

Commission



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Status update on Ecodesign for fans, and upcoming EU policies of relevance for the fan industry

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### I. Policy context

### II. Revised motors and VSD regulation

III. Status update on Ecodesign for fans

IV. Market surveillance



### I. Policy context



### **Current Energy and Climate Framework**



### **Energy Union Governance**

National Energy and Climate Plans (NECPs)



### POLITICAL GUIDELINES FOR THE NEXT EUROPEAN COMMISSION 2019-2024

'A Union that strives for more - My agenda for Europe - by candidate for President of the European Commission Ursula von der Leyen'

#### **1.A European Green Deal** (extracts)

*I want Europe to strive for more by being the first climate-neutral continent.* 

To help us achieve our ambition, I will propose **a European Green Deal** in my first 100 days in office. This will include the first European Climate Law to **enshrine the 2050 climate neutrality target into law**.

We are on track to meet our ambitious **Paris Agreement goals and 2030 targets**. But **we need to go further and faster** if we are serious about climate neutrality in 2050.

We will be a world leader in circular economy and clean technologies



## Mission letter to Commissioner designate for energy, Kadri Simson

"To become the world's first climate-neutral continent, Europe must **reduce emissions further and faster, and by at least 50% for 2030** [current objective is 40%]. Given energy production and use accounts for 75% of the EU's emissions, energy will have a central role to play in the European Green Deal.

*I want you to focus on the rapid implementation of energy-efficiency and renewable-energy legislation.* [...]

You should ensure **Europe follows the energy-efficiency-first principle** across the board. ..."

https://ec.europa.eu/commission/sites/beta-political/files/mission-letter-kadri-simson\_en.pdf



## EU policy framework for energy efficiency PRODUCTS



#### **Financing Energy Efficiency**

European Structural Investment Fund; Horizon 2020; LIFE + funding; European Fund for Strategic Investments; Member State programmes; etc.



## Ecodesign and energy labelling

- Ecodesign: setting minimum efficiency (and other) requirements for energyrelated products, which they have to meet before being placed on the EU market
- First rules date from 1992, currently almost 30 product groups covered
- Energy labelling: providing information on energy efficiency and other performance criteria to consumers
- First labels date from 1979; currently 15 product groups covered





## Ecodesign and Energy labelling – Expected Results

- Delivers close to half of the 20% energy efficiency target for 2020
- 175 Mtoe primary energy savings per year by 2020, i.e. the annual primary **energy consumption of Italy**
- 320 Mt CO<sub>2</sub> equiv. greenhouse gas emission reduction; i.e. around 25% of EU 2020 reduction target
- Savings of around € 500 per household per year
- **€ 55 billion extra revenue** for industry, wholesale and retail sector

*Source: Impact accounting study* (*https://ec.europa.eu/energy/sites/ener/files/documents/2014\_06\_ecodesign\_impact\_accounting\_part1* .pdf)



#### The 2019 Ecodesign and energy labelling package: <u>17 new/revised measures for 11 products !</u> <u>Adopted in March/October 2019</u>

Product Group	New or (R)eview	Ecodesign	Energy labelling				
1. Entreprise servers	New	(EU) 2019/424					
2. Electric motors and VSDs	R	(EU) 2019/1781		]			
3. EPS (Electronic Power	R	(EU) 2019/1782		Published 25			
Supplies)				october 2019			
4. Power transformers	New	(EU) 2019/1783					
5. Welding equipment	New	(EU) 2019/1784					
6. Commercial refrigeration	New	X	X				
7. Domestic refrigeration	R	X	X	Expected			
8. Lighting products	R	X	X	publication:			
9. Electronic displays and TV	R	X	X	<b>5</b> December			
10. Dishwashers	R	X	X	2019			
11. Washing machines	R	X	X				



### II. Revised motors and VSD regulation





## Electric motors: Review of regulation 640/2009

- New text voted by Member States on 14 January 2019
- Scrutiny by EP and Council: ended in May 2019
- Adoption: 01/10/2019
- Publication: 25/10/2019

https://eur-lex.europa.eu/eli/reg/2019/1781/oj

- Repeals Regulations (EC) 640/2009
- Application date: 1 July 2021
- Includes variable speed drives



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## Scope and energy efficiency levels: more ambition !

