ENERGY LABELLING and ECODESIGN
WORKING DOCUMENT
for comments by 15 September 2011 and for discussion on 23 September 2011

Questions to the Technical Subgroup of the Ecodesign Consultation Forum on the draft energy labelling and draft ecodesign regulations discussed on 5 July 2011

Some of the questions below ask for data on particular aspects. This should be understood as requests for data in addition or in contradiction to that given in the VITO preparatory study and in the follow-up study from UK DEFRA / Swedish Energy Agency / ECEEE (both studies are uploaded to CIRCA as background information). If you do not have information that would complement or question the information already collected in those studies, please skip the answers to those questions.

1. Scope of the regulations

1.1. Professional/household

Do you have information as regards the market share of the following technologies and the impact of the proposed regulations on them?

a) directional halogen lamps designed for use exclusively in professional lighting

We are not aware of any halogen lamps designed "exclusively" for professional lighting, although there may be some that are primarily marketed for and used in the professional applications. Halogen infrared-reflector coated (IRC) and silver-reflector directional lamps are relevant to professional and household consumers alike.

b) directional household high-intensity discharge lamps

We are not aware of any directional household high-intensity discharge lamps.

1.2. Special purpose lamps

1.2.1. Do you agree with the use of the "special purpose lamps" category (as in Regulation 245/2009, ie lamps claimed to be unsuitable for general lighting, not for household room illumination[1]) as a means of providing exemptions to the draft Regulations' requirements?

[1] Regulation 245/2009 (as amended by Regulation 347/2010) does not formally define "special purpose lamps", however Annex I on exemptions de facto creates such a category for non-general lighting lamps. In the Regulation on directional lamps, special purpose lamps would be included in the definitions.

We found only one reference to special purpose lamps in Regulation 245/2009 which appears in paragraph (5) in the preamble of the implementing measure:

> *"Products subject to this Regulation are meant to be used essentially for general lighting purposes, meaning that they contribute to the provision of artificial light replacing natural light for the purposes of normal human vision. Special purpose lamps (such as lamps used in computer screens, photocopiers, tanning appliances, terrarium lighting and other similar applications) should not be subject to this Regulation."*

We believe the definition of exemptions and of special purpose lamps should be as specific and technically grounded as possible. We are concerned that manufacturers may adopt an approach of putting labels on packaging for directional lamps as "not suitable for general lighting purposes" and thereby seek to exempt certain directional lamps from regulation through a 'special purpose lamps' classification. Manufacturers may claim their lamp is 'special purpose' due to a narrow beam angle or a special coating, however on the application side, homeowners have already demonstrated a willingness to use directional lighting for general illumination of a room. Because of this risk, we think a slightly more rigorous approach would be desirable for this regulation.

There is a definition in the Working Document that reads: "'special purpose product' means a lamp or a halogen lighting converter not intended for use in general lighting because of its technical parameters." The terms "intended for use" and "technical parameters" both evade the real possibility that people will adapt and use products in ways that manufacturers never intended. A manufacturer's intention or a technical parameter is no basis for an exemption – consider the bulge reflector (BR) shaped lamp that was exempted from the US Energy Policy Act regulation of directional lamps in the mid 1990's. In the early 1990's when the law was drafted, the BR lamp was an unusual lamp, representing less than 2% of reflector lamp sales at the time of the law. By 2001, 57% of all reflector lamp shipments were ER/BR lamps (NEMA, 2003), and these lamps accounted for approximately 77% of reflector lamp shipments to the residential sector.[2] *This exclusion for a special purpose lamp became a gaping loop hole.*

We believe the language in 245/2009 which gives examples of special purpose lamps that could never be construed as general purpose lamps (i.e., "such as lamps used in computer screens, photocopiers, tanning appliances, terrarium lighting and other similar applications") is stronger because it focuses on the applications rather than any intended use or technical parameters of the

[2] http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/2006_activities_data_sheets.pdf

lamps. We would welcome the opportunity to discuss and develop language for a definition or application description that would help determine the eligibility of a lamp for 'special purpose' classification.

