



ANEC AND BEUC CONTRIBUTION TO THE EUROPEAN COMMISSION'S QUESTIONNAIRE TO THE TECHNICAL SUBGROUP OF THE ECODESIGN CONSULTATION FORUM ON LEDS AND DIRECTIONAL LIGHTING

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BEUC X/2011/093 – 15/09/11

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Summary

In the context of the implementation of the Ecodesign of Energy-related Products (ErP) Directive, the European Commission is proposing ecodesign requirements for directional light sources, light-emitting diode lamps (LEDs) and halogen lighting converters. The Commission also proposed energy labelling requirements for luminaires and revised labelling requirements for general lighting.

This contribution follows a position paper¹ submitted to the European Commission and circulated to the Member States before the Consultation Forum of 5 July 2011. The present contribution replies to both technical and political questions put forward by the European Commission after the Consultation Forum of 5 July and prepares the meeting of the Technical Subgroup of 23 September 2011.

¹ "Consumer relevant Eco-Design requirements for domestic lighting (part 2 - Directional light sources and LED lamps)",

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1 Scope of the regulation

1.1 Professional/household

ANEC and BEUC are not in a position to provide data regarding the market share of directional halogen lamps designed for use exclusively in professional lighting and of directional household high-intensity discharge lamps.

1.2 Special purpose lamps

1.2.1 Exemptions from regulation

ANEC and BEUC agree with the use of the “special purpose lamps” category as a means of providing exemptions to the draft Regulations’ requirements.

1.2.2 Technical documentation

Whether a lamp is intended for special purpose or not is only of interest for the authorities enforcing legislation. Yet, consumers as well can be interested in that information. Hence, not only the technical parameters should be mentioned but also a justification why this lamp is unsuitable for general lighting, i.e. the technical documentation could provide an indication such as “this lamp is only intended to be used as...”. In addition, a warning such as “This lamp can cause technical damage and constitute a safety hazard when used in general lighting applications. Do not use in general lighting applications”.

1.2.3 Energy labelling regulation

ANEC and BEUC believe that it would not make things easier to make definitions for the same product in two different regulations. It is preferable to refer to the adequate regulation than to duplicate information (it may be written differently, cause confusion and possibly become contradictory when a revision is issued).

2 Definitions

2.1 LED products

ANEC and BEUC recommend listing the subgroups of LEDs to make it clear that the regulation will apply to all LEDs. However, the Regulation should cover only LED lamps and not LED modules (as these are electronic components that cannot be used as lamps before being built-in into a housing with corresponding optics etc). The list should make clear that an LED lamp can be a self-ballasted lamp or a lamp that is to fit in a certain type of luminaire (different types of sockets etc.).

3 Tolerances in verification procedures

A tolerance of 10% is acceptable and in line with what consumer organizations use in their own evaluation of products.

However, although we understand the criterion to test 20 samples to make the verification, we would like to insist on the fact individual consumers will rarely buy 10 identical bulbs, yet they will be very disappointed to buy one lamp that claims 10000hrs and lasts only 2000hrs. The consumer's disappointment towards one lamp tends to spread to the technology and he will be less likely to pick another similar lamp. To solve that issue, we strongly **recommend that the lamp lifetime information provided to consumers be honest, i.e. indicates a lifetime reached by most samples of a same model.**

4 Calculation methods for the energy labels

4.1 Efficiency requirements for label classes

The Commission's Working Document circulated before the Consultation Forum of 5 July 2011 explained the following²:

"When buying lamps, consumers know whether they need a non-directional or a directional lamp, they rarely compare the two categories to each other. They need meaningful distinctions within the two categories, not between them."

ANEC and BEUC second that statement, but do not agree with the following statement in the same Working Document:

"However, fluorescent, HID and LED light sources do not obey the rule on efficiency increasing with light output. Their efficiency has only limited links to their light output. It fluctuates arbitrarily across the light output range."

