# **ErP - Fan Savings and Market**

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Dipl.- Ing. Claus Händel Technical Secretary European Ventilation Industry Association Avenue des Arts 46 1000 Brussels, Belgium Tel.: +32 2 732 70 40 E-mail: haendel@fgk.de

### **Basis for EVIA savings calculations:**

- Data are given for EU market when placing on the market
- EVIA collected data of fan manufacturers representing approx. 33% of estimated market size for different fan sizes (fan power).
- The results are extended to the estimated market size.
- Typical power savings, defined for each fan size groups for each year, lead to energy savings by considering 4 000 operating hours per year, which was estimated as a good average of all fan applications.
- CO<sub>2</sub>-Faktor for Electricity 460 g CO<sub>2</sub>/kWh<sub>Electricity</sub>
- Considering exports and spare parts, there is always a stock of non-complying fans.
- Saving estimations made based on BEP (optimistic) but not including variable speed drive (conservative).
- It does not include very big fans.

### Energy Savings Estimation (already submitted)

Energy saved - EVIA Data fans								
running hours per year, average (hours); 4000						cumulative		
placed on the market 2013 (kWh)	639.479.422	639.479.422	639.479.422	639.479.422	639.479.422	3,20		
placed on the market 2014 (kWh)		843.176.048	843.176.048	843.176.048	843.176.048	3,37		
placed on the market 2015 (kWh)			1.338.601.928	1.338.601.928	1.338.601.928	4,02		
placed on the market 2016 (kWh)				1.570.631.430	1.570.631.430	3,14		
placed on the market 2017 (kWh)					1.798.692.021	1,80		
Sum (TWh)	0,64	1,48	2,82	4,39	6,19	15,5	TWh since	2013
Energy saved - Market based on estimated share (EVIA								
data respone) 33%								
Sum (TWh)	1,9	4,5	8,5	13,3	18,8	47,0	TWh since	2013





Estimated Impact of Ecodesign Regulation EU 327/2011 on Electrical Power Savings



## Other Regulation on Products with integrated Fans

			327/2011 fans				
Number	Title	Scope	integrated?	comments	Tier 1	Tier 2	Tier 3
206/2012	Air conditioners and comfort fans	air conditioners of <12 kW	yes		2013	2014	
		comfort fans	no	<125W and only labelling required			
2016/2282	Air heating, cooling products, high temp process chillers and fan coil units	air heating < 1MW	yes		2018	2021	
		Cooling product and high temp chiller < 2MW	yes				
		FCU	no	many <125W can be bigger only info	mation		
622/2012	Circulators	stand alone glandless circulators and glandless cir	no	no fan			
617/2013	Computers	Computers and computer servers	no	most <125W			
66/214	Domestic cooking appliances	Domestic ovens hobs and range hoods	no	<125 W and exclusion in 237/2011			
4/2014	Electric motor	electric motor	yes	forced ventilation	2011	2015	2017
278/2009	External Power Supplies	no-load condition electric power consumption	no	most <125W			
1016/2010	Household dishwashers	household dishwashers	no	<125W			
932/2012	Household tumble driers	huosehold tumble dryers	no	<125W			
1015/2010	Household washing machine	household washing machine	no	no fan			
327/2011	Industrial fans	fans	-	-			
2015/1428	lighting proiducts in domestic and tertiary sector	lamps, LED, etc	no	<125W			
2015/1188	Local space heaters	gas stove, cookers, raidiant tube heaters, storage	no	<125W			
		Warm air heaters	yes		2018		
813/2013 814	Heaters and water heaters	Heaters and water heaters <400 kW	partly	<125W heat ODA heat pumps include	2015	2017	
548/2014	Power Transformers	Power Transformers >1kVA	yes				
2015/1095	Professional refrigerated storage cabinets	stand alone storage cabinets	no	<125w			
643/2009	Refrigerators and freezers	household refrigerators and freezers	no	<125W			
107/2009	Simple set-top boxes	Simple set-top boxes	no	<125W			
2015/1189	solid fuel boilers	solid fuel boilers <500 kW	no	<125W			
1275/2008	Standby and off mode electric power consumption of household and office equip	Standy and off mode power consumption	no	no fan			
642/2009	Televisions	Televisions	no	<125W			
666/2013	Vacuum cleaners	Vacuum cleaners	no	exclusion			
1253/2014	Ventilation units	residential ventilation	partly	most <125W	2016	2018	
		non residential unidirectional	yes				
		non-residential bidirectional	yes				
547/2012	Water pumps	Water pumps	no	no fan			

