

Lighting the Future - Accelerating the deployment of innovative lighting technologies

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| <p>Data publication</p> <p>A synthesis of your contributions received via this online questionnaire, as well as any individual contributions, together with the identity of your organisation/affiliation, will be published on the web.</p> <p>Therefore, in order to take part in this consultation, you must indicate prior agreement to the publication of your personal data (opt-in).</p> <p>Do you agree with the publication of your personal data?</p> <p>-single choice reply-(optional)</p> | <p>I agree (opt-in)</p> |
| <p>I am replying as / on behalf of a ...</p> <p>Note: If you represent more than one category, please choose the most relevant one.</p> <p>-single choice reply-(optional)</p> | <p>Other (please specify)</p> |
| <p>Replying as / on behalf of - Other -open reply-(optional)</p> | <p>Consortium of national metrology institutes cooperating within the EMRP (European Metrology Research)</p> |
| <p>Please provide your name / your organisation's name (will be published).</p> <p>Note: If you are responding as a citizen, enter 'Citizen'.</p> <p>-open reply-(optional)</p> | <p>Dr. Marijn van Veghel, coordinator of EMRP project "Metrology for Solid State Lighting"</p> |
| <p>Please indicate the area or sector of activity or field of work.</p> <p>-single choice reply-(optional)</p> | <p>Other (please specify)</p> |
| <p>Sector of activity / field of work - Other -open reply-(optional)</p> | <p>Metrology, developing measurement standards and methods for traceable measurements of SSL</p> |
| <p>Please indicate your country of residence / establishment.</p> <p>-single choice reply-(optional)</p> | <p>--- Other ---</p> |
| <p>Country - Other -open reply-(optional)</p> | <p>Multi-national consortium: the Netherlands, Finland, Czech Republic, Spain, Switzerland, Italy, Portugal, France, Hungary, United Kingdom, Germany, Slovakia, Sweden and Denmark</p> |

Solid State Lighting and European Users

(1) How would you propose to overcome the challenges described in the Green Paper for the wider market penetration of Solid State Lighting (SSL) technologies in Europe?

-open reply-(optional)

- Low-quality LED products: Setting up EU-wide quality requirements for SSL products will be a key issue for guaranteeing user satisfaction and confidence in SSL products. These quality requirements have to be formulated in a quantitative way by expressing minimum values for a suitable set of quality parameters. Adherence to the requirements can be verified in an objective way by performing proper measurements, i.e. measurements which are traceable to the SI system of units. The insistence on traceability is essential for an objective verification; only when the measurements are linked to a universal system of measurement units they can be compared in a meaningful sense to the requirements. Traceable measurements would therefore form a natural part of any market surveillance scheme directed at ensuring the quality of SSL products on the market. To ensure traceability, market surveillance authorities should employ only national metrology institutes or measurement laboratories which have a specific accreditation for SSL measurements. For SSL manufacturers to provide the guarantees their customers require, and for lighting designers to be able to make appropriate decisions, manufacturers must be able to justify claims of efficiency and quality. This requires validated photometric data to be produced by a network of accredited testing laboratories using internationally accepted methodologies. Customer acceptance is also dependent on quality of the light. Specifications using challenging quality metrics will ensure the development of products that exceed customer expectation. -High initial purchase costs: In order to make a proper economic decision on the purchase of SSL products reliable information on energy efficiency and life-time are crucial. This information can only come from traceable measurements. Governments can help users by subsidy schemes or tax benefits, but this should always be based on an objective assessment of the true energy-saving potential of the SSL products, as determined by traceable measurements. - User awareness of SSL advantages and capabilities: To stimulate the awareness of SSL potential, objective information is necessary. Comparisons between current lighting and the new, SSL-based solutions can help convince users, as long as they are based on reliable measurements. - Insufficient or poor product information: There is a clear need to establish a set of generally accepted quality parameters that are good expression of the quality of SSL products as experienced by users. This is particularly urgent for color rendition. It is important that a suitable infrastructure exists to support the reliable measurement of these quality parameters. The EU and national governments should continue to support the ongoing development of new measurement standards and methods at the national metrology institutes. - Concerns for biological safety: product safety, even more than product quality in general, should be verified using reliable, i.e. traceable measurements. Traceability should therefore be incorporated in guidelines for product certification. Enforcement by market surveillance authorities should likewise be based on traceable measurements. - Rapid technological obsolescence and missing standards: Where gaps in standardization exist, the EU should support the development of SSL standards, acting as much as possible in cooperation with international initiatives. Standards should take into account objective verification of criteria through suitable measurements.

(2) Which *additional* challenges do you see for a wider SSL market penetration in Europe and which solutions would you propose to resolve them?

