Policy recommendations on tumble driers

Anette Michel, November 2011

Introduction

Electrical laundry drying accounts for a considerable share of a household's electricity consumption: a typical dryer (today's class C) consumes three times more energy per cycle than the washing machine.
The penetration of driers in European households is increasing: 3.8 million tumblers for residential use were sold in 2007 in the EU-27– 14% more than 2002 (data from GfK and Eurostat in PWC, 2008).
Therefore it is crucial to implement effective measures limiting the electricity consumption of the increasing drier stock.

Best available technology: heat pump driers

Heat pump driers consume 50% less electricity than conventional condenser driers. Only heat pump driers reach today's class A, but they are much better than the class limit.
Today there are 79 residential and 4 professional heat pump drier models from 17 different manufacturers on the European market (www.topten.eu, November 2011).
The least efficient heat pump driers consume 0.43 kWh/kg, the most efficient 0.19 kWh/kg. With the proposed EEI calculation these models reach an EEI of 61 and 29 respectively.
In Switzerland, heat pump driers reached a market share of 32% in 2010. From January 2012, only class A tumble driers are allowed on the Swiss market.

Comments on the draft regulations

1. Draft Ecodesign regulation (from 20. July 2011)

Phase-out of worst performing products only

The proposed ecodesign requirements are generally welcome. Tier one will lead to a phase out of the least efficient conventional driers (today's lower class C and worse, new proposed class D) from 2013, Tier 2 will phase out the new proposed class C from 2017. This does not mean a phaseout of conventional driers; most of today's class B driers would be left on the market (with an energy consumption twice as high as of the best driers).

Go for the BAT: EEI=53; no loopholes for inefficient technologies and washer-driers

Leaving these driers on the market would mean a high missed saving potential. Heat pump driers consume 50% less energy than conventional driers, and already today there is a vast market offer of 80 models from 17 different manufacturers and of different sizes, for household, semi-professional and professional use (see www.topten.eu). Therefore it is important to set a clear sign for the heat pump technology by announcing an EEI of 53 or at least 60 as tier 2 requirement. An EEI of 60 would leave today's worst performing heat pump driers (0.43 kWh/kg) on the market, an EEI of 53 would eliminate these new products in the future and set an incentive for new more efficient products than less efficient ones.
Switzerland goes ahead and bans driers not reaching the current class A from January 2012.
The generally less efficient vented driers should be treated exactly the same way as condenser driers: the same EEI calculation formula should be applied and the same MEPS should be set. The proposed MEPS would leave class C vented driers on the market also in tier 2. Such a protection of the less efficient technology would undermine the measures for condenser driers. The same accounts for the exemption of combined washer-driers from the ecodesign regulation. Wahser-driers are neither covered by the ecodesign regulation for washing machines nor by the draft regulation for driers. Experts expect their market share to rise in the future, in the UK for example washer-driers already account for 23% of the drier

sales. The old energy label from 1994 still applies to washer-driers, but the ecodesign regulations for driers and possibly for washing machines should be extended to cover these combined appliances.

Stricter requirements for condensation efficiency, humidity sensors
Minimum requirements for condensation efficiency are also proposed, which is also welcome, as low condensation efficiency can lead to wet rooms and the need for additional room drying equipment. The proposed values of 60% (tier 1) and 70% (tier 2) are however too low. There are models with condensation efficiency values of more than 90% on the market (V-ZUG for instance, see references). A condensation efficiency of 60% means that 40% of the humidity remains in the room, which can still cause damages without drying measures. Condensation efficiency requirements should be set at 70% in tier 1 and 85% in tier 2.
Equipment with a humidity sensor should be an additional requirement, starting with Tier 1. Humidity sensors are common in efficient driers and can avoid excess energy use.
It is important that also driers sold for professional use are included in the scope, at least for capacities up to 16 kg. There are highly efficient driers for pro use (see examples below), and the ecodesign regulation could lead to more efficient products for this sector.

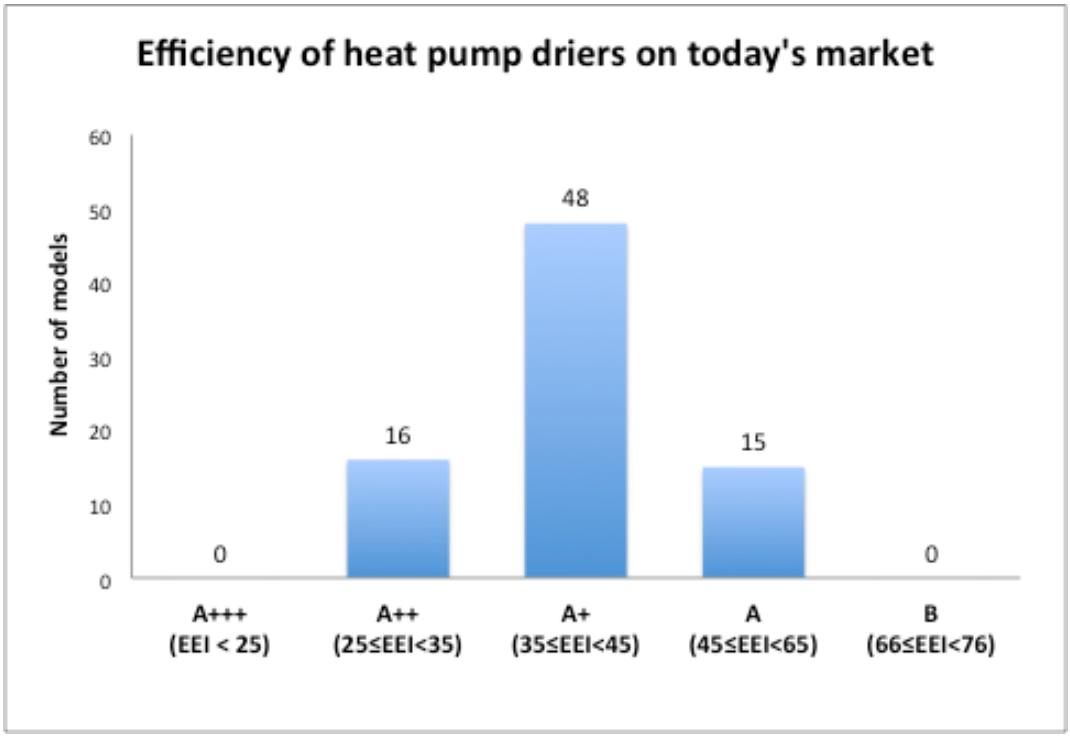
1. Draft labelling regulation (from 21. October 2011)

