eceee 2021 Summer Study on energy efficiency June 10th 2021

Nadja Gross, Eric Bush, Topten, Switzerland

Energy efficiency labels for residential and commercial coffee makers













Topics

- About Topten
- Energy consumption of coffee makers
- Residential coffee makers & the Swiss Energy Efficiency Label
- Commercial coffee makers: are they different?
- Focus on energy losses
- Conclusions



Topten.ch – the energy efficiency platform

- Online platform for best products: energy efficiency, environment, performance
- 70 product lists, 8'000 products
- 520'000 sessions, 1.9 million pageviews per year
- Basis for rebate programmes
- Founded in 2000 in Zurich, online in 19 countries worldwide
- European platform: <u>www.topten.eu</u>

Marke Gerätetyp Bauforn Sortieren nach Optionen auswählen Optionen auswählen Optionen auswählen Effizienz-index (%) Imatter Koschen Imatter Koschen Imatter Koschen Könter Koster (KH) Zeige 1-10 von 56 Einträgen. Miele KY 7772 ak Energie (KWh/Jahr): 116 Höhe (cm): KKhl-Gefrier-Kombil Einbau EURO 177 Strom in 15 J.: CHF 348 V - ZUG CombiCoder V4000 Energie (KWh/Jahr): 116 Höhe (cm): KKhl-Gefrier-Kombil Einbau EURO 177 Strom in 15 J.: CHF 438 Siemen Siemens Energie (KWh/Jahr): 146 Höhe (cm): 178 Strom in 15 J.: CHF 447 Siemen Siemens Energie (KWh/Jahr): 146 Höhe (cm): 186 Strom in 15 J.: CHF 447 Siemen Siemens Energie (Wh/Jahr): 149 Höhe (cm): 186 Strom in 15 J.: CHF 447	❤ auf ❤			♀ Ratg	schranke	kriterien Kühl:	🖉 Auswahlk	schränke	rgieeffiziente Kühlso
Alle Filter löschen Inettoshop.ch.x x Zeige 1-10 von 56 Einträgen. Marke & Modeli Energie (Wh/Jahr): 116 Kühl-Gefrier-Kombil Stomi in 15 J.: CHF 348 Weile Kühl-Gefrier-Kombil Enbaue EURO 177 Stomi in 15 J.: CHF 348 V 2006 Energie (Wh/Jahr): 116 Kühl-Gefrier-Kombil Introduction in 15 J.: CHF 348 V 2006 Energie (Wh/Jahr): 146 Miele (m): Stomi in 15 J.: CHF 348 V 2006 Energie (Wh/Jahr): 146 Miele (m): Stomi in 15 J.: CHF 348 V 2006 Energie (Wh/Jahr): 146 Miele (m): Stomi in 15 J.: CHF 348 V 2006 Energie (Wh/Jahr): 149 Miele (m): Stomi in 15 J.: CHF 348 V 2006 Energie (Wh/Jahr): 149 Miele (m): Stomi in 15 J.: CHF 349 Varianten: Küstelwerk Energie (Wh/Jahr): 149 Hible (m): 185 Stom in 15 J.: CHF 347 Varianten: Küstelwerk Energie (Wh/Jahr): 149 Hible (m): 185 Stom in 15 J.: CHF 447 W Wittere Produktdetalis	✓ auf ✓	rtieren nach	Sortieren nach				Bauform	Gerätetyp	
eige 1-10 von 55 Einträgen. Marke & Modell Energie (Wh/Jah): 116 Kähl-Gefirer-Kombi Einbau EUNO V-ZUG CombiCooler V4000 Kählschrank Effizienz-Index (%): 51.0 Höhe (cm): 177 Srom in 15.1: CHF 348 Kähl-Gefirer-Kombi Einbau SMS T78 Srom in 15.1: CHF 438 Srom in 15.1: CHF 438 Srom in 15.1: CHF 438 Srom in 15.1: CHF 438 Srom in 15.1: CHF 438 CHF 447 Effizienz-Index (%): 63.5 Höhe (cm): 188 Srom in 15.1: CHF 447 Effizienz-Index (%): 63.8 Storm in 15.1: CHF 447 Effizienz-Index (%): 63.8 Storm in 15.1: CHF 447 Shopplinks Erhältlich bei Auf Lager? Lieferung inbegriffen? Preis Conformer in 2.1: CHF 749.00		Effizienz-Index (%)	Effizienz-Ind			en	Optionen auswähle	Optionen auswählen	onen auswählen
