Researchers light up Europe with LEDs

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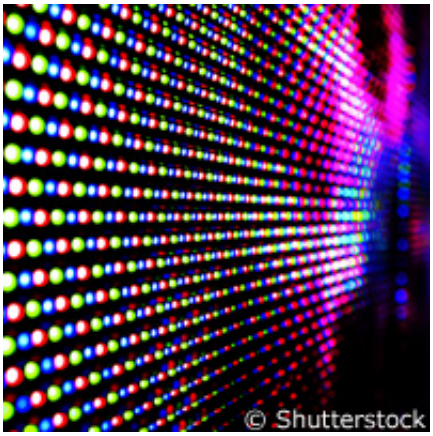

Novel light-source technology just got a big boost in Europe thanks to the OLED100.eu ('Organic LED (light-emitting diode) lighting in European dimensions') project which tackled the challenge to develop the techniques needed to form the basis for efficient OLED applications for the European general lighting industry. The OLED100.eu researchers have successfully increased the energy efficiency and lifetime of organic LEDs for large-area lighting applications.

Led by Philips Technologie GmbH in Germany, the OLED100.eu team has been working on OLEDs for the last three years. Over this 36-month period, the researchers resolved technical quirks and probed the acceptance levels and preferences of end users concerning this new lighting technology. They also developed a large-area OLED luminaire

consisting of 9 OLED tiles of 33 x 33 square centimetres each.

The aims and objectives of the study were to boost the luminous efficacy, strengthen the lifetime, upscale the light-emitting area, optimise processes to slash production costs, and standardise measurement based on application research.

The OLED100.eu team succeeded in demonstrating high-efficiency OLEDs based on Novaled PIN OLED technology and out-coupling materials showing 60 lumens per watt (lm/W) which are more efficient than energy-saving lamps. They also secured long-lifetime OLEDs with Novaled know-how, showing 100 000 hours comparable to inorganic LED lifetime. The researchers performed perception case studies on taste and acceptance of OLEDs as light source, and they carried out industrialisation scenarios and cost calculation of production processes with a particular focus on cost-efficient technologies like screen-printing for substrate structuring. And they succeeded in devising standardisation of measurement procedures for OLEDs, which currently serve as the basis for work of the International Commission on Illumination (CIE).

'The OLED100.eu research consortium has played a vital part in ensuring that Europe will play a leading role in OLED technology for lighting applications also in the future,' says Dr Stefan Grabowski, senior scientist at Philips Research Laboratories in Aachen.

Commenting on the results of the project, Dr Karsten Diekmann of OSRAM GmbH in Germany says: 'The results of OLED100.eu will contribute to further increase the acceptance of OLED technology. In the project we gained a better understanding of end-user preferences, a better comparability through standardised measurement procedures, and better OLEDs.'

For his part, Dr. Christian May, the head of Business Unit OLED

Lighting says: 'The work to achieve the challenging goals of the OLED 100.eu project brought us to a higher level of our COMEDD pilot process line. We are really proud of the 33 x 33 cm2 large OLED panels, which are one of the largest worldwide and made at our pilot process line.'

OLEDs convert current into light, but are different from inorganic LEDs because they emit light over a large area. The thickness of the light-emitting area is just around 400 nanometres, which is about 100 times thinner than a human hair.

The OLED100.eu partners are from Belgium, Germany, France, the Netherlands, Austria and the United Kingdom.

More information: oled100.eu/homepage.asp

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