Draft labelling regulation: better label and calculation formula
The new energy label proposal brings a vast improvement and is generally very welcome. The proposed new label allows consumers to distinguish between less and more energy efficient heat pump tumble driers, which has not been possible with the current label.

Draft regulation		% improvement	Technology / today's class
A+++	EEI < 25		Future BAT
A++	35	29%	BAT Heat pump driers (A)
A+	45	22%	Heat pump driers (A)
A	65	31%	Low efficiency HP driers (A)
B	76	14%	Class B
C	85	11%	Class C and B
D	85 < EEI		Class C and D

Tab 1: Labelling scale proposed in the draft regulation

The new A+++ class would be empty now, reserved for the future BAT. Today's best driers reach the future A++ class (with around 0.23 and 0.19 kWh/kg). With an empty top class an incentive remains to develop even more efficient driers.
Furthermore larger driers are no longer rewarded with easier-to-reach high efficiency values and good label classifications, thanks to including the capacity into the EEI calculation formula. Another change is the new declaration of the condensation efficiency on the label. The condensation efficiency classification scale is sensible and simple and we are welcoming this additional important consumer information.



Data source: 79 residential heat pump driers from www.topten.eu, November 2011. Own EEI calculations.

Suggestions: narrower good classes, A to G instead of A+++ to D, tighter measurement tolerance

In the proposed classification scale the class widths are very uneven: classes A and A++ are very large (31% and 29% improvement necessary to reach the next class). The suggestion below is more balanced and avoids large good classes.

Another shift of three classes would result in the ideal A-G scale, making the message much clearer to consumers. Additionally a stronger influence of the capacity (kg) on the resulting EEI should be included into the calculation formula, to slow down the trend toward larger products.

On the fiche the explanation of the declared energy consumption should be formulated clearer, saying: '…based on a *total* of 160 drying cycles….'.

Additional recommendations for both labelling and ecodesign regulation regard the scope and the differentiation of condenser driers with and without heat pump: driers for professional use should be included in the scope of both regulations as long as lot 24 on commercial driers has not resulted in any implementing measures; heat pump driers should be mentioned in the definitions and on the product fiche. Finally the measurement tolerance of 10% is too high. A general measurement tolerance of 5% is technically attainable and ensures that classes do not overlap.

Recommendation		% Improvement	Technology / today's class
A	EEI < 24		Future BAT
B	30	20%	BAT Heat pump driers (A)
C	38	21%	Heat pump driers (A)
D	56	32%	Low efficiency HP driers (A)
E	76	26%	Class B
F	85	11%	Class C and B
G	85 < EEI		Class C and D

Tab. 2: recommended scale: narrower good classes and A to G

Adaption to lower initial moisture content
Another point is the initial moisture the energy consumption is measured at: some confusion was caused in 2005 when the measurement standard was changed to 60% initial moisture, but the label classification scheme remained referring to 70% initial moisture. Such a situation, which led to possible wrong declaration, should be avoided. The typical washing machine today has rather a spin-drying efficiency of class B (50% remaining moisture) than C (60%). Therefore the measurement standard should be updated to account for this development and declare the drier's energy consumption as close to real-life consumption as possible. At the same time the energy labelling classification scheme (and ecodesign regulation) also should refer to 50% initial moisture energy consumption values. Since the current scheme refers to 60% initial moisture, the classification scheme would have to be revised.

References

Professional heat pump driers by Miele and Electrolux:
http://www.miele2011.co.uk/diagnostic/resources/pdfs/Larger_Heat_Pump.pdf
http://laundrysystems.electrolux.com/node350.aspx?productId=5673

V-ZUG heat pump driers with condensation efficiency > 90%:
http://www.vzug.com/medias/sys_master/8804205330462/Waschen-Trocknen_2011_d.pdf

Heat pump driers on the European market: www.topten.eu

Switzerland bans class B and C driers from 2012 (Rita Werle, EEDAL 2011):
http://www.topten.eu/uploads/File/040_Rita_Werle_final_driers.pdf

Heat pump driers in Austria:
http://www.topprodukte.at/index.php?pid=produktlisten&topproductscat1=23&topproductscat2=73&topproductscat3=197&topprodukte_sort_listing=x&topprodukte_sort_direction=x&topprodukte_how_many_ds=1

Heat pump driers in Germany: http://www.ecotopten.de/prod_trocknen_prod.php

Draft regulations: http://env-ngo.eup-network.de/

PriceWaterhouseCoopers (PWC), December 2008: Ecodesign of laundry dryers. Preparatory studies for Ecodesign requirements of Energy-using-Products (EuP) – Lot 16. Draft final report.

Labelling directive for combined washer-driers 96/60/EC:
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1996:266:0001:0027:EN:PDF