1.2.2. Do you agree that to facilitate market surveillance, the technical documentation of each lamp claimed to be special purpose should indicate the technical parameters required for the lamp's special purpose, and should do so even if the lamp is technically not different from general lighting lamps?

Yes, CLASP would agree that to facilitate market surveillance, technical documentation on each "special purpose" lamp shouldbe supplied, including an explanation for how it is unsuitable for general lighting. We note that in Annex I of the Working Document, it reads: "The technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC shall list the technical parameters that make the product design specific for the stated intended purpose." We suggest that the Commission consider appending the following phrase to that statement in Annex I: "and unsuitable for general lighting."

We are unsure what is meant by "even if the lamp is technically not different from general lighting lamps" – if that were the case, then there is no technical reason why it couldn't be used in a general lighting application. As such, we do not think documentation or labelling would prevent this technically identical special lamp to be used in general lighting applications. CLASP would therefore not support its classification as a special purpose lamp.

CLASP wishes to inform the Commission that in the Energy Independence and Security Act of 2007, the US Government drafted several exclusions for certain lamp types that were not to be regulated as general service incandescent lamps. These five lamp types (i.e., rough service lamps, vibration service lamps, 3-way incandescent lamps, 2,601–3,300 lumen general service incandescent lamps, and shatter-resistant lamps) have special treatment under the law, in that the DOE tracks their annual shipments (with the support of NEMA) and compares those shipments to a 10 year shipment forecast that was based on historic shipments. If any of these five exempted lamp types is found to have a sudden surge in sales because consumers are purchasing them in large quantities to circumvent the incandescent lamp regulation, then DOE is directed to establish a regulation on that lamp type within one year.[3] *Perhaps an approach like this may be helpful in Europe, to provide some assurance of the integrity of this regulation?*

[3] http://www1.eere.energy.gov/buildings/appliance_standards/residential/five_lamp_types.html

1.2.3. As the updated Energy Labelling is intended to apply to general lighting lamps only, it would make sense to exempt special purpose lamps here too. It would be logical to have the same exemptions under energy labelling and Ecodesign. In order to ensure that the scope of the exemption is exactly the same, as well as to simplify the Energy Labelling Regulation and any further update as regards special purpose lamps, do you agree with the approach that in the definition of special purpose lamps in the energy labelling regulation, we simply refer to the Ecodesign Regulations? The following provisions would be included in the draft energy labelling regulation:
Article 1 – Subject matter and scope
(…) "This Regulation does not apply to special purpose lamps."
Article 2 – Definitions
"'Special purpose lamp' means a lamp not intended for general lighting and exempted from minimum requirements in implementing measures of the Directive 2009/125/EC."

Yes, it would seem reasonable that any exclusion for "special purpose lamps" should rely on a consistent definition across both the relevant Ecodesign and Energy Labelling regulations. If the Commission chooses to develop a definition for special purpose lamp or special purpose directional lamp in the Ecodesign regulation on directional lamps, it may be more advantageous to simply cross-reference the definition in Energy Labelling Regulation than to define it again here.

As stated previously, we reiterate our objection to the draft definition provided here regarding the intent of the lamp (i.e., "intended for general lighting"). We do not consider that a sufficiently rigorous a test to quality for exemption from the requirements.

2. Definitions

2.1. LED products

Could you provide your views on the definitions covering LED lamps in the working documents, taking into account the following aspects?

a) definitions are needed only for those products that are targeted by the provisions of the regulations
b) if a product group targeted by the provisions of the regulations is too generic compared to the categorisation used outside the context of ecodesign/energy labelling, for clarity it is possible to list in its definition the subgroups that compose the product group (e.g. " 'LED lamp' includes LED modules and self-ballasted LED lamps")

c) the objective is to define what makes a product group unique compared to other product groups in the context of the regulations, not to provide a complete technical description of the product group

There are two definitions we found in the Working Documents for LED lamps. Our suggested revisions are tracked in red. Notes about these changes appear after the definitions.

