

# Heat Pump Tumble Driers

**New EU Energy Label and Ecodesign Requirements in Europe  
MEPS in Switzerland  
Initiatives in North America**

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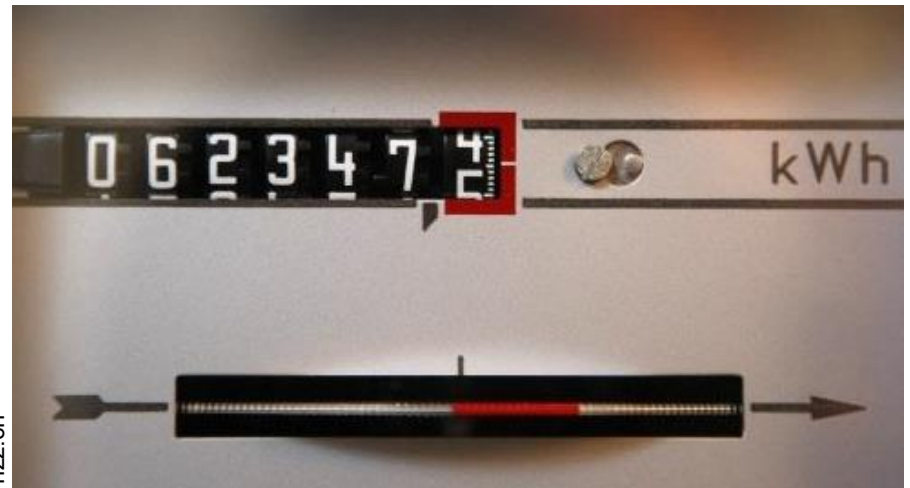
# Topics

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- Electric drier technologies
- Europe
  - Market situation of heat pump driers
  - Regulations: EU energy label, Ecodesign Requirements
  - Best Available Technology (BAT) according to Topten.eu
  - Success story of heat pump driers in Switzerland
  - Policy recommendations
- US & Canada
  - Super efficient drier market situation, dryer stock (2009)
  - Government Policy Status
  - ENERGY STAR Label, ENERGY STAR Emerging Technology Award
  - Super Efficient Clothes Dryers
  - SEDI Policy Recommendations

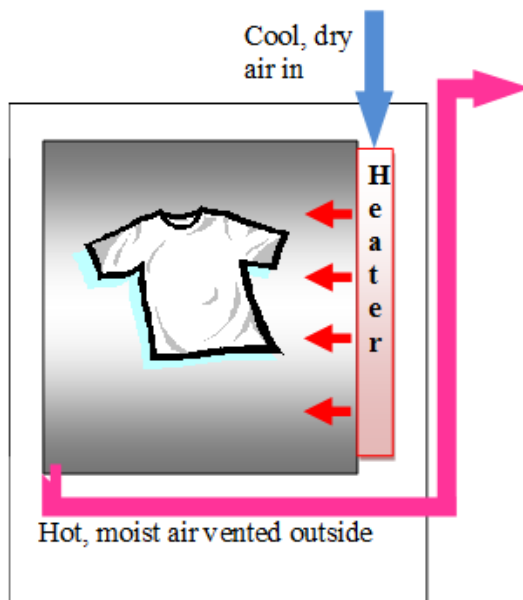
# Introduction

- Washing and drying of clothes and textiles is part of our everyday routine
- Europe: Drying with an electric tumble drier is becoming more and more the trend
- North America: Using a drier is the norm
- Drying with an electric tumble drier is energy intensive



