triggered significant technological advancements.
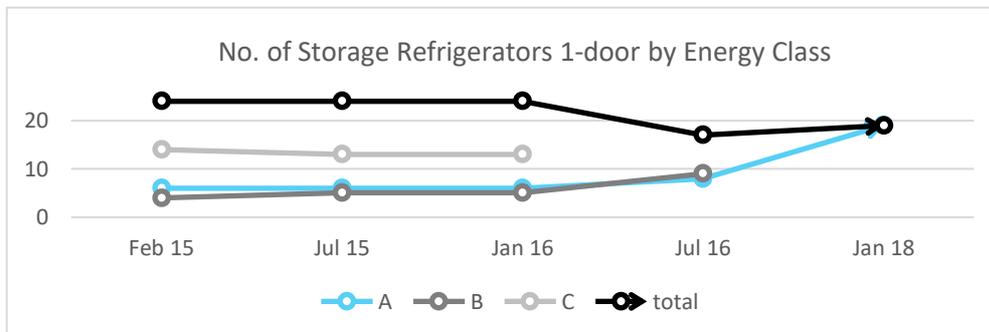
Graph 2 Impact of EU Labelling and Ecodesign on the Development of 1-door Refrigerators from February 2015 until January 2018

4. References and links

Useful links

Topten.eu storage refrigeration product lists:
- http://www.topten.eu/english/professional-refrigerators/storage-refrigerators/storage-counter-refrigerators.html
- http://www.topten.eu/english/professional-refrigerators/storage-refrigerators/storage-refrigerators-1-door.html
- http://www.topten.eu/english/professional-refrigerators/storage-refrigerators/storage-refrigerators-2-doors.html
- http://www.topten.eu/english/professional-refrigerators/storage-freezers/storage-counter-freezers.html
- http://www.topten.eu/english/professional-refrigerators/storage-freezers/storage-freezers-1-door.html
- http://www.topten.eu/english/professional-refrigerators/storage-freezers/storage-freezers-2-doors.html
- http://www.topten.eu/english/professional-refrigerators/storage-combined-refrigerator-freezers.html

Topten.eu storage refrigeration selection criteria:
- http://www.topten.eu/english/criteria/professional-storage-refrigerators.html&fromid=

References

Commission issued FAQ of April 2018 related to Regulation (EU) No 2015/1094 with regard to the energy labelling of professional refrigerated storage cabinets and Regulation (EU) No 2015/1095 with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers

Commission delegated regulation (EU) 2015/1094 of 5 May 2015 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of professional refrigerated storage cabinets

Commission Regulation (EU) 2015/1095 of 5 May 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers

Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006

August 22nd 2018, Maike Hepp, Topten International, Zürich