> *(14) "light emitting diode (LED) lamp" or "LED module" means general illumination light source where the visible light emitted by the product originates from ~~lamp in which the light~~ a solid state device that converts electrical energy directly into light with ~~embodying~~ a p-n junction~~, emitting optical radiation when excited by an electric current~~;*

The light emission at the p-n junction is not always 'optical' radiation, but can be UV, which is down-converted into the visible spectrum (i.e., 'optical' radiation) by a phosphor. The more generic term we've inserted in its place (light) can apply to UV light, visible light or even infrared light.

> *(20) "retrofit LED lamp" means an LED lamp designed to be used in luminaires and sockets compatible with non-LED lamps;*

There is always the possibility of having simply a socket on a wire, suspended in the middle of a room. One could argue that is not a luminaire, and thus any lamp designed to go in that installation was not a retrofit LED lamp. By adding the phrase 'and sockets' we pick up those and any other anomalies without having to specify socket sizes or types.

We note that it may also be necessary for the Commission to differentiate between integrally ballasted LED lamps and LED modules. If that is the case, we would suggest considering language that differentiates around whether a power supply/driver is incorporated into the device (i.e., retrofit lamp) or whether it requires an LED power supply/driver (i.e., module).

Should the Commission choose to develop definitions for integrally ballasted LED lamps and LED modules, we would welcome the opportunity to discuss and develop language for these.

3. Tolerances in verification procedures

Could you provide recommendations for the verification procedure by market surveillance so as to have tolerances more tailor-made to the requirements of the Regulation, instead of the single tolerance value per product category as in the current

Annex[4]? Of course, only in case you would find it appropriate at all to better distinguish tolerances. For some parameters, the method of comparing thresholds to average results from a sample batch of 20 lamps could also be replaced by a threshold that all lamps in the batch need to comply with.[5]

We are indeed very concerned about the risk that manufacturers may use this loose tolerance around testing parameters as a means of circumventing or diminishing the effectiveness of the regulation, as at least for some parameters we know that the current degree of precision in the manufacturing processes don't justify such high tolerances. All tested and regulated parameters should not be treated the same, but rather should take into account new and improved testing equipment, accuracies and tolerances.

CLASP would welcome a dialogue with industry around these issues, including their sharing of test data (i.e., evidence) that justifies the need for such a broad testing tolerance on such regulated parameters.

We commend the Commission's efforts to look into tighter tolerances on performance metrics of regulated products, to help ensure that the European Community benefits from the regulation as intended.

4. Calculation methods for the energy label

4.1. Efficiency requirements for label classes

What would be the appropriate method to set efficiency requirements for the different label classes?

Options range from the energy efficiency index as calculated in 98/11/EC, to a single lm/W value for each class independently of wattage or light output, with several options including a mixture of these. See more discussion in the Commission's working document 1 on Energy labelling.

One option the Commission might consider would be to develop an energy label for lamps based around the socket and voltage for which the lamp is designed to operate. In other words, any lamp type that is a substitute for another lamp type shall be subject to the same rating scale. The new energy label rating scales (A to G) would be based on the available lamp types that can operate in those sockets (clustering similar socket types) and any new technology entrants that seek to replace the incumbent technology will be ranked according to those unique scales.

[4] For example, a 10% tolerance on colour rendering would mean that a lamp claimed to have CRI 90 would be legal and be allowed to be less energy efficient (Table 3 in the Ecodesign working document), even if tests demonstrate that the average CRI of the sample batch is only 81.

[5] For example, this could make market surveillance cheaper and faster as authorities would not have to wait until the failure of the entire sample batch before establishing the batch average for checking compliance with resistance to switching requirements.

This approach is potentially a better solution because:

a) It reflects how consumers/businesses really purchase lamps – that is, by the type of socket they need to fill.

b) It enables the Commission to be flexible in setting the A to G scale, to take into account the available and anticipated future technologies that are capable of operating in those sockets and voltages. For example, the "A" rating for a line-voltage E27 socket would have lower efficacy requirement than an "A" rating for a linear fluorescent lamp socket. Each scale is relative to those lamp types that can be installed in the same sockets.