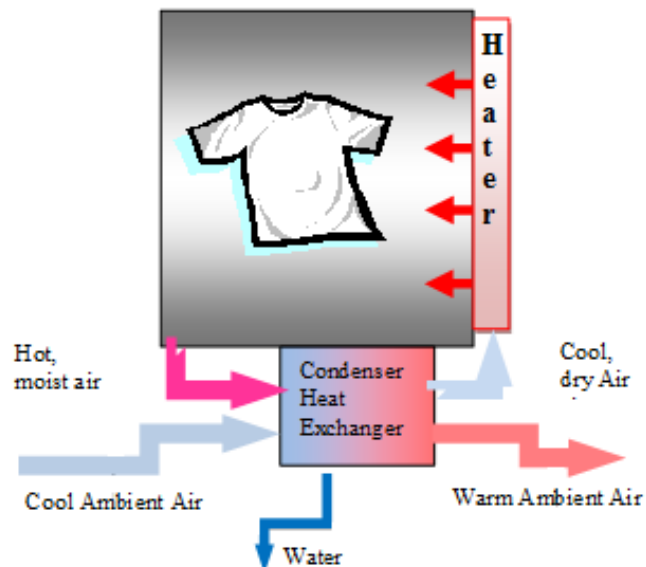
# Electric Drier Technologies

## Vented

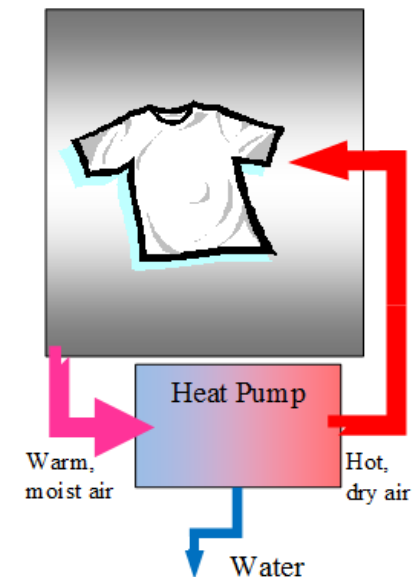


## Condensing

### Conventional driers



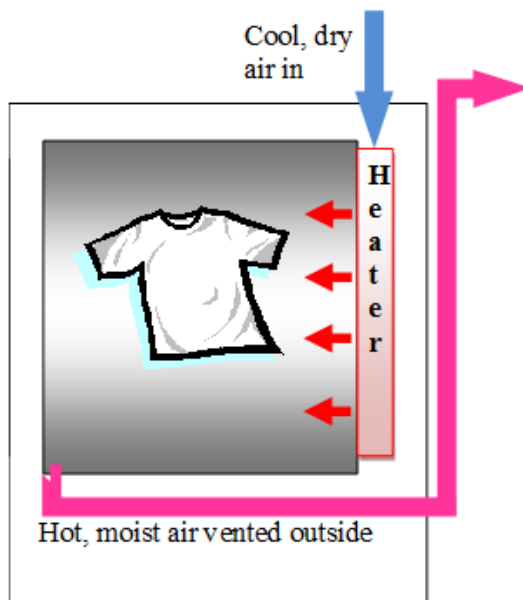
### Heat pump driers



Source: Super Efficient Dryer Initiative SEDI

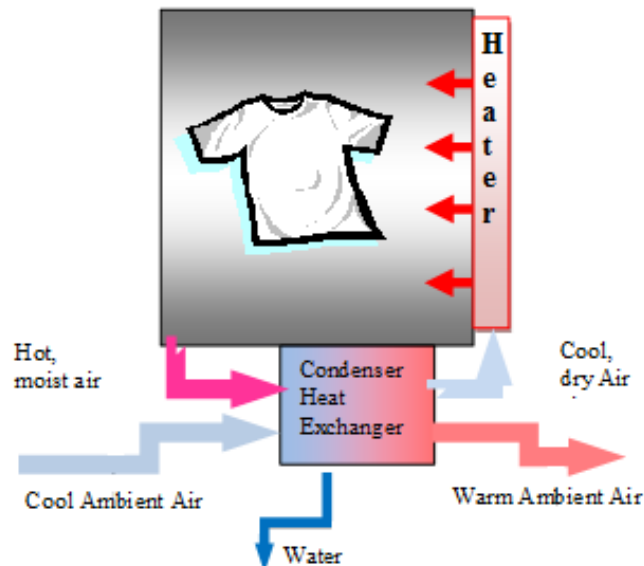
# Electric Drier Technologies

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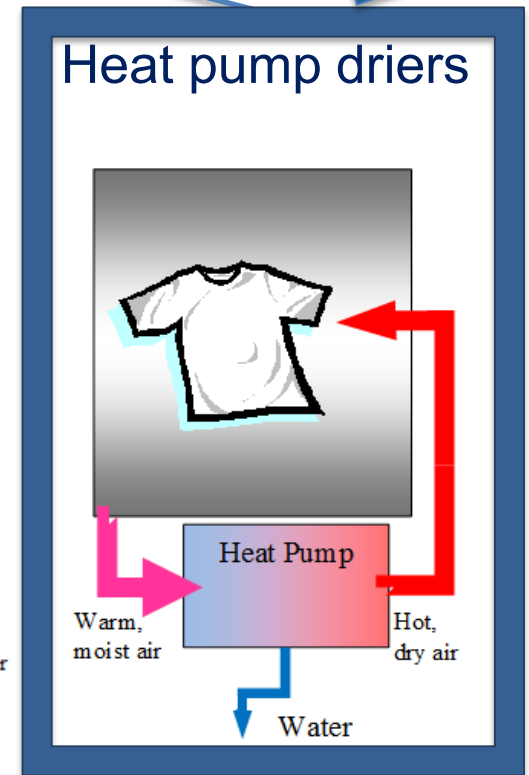


