# Energy label and Ecodesign - Issues
# Example: vacuum cleaners
# CYS - Lefkosia
# 13th July, 2016

# Energy label vacuum cleaners

- Scope:
  - Electric mains-operated vacuum cleaners, including hybrid vacuum cleaners.
  - Hybrid vacuum cleaners: Only in the mains-operated state covered.
- Out of scope:
  - Wet, wet and dry, battery operated, robot, industrial, outdoor, central vacuum cleaners, and floor polishers.
- Timetable:
  - Tier 1: Applies from 1st September, 2014
  - Tier 2: Applies from 1st September, 2017

# Energy label vacuum cleaners

- Tier 1: Applies from 1st September, 2014: Label 1

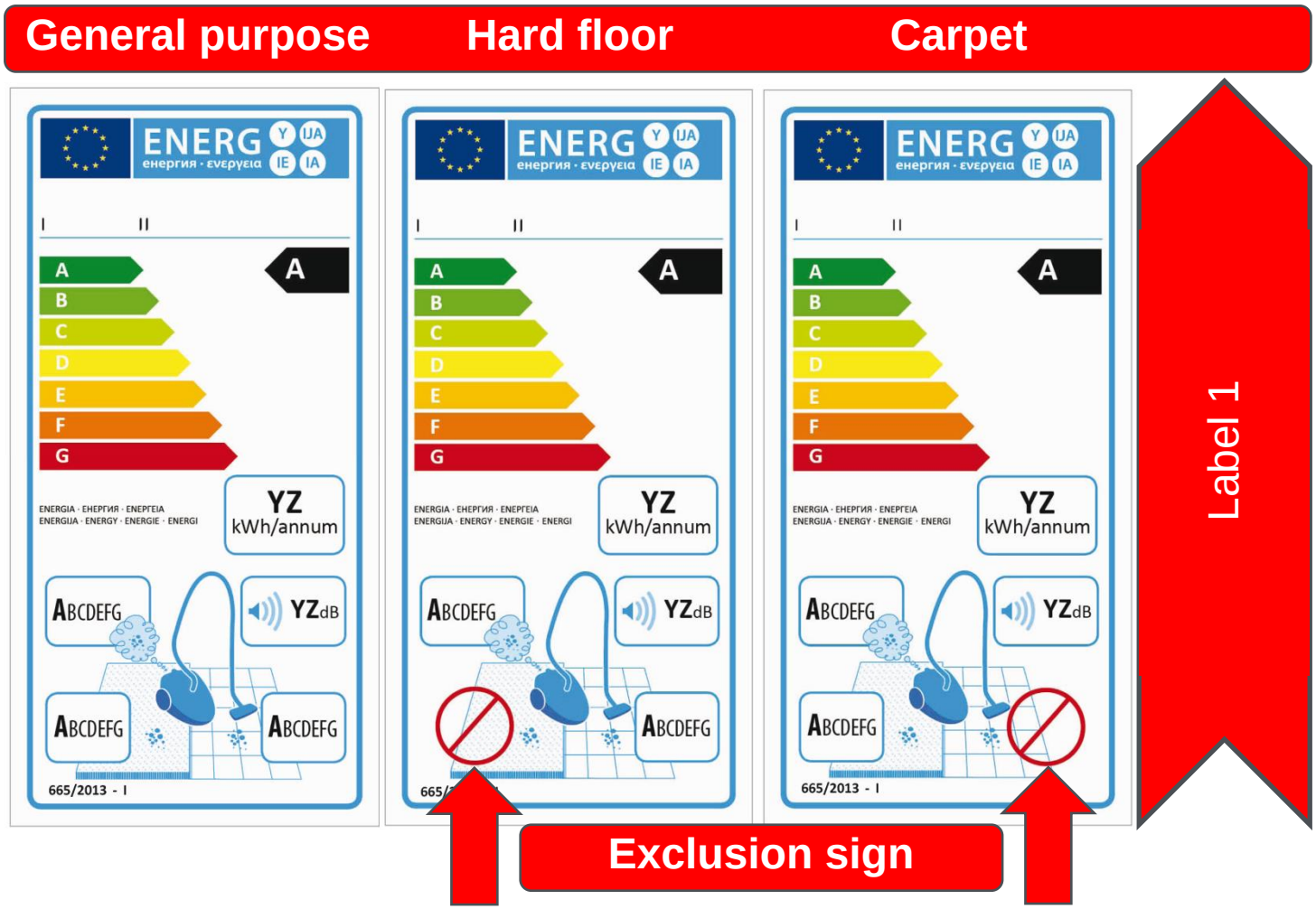
| Class | Energy efficiency [kWh/a] |
|---|---|
| A+++ | n/a |
| A++ | n/a |
| A+ | n/a |
| A | $AE \leq 28.0$ |
| B | $28.0 < AE \leq 35.0$ |
| C | $34.0 < AE \leq 40.0$ |
| D | $40.0 < AE \leq 46.0$ |
| E | $46.0 < AE \leq 52.0$ |
| F | $52.0 < AE \leq 58.0$ |
| G | $58.0 < AE \leq 62.0$ |