This statement is not correct in the case of compact fluorescent lamps. Our members have tested 473 models of CFLs since 2008. Separated in power categories, the minimum, average and maximum efficiencies are shown below (average values):

CFL's	Efficiency (lumen/watt)		
	min	average	max
Power range			
5-8W	23,7	48,6	70,0
9-11W	29,5	54,9	70,8
13W-16W	38,8	59,3	74,5
18-22W	48,6	61,9	72,3
23W-25W	56,3	66,9	73,8

The Commission's proposal for the distribution of lamps in classes echoes the general perception that LEDs (for non-directional lighting) are much more efficient than CFLs. Our members' tests of LED models comparable to CFLs (in terms of light output, self-ballast and non-directional) **do not support this assumption by the Commission. At best, LEDs are comparable with a good CFL.** This is technologically due to the fact that the higher efficiency of an LED module is outweighed by the efficiency loss when the module needs to be built into a lamp housing.

LED's	Efficiency (lumen/watt)		
	min	average	max
Power range			
6-8W	35,1	49,2	63,2
12W (2 models)	54,2	59,4	64,6

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Moreover, it would be very important to make a distinction between CFLs. Our members have found **CFLs with a really low efficiency** (around 25lumens/watt) and **others with really good efficiency** (around 70 lumens/watt). The latter lamps will give almost twice the amount of light than the former. It would be very important that these differences are visible in the energy label.

Our members have also tested halogen lamps for non-directional light. **Manufacturers have often claimed in the past savings of 30%** when compared to the old incandescent lamps. Our tests show that this is very optimistic. **At best (but definitely in not general), savings reach up to 20%.**

HAL's	Efficiency (lumen/watt)		
Power range	min	average	max
28W	9,4	10,6	11,7
42W	11,7	13,2	13,9
IL's	Efficiency (lumen/watt)		
Power range	min	average	max
40W	8,9	10,2	11,1
60W	9,8	11,5	12,1

Considering the findings above, it is clear that focusing on indirectly technology-based labelling may be misleading for consumers. If the Commission agrees that consumers should get the best light, independent from technology, and that they should be correctly informed about the efficiency, then certainly the Commission should not accept a scale indirectly based on technology.

For that reason, **the best approach would be the Lumen/watt ratio**, for all lamps and equal treatment of technologies. The lumen/watt ratio is the index that really relates to efficiency and that is common to all light bulbs. It would make the message much clearer and realistic for consumers.

In the short term, it would probably translate into the downgrading of some lamps and into more CFLs rated "B".

4.2 "Annual" electricity consumption

Displaying the “annual” consumption at 1000hrs matches the already common claim from the brands and our members also use this equivalence in our tests.

4.3 Low pressure sodium lamps

ANEC and BEUC are not in a position to provide data regarding a correction factor for low pressure sodium lamp control gear.

4.4 Useful beam angle

ANEC and BEUC would like to stress that any solution involving the systematic use of a goniophotometer could hamper market surveillance because of the costs of such a device.

Visual inspection appears as a more reasonable option. However, it also comes with obstacles. LEDs are built with modules. There is a risk that one or two elements may burn with a different light output (defective or with lower quality), causing the light distribution to be non-homogeneous. Yet, this can hardly be identifiable through a mere visual inspection.

5 Label Layout

ANEC and BEUC would like to stress that the questions related to the label layout are in essence political and should not be considered as purely technical.

Following the introduction of the mandatory information on the packaging of CFLs in September 2010, we have noticed that each manufacturer uses his own specific way of communicating the starting time, the colour of the light and the durability. Some of them even created specific pictograms (which are different from brand to brand). **This does not help consumers at all when it comes to comparing the models. Certainly, the European Commission’s expressed concern on 5 July 2011 that harmonization of pictograms would “bring monotony to shops” does not offset that very significant issue.** In order to have the basic information available in a straightforward way, ANEC and BEUC strongly recommend that all necessary information is provided in a standardized way, preferably all on the Energy Label.

We would also like to suggest that to have **the light output printed on the lamp itself**: this way, when a consumer wants to replace the lamp, he will see easily what amount of light he was using.

6 Efficiency of directional lamps

6.1 Efficacy range of the technologies involved

ANEC and BEUC are not in a position to provide data for this question.

6.2 Optical efficiency of the reflector

ANEC and BEUC are not in a position to provide data for this question.

7 Requirements for retrofit LED lamps

In terms of luminous flux, we argue that producing equivalent light should indeed be the minimum requirement for replacements.

On the other hand, LED bulbs contain a lot more materials than CFLs, especially metals (resulting in much heavier lamps). So, it is really important to guarantee that they last the announced lifetime; otherwise, LEDs would never be better than CFLs from a Life-Cycle point of view. This is why we argue that LEDs should have specific criteria for **minimum durability and lumen maintenance**.