## Condensing

### Conventional driers



### Heat pump driers

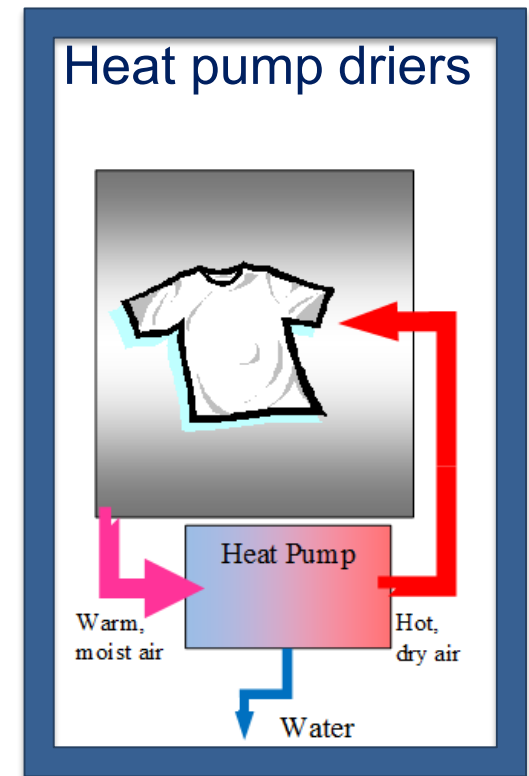


Focus

Super Efficient Dryer Initiative SEDI

# Heat Pump Driers: Huge Energy Savings

- 50% less energy consumption than conventional condenser driers
  - Clothes are treated with care due to low temperatures
  - Higher purchasing price than conventional condenser driers
  - Lowest life cycle costs
- (Gfk, Panelmarket Germany, February 2013)
- it is worthwhile to promote heat pump driers and to push their market share



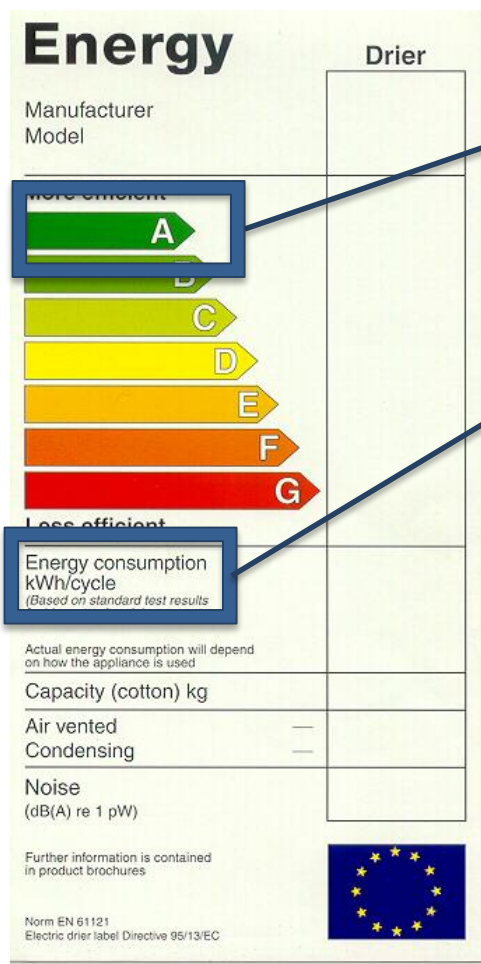
# Europe: Market Situation of Heat Pump Driers

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- Heat pump driers are gaining market share
- Level of sales share varies between countries
  - Switzerland is leading: 100%
  - Germany, Austria, Italy: around 40%
- In 2012, around 90 models from 18 different manufacturers were available on the European market (Topten)