- Rated input power < 1600 W.

| Dust pick up on carpet ($dpu_c$) | Dust pick up on hard floor ($dpu_{hf}$) | Class | Dust* re-emission ($dre$) |
|---|---|---|---|
| $dpu_c \geq 0.91$ | $dpu_{hf} \geq 1.11$ | A | $dre \leq 0.02\%$ |
| $0.87 \leq dpu_c < 0.91$ | $1.08 \leq dpu_{hf} < 1.11$ | B | $0.02\% < dre \leq 0.08\%$ |
| $0.83 \leq dpu_c < 0.87$ | $1.05 \leq dpu_{hf} < 1.07$ | C | $0.08\% < dre \leq 0.20\%$ |
| $0.79 \leq dpu_c < 0.83$ | $1.02 \leq dpu_{hf} < 1.04$ | D | $0.20\% < dre \leq 0.35\%$ |
| $0.75 \leq dpu_c < 0.79$ | $0.99 \leq dpu_{hf} < 1.01$ | E | $0.35\% < dre \leq 0.60\%$ |
| $0.71 \leq dpu_c < 0.75$ | $0.96 \leq dpu_{hf} < 0.98$ | F | $0.60\% < dre \leq 1.00\%$ |
| $dpu_c < 0.71$ | $dpu_{hf} < 0.96$ | G | $dre > 1.00\%$ |

* Particle range: From 0.3-10 µm. = minimum requirements

# Energy label vacuum cleaners



# Energy label vacuum cleaners

- Timetable: Tier 2: Applies from 1st September, 2017: Label 2

| Class | Energy efficiency [kWh/a] |
|---|---|
| A+++ | *AE* ≤ 10.0 |
| A++ | 10.0 < *AE* ≤ 16.0 |
| A+ | 16.0 < AE ≤ 22.0 |
| A | 22.0 < AE ≤ 28.0 |
| B | 28.0 < *AE* ≤ 35.0 |
| C | 35.0 < *AE* ≤ 43.0 |
| D | 43.0 < *AE* ≤ 52.0 |
| E | n/a |
| F | n/a |
| G | n/a |

- **Rated input power** < 900 W;
- **Sound power level** ≤ 80 dB(A); determined on carpet;
- **Hose: Durability** → 40,000 oscillations under strain; weight of 2.5 kg;
- **Operational motor lifetime** → 500 hours; **half-loaded** dust bag; 14½ min on and ½ min off. Minimum 500 h and maximum 600 h.

| Class | Dust* re-emission (*dre*) |
|---|---|
| A | *dre* ≤ 0.10% |
| B | 0.10% < *dre* ≤ 0.25% |
| C | 0.25% < *dre* ≤ 0.40% |
| D | 0.40% < *dre* ≤ 0.60% |
| E | 0.60% < *dre* ≤ 0.80% |
| F | 0.80% < *dre* ≤ 1.00% |
| G | *dre* > 1.00% |

- **Dust pick-up:**
  - Minimum carpet: 0.75 (class G);
  - Minimum hard floor: 0.98 (class G).

