

Country:	Switzerland
Technology:	Laundry Dryers
Sub Category:	Vented and condenser electric models

Introduction

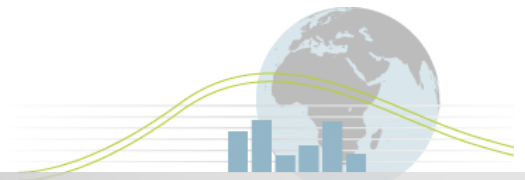
The first stage in the Mapping and Benchmarking process is the definition of the products, i.e. clearly setting the boundaries that define the products for use in data collection and analysis. Doing this ensures that comparison between the participating countries is done against a specific and consistent set of products.

The summary definition for this product is:

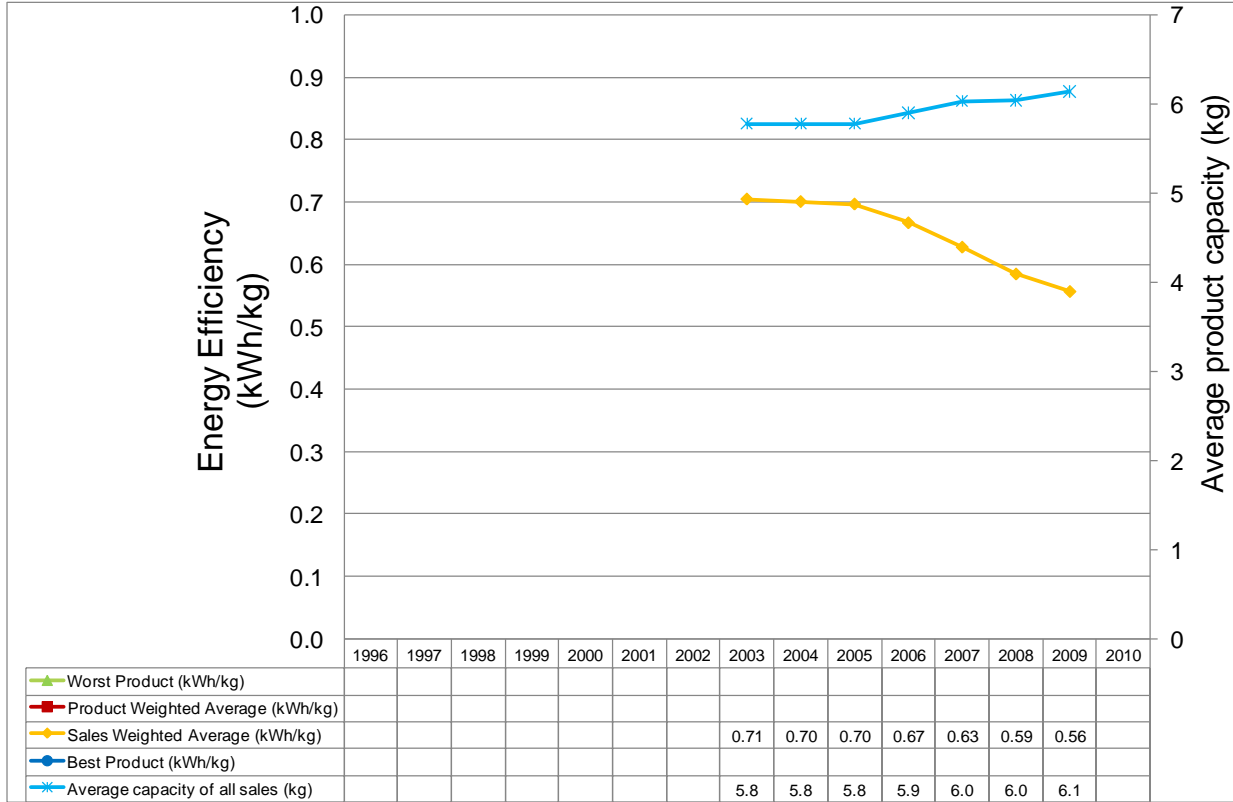
<p>Laundry Dryers defined as: <i>'An energy using appliance for use in households designed to remove the moisture of a (given) load of clothing or other textiles.'</i></p>			
<p>Data will be analysed for the following types of laundry dryer:</p>			
Laundry Dryers	Heat source	Electrical	
	Mode of drying	Tumble dryer	
	Air usage	Vented (fresh air is heated, passed through textiles and exhausted from the appliance)	Condenser (noting whether air condenser, or heat pump condenser) (air used for the drying process is dehumidified by cooling and re-circulated)
Functionality	Layout	Noted whether top loader or front loader.	
	Capacity (dry load)	Less than 10 kg. Full analysis only for appliances with capacity between 4 kg and 10 kg.	
	Wash capability	Washer dryers are excluded from the analysis.	
	Automation	To be noted whether the appliance has moisture sensor, load sensor or just timer /manual control.	