# Regulations: EU Energy Label

old label



**Old:** all heat pump driers A (although considerable differences)

**New:** heat pump driers A to A+++  
→ allows the distinction between more and less efficient models

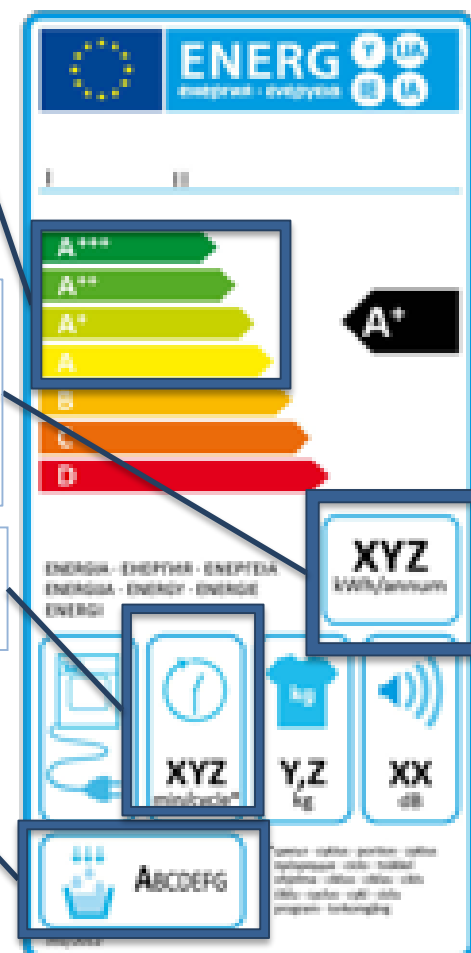
**Old:** kWh/cycle

**New:** kWh/year  
(160 standard cycles, full & partial load, left-on/off, programme time)

**New label:** Cycle time  
(HPD longer than conventional driers)

**New:** Condensation efficiency.  
If low → humid rooms → need for additional room drying equipment  
→ increasing electricity consumption

new label  
(mandatory since May 13)





# Regulations: Ecodesign Requirements

Condenser Driers	Energy Efficiency Index		Condensation Efficiency	
From 11/2013	< 85	→ Phased out: D → Allowed: C – A+++	> 60%	→ Allowed: D – A (all)
From 11/2015	< 76	→ Phased out: C → Allowed: B – A+++	> 70%	→ Phased out: D → Allowed: C – A



Non-efficient condenser driers with class B (no heat pump!) will be available on the EU market also in the future



Up to 30% of the moisture will be allowed to be expelled into the room



**Topten for policy makers, researchers and procurers:** find the best products of Europe, EU policy recommendations and procurement guidance on [topten.eu](http://topten.eu)

Europe

**Topten for consumers:** Find the best products in your country on national Topten websites

China

European countries

USA

## News



Topten publishes its **TV market monitoring 2007-2012**, showing the developments leading to 39% class A / A+ sales in Europe in 2012. (July 2013)



**Swiss appliance sales data 2004 - 2012** have been published: 100% class A driers and 56% of A+++ washing machines sales reflect a highly efficient market (July 2013).



**Topten Global Report 2012:** how Topten supports market transformation towards better energy efficiency (May 2013)



**Selecting the most energy efficient products:** The **Topten manual** summarizes the programme and its mechanisms (November 2012)

[News Archive](#)

## Topten: global project for the most energy efficient products

Topten is an international program to create a dynamic benchmark for the most energy efficient products.

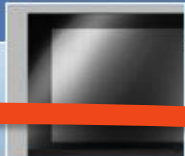
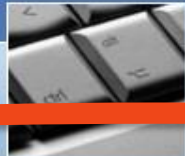
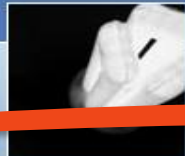
In 20 countries around the world, Topten presents the best products on national markets for an increasing range of electric products. Topten is neutral, rigorous and transparent in that there is no influence from manufacturers or retailers and the selection methodology is explained online. Apart from consumer information, Topten aims at providing policy recommendations based on its overview on the high efficiency product market.

» [more](#)

Topten = Reference for BAT

[www.topten.eu](http://www.topten.eu) - Best products of Europe

Online in China, 18 European countries, USA



Cars

Household

Lighting

Office  
Equipment

Consumer  
Electronics

Building  
Components

Professional  
Refrigerators

## Best products

- Refrigerator Freestanding
- Chest Freezers
- Upright Freezers
- Tumble Driers**
- Vacuum Cleaners
- Coffee Machines
- Washing machines
- Dishwashers

## News



Topten publishes its [TV market monitoring 2007-2012](#), showing the developments leading to 39% class A / in 2012. (July 2013)

- Residential
- Semi professional use
- Professional use

Appliance sales data 2004 - published: 100% class A

driers and 56% A+++ washing machines sales reflect a highly efficient market. (July 2013) » [more](#)



**Topten Global Report 2012:** how Topten supports market transformation towards better energy efficiency. (May 2013)



The Regulatory Committee has approved the **Ecodesign regulation for vacuum cleaners**, including a power cap (1600W / 900W). (March 2013) » [more](#)

[News Archive](#)

[Topten Focus](#) (Registration)

## Energy efficiency for consumers, in policy and procurement



### Topten reveals the best products in Europe:

Topten is a web portal guiding consumers to the most energy efficient appliances and cars in Europe. Find the best products available in your country, with a simple click! » [Fact sheet](#)



### Topten documentation:

All Topten policy recommendations and other publications related to energy efficient products can be accessed [here](#).



