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Switch on sunlight for a brighter future

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COE-LUX Office

Technology with a sophisticated optical system using nanostructured materials into a high-tech window-system, COE-LUX therefore not only has the potential to be a revolutionary innovation for the contemporary lighting and design industry, but also to boost the well-being of citizens in Europe and beyond.

"With COE-LUX, you can experience sunny skies anytime, anywhere," said Professor Paolo Di Trapani, coordinator of the project and a physicist at the University of Insubria in Como, Italy whose research has been driven by the desire to recreate natural light for the past 10 years. "Looking to recreate the aspect of a perfume or the colour of a tropical fruit, it is difficult to describe COE-LUX's lighting effects due to the perception of infinite space which the technology produces. Instead, an idea collected in the course of the project has shown that an atmosphere 'materialises' itself happy and relaxed when applied to COE-LUX light despite remaining in a windowless room of a few square metres for a sustained period of time." The technology is owned by the IT Insubria-University spinoff "COE-LUX Srl".

Growing recognition of the impact of light on health and well-being

The United Nations has proclaimed 2015 as the international 'Year of Light', to raise global awareness of how light can have a positive influence on our health and wellbeing. Warm, artificial, direct sunlight illuminates and enhances objects, making domestic and public spaces more attractive and welcoming. The play of light and shadow gives them volume and shape and alters the way people react and interact with their surroundings.

The COE-LUX light diffusing technology will benefit anyone who does not get enough sunshine. It has been designed with a focus on the healthcare industry, but can be applied in retail, hospitality, museums, airport, underground transport, spa, sports centres, cinema, office and industrial environments. Those working or living in underground spaces, either due to space restrictions or as a way of coping with extreme climates, such as in Canada or the United Arab Emirates, are set to benefit greatly from the technology. The same is true of residents of countries located further from the equator, close to the Arctic or Antarctic, who often experience very little natural light for long periods during the year.

How it works

COE-LUX combines three key elements:

- The latest energy-saving LED technology to reproduce the sunlight spectrum
- A sophisticated optical system to create a sensation of distance between the 'sky' and the 'soil'
- Nanostructured materials, only a few millimetres thick, to recreate the entire Rayleigh scattering process which occurs in the atmosphere

These elements are incorporated into a high-tech window system offering an enormous range of opportunities and design possibilities for indoor architectural spaces. Users can experience the light of Northern Europe, of the Mediterranean and of the Tropics in the three settings options that COE-LUX provides.

Product Development and commercialisation

The COE-LUX research project received €2.5m in funding from the European Union under the 7th Framework Programme. Prof. Di Trapani confirms that "this EU funding was essential to allow us to invest in research and development and cover demonstration costs. It was invaluable in helping to continue our research to join and support us. We strongly encourage other SMEs to apply for EU funding as a source of opportunity".

The COE-LUX technology will be ready for market towards the end of 2014 and constitutes an important business opportunity for the project partners and network of European enterprises which will be involved in its production, demonstration and implementation. The global lighting market is estimated to be worth €58 billion and this game-changing innovation is well positioned to take a share of that market, boosting European competitiveness and creating jobs, contributing even further to the wellbeing of European citizens.

Michael Jennings, spokesperson for European Research, Innovation and Science Commissioner Maire Geoghegan-Quinn, said: "Many areas of our lives – from energy, transportation, medicine, food safety, health and well-being – are being enhanced and even revolutionised by nanotechnology. COE-LUX is a great example of how science can turn a simple idea that is difficult to achieve – replicating sunlight – into a reality. It clearly has huge potential to make a difference in people's lives".

About COE-LUX

COE-LUX® is a research project funded by the European Union under the 7th Framework Programme (FP7). The European Commission featured COE-LUX among twelve innovative technologies showcased at the 2014 Innovation Convention in Brussels in March. COE-LUX combines three key elements: the latest LED technology which reproduces the sunlight's spectrum; a sophisticated optical system that creates the sensation of the distance between the sky and the soil; and nanostructured materials, only a few millimetres thick, which recreate the entire Rayleigh scattering process which occurs in the atmosphere. These elements are incorporated into a 'high-tech window' system offering an enormous range of opportunities and design possibilities for indoor architectural spaces. COE-LUX is the result of collaboration between COE-LUX, owner of the lighting technology (IT), Next Limit Technologies, owner of the photovoltaic rendering engine Maxwell Render (BE) and (K)zeptobits, responsible for COE-LUX's innovative installation worldwide (LT) and research partners Götting Bohnecke SE (DE), Eidgenössische Technische Hochschule (CH), Bartenbach GmbH, Aldians (AT) and Component Slips (IT). For more information on COE-LUX® visit www.colelux.com.

About European research and innovation funding

On July 1 the European Union launches a new, seven-year research and innovation funding programme called Horizon 2020. Over the next seven years almost €10 billion will be invested in research and innovation projects to support Europe's economic competitiveness and extend the horizons of human knowledge. The EU research budget is focused mainly in improving energy, the environment, the health, the environment, transport, food and energy (see table breakdown below). Research partnerships with the pharmaceutical, aerospace, car and electronics industries also encourage private sector investment in support of future growth and high skill job creation. Horizon 2020 will have an even greater focus on turning excellent ideas into marketable products, processes and services.

HORIZON 2020 – The EU Framework programme for Research and Innovation



Horizon 2020 – The EU framework programme for Research and Innovation

For the latest information on European research and innovation, go to:
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