Does your recommendation affect the following aspects determined by the method, and if yes, how do you evaluate the effect?

a) downgrading or upgrading existing lamp classifications
b) clarity for consumers
c) equal treatment of technologies, taking into account the main fields of applications covered by the label, and necessary incentives for development
d) actual energy savings achieved by entire lighting systems, taking into account any incentives created by the label to prefer certain lamp categories over others

Our suggested approach developed above is different from those currently being considered by the Commission. It would involve new lamp classifications of A to G – this is potentially the best aspect of our proposal, because the scale would be appropriate and fine-tuned for each of the groups of sockets being accommodated. This label should improve clarity for consumers of all types of lamps because it will be exactly to the socket they are looking to operate. It would not provide equal treatment of technologies across the lighting system – in other words, a T5 linear fluorescent lamp would not have the same rating as a T12 linear fluorescent lamp, even though both are fluorescent technologies. It would, in this way, encourage and incentivise innovation by labelling the top performers with the highest classifications. This approach should save more energy overall, by providing consumers and professionals with relevant energy classes tailored for the socket they are looking to fill.

If the Commission is interested in exploring this approach, CLASP can put together a strawman across all the covered socket types and lamp types within 1-2 weeks.

4.2. <u>"Annual" electricity consumption</u>

Do you agree that taking into account the diversity of applications in household lighting and especially in professional lighting, it would be more accurate to indicate the energy consumption over 1000 hours (kWh / 1000 hours), rather than over a year (which always assumes a given amount of operating hours / year, and can be very misleading)?

Yes, it would be more "accurate" to indicate energy consumption over a fixed time period and would obviate the need for an embedded assumption about operating hours for different end-use applications.

In addition, it would have the advantage of providing energy consumption (and potentially cost of energy consumption?) in a metric that is immediately comparable to the reported lamp lifetime. That is, average lamp lifetime is reported in thousands of hours, and the per-1000 hour metric would give consumers a sense of the relative operating cost over a consistent period of time. For example, a 60 W incandescent lamp would use 60 kWh and a 15 W CFL would use 15 kWh. If you then multiply by electricity cost, the payback periods and energy-efficiency related savings are immediately transparent.

4.3. Correction for low pressure sodium lamp (LPS) control gear

In Table 2 of the draft energy labelling regulation, the power of all lamps operating on external control gear is corrected by a technology-dependent factor for losses caused by their gear. However, LPS lamps are not listed. Do you agree that LPS lamps should also get a correction factor, and if yes, what should it be?

(LPS lamps are within the scope of energy labelling, as for example in motorway lighting they can be compared to HID lamps and to LED lamps)

Yes, we agree that LPS lamps should be treated in a manner consistent with other HID lamps. It would not be equitable to apply a correction factor to some lamp types and not others. The factor should be based on the performance of new operating ballasts used with LPS lamps.

4.4. Measuring the beam angle

On the issue of verifying whether a lamp is a DLS or NDLS (80% of flux in 120 degree cone), and measuring the useful beam angle in 90°/120°: in order to reduce test costs and administrative burden for market surveillance authorities, some alternatives to expensive goniophotometer testing are considered, i.e.

a) defining the useful beam angle as 180° in the Regulation, and using an integrating sphere for testing in a 180 degree cone ('forward flux'),

CLASP maintains its view that all forward lumens ('flux') are useful. While some lighting professionals may specify and design around precise cones of light, the volume in the market uses directional lamps for general illumination in their homes and businesses. The lighting may be focusing on or calling attention to a particular area or product, but the 'spill light' that is emitted into the living space is not useless.