Marke & Modell Energie Typ Kosten (CHF) Miele K3772 8 Kühlschrank Energie (KWh/Jah): Effluene.index (%): 116 51.0 Kühl-Gefrier-Kombil Endau EUNO Kühlschrank Stom in 15 J.: CHF 348 V-ZUG CombiCooler V4000 Kühlschrank Energie (KWh/Jah): Effluene.index (%): 146 63.5 Kühl-Gefrier-Kombil Einbau SMS 178 Stom in 15 J.: CHF 438 SEMENS Kühlschrank Energie (KWh/Jah): Effluene.index (%): 143 63.5 Kühl-Gefrier-Kombil Einbau SMS 178 Stom in 15 J.: CHF 438 SEMENS Kühlschrank Energie (KWh/Jah): Effluene.index (%): 149 63.8 Kühl-Gefrier-Kombil Einbau SMS 178 Stom in 15 J.: CHF 447 SEMENS Kühlschrank Energie (KWh/Jah): Effluene.index (%): 149 63.8 Kühl-Gefrier-Kombil Einbau SMS 178 Stom in 15 J.: CHF 447 Weitere Produktdetalis O Link zum Hersteller Weitere Produktdetalis O Link zum Hersteller Stom in 15 J.: CHF 447 Shopplinks Erhältlich bei Auf Lager? Lieferung inbegriffen? Preis	Export -		p.ch 🗶	nettoshop.ch 🗶					
KF 7772 8 Energie (KMh/Jah): 116 Energie (KMh/Jah): 116 Energie (KMh/Jah): 116 Energie (KMh/Jah): 116 Interview (KM): Storm in 15 J.: CHF 348 V2UG CombiCoder V3000 Kühlschrank Energie (KMh/Jah): 146 Kühlschrenk Kühlschrenk CHF 348 Kühlschrank Energie (KMh/Jah): 146 Kühlschrenk Storm in 15 J.: CHF 348 Kühlschrank Energie (KMh/Jah): 149 Kühlschrenk Storm in 15 J.: CHF 447 Kühlschrank Energie (KMh/Jah): 149 Kühlschrenk Storm in 15 J.: CHF 447 Kühlschrank Energie (KMh/Jah): 149 Kühlschrenk Storm in 15 J.: CHF 447 Kühlschrank Energie (KMh/Jah): 149 Kühlschrenk Storm in 15 J.: CHF 447 Weitere Produktdetalis Q Link zum Hensteller Bible (cm): 186 Storm in 15 J.: CHF 447 Erhältlich bei Auf Lager? Lieferung Inbegriffen? Preis Conforerme Conforarma ja nein CHF 749.00	Stand: 20.05.20 Preisvergleich		Kosten (CHF)	к	Тур	ie	Energie		-10 von 56 Einträgen
CombiCooler V4000 Energie (KMh/Jahr): 146 Einbaus SMS Stom in 15 J.: CHF 438 Kühischrank Energie (KMh/Jahr): 149 Kühi-Gefrier-Kombi T78 Stom in 15 J.: CHF 447 Kühischrank Energie (KMh/Jahr): 149 Kühi-Gefrier-Kombi Freistehend B Stom in 15 J.: CHF 447 Warianter: Kühischrank Efficienz-Index (%): 6.3.8 Höhe (cm): 186 Stom in 15 J.: CHF 447 Weitere Produktidetails © Unk zum Hersteller Stom in 15 J.: CHF 447 Erhältlich bei Auf Lager? Lieferung inbegriffen? Preist Conforarma ja nein CHF 749.00	CHF 2'749	CHF 348 C	Strom in 15 J.: CHF 348	Strom in 15	Einbau EURO			KF 7772 B	
KKIBSCHUCA Walnachtank Energie (WWh/Jahr): 149 16 KCMS-Getter-Komel Preistehend Strom in 15 J.: CHF 447 Image: Strom in 15 J.: Varianter: K336ZavCA Image: Strom in 15 J.: CHF 447 Image: Strom in 15 J.: Image: Strom in 15 J.: Image: Strom in 15 J.: CHF 447 Image: Strom in 15 J.: Image: Strom in 15 J.: CHF 447 Image: Strom in 15 J.: CHF 749.00 Image: Strom in 15 J.: CHF 749.00	CHF 2'040	CHF 438 C	Strom in 15 J.: CHF 438	Strom in 15	Einbau SMS			CombiCooler V4000	1.24
Shoplinks Erhältlich bei Auf Lager? Lieferung inbegriffen? Preis Conforama ja nein CHF 749.00	CHF 749.00	CHF 447 CHI	trom in 15 J.: CHF 447	Strom in 15	Freistehend			KG36EAICA Kühlschrank	
Conforama ja nein CHF 749.00						nk zum Hersteller			
	Shoplink	Preis	egriffen? Preis	Lieferung inbegriffer	Auf Lager? I		Erhältlich bei		1000
ettoshop.ch nettoshop.ch ja ja CHF 769.00	» zum Shop	CHF 749.00	CHF 749.0	nein	ja	orama	ama Confo	Confor	
	» zum Shop	CHF 769.00	CHF 769.0	ja	ja	shop.ch	nettoshop.ch nettos	(C) n	
melectronics ja ja CHF 868.00	» zum Shop	CHF 868.00	CHF 868.0	ja	ja	tronics	electronics melect	m	
Interdiscount ja ja CHF 1'079.15	» zum Shop	CHF 1'079.15	CHF 1'079.	ja	ja	discount	ter scount Interdi		