Summary table:

	Scope	2017	20182020	20	21	2022	2023 —	$\longrightarrow$
AC induction motors <= 1000 V								
0.75-375 kW	3 phase, 2/4/6 poles	IE2+VSD/IE3		$\rightarrow$				
0,75-1000 kW	3 phase, 2->8 poles				IE3 —	{		$\leftarrow$
→75-200 kW	2/4/6 poles, excl. ATEX, non- integr. brake and Ex eb						LIE4	$\rightarrow$
0.12-0.75 kW	3 phase 2->8 poles				IE2 —	}		$\rightarrow$
>= 0.12 kW	1 phase						IE2	$\rightarrow$
0.12-1000 kW	Incr. safety Ex eb 2->8 poles						IE2	$\rightarrow$
ATEX and non-ir	itegr. brake motors				No mo	ore exempt		
Variable speed d	lrives							
0.12-1000 kW	3-phase				IE2 —	}		$\rightarrow$

Color legend :

Current requirements 640/2009

Requirements new regulation



## New/updated provisions:

- Information requirements for both motors and drives, including efficiency at additional load points to enable extended product approach.
- Anti-circumvention provisions (similar to other new/revised regulations) e,g, the manufacturer shall not place on the market products designed to be able to detect they are being tested.
- Targeted exemptions, incl. 7 years exemption for motors that substitute identical motors integrated in products (spare parts)

#### Estimated benefits (by 2030):

- Extra energy savings of 10 TWh/yr and GHG emission reduction of 3,2 MtCO<sub>2</sub>eq./yr;
- Extra savings on annual end-user expenditure of EUR 1,3 billion and additional business revenue of EUR 0,3 billion per year.



#### **Provisions to facilitate inspection of large motors**

(originating from the EU-funded INTAS project on testing of large fans and large transformers)

Motors with a rated power output of **375** to **1 000** kW:

- MSAs may decide to undertake the verification procedure at the premises of manufacturers, using its own testing equipment.
- If factory acceptance tests are planned MSAs may decide to use witnessed testing during these factory acceptance tests to gather test results which can be used to verify compliance.
- MSAs may request a manufacturer to disclose information on any planned factory acceptance tests relevant for witnessed testing.



### III. Status update on Ecodesign for fans



#### Current regulation (EU) No 327/2011 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R0327

- > Sets minimum energy efficiency requirements for fans driven by motors
- Scope: rated electric power input ≥125 W and ≤500 kW at BEP, including those integrated in other energy-related products
- Targeted exemptions (e.g. designed specifically for gas temperature > 100 °C)
- > Aim: improving penetration of high-efficiency industrial fans in the EU market.
- > 2 tiers, 1 January 2013 and 1 January 2015.
- Distinguishes 7 fan categories:
  - 'Axial fan'
  - □ 'Centrifugal forward curved' & 'Centrifugal radial bladed' fans
  - □ 'Centrifugal backward curved fan without housing'
  - □ 'Centrifugal backward curved fan with housing'
  - □ `Mixed flow fan'
  - Cross flow fan'
- Special purpose fans" used in specific applications benefit from a correction factor of 5% or 10%.
- > Mandatory information requirements including energy efficiency.

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## **Estimated impact of current regulation**





### Why the review ? What is the purpose ?

### **Recital 14:The review should in particular consider:**

- setting technology-independent requirements
- potential of use of VSD
- reduce exemptions
- consider fans below 125 W

# **Article 7:review of Regulation no later than 4 years** (CF April 2015)

- assess feasibility of reducing number of fan types
- consider reducing the scope of exemptions, including allowances for dual use fans

### + other relevant issues / topics:

• Scope for increasing requirements, jet fans, etc.



### A long process ...



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## What is envisaged ?