The spill light provides some ambient illumination benefit and therefore should be included in the performance measurement. Indeed, this point is implied by the experts who call for correction factors to apply to LEDs because their precise optics virtually eliminate 'spill light'. (If spill light were not useful, why should LEDs get a correction factor to account for its absence?) Even now, when manufacturers talk about the lumen output from an MR-16 directional lamp, they do not give only those lumens occurring in a 90° beam angle, so why should the regulation constrain itself that way? From a market surveillance point of view, directional lamps could be measured at a lower cost, including through an appropriately calibrated, ported integrating sphere.

Our suggestion here is not out of the ordinary - the US, Canada and Australia all regulate directional lamps, and all of them consider all forward lumens when making an assessment of the performance of the lamp. For Europe to adopt a 90° cone would take it out of alignment and make it inconsistent with other regulators working on this same product.

Finally, it is very important to note that allowing the regulation to consider all forward flux as relevant does not preclude Professional consumers of directional lights, such as museums and retail display lighting, from purchasing and using precision optical lamps. Those products should and will still be available, as long as that precision is required. Our suggestion of acknowledging all forward flux as relevant is based on the reality of how most of these lamps are used in Europe.

b) report of visual inspection and manufacturer's declaration of beam angle; testing with a goniophotometer only if visual inspection raises doubts.

('visual inspection' would mean that the authority would have to take a photo of the light distribution against an appropriate background. A small software-program would translate the pixel intensity of the photo into an approximate (2 D) flux distribution that would help determine whether a more thorough inspection is to be conducted.)

The use of a 'visual inspection' does not seem rigorous enough to us, and may result in some unnecessary disputes.

We point out, however, that this entire issue could be avoided if the Commission simply recognises the usefulness of all forward lumens. Indeed, it would also simplify the regulation, eliminate some of the correction factors (which will be compounded for certain products), and result in a more transparent regulation.

Which one of these alternatives, if any, would you find acceptable? Do you have a better alternative?

Our preference is for option a), testing in a 180 degree cone.

Can you estimate the difference in cost and in availability to market surveillance of the two main measurement instrument (integrating sphere and goniophotometer)?

The Task 1. International Directional Lamp Regulatory Review[6] *prepared by Navigant Consulting for Defra/eceee/Swedish Energy Agency estimated a cost differential of 10 to 1, based on an interview with an Australian lighting testing laboratory. The following text is a quote from this report:*

> *"Australian experts indicate that the revised integrating sphere test method (i.e., incorporating the requirement for calibrating the sphere using reference lamps of a similar beam angle) will become the primary test method used by the Australian Government to test products sampled from the market place for compliance with MEPS. The Australian experts estimate that enforcement testing costs can be reduced by a factor of up to 10 using the revised sphere test method over the goniophotometer test method. This allows for a broader market sampling (basically 10 times more product tested for the same budget) thereby maintaining a fairer and more competitive market for suppliers of these products (i.e., blocking undercutting by non-compliant inferior products). Recognising that the revised integrating sphere test method has its own testing tolerance ranges, any products that are measured by the sphere method that are deemed to be borderline in terms of meeting compliance may then be re-tested using the goniophotometer test method. This procedure will maximise the value for money of a compliance-check testing programme."*
>
> *Source: Task 1 International Directional Lamp Regulatory Review, May 2010.*

5. Label layout

Do you agree that three versions of the lamp label are needed?

a) Independent full label (brand name and model number have to be shown for identification)
b) Full label on the packaging (no need to repeat the brand name and model number, to save space)
c) Simple label on the packaging (label class scale alone, it is a version allowed by Directive 98/11/EC that provides flexibility in packaging design since 1998)

If you do not agree, where do you see an opportunity for simplifying the scheme, and for what reason do you want to simplify it? Are there any adverse effects to the

[6] http://efficient-products.defra.gov.uk/assets/Uploads/Defra-Report-Directional-Lamps-Task-1-v.10a.pdf

simplification (e.g. less flexibility in the design of small packagings), and if yes, how do you propose to tackle them?

CLASP agrees to the current three label approach.