Estimated Fans in other ErP Products Top - Down

LOT 6 EU 1253/2014 Ventilation		<u>Slide 7</u>
Residential ventilation 7.8 Mio out of scope <125W		0
Non-Residential Units BVU + UVU	1,4 Mio	
LOT 21 EU 2281/2016 Air Heating, Chillers,	0,8 Mio	<u>Slide 10</u>
LOT 20 EU 1188/2016 Local space heater incluing	uded Lot 21	<u>Slide 10</u>
EU 813 814/2013 Heat Pumps	0,2 Mio	<u>Slide 9</u>
EU 640/209 Electric Motors (fans implemented)	?	
EU 206/2012 RAC < 12kW 3,5 Mio most <125W (prb. not counted)	) 0,32 Mio	<u>Slide 8</u>
LOT 1 Professional Refrigeration	0,777 Mio	<u>Slide 11</u>
Total	3,5 Mio	
Total Fans	11 Mio	
Fans in ErP Products	32 %	

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**based on questionaire of fan manufacturers representing approx. 33% of estimated market** 



### EU 1253/2014 - Estimated sales Ventilation in Europe

### **Unit sales RVU**



The numbers: 7,8 mln. units sold, 103 mln. installed (2010) and rising...



### **Unit sales NRVU**



1,1 mln. exhaust units and 0,32 mln. balanced (AHU& CHRV) units sold, 19 mln. units installed and (slowly)rising in EU 2008

EU-2008 sales size distribution, AHU & CHRV (100%= 320.000 units)



m3/h (design flow rate)

Kaup 2009 correction



### EU 206/2012 - Estimated sales RAC < 12kW





Figure 11: Total EU sales in units, 2005 data - EuP Lot 10 preparatory study (2008), other split data - BSRIA source adapted, other portable data - BSRIA and GfK source adapted.

Figure 14: Split sales distribution by size, source BSRIA.

Туре	sales	% Fan >125 W	Fans in scope
Portables	600.000	0%	0
Single split	3.400.000	5%	170.000
Multi split	550.000	28%	154.000
Total			324.000

## EU 813 814/2013 - Estimated sales heat pumps











## Estimated sales LOT 20 and 21 products

#### Table 1: Sales and stock of products within scope

MARKET	Units	1990	2000	2010	2020	2030		
SALES/units								
Comfort chillers	No * 1000/yr	26	73	105	127	153		
Air-cooled small	No * 1000/yr	21	60	88	107	130		
Air cooled large	No * 1000/yr	2	5	6	7	7		
Water cooled small	No * 1000/yr	2	6	9	11	13		
Water cooled large	No * 1000/yr	1	2	2	3	3		
Air conditioners & heat pumps	No * 1000/yr	73	227	324	369	348		
of which reversible	No * 1000/yr	22	114	224	311	325		
Warm air heaters	No * 1000/yr	148	117	97	82	74		
gas and liquid fuel	No * 1000/yr	133	102	87	77	69		
electric	No * 1000/yr	15	15	10	5	5		
High temp. process chillers	No * 1000/yr	14	20	27	38	53		
Air-cooled small	No * 1000/yr	8	11	15	21	29		
Air cooled large	No * 1000/yr	2	3	5	7	9		
Water cooled small	No * 1000/yr	2	3	4	5	8		
Water cooled large	No * 1000/yr	2	2	3	5	7		
	SALE	S/capacity	/	•				
Comfort chillers	GW cooling	3	8	11	12	14		
Air conditioners (AC)	GW cooling	2	6	9	10	10		
Heat pumps (HP)	% reversible		68% of A	C (assume	d constant)			
Warm air heaters	GW heating	8 6 5 5 4				4		
HT process chillers	GW cooling	3	5	6	9	13		
	STO	CK/units						

SAL	2010	pcs. Fans			
Comfort chillers No * 1000/yr	105000	х			
Air-cooled small No * 1000/yr	88000	3	264000	84%	
Air cooled large No * 1000/yr	6000	6	36000	6%	
Water cooled small No * 1000/yr	9000	0	0	9%	
Water cooled large No * 1000/yr	2000	0	0	2%	
Air conditioners & heat pumps No * 1000/yr	324000	1	324000		624000
of which reversible No * 1000/yr	224000	х			
Warm air heaters No * 1000/yr	97000	1	97000		
gas and liquid fuel No * 1000/yr	87000	1	87000		
electric No * 1000/yr	10000	1	10000		
High temp. process chillers No * 1000/yr	27000	х			
Air-cooled small No * 1000/yr	15000	3	45000		
Air cooled large No * 1000/yr	5000	6	30000		
Water cooled small No * 1000/yr	4000	0	0		
Water cooled large No * 1000/yr	3000	0	0		
Total fans estimated			893000		
Cross check installed power	20	GW cooling			
	0,05	kWFan/kWC	ooling		
	1	GW Fan			
	1000000	kW Fan			
	1,5	kW/Fan			
	666666,667	Fans			
Airccoled	90%				
	596825,397	Fans			

	sales	% Fan > 125W	Fans included	Fans in scope
w/w chiller	11.000	0%	0	0
a/w chiller	34.000	100%	6	204.000
condensing units	573.000	100%	1	573.000
Total				777.000



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