- Improved <u>fan definition</u> with clear boundaries (FprEN 17166)
- Reduction of the number of <u>fan types</u>, improved definitions of fan types and simpler calculations (less equations)
- > <u>Jet fans</u> explicitly added to the scope.
- Dual use fans: allowance of 10% (instead of 5% now)
- Exemptions: no exemption removed, but:
  - □ Improve the definition of emergency fans and refer to F300 fire safety class.
  - □ Clarify/improve the exemption for fans specifically designed to operate in toxic, highly corrosive or flammable environments or when abrasive substances are being handled.
  - □ Alignment with the motors regulation (e.g. threshold temperatures).
  - Other targeted exemptions considered.



<u>'Not final assembly'</u> provisions removed, **but** the performance of an incomplete fan (impellers, motorized impellers or bare shaft fans) shall be determined in one or more configuration(s) of a complete fan. The exact configuration(s) that has (have) been subject to the conformity assessment shall be described in the documentation.

#### Testing methods:

- tests may be conducted with the geometrical equivalent of the stator's (housing) inner surface;
- $\Box$  scaled model testing allowed for large fans (impeller > 1 m diam)
- □ non-essential elements may be removed.
- Market surveillance of <u>large fans</u>: same as for motors (see above)
- Anti-circumvention: same as for motors (see above)
- Circular economy (repareability-recyclability):
  - > Allow spare part fans on the market for 7 years
  - Marking of plastics parts >50 g in order to facilitate identification of their recycling potential.



#### > Energy efficiency requirements: as proposed at the CF in 2014.

Fan type	Measurement	Pressure	N	
	category			
A	A, C	static	0,50	
Axia	B, D	total	0,64	
Forward curved <5kW	A, C	static	0,52	
and backward inclined centrifugal fans	B, D	total	0,57	
Other centrifugal fans	A, C	static	0,64	
	B, D	total	0,67	
Mixed flow	A, C	static	0,57+0,07·(α -45)/25	
	B, D	total	0,67	
Crossflow	B, D	total	0,21	
Jet fans	E	See text	0,50	

For **jet fans** the same equations are used (see next slide), but the efficiency parameter is the jet-fan impeller efficiency  $\eta_r(T)$ . Instead of the electrical power input  $P_e$  the equations shall use the mechanical power supplied to the impeller of the fan  $P_r$  (in kW).  $\eta_r(T)$  is calculated as  $q_v(T) \cdot \Delta p(T)/P_r = 0.5[T_m/(\rho \cdot A_2)]^{0.5} \cdot T_m/P_r$ 

+ Special considerations for HPLV fans (High Pressure Low Volume fans):





## **Estimated impact of the revision**





## **IV. Market surveillance in the EU**



### **EU market surveillance framework**

**General principles:** Regulations 765/2008 & 2019/1020, covering all product legislations (from safety of toys to chemicals etc.)

- EU Member Sates are in charge of market surveillance
- They designate Market Surveillance Authorities (MSAs), for each product legislation (can be at national or regional level)
- Manufacturers issue a Declaration of conformity + "CE marking" + technical documentation (other systems exist e.g. third party certification)
- Compliance is required when the product is placed on the market (or put into service). Verified e.g. through:
  - ✓ Sampling products in shops
  - ✓ Borders checks (collaboration with customs)
  - ✓ Ordering on line
  - ✓ Purchasing to manufacturers
  - $\checkmark$  Documentation checks and products testing
  - ✓ Etc.



#### For Ecodesign:

- > MSAs are typically:
  - $\checkmark\,$  Ministry that also oversees several other regulations, or
  - ✓ Energy Agency that also takes market surveillance on board
- > National or regional level (with coordination at national level)
- ➤ With different legal powers, procedures, ...
- With or without Energy Labelling
- With or without other (related) competences (low voltage directive, EMC ...)
- => Some inspectors deal with many different regulations



#### How to ensure coherence and effective collaboration ?

- Administrative Cooperation Groups (ADCOs) supported and financed by the EU
- Collaboration across legislations through :
  - ✓ ADCO chairs meetings
  - ✓ Expert Group on the Internal Market for Products
- > ICSMS database with inspection results.
- New regulation 2019/1020 => EU product compliance Network (capacity building, training, joint actions, Union testing facilities, ...)
- EU-funded Joint actions



### **EU funded Joint Actions**





## **Thank you for your attention!**

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The view expressed in this presentation are those of the policy officer in charge, and do not necessarily represent those of the Commission.

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