6. Efficiency of directional lamps

6.1. Efficacy range of the technologies involved

Could you provide your latest information as regards the available efficacy range of the following directional lamp types, in three typical wattages? With luminous flux measured in a 90° cone (except for compact fluorescent lamps where it is measured in 120°). If you deviated from this useful beam angle please clearly indicate it.

Lamp types:

- ✓ Incandescent
- ✓ conventional mains voltage halogen
- ✓ conventional extra low voltage halogen
- ✓ xenon-filled mains voltage halogen
- ✓ infrared coated extra low voltage halogen with external transformer
- ✓ infrared coated extra low voltage halogen with incorporated transformer
- ✓ Compact fluorescent lamp
- ✓ High intensity discharge lamp
- ✓ non-retrofit LED module
- ✓ extra low voltage retrofit LED (requiring external control gear)
- ✓ Self-ballasted LED lamp

Suggested format for the information for each lamp type:

Lamp type 1	Model designation	Flux measured in 90° (120° for CFLs)		Flux measured in 180°	
		Lowest efficacy	Highest efficacy	Lowest efficacy	Highest efficacy
[Lowest wattage category]*	[e.g. MR16]	[e.g. 12 lm/W]			
[Most frequent wattage category]*					
[Highest wattage category]*					

* Please be specific about the wattage of the lamp given in each category.

We are pleased that the Commission is soliciting such detailed data from the manufacturers. We hope that you receive a robust and accurate data set upon which to base your regulatory standards.

We would also be interested in learning what your estimate is of the efficacy likely to be achieved by each lamp type by 2016.

It is important to note that of the technologies under consideration, the one with the most room for improvement is LED. This technology is not only improving its performance from the standpoint of the packaged LED, but also the driver, the optics and the power supply are all improving and will result in a far superior product in 2016 compared to what is available today (and indeed, what was available in 2009 when VITO completed their study). The performance of any given LED system however is not solely dependent on the packaged LED, but is also dependent on the driver, the power supply and the optics. The table below illustrates these losses for an LED luminaire, and illustrates the enormous potential for system efficacy performance improvement over conventional light sources (e.g., incandescent lamp at 15 lm/W, CFL at 60 lm/W):

Table 4.5: Summary of LED Luminaire Performance Projections (at operating temperatures)

Metric	2009	2010	2012	2015	2020
Package Efficacy-Commercial Cool White (lm/W, 25 C)	113	134	173	215	243
Thermal Efficiency	87%	89%	92%	95%	98%
Efficiency of Driver	86%	87%	89%	92%	96%
Efficiency of Fixture	81%	83%	87%	91%	96%
Resultant luminaire efficiency	61%	64%	71%	80%	90%
Luminaire Efficacy- Commercial Cool White (lm/W)	69	86	121	172	219

Notes:

1. Efficacy projections for cool-white luminaires assume CRI=70-80 and a CCT = 4746-7040°K.
2. All projections assume a drive current density of 35 A/cm^2, reasonable package life and operating temperature.
3. Luminaire efficacies are obtained by multiplying the resultant luminaire efficiency by the package efficacy values.

Source: US DOE Solid-State Lighting Multi-Year Program Plan FY2011.

Given that the forecast is for LED systems exceeding 170 lumens per watt in 2015, we believe it would be reasonable for the Commission to adopt a minimum system efficacy level in 2016 at 80 lm/W, which will be easily achievable by LED lamps and potentially achievable by the best quality CFLs.

6.2. Optical efficiency of the reflector

What level of optical efficiency can you observe in mainstream examples of the different categories of reflector filament lamps (MR, AR, R/NR, PAR), expressed as % of the light from the source that is leaving the lamp?

Please see section 2.2 of the Defra/ECEEE Task 2 report[7], which focuses on reflective surfaces.

7. Requirements for retrofit LED lamps replacing fluorescent or high-intensity discharge lamps

Do you agree with the principle that such retrofit LED lamps should be required to provide the same service as the lamps they intend to replace? Concretely, when the retrofit lamp is installed in the same luminaire as the replaced lamp, the luminaire should have similar photometry and luminous flux, and not use more power? If yes, could you suggest a formulation for this requirement and a verification procedure to check conformity with the requirement? If not, what method (if anything) should we use in setting requirements on fluorescent and HID retrofit lamps?