-open reply-(optional)

Since not all the LED industry value chain resides in Europe, particularly LED chip and package production, it may be difficult to control properties such as cost and quality. Europe has the research expertise to develop LED chip production, but needs support to establish manufacturing capability.

(3) What can EU Member States do to reinforce market surveillance of product performance and safety in the area of SSL lighting products?

-open reply-(optional)

It is important that market surveillance authorities use objective measurements to verify claims by producers and importers of SSL products. Objective measurements can only mean measurements which are traceable to the SI system of units. These measurements have to be performed by laboratories with specific knowledge of the field of SSL metrology, either national metrology institutes or accredited laboratories with SSL measurements explicitly mentioned in their accreditation scope. The use of traceable measurements in the enforcement of product regulations will stimulate producers and importers to apply traceable measurements themselves. It will also ensure that products from inside and outside the EU are treated on equal footing, as both will be verified using a universal scale. Establishment of an EU equivalent of the CALiPER programme based on accredited, traceable measurement would provide customer confidence through benchmarking of products and testing laboratories.

(4) What could the lighting industry do to ensure the performance of SSL products?

-open reply-(optional)

The lighting industry should reinforce its leading position in the field of quality lighting products by rigorous adherence to objective and quantifiable quality statements, based on proper measurements. Adoption of challenging specification for products and accreditation as exemplified by the ENERGY STAR SSL Program will improve quality, and develop industry agreed specification, measurement and certification.

(5) What can be done to raise awareness of consumers and professional users to SSL technologies and which specific measures and incentives would you propose for accelerating SSL uptake?

-open reply-(optional)

The EU and its member states should continue to invest in the development of a SSL targeted measurement infrastructure, to underpin claims of SSL performance and boost user confidence. This measurement infrastructure should consist of suitable quality parameters and standards, traceable measurement facilities at national metrology institutes and an accreditation framework for ensuring the quality of measurements performed at secondary laboratories and industry. Such a measurement infrastructure is currently being developed, amongst others as part of the European Metrology Research Program (EMRP). The efforts should be continued to ensure sufficiently deep embedding and also to keep track of new developments in SSL technology, such as OLEDs. Case studies should be conducted and publicized, which cover the true life cycle environmental cost benefits of SSL.

(6) What could be done to overcome the landlord-tenant conflict?

-open reply-(optional)

Sustainability of the lighting system can be demonstrated through benefits of lifetime and reduced maintenance. Predictions of lifetime can be supported by trusted third party measurement.

(7) Which *additional* measures to the ones listed in the Green Paper could help accelerate SSL deployment in buildings?

-open reply-(optional)

The benefits of integrated lighting solutions, such as Photovoltaic with LED, and smart controls can be demonstrated in pilot studies and through recommendations in an EU lighting code. Additional benefits of lighting control can be demonstrated, such as the impact of spectral and lighting quality on productivity and health.

Solid State Lighting and the European Lighting Industry

(8) What measures, beyond the ones listed in the Green Paper, could *further* support research and innovation and the reinforcement of the SSL value chain in Europe?

-open reply-(optional)

As metrology is of great importance in ensuring product reliability, and therefore in meeting user expectations, it should be an important aspect of research in SSL. The importance of international coherence in the measurement and the need for independence of the particular commercial interests, makes that this research is adamantly suited to be carried out in specially targeted programs, such as the European Metrology Research Program (EMRP). The procurement of lighting should include challenging specification, which requires appropriate and accurate validation.

(9) Which *other* actions beyond the ones listed in the Green Paper could be taken by industry to reinforce sustainable SSL manufacturing capacity in Europe?

-open reply-(optional)

(10) Which *additional* actions to the ones listed in the Green Paper can reinforce cooperation along the value chain, in particular with architects and lighting designers, electrical installers and with the construction and building industry? What should be the role of the Member States and the EU in making it happen?

-open reply-(optional)

To dissuade installers from changing the lighting design to include poor quality replacement fittings, an “Equal and Approved” document should recommend more robust metrics and validation. Market surveillance and benchmarking exercises would demonstrate the success of SSL and present a barrier to poor quality lighting systems.

(11) Are there gaps in standardisation today which hamper SSL innovation and deployment? If yes, where are such gaps and how can they be addressed?

-open reply-(optional)

Global measurement and quality standards for SSL are not yet in place. These should be at least equivalent or more challenging than have been developed in the US CALiPER and ENERGY STAR programs. The measurement standards should be based on recommendations from National Measurement Institutes rather than potentially biased industry standards that are not open to public debate.

(12) Which actions should Member States and industry take to support education, vocational and lifelong learning and training on SSL and to address the adaptation of educational curricula to include the latest lighting technologies?

-open reply-(optional)

The provision of accredited training for lighting design and measurement will provide a framework for industry. By making informative and interesting materials for public school systems in Europe the consumers of tomorrow can become familiar with the SSL products and take home the knowledge to their parents.