If the efficiency of the bulbs were stated in lumen/Watt, then consumers would also receive the real information for these lamps and compare with the other lamp types.

8 Halogen lighting converters

ANEC and BEUC are not in a position to provide data for this question.

9 Lamp functionality requirements

9.1 Measurement of lifetime

Durability of the light bulbs is an important issue; the suggested Ecodesign requirements are not protecting consumers in this regard. Overall, our members have

tested 1665 samples until the 8000 hours mark (333 models). If one considers the test results from the 185 samples of CFLs used in one of the latest test batches, our members' tests showed a **failure rate of 40% at 6000hrs**.

Regarding lumen maintenance of CFLs, the Commission's working document proposes that the lamps sustain 70% of the initial flux at 6000hrs. Our members' tests conclude that 14.2% of the 140 models tested (the values for each model are an average of 3 samples) at the 5000 hours mark had a lumen decrease higher than 30%, meaning that they would not comply with the future requirement.

In their latest cycle of tests our members also tested 3 LED samples that failed at around 2400hrs and near the 5000hrs limit. This is one of the issues that may demotivate consumers the most, especially considering that most information and marketing related to CFLs and LEDs' mention durability as a main advantage over incandescent. The phase-out of incandescent lightbulbs itself was decided under the assumption that CFLs last longer. When consumers are "forced" to go in one direction (even if we are convinced of the benefits of CFLs in terms of efficiency) and acquire a non-satisfying product instead, they will inevitably feel deceived.

Because there is no accelerated lamp life test method, **we recommend that manufacturers guarantee their lifetime claims**, especially as the trend is to longer lifetimes (CFLs with 15000hrs). Authorizing lamps to have a failure rate of 50% at the announced lifetime means that the consumer has only 50% chance that his lamp will stand the claim. Even a 30% allowance most likely means that one in three CFLs bought will not meet their lifetime claim.

LEDs should also have strict requirements for durability, but this is more difficult because one year has only 8760hrs for testing. A 6000hrs test for a lamp that claims 25000hrs is definitely too short. Such a lamp, even if it fails at 5000hrs should be considered as not satisfying.

9.2 Power factor

We recommend that the European Commission refers here to requirements found in the German Blue Angel scheme.

9.3 Level of ambition

We have identified the following issues in the Working Document

Table 5:

- lamp survival factor – as explained above, 50% is misleading and unacceptable;

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- number of switching cycles – From the 510 samples tested by our members so far with the 30000 on/off cycle, 51% have sustained the full test. For a lamp that claims to last 8000hrs (and considering 1000h/year), this means that the user can switch it up to 10 times a day without problems. If the lamp is to be used in a bathroom this is very important. On the other hand, if the same lamp only lasts 8000 switches, then it can only withstand 2.5 switches a day, i.e. an unsatisfying result, even for a bedroom. If a lamp can only sustain 4000cycles (half the lifetime), the consumer can only use it once a day;
- Lamp warm-up time – it is not acceptable that consumers have to wait half a minute to receive half the light output. In their tests of non-directional lights, our members have found that 25% of the lamps are able to provide 45% of the luminous flux after 3 seconds;

Table 6:

- lamp survival factor – as explained above, 50% is misleading and unacceptable;
- Almost every halogen (90%) tested by our members has lasted more than 10000 cycles, suggesting that the proposed requirement is not restrictive at all;

Table 7:

- lamp survival factor – as explained above, 50% is misleading and unacceptable;
- LEDs tested by our members in their last test batch all withstood the 30000 cycles;

9.4 Retrofit lamps

We consider that the Working Document adequately addresses that issue.

10 Product information requirements

10.1 Indication of the luminous flux on the lamp

We strongly support the inclusion of this requirement. After 10000hrs, there is a serious risk that consumers do not remember the output of the lamp they purchased years earlier (for these lamps which really last years).

10.2 Minimum luminous flux on lamps

Given that the uncertainty on the individual claims by manufacturers is so high, we do not support a dynamic calculation based on the claim, but would rather recommend sticking to the “average technology” approach.

10.3 Luminaries not adapted to energy-efficient bulbs

Information to the consumers should be a must, in this case. But the mentioning on the luminaire should not only be that it does not fit lamps with B class, but also lamps with A class and also make clear that this means that the luminaire cannot be operated with efficient lamps.