We do not feel such a requirement and formulation is necessary, and we are concerned in certain applications it may result in a detrimental use/application of LED technology. For certain retrofit lamps, light output emission patterns may be different and this is not a bad idea. For example, consider fluorescent tubes - light is emitted equally all around the tube. For LED replacement fluorescent lamps, is likely that the LEDs will be placed along one side of the tube, so that light is emitted from the part of the lamp that is facing into the living space. The LED replacement tube would therefore have a different photometric profile and total light output, but it may be possible to have equivalent system performance when installed in certain luminaires.

We believe that this requirement will add further complication to the regulation, and yet add little value to the overall objective of Ecodesign. With or without this requirement, manufacturers will do their best to provide consumers the service they expect and customers who buy precision optical products will still do their research before purchasing a retrofit LED lamp. Consumers of general lighting who are not concerned with such detail will purchase LED retrofits and install them. Generally, the focus to date has been whether the light output is sufficient to match that of the original lamp, not the photometric profile.

Under Ecodesign, the objective of reducing environmental impact of these products is best achieved through having ambitious efficacy requirements. We feel that converting

[7] The report and related documents can be downloaded from the Defra website: http://www.mtprog.com/cms/eup-directional-lighting-technical-support-reports-2/ or from the eceee website: http://www.eceee.org/Eco_design/products/directional_lighting/technology_prospect_report

this regulation into a quality control effort for optical light distribution patterns is a misapplication and suggest some separate voluntary scheme be established by ELC to achieve that objective.

8. Halogen lighting converters

Could you suggest a set of requirements for halogen lighting converters that make sure all of the following criteria are met:

a) The requirements bring significant cost savings to the end-users of important categories of halogen lighting converters.
b) No category of halogen lighting converter is phased out that would not have an equivalent replacement that can operate the same lamps.
c) The safety of lamps using external halogen converters is not compromised.
d) No lock-in effect is created that would block the upgrading of extra low voltage halogen installations with extra low voltage retrofit LEDs (e.g. flexibility of the converter to work with radically smaller system wattages).

We support the Commission's proposal and requirements in the Working Document. We are preparing a separate report that has a chapter focusing on halogen lighting converters. The level proposed in the Working Documents seem reasonable to us, and according to data in the Preparatory Study will have a minimal impact on the market. Overall, we support the phasing out of inefficient magnetic designs in favour of efficient electronic halogen converters, especially for power ratings of 200 W and below.

9. Lamp functionality requirements

9.1. Measurement of lifetime

Can you propose a solution for checking compliance with lifetime requirements of lamps that have a long life? Is it for example a feasible option to set a requirement on lamp survival factor and lumen maintenance after a shorter time (e.g. 6 months of testing), rather than to make market surveillance wait until the end of the lamp's claimed life?

The same test methods used by industry to assess product life should also be used by the regulators. This is the only way that market monitoring and testing integrity can be ensured.

They key point is to do lumen maintenance measurement, such as that outlined in LM-80. Perhaps the duration of the testing should be based around having a testing period that is related to the claimed lifetime of the product? For example, one-tenth of the claimed lifetime, but not less than 2,000 hours and not greater than 5,000 hours. The

number of hours should be discussed and compared to test results from actual products before being finalised.

Do you consider that current method of determining lamp lifetime (50% lamp survival at the claimed lifetime) raises issues of consumer confidence in lamps?

No, we have not seen any evidence of the 50% survival undermining consumer confidence. This is the current method used for conventional lighting as well, and consumers haven't been complaining to their consumer watchdogs en masse. Rather, if a consumer is disappointed in the lifetime of a product they have purchased, typically they simply won't buy from that supplier again.

9.2. Power factor

Is the definition of power factor appropriate for the purposes of lighting products?