### Professional procurement:

[Topten Pro](#) gives purchasing guidance for public procurers and other professional buyers. It provides clear guidance on tender criteria to buy the most efficient product on the market.



### Product Competition

Who Will Supply Europe's Most Energy Efficient Products?

[Announcement and Rules](#)

- |                            |                             |
|----------------------------|-----------------------------|
| <a href="#">Austria</a>    | <a href="#">Lithuania</a>   |
| <a href="#">Belgium</a>    | <a href="#">Luxembourg</a>  |
| <a href="#">Croatia</a>    | <a href="#">Norway</a>      |
| <a href="#">Czech Rep.</a> | <a href="#">Poland</a>      |
| <a href="#">Finland</a>    | <a href="#">Portugal</a>    |
| <a href="#">France</a>     | <a href="#">Romania</a>     |
| <a href="#">Germany</a>    | <a href="#">Spain</a>       |
| <a href="#">Greece</a>     | <a href="#">Sweden</a>      |
| <a href="#">Italy</a>      | <a href="#">Switzerland</a> |

**topten.info** Global Topten network



# Driers: BAT according to Topten.eu

Brand	Siemens	BEKO	AEG	Siemens	Siemens	Siemens	Brandt	Gorenje
Model	WT48Y7W1	DPU 8306 GXE	T97689IH T97685IH	WT48Y701	WT48Y731	WT48Y781	BFD82CH	D 8565 H
Electricity costs (€ 15 years)	387	396	398	479	479	479	490	490
Capacity (kg)	8	8	8	8	8	8	8	8
Drying time (min) full load	187	174	188	186	186	186	180	180
Energy class	A+++	A+++	A+++	A++	A++	A++	A++	A++
Energy (kWh/year)	172	176	177	213	213	213	218	218
Condensation class	B	A	A	B	B	B	A	A
Efficiency Index	23.2	23.3	24	28.4	28.4	28.4	29	29.2
Countries available	on demand	on demand	DE / on demand	on demand	on demand	on demand	CH / on demand	on demand

August 2013



Gorenje	Electrolux	AEG	Electrolux	BEKO	AEG	AEG
D 7565 NA/NB D 7665N	EDH3498RDL	T59880	EDH3497RDW	DPU 8305 XE	T86589IH3	T86594FIH
448	583	477	583	522	526	583
7	9	7	9	8	8	9
155	165	155	180	145	170	200
A++	A++	A++	A++	A++	A++	A++
199	259	212	259	232	234	259
A	A	B	A	A	B	A
29.6	30.3	30.7	30.8	31.1	31.8	32
on demand	SE / on demand	DE / on demand	SE / on demand	on demand	DE / on demand	DE / on demand



Selection criteria [www.topten.eu](http://www.topten.eu)

- Energy efficiency: A++ or A+++
- Condensation efficiency: B or A

A+++/A (2 models)

A+++/B (1 model)

A++/A (7 models)