The detailed product definitions can be found at the Annex website:

<http://mappingandbenchmarking.iea-4e.org/matrix>

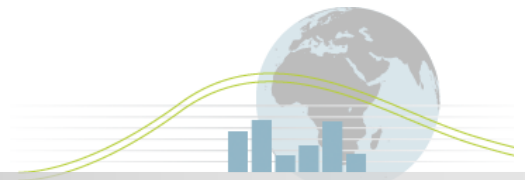


Energy Efficiency of New Laundry Dryers Switzerland

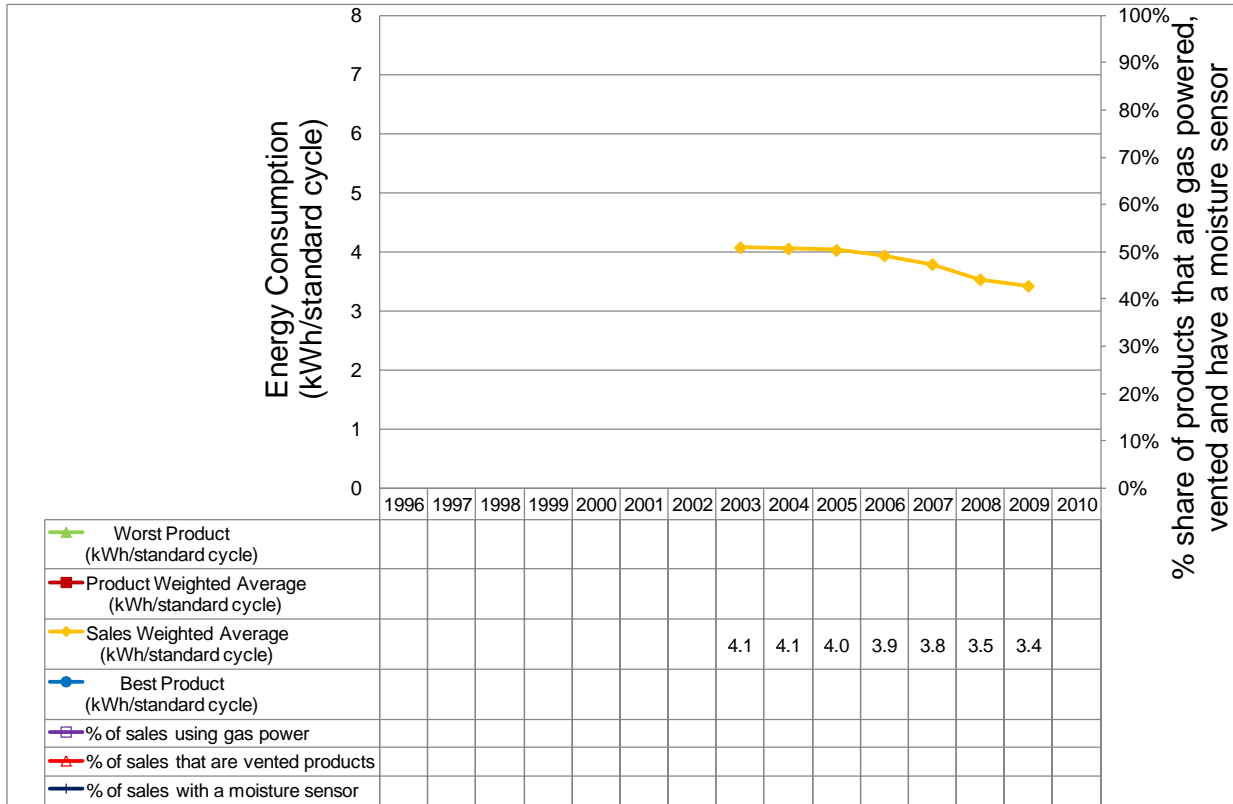


Key notes on Graph (see notes section 1)