"power factor" means the ratio of the absolute value of the active power to the apparent power under periodic conditions;

This definition is good, although it may help improve clarity if a few additional terms are added and included in the definition. Our suggestion appears below:

"power factor" means the ratio of real power over apparent power, where real power is the average, over one cycle, of the instantaneous product of current and voltage and apparent power is the product of the rms values of current and voltage.

Do you consider the power factor as a necessary functionality requirement, or could the Regulation do without it?

We consider power factor a necessary functionality requirement, as it can result in losses in the distribution network if left unchecked.

What levels of power factor would you find acceptable for CFLs and LEDs?

LED PF ≥ 0.50 at Stage 1 and PF ≥ 0.70 at Stage 3

CFL the same.

9.3. Level of ambition

Please assess the level of ambition of the proposed functionality requirements for the different lamp types in Tables 5 to 7.

We prepared a separate report that addresses these requirements. Please see the report.

9.4. Retrofit lamps

Should retrofit lamps (e.g. LEDs or CFLs replacing reflector incandescent bulbs) comply with additional functionality requirements as compared to non-retrofit lamps? If yes which should be these additional requirements?

From the Working Document:

a) the Correlated Colour Temperature shall be between 2600K and 3200K;
b) the lamps shall be fully dimmable using dimmer systems compatible with mains voltage or extra low voltage halogen systems, as applicable;
c) extra low voltage LED retrofit lamps shall be able to operate on all types of halogen lighting converters;
d) if the lamp is claimed to be a retrofit to a specific halogen or incandescent lamp, its dimensions shall not exceed the maximum standard dimensions of the replaced lamp type.

The primary complaint we are aware of from people who have purchased retrofit LED lamps is the fact they are not bright enough, and for some products, blocks of LEDs will fail while others continue operating. The requirements listed above are laudable, and will encourage manufacturers to develop products to replace directional lamps that are equivalent in performance to the incumbent technology. We do feel, however that the light output should be a criterion to ensure consumer satisfaction with the replacement lamps.

10. Product information requirements

10.1. Do you agree that at least an indication of the luminous flux of the lamp should be required on the lamp itself (to help consumers replace the lamp at the end of life)?

Yes, this would be helpful to have as a stamp on the lamp, particularly as the market shifts to lamp replacement based around lumen output as opposed to incandescent wattage equivalents.

10.2. Requirements on minimum luminous flux for lamps claimed to be retrofits to conventional halogen reflector lamps

Would you agree if instead of listing the luminous flux requirement for each lamp technology in three columns as proposed in Table 8 of the Ecodesign working document (obtained through average lumen maintenances applicable to the entire technology), the Regulation provided for a dynamic calculation of the minimum luminous flux by using a multiplication factor obtained from the claimed lumen maintenance of the particular retrofit lamp model?

We think that the stronger approach would be to have a minimum luminous flux requirement for replacement halogen reflector lamps, and then through the lumen maintenance requirements (see question 9.1), the lumen maintenance of the lamp can be assessed over time.

10.3. Do you agree that the warning about a luminaire's non-compatibility with energy saving lamps should be introduced as a product information requirement?

Such 'luminaires with negative lock-in effect' would be defined as a general lighting luminaire that is not compatible with lamps classified as 'B'.

The compatibility would be established in harmonised standards, taking into account socket type, dimension of the space available for lamps, dimmability etc. Awaiting the harmonised standards, a transitional method to establish compatibility could be published as a Commission communication in the OJ (just as for measurement methods for some products).

We are unsure whether this would be helpful in influencing the decisions of consumers. We can envision a scenario where one manufacturer in the world produces a particularly efficient lamp, and then all the labels on products in Europe need to be updated. In other words, the labelling is based not on the product itself, but the availability / non-availability of a lamp type in the global lighting market. We expect this approach will be difficult (and potentially costly) to implement and keep up to date.

Perhaps an alternative approach to consider for luminaires with potential negative lock-in effects, there could be a warning label that would indicate to the consumer to check with his supplier about which classes of lamps would be available (instead of simply saying no class B available).