* Particle range: From 0.3-10 µm. = minimum requirements

# Market Surveillance

- Verification procedure for market surveillance purposes (Annex III):
  - The Member State authorities shall test one single unit per model.
  - Vacuum cleaner model complies with ecodesign requirements, if vacuum cleaner complies with parameters listed in Annex I and Table 1.
  - If results not achieved →Member State authorities: Randomly select three additional units of the same model for testing or three additional units of one or more different models which, in accordance with Article 4, have been listed as equivalent vacuum cleaner in the manufacturer's technical documentation.

    →Vacuum cleaner model complies now with the ecodesign requirements, if the vacuum cleaner complies with the parameters listed in Annex I and Table 1.
  - If results not achieved, model and all equivalent vacuum cleaner models do not to comply with Regulation.
- Member State authorities shall use the measurement and calculation methods set out in Annex II.

# Market Surveillance

- Verification procedure for market surveillance purposes (Annex III): Table 1

| Parameter | Verification tolerances |
|---|---|
| Annual energy consumption | The determined value(1) is not more than 10% higher than the declared value. |
| Dust pick up on carpet | The determined value(1) is not more than 0.03 lower than the declared value. |
| Dust pick up on hard floor | The determined value(1) is not more than 0.03 lower than the declared value. |
| Dust re-emission | The determined value(1) is not more than 15% higher than the declared value. |
| Sound power level | The determined value(1) is not higher than the declared value. |
| Operational motor lifetime | The determined value(1) is not more than 5% lower than the declared value. |

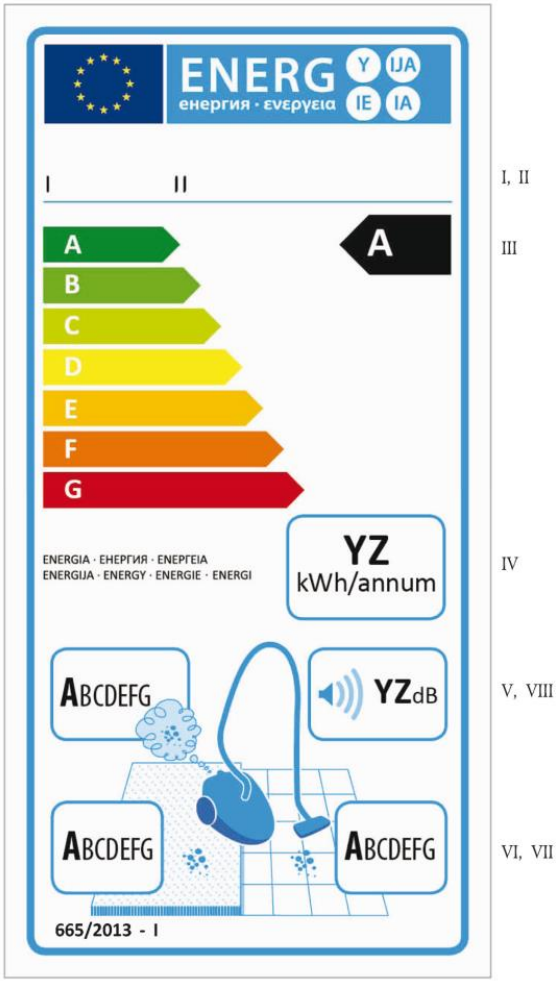
(1) The arithmetic average of the values determined in the case of three additional units tested as prescribed in point 3.

# Energy label

Label size: At least 75 mm wide and 150 mm high.

Timetable: Label 1; 1st September, 2014; Annex II.