- This graph is based on the weighted average of Swiss laundry dryer sales supplied by the Swiss industry (mainly the Swiss Association of the Domestic Electrical Appliances Industry).

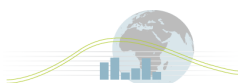


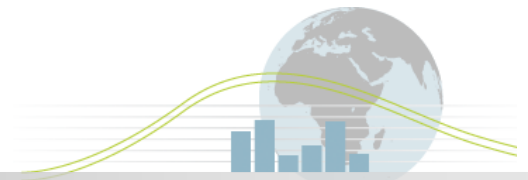
Energy Consumption of New Laundry Dryers Switzerland



Key notes on Graph (see notes section 2)

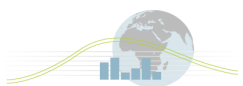
- This graph is based on the weighted average of Swiss laundry dryer sales supplied by the Swiss industry (mainly the Swiss Association of the Domestic Electrical Appliances Industry).

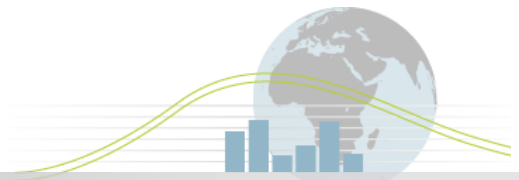




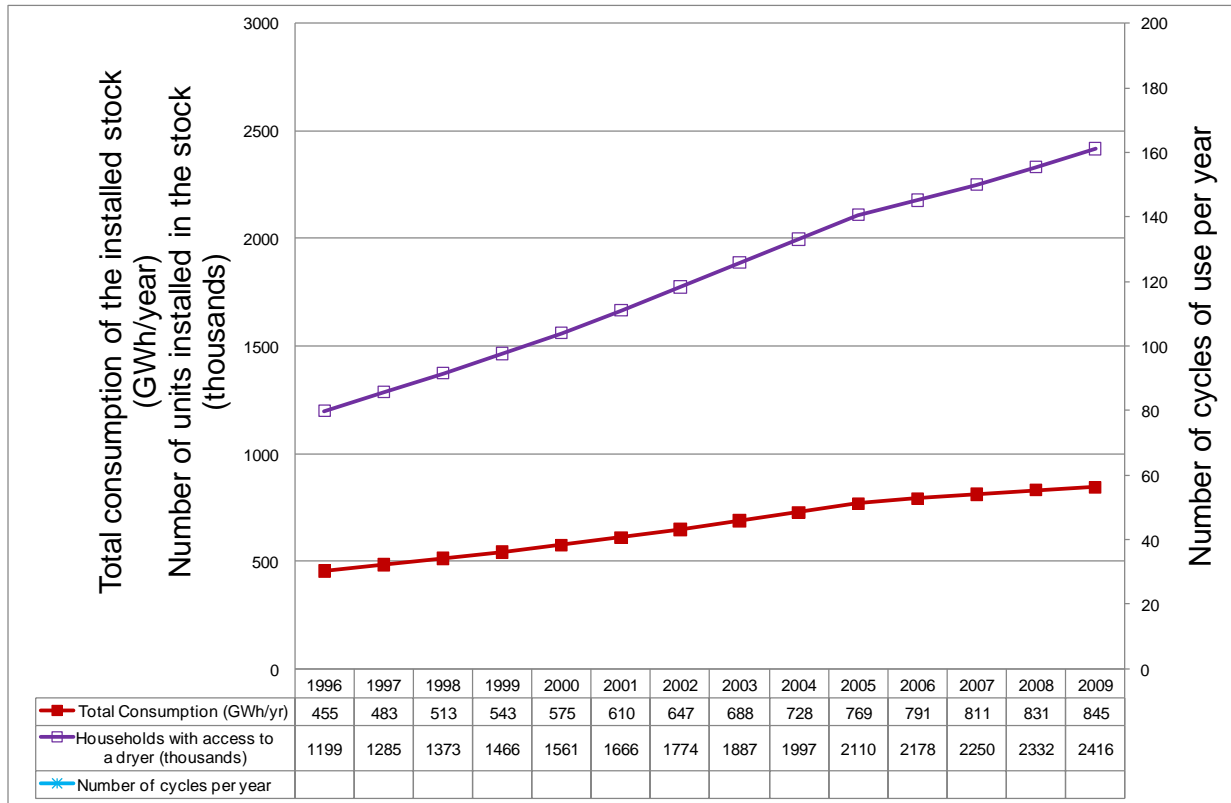
Energy Efficiency in the Installed Laundry Dryers Stock Switzerland