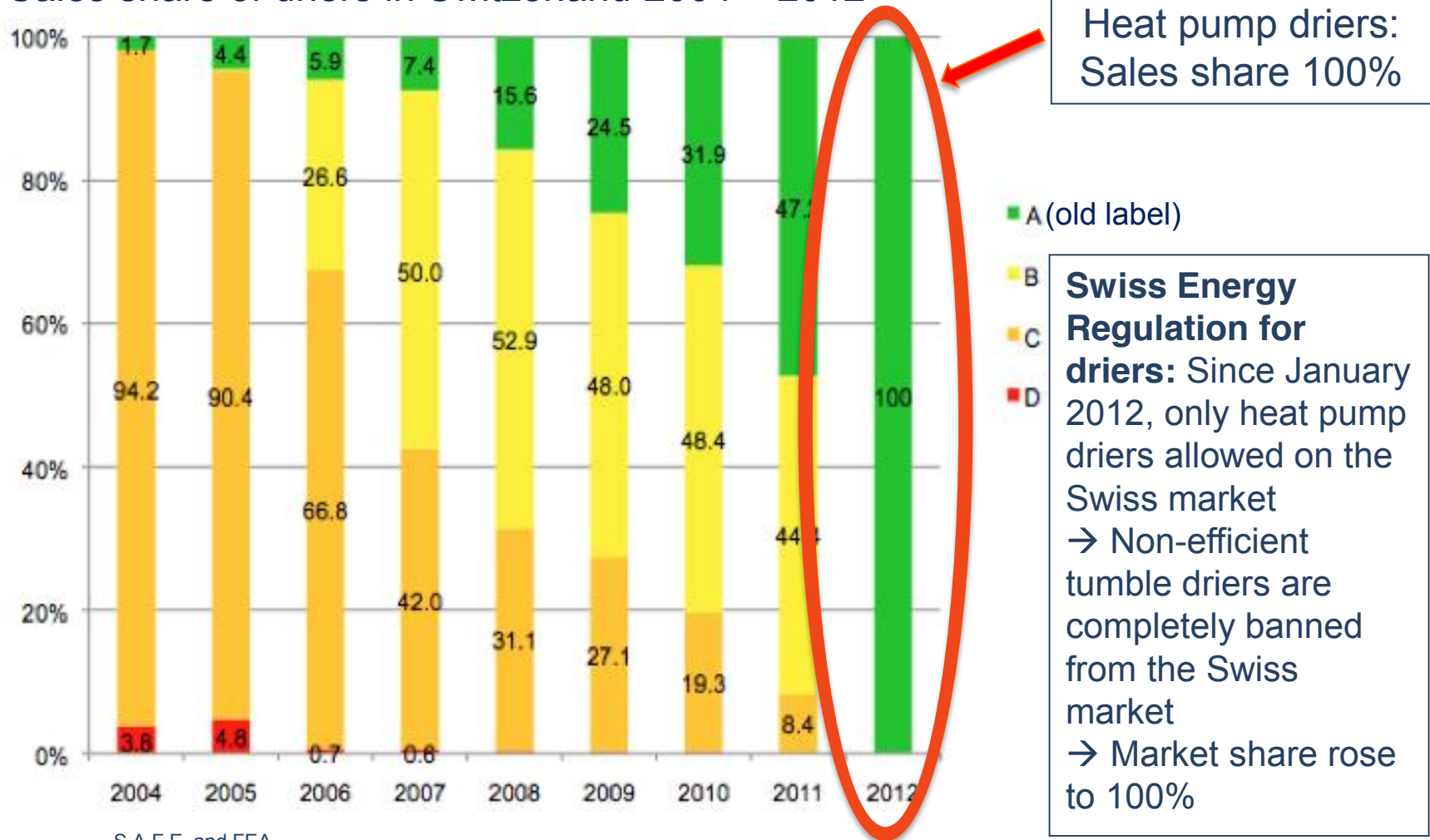
A++/B (5 models)

Energy Efficiency Index: 23.2/23.3

Drying time: 145 – 200 minutes

# Switzerland: Success Story of Heat Pump Driers

Sales share of driers in Switzerland 2004 – 2012



S.A.F.E. and FEA

# Policy Recommendations: EU Energy Label

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- The thresholds of the classes are weak
  - Energy efficiency:  
Some driers already reach the energy efficiency class A+++ at the time of the introduction of the revised label
  - Condensation efficiency:  
Some driers also already meet the top class A
- Recommendations
  - Update of the EU Energy label in a timely manner to reflect the fast changing market
  - The top classes should then be held empty to give incentives to manufacturers for future technical developments

# Policy Recommendations: Ecodesign Requirements

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- Tier 1 and tier 2 are weak
  - Energy efficiency:  
Non-efficient driers (without heat pump, class B) will be allowed on the market also in the future
  - Condensation efficiency:  
Up to 30% of the moisture will be allowed to be expelled into the room
- Recommendations
  - Only heat pump driers should be allowed on the European market – following the good example of Switzerland → should be adapted in next revision
  - Ambitious requirements for condensation efficiency