Geräuschpegel (dB): 38

Geräuschklasse: C

Energy consumption of making coffee

The stock of **residential** coffee makers in the EU is estimated 100 Mio units, consuming 17 TWh per year. Estimates of annual sales are roughly 30 Mio units by 2025.

The stock of **commercial** coffee makers in the EU is estimated at 5.9 Mio units, consuming 13.6 TWh per year. Estimates of annual sales are roughly 700,000 by 2025.



2009: introduction of a voluntary energy label

- 2010-2014: development of new testing method by manufacturers (CECED, FEA)
- 2015: Introduction of mandatory label with new testing method (FEA)
- 2016: Revision of label, based on international testing method EN60661:2014, as well as the European Regulation on Standby → auto-shut off of 30min as a factory setting.

Swiss Energy Label for Residential Coffee Makers



- Energy consumption is shown by measuring each function on its own:
- e.g., production of coffee, espresso, steam for milk foam, etc)
- Unproductive functions such as cup-warmer, reheating, rinsing, etc.
- Values are added and multiplied for the annual consumption.



Resulting Market Development in Switzerland

The annual consumption of coffee makers dropped from an average of 180 kWh (2006) to below 50 kWh for efficient models (2018).





Commercial Coffee makers

- 2014: Preliminary study for Ecodesign WP 3
- 2016: Commercial Coffee makers were dropped from WP 3
- 2021: Preliminary study for Ecodesign WP 4 → Saving potential 2.4 TWh/a
- → Currently not in the scope of WP4, but proposition to include them in "professional cooking appliances"

Ongoing: Development of new testing standard CLC/TC 59X/WG 21 by CENELEC



Differences of residential and commercial

- Product variety (coffee varieties, tea, hot milk)
- Speed of production (higher capacity of cups / hour)
- Simultaneous production (steam, coffee, teawater)
- Higher automation in places with no staff
- Use of fresh milk: needs to be refrigerated → causes higher energy consumption than keeping it in the fridge (residential)



Topten approach: Focus on Energy loss

DIN 18873-2:2016 defines the energy losses as the energy that is needed despite not producing a single coffee (heating up, keep warm, rinsing). Note: Refrigeration of fresh milk is not included (measured separately).

Assumption: the production of the actual beverage is not that different between models and manufacturers. Daily number of cups produced depends a lot on the location (unlike households which are rather similar)

Find the current product list here: <u>www.topten.eu/commercial-coffee-makers</u>



Energy consumption over the day (restaurant)





Portafilter espresso machine, Energy consumption (kWh/day)





Conclusions residential coffee makers

- Introduction of European Energy Label for residential coffee makers, based on EN60661:2014
- →Can easily be adopted from the Swiss Energy Label, no new testing required
- →Many machines are already tested and labelled for the Swiss market.



Conclusions commercial coffee makers

- MEPS for commercial coffee makers
 - Standby: Adoption of Commission Regulation 1275/2008
 and 801/2013
 - Mandatory timetables for on/off settings automatic Shut-off after cleaning cycle
 - Promotion of Eco-mode (reduction of keep-warmtemperature after 15min of inactivity)
- Label for commercial coffee makers
 - Adapted from the Swiss label for residential coffee makers and in the future, using the new testing standard CLC/TC 59X/WG 21 by CENELEC

Or

• Based on energy losses (DIN 18873-2:2016)



Next steps

More data is needed to test the applicability to commercial coffee makers of the testing norms EN60661:2014 and DIN 18873-2:2016

Energy efficiency of coffee makers needs to stay on the agenda of policy makers, manufacturers and users.



Thank you for your attention!