No data on the efficiency of units installed in the stock was made available to the Annex at the time of publication. The average consumption of a household that has the possibility to dry laundry with a vented tumble dryer or condenser dryer has fallen from 380kWh to 350 kWh.



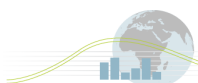


Energy Consumption in the Installed Laundry Dryers Stock Switzerland



Key notes on Graph (see notes section 4)

- Data is taken from prognos report “electrical appliances in Households and offices” for eae, Zürich.
- The data on households with access to a dryer is plotted as data was not available on the absolute number of dryers installed in the stock. Some of those households have access to a dryer privately (87% of sales in 2009) while others have access to a communal machine(s) in an apartment block.



Major Policy Interventions (See notes Section 5)

Switzerland has generally adopted the EU regulations on appliance labelling and standards on a voluntary basis. There is one directly relevant EU policy:

- EU energy labels for electrically heated laundry dryers were established in 1996¹, allocating a label A to G based on drying a cotton load sized to the maximum capacity of the appliance. The label class thresholds are different for vented and condensing dryers, with condensing dryers allowed to consume slightly more energy within each label class (see section 5 Notes on Policy Interventions for further information). Changes were made to the test methodology for tumble dryers that underpins the EU label scheme in 2005, reducing the starting moisture content and adjusting the ambient temperature and humidity. In order to ensure that products did not shift classes as a result of these changes, the calculation of the efficiency index C was adjusted to compensate. There are no EU energy label requirements for gas tumble dryers.

There have been no EU regulatory minimum standards nor an EU ecolabel category for laundry dryers in Europe up to time of publication in December 2010.

However, a new EU ecodesign regulation and a revised EU energy label for laundry dryers are expected during early 2011, following a three year ecodesign study² and policy consultation process. It is not yet decided whether or not the new ecodesign regulation will include MEPS. The new energy label will include additional energy classes A+, A++ and A+++ above the existing classes.

In terms of national policies, the Swiss Government has actively promoted and supported the market for heat pump dryers for the past few years, and successfully grown their market share to around 25% in 2009. From January 2012 only laundry dryers with an energy efficiency class of A or higher will be permitted in Switzerland. In practice this effectively means that only heat pump dryers will be permitted for sale from that date if it should not be possible to realize a (condenser) dryer with a specific energy consumption of <0,55 kWh/kg without a heat pump..

¹ Under Commission Directive 95/13/EC of 23 May 1996.

² See <http://www.ecodryers.org/>.

Cultural Issues (See Notes Section 6)

In Switzerland totally the dryer market is parted in dryers for just one household or a family (about 87% of the sales, medium capacity/load 6.1 kg in 2009) and dryers for apartment buildings, used by more than one family (semi-professional machines, 13% sales share, medium capacity/load 6.5 kg in 2009). A semi-professional dryer is used by 5 household on an average, i.e. the medium load of a single household machine has to be multiplied by five in order to get the real use/intensity in dried laundry (kg/year).