# US & Canada: Super Efficient Drier Market

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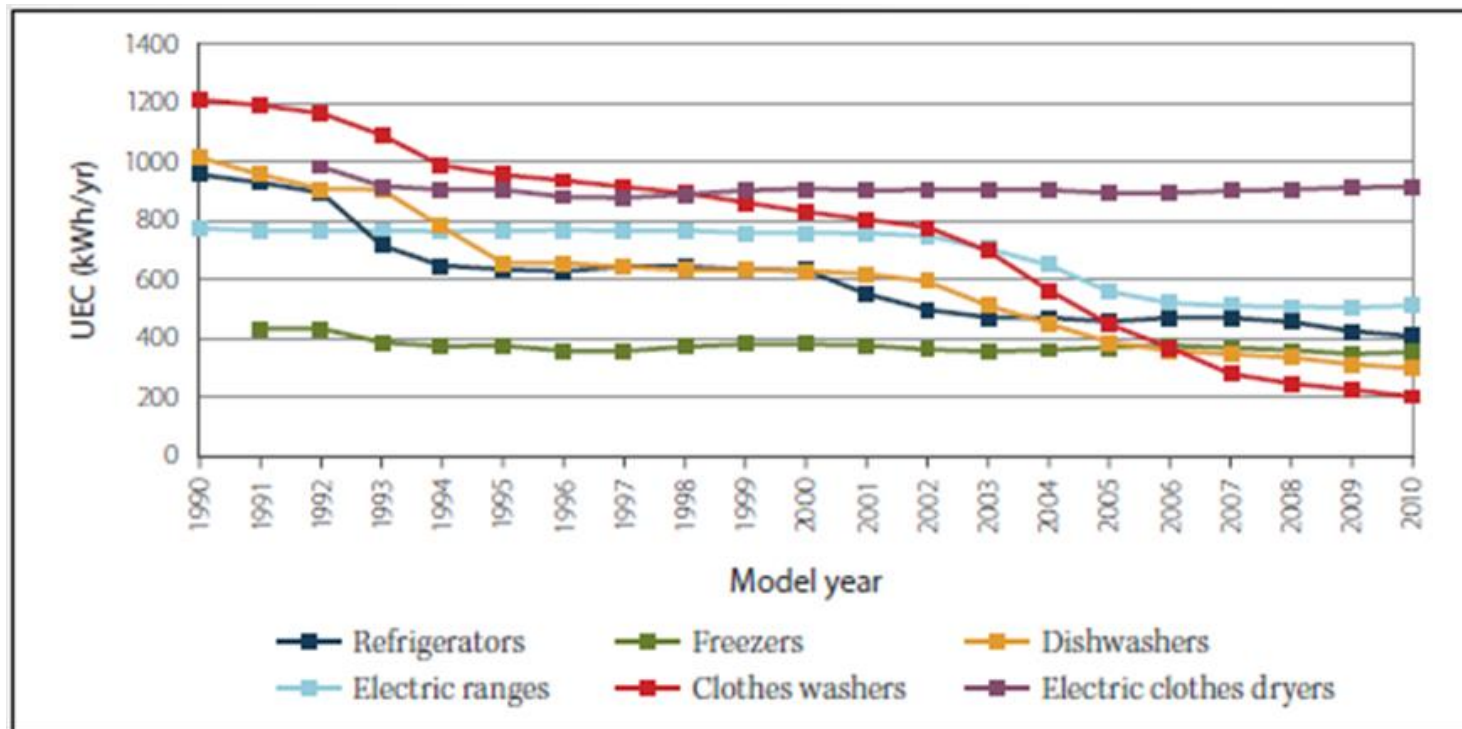


# US & Canada: Drier Stock (2009)

Market Penetration	US	Canada	Both
Total households	113.6 mil	12.6 mil	126.2 mil
% electric	63.2%	81.0%	65.0%
% natural gas or propane	16.3%	2.5%	14.9%
% without dryers	21.2%	16.7%	20.1%
% vented	99%	99%	99%

# 2013 Clothes Washers Initiative

- Average energy consumption of clothes washers declined over 75% from 1990 to 2007
- Market penetration of 50% CEE Tier 2 CWs (EVT 2013)
- Dryers – No efficiency gains over the past 20 years