- I. Supplier's name or trade mark;
- II. Supplier's model identifier (the code, usually alphanumeric, distinguishes a specific vacuum cleaner model from other models with the same trade mark or supplier's name);
- III. Energy efficiency class as defined in Annex I
- IV. Average annual energy consumption, as defined in Annex VI;
- V. Dust re-emission class, determined according Annex I;
- VI. Carpet cleaning performance class, determined according Annex I;
- VII. Hard floor cleaning performance class, determined according Annex I;
- VIII. Sound power level, as defined in Annex VI.



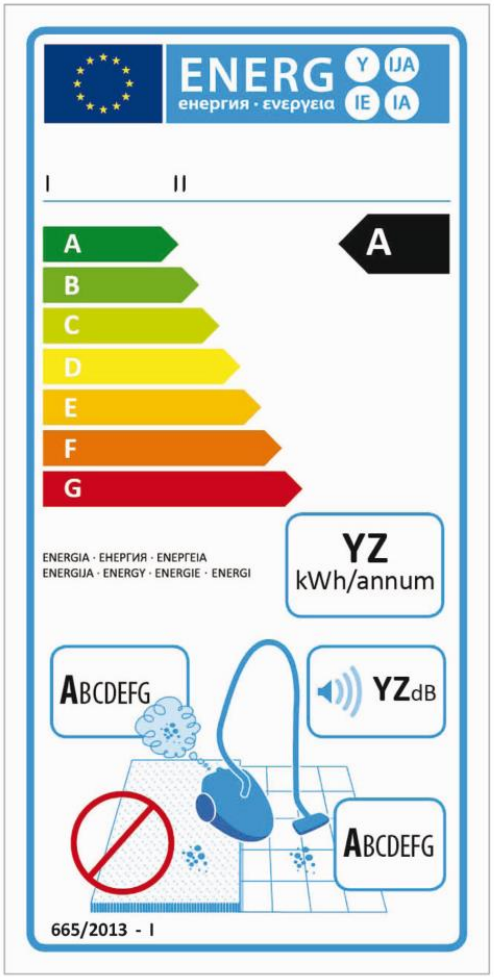





Nilfisk

# Energy label

- **Hard floor vacuum cleaners, Label 1, Annex II**
- I. Supplier's name or trade mark;
- II. Supplier's model identifier (the code, usually alphanumeric, distinguishes a specific vacuum cleaner model from other models with the same trade mark or supplier's name);
- III. Energy efficiency class as defined in Annex I
- IV. Average annual energy consumption, as defined in Annex VI;
- V. Dust re-emission class, determined according Annex I;
- VI. Carpet cleaning performance; **Sign of exclusion**
- **VII. Hard floor cleaning performance class, determined according Annex I;**
- VIII. Sound power level, as defined in Annex VI.



# Responsibilities of suppliers

Responsibilities of suppliers: Suppliers shall ensure 1 year after entry into force of the Regulation with regard to the ecodesign requirements:

a) Each vacuum cleaner is supplied with a printed label in the format and containing the information set out in Annex II;

b) a product fiche, as set out in Annex III, is made available;

c) the technical documentation as set out in Annex IV is made available on request to the authorities of the Member States and to the Commission;

d) any advertisement for a specific model of vacuum cleaner contains the energy efficiency class, if the advertisement discloses energy-related or price information;

e) any technical promotional material concerning a specific model of vacuum cleaner which describes its specific technical parameters includes the energy efficiency class of that model.

# Responsibilities of dealers

Responsibilities of dealers: Dealers shall ensure 1 year after entry into force of the Regulation with regard to the ecodesign requirements:

a) Each model presented at the point of sale is accompanied by the label provided by suppliers in accordance with Article 3 displayed in proximity to the displayed vacuum cleaner, so as to be clearly visible and identifiable as the label belonging to the model, without having to read the brand name and model number on the label;

b) vacuum cleaners offered for sale, hire or hire-purchase where the end-user cannot be expected to see the product displayed, as specified in Article 7 of Directive 2010/30/EU, are marketed with the information provided by suppliers in accordance with Annex V to this Regulation;

c) any advertisement for a specific model of vacuum cleaner contains a reference to the energy efficiency class, if the advertisement discloses energy-related or price information;

d) any technical promotional material concerning a specific model of vacuum cleaner which describes its specific technical parameters includes a reference to the energy efficiency class of the model.