In Switzerland around 70 % of all private households can use a laundry dryer, in most cases using a privately owned one. The penetration of household ownership is increasing from about 40% in 1996 to 69% in 2009 (midyear estimates). From 2003 to 2009 the market for condenser dryers grew faster than for vented dryers, with the market share of vented dryers falling from 18% to 8%. The share of category A heat pump dryers grew from 2% in 2003/2004 to 24% in 2009. Actually the best A-dryers consume 0.23 kWh/kg (6 kg, single family dryer), 0.26 kWh/kg (7 kg, single family dryer) and 0.27 kWh/kg (7 kg, semi-professional dryer).

Notes on data

Section 1: Notes on Product Efficiency

1.1 Test methodologies, Performance Standards and Labelling Requirements

Laundry dryers in Switzerland are tested to the EU test methodology EN61121 as amended in 2005. This test methodology is also the basis of EU energy labelling for laundry dryers. The key elements of the test methodology including those that impact on energy consumption are summarised in the table below:

Test methodology	IEC61121:2005
Capacity metric	Kg dry weight of load
Ambient temperature for test	23°C±2°C
Ambient relative humidity for test	55%
Test cloths	All 100% Cotton
Load during test	Rated capacity
Initial moisture content	60% remaining moisture content
Final moisture content	8% ± 3.2% of bone dry
Metric for efficiency arising from local test	kWh/cycle and kWh/kg

Significant changes were made to test methodology in 2005 that affect the energy consumption and efficiency data derived from it:

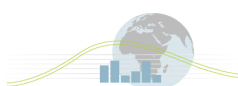
- The initial moisture content was changed to 60% (previously 70%)
- The ambient test temperature was changed to 23°C (previously 20°C)
- The ambient humidity was changed to 55% (previously 65%)

The calculation of the applicable EU energy label was modified, however, at the same time to compensate for the energy advantage gained by vented dryers due to the increased temperature and reduced humidity of the air they draw in from the test room. This compensation also means that labels earned after 2005 should be directly comparable to those earned afterwards. In this analysis therefore, data based on EU energy label or energy efficiency index should be continuously comparable. In contrast, kWh/cycle data as declared on the energy label, and kWh/kg efficiency data derived from the test methodology will not be comparable before and after 2005 without normalisation.

The EU energy label requires an A to G classification, declaration of kWh per cycle and classification as vented or condensing. A declaration of noise performance is optional.

1.2 Product Efficiency Graphic

1.2.1 Data Source:



Data supplied by Swiss industry (mainly the Swiss Association of the Domestic Electrical Appliances Industry).

1.2.2 Data Clarifications

As the data for this analysis has been provided from a third-party report the limitations of the data set are unknown.

1.2.3 Glossary of energy metrics for laundry dryers:

The key metrics for laundry dryers and the key calculations undertaken in the wider Annex analysis are described below. Some metrics and/or calculations are not relevant to all data sets due to absence of data or for other reasons.

Declared Unit Load Capacity: Unit load capacity in kg is defined by local regulations and declared by manufacturers (Unit kg).

(Note: This capacity is defined using the mixture of materials defined in the local regulations which is not necessarily in line with the mixture of material used elsewhere (for local load mix, refer to Section 1.1 on “Notes on Data”).

Unit Energy Consumption (UEC): Unit Energy Consumption is the energy consumed by the unit to complete one drying cycle as defined by local test conditions (Unit: kWh/cycle).

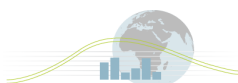
Sales Weighted UEC of New Models: Value calculated by [Sum of (UEC multiplied by sales volume of Model in year) for all Models] divided by [Sum of (sales volume of all Models in year)]. Unit kWh/cycle.

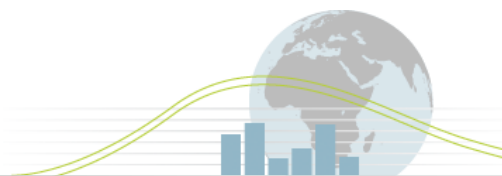
Product Weighted UEC of New Models: Value calculated by [Sum of (Model UEC for all models sold in year)] divided by [Sum of (Number of Models sold in year)]. Unit kWh/cycle.

Unit Energy Efficiency (UEE): Value calculated by dividing UEC by Declared Unit Load Capacity (kWh/Kg/cycle).