# ENERGY STAR Label

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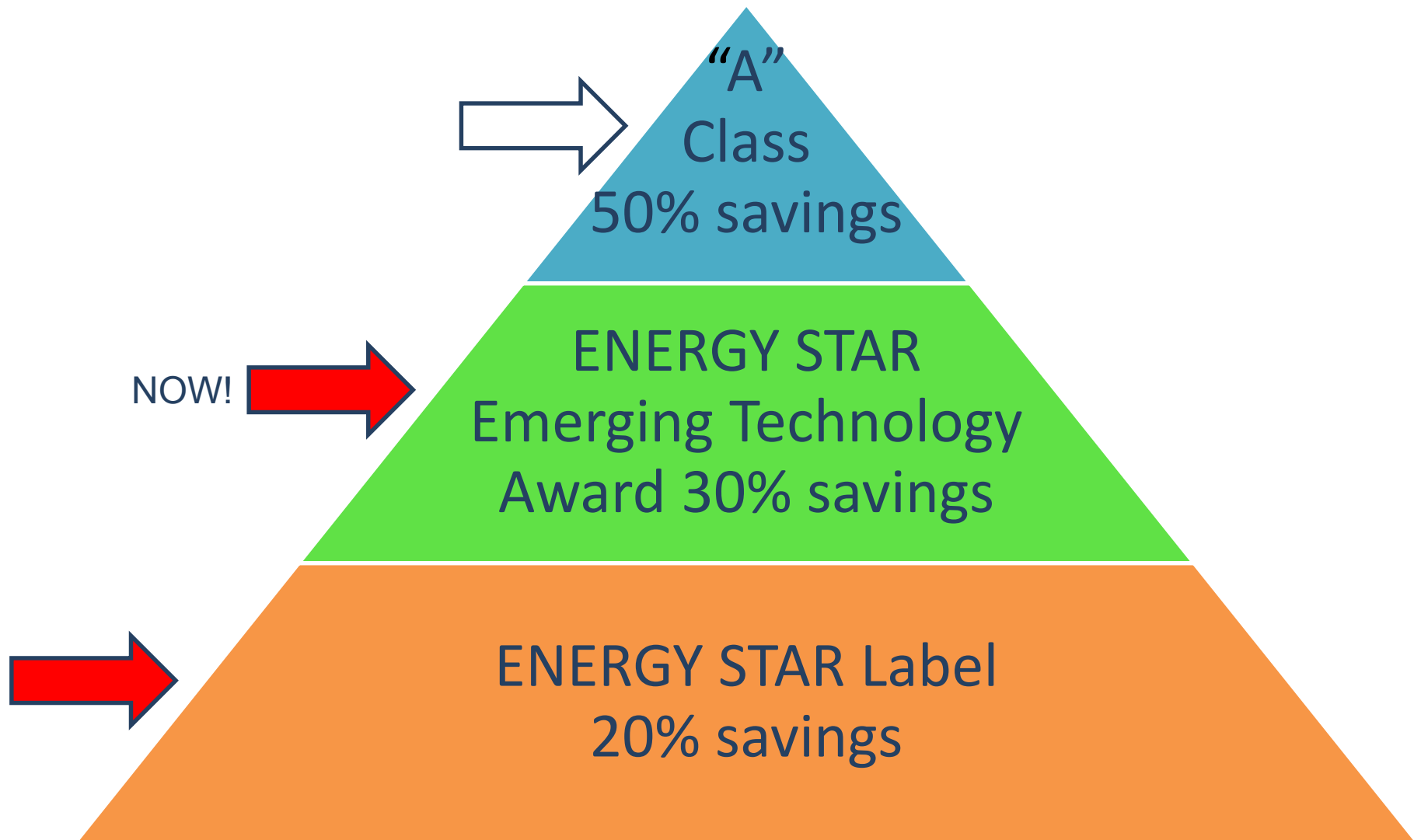
# Government Policy Status

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- **US Department of Energy Minimum Standard**
  - Revised 2011, effective January 1, 2015
  - Minimum efficiency level relatively low, reflecting current market
- **ENERGY STAR Emerging Technology Award**
  - For advanced dryers: awarded June 2013
- **US Department of Energy Test Procedure**
  - Revised August 2013, effective January 1, 2015
  - Does not address substantial issues identified in laboratory testing
- **ENERGY STAR label**
  - For clothes dryers: draft released August 2013
- **Natural Resources Canada (NRCan) Standard**

# North American Drier Efficiency Tiers

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# ENERGY STAR Emerging Technology Award

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- Samsung DV 457
- Electric resistance, vented dryer
- Heater modulation, improved moisture sensing
- Expected 30% savings

# Projecting the Future

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- 2013
  - Electric utilities offer subsidies for ENERGY STAR Emerging Technology Drier
- 2013-2014
  - SEDI defines EU class “A” equivalent tier
- 2014
  - ENERGY STAR label for clothes dryers appears in shops
- 2016-2017
  - ENERGY STAR label requirements revised

# SEDI Policy Recommendations

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- Continue international communication and cooperation
- Define most efficient tier for North American driers (50% efficiency improvement)
- Improve test procedure to better reflect «real world»
- More research into consumer drier usage behavior
- More research into total domestic energy consumption impacts of different drier technologies (vented vs. unvented)



# Thank you for your attention

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