# Energy label vacuum cleaners Online

- COMMISSION DELEGATED REGULATION (EU) No 518/2014 of 5 March, 2014 amending Commission Delegated Regulations (EU) No. 665/2013 with regard to labelling of energy-related products on the internet.
- Important points:
- an **electronic label** in the format and containing the information set out in Annex II is made available to dealers for each vacuum cleaner model placed on the market from 1 January, 2015 with a new model identifier.
- an **electronic product fiche** as set out in Annex III is made available to dealers for each vacuum cleaner model placed on the market from 1 January, 2015 with a new model identifier.
- vacuum cleaners offered for sale, hire or hire-purchase where the end-user cannot be expected to see the product displayed are marketed with the information provided by suppliers in accordance with Annex V to No. 665/2013. Where the offer is made through the internet and an electronic label and an electronic product fiche have been made available in accordance with Article 3(1)(f) and 3(1)(g) the provisions in Annex VIII shall apply instead.
- Annex VIII: Describes how the label has to be made available online and how the design has to be.
- Additionally, it describes how the electronic product fiche has to look like.

# Energy label vacuum cleaners

- Energy label and ecodesign requirements vacuum cleaners: Problems!
  - Differences regarding results in dust pick-up carpet
    - Carpet: Different lots and batches mean an error between different measurements.

$$dpu_c = dpu_m \cdot \left(\frac{dpu_{cal}}{dpu_{ref}}\right)$$

| | |
|---|---|
| $dpu_m$ | measured dust pick-up of the vacuum cleaner; |
| $dpu_{cal}$ | calibrated dust pick-up of the reference vacuum cleaner system measured when the test carpet was in original condition; |
| $dpu_{ref}$ | measured dust pick-up of the reference vacuum cleaner system. |

    - Standard describes reference system of SLG tested on a BIC 1 test carpet from 2009,
    - if the test house applies another reference cleaner system and the manufacturer with his test results another one?
    - Calibration: How often?
    - Application of lower, the mean, or the upper level of calibration results (can lead to different classes)

# Household vacuum cleaners

**Tasks to be fulfilled:**

- Motion resistance
  - Test is already in standard / thresholds to be set by regulation
- Debris pick-up
  - Test for debris pick-up (lentils and rice) under consideration
- Multiple nozzles and settings
  - New proposal for future standards
- Input power
  - New definition will be discussed
- Battery operated vacuum cleaners
  - New consumer relevant test under consideration (e.g. max run time)
- Robot vacuum cleaners
  - New consumer relevant test under consideration (e.g. navigation)

# Issues for commercial vacuum cleaners

- Regulations 665/2013/EU and 666/2013/EU cover household and commercial dry vacuum cleaners
- However: Application field and time completely different.
  - Field of applications commercial: Hotels, offices, shops…
    - Daily cleaning of several thousand m²
  - Motion resistance great issue. Household vacuum cleaners up to 110 N
    - Non-applicable for commercial area → 35-45 N depending on carpet
  - Hard floor test: Dust pick-up from crevice means → sealed nozzle to create high vacuum, however: Solid particles as often found in commercial environment cannot be picked up → dissatisfied customers
  - Due to laws for commercial buildings with staff >250 people → A-labelled machines needed, but, tests contradict cleaning efficiency for professional use.
    - Tests and reality contradict in this case!

# Issues for commercial vacuum cleaners

- Now:
- EN 60335-2-69 harmonised standard for
  - Sound power level and rated input power
- However, safety and not performance standard
- Members of Eunited Cleaning are working on performance standard for commercial vacuum cleaners taking into account
  - Sound power level,
  - rated input power,
  - dust pick-up  hard floor,
  - motion resistance threshold,
  - easy tests for MSAs (cooperation with Baden-Wuerttemberg and others)