Sales Weighted UEE of New Models: Value calculated by [Sum of (UEE multiplied by sales volume of Model in year) for all Models] divided by [Sum of sales volume of all Models in year]. Unit kWh/kg/cycle.

Product Weighted UEE of New Models: Value calculated by [Sum of UEE for all models sold in year] divided by [Number of Models sold in year]. Unit kWh/Kg/cycle.





Section 2: Notes on Product Consumption

2.1 Test methodologies, Performance Standards and Labelling Requirements

No further information available.

2.2 Product Consumption Graphic

No further information available.

Section 3: Notes on Efficiency of Stock

No further information available.

Section 4: Notes on Consumption of Stock

Source:

Data is taken from *prognos report "electrical appliances in Households and offices" for eae, Zürich.*

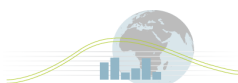
Section 5: Notes on Policy Interventions

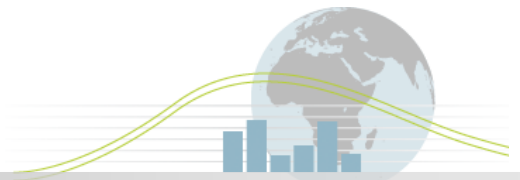
5.1 Requirements of Commission Directive 95/13/EC with regard to energy labelling of household electric tumble dryers of 23 May 1995.

Switzerland voluntarily adopts the EU energy label (a new version of which is expected in early 2011) but this section describes the current labelling requirements. The energy efficiency of each appliance is based on the specific energy consumption (C) in kWh per kg of load measured for a dry cotton cycle according to the conditions and test methodology described in Notes section 1.1.

For air **vented driers**, the energy efficiency class is determined in accordance with the following table:

Energy efficiency class	Energy consumption C
A	$C \leq 0.51$
B	$0.51 < C \leq 0.59$
C	$0.59 < C \leq 0.67$
D	$0.67 < C \leq 0.75$
E	$0.75 < C \leq 0.83$
F	$0.83 < C \leq 0.91$
G	$C > 0.91$

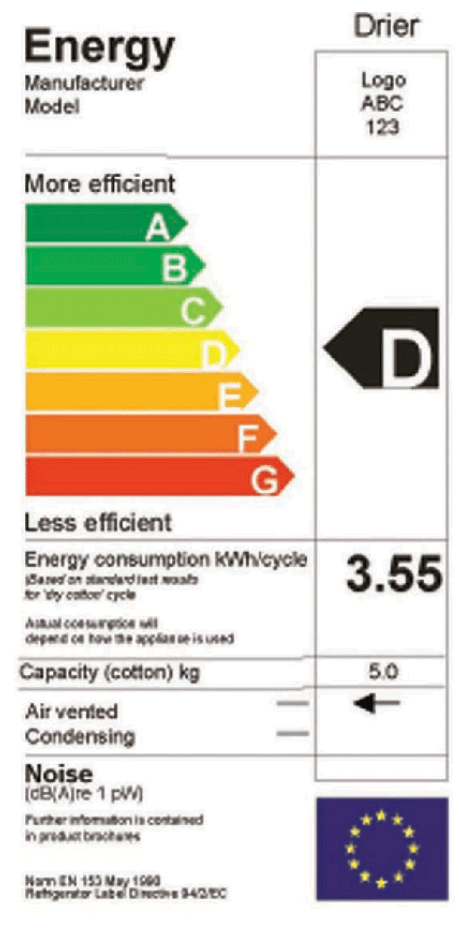




For **condenser driers**, the energy efficiency class is determined in accordance with the following table:

Energy efficiency class	Energy consumption C
A	$C \leq 0.55$
B	$0.55 < C \leq 0.64$
C	$0.64 < C \leq 0.73$
D	$0.73 < C \leq 0.82$
E	$0.82 < C \leq 0.91$
F	$0.91 < C \leq 1.00$
G	$C > 1.00$

The label itself is shown below³



Section 6: Notes on Cultural Issues

None.

³ Source from: http://www.clasponline.org/clasp_online_worldwide.php?programinfo=54