



# A clean LED production for a clean environment

**T**he production of electricity is responsible for approx. 40 percent of the world's CO<sub>2</sub> emissions.

A substantial proportion of the power produced is used for lighting – around 15 percent. However, with the use of light emitting diodes (LEDs) as a light source, there is now an interesting and promising technical alternative: the small light-emitting elements can be implemented just about anywhere as an effective replacement for conventional lighting systems.

Not only do they consume much less electricity but they also have an extremely long service-life. By using LED technology, the hope is to drastically reduce the amount of power consumed due to electrical lighting by up to 80%.

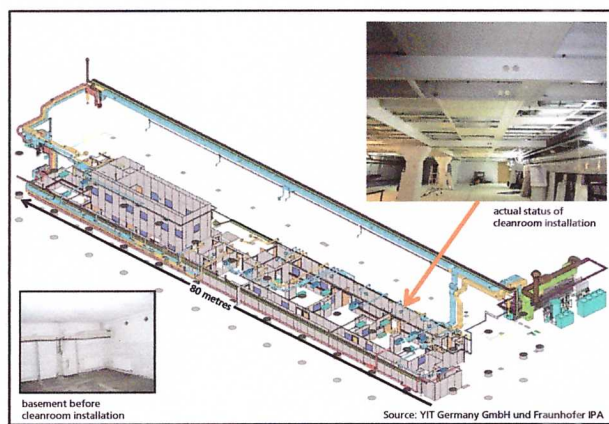
The ecological as well as economical advantages of using LEDs has led to a continuous rise in worldwide demand, which is why the Romanian electronics manufacturer Microelectronica S.A. has decided to construct a factory to produce LEDs in Bucharest. The project has been chosen by the EU as part of its structural policy to support economically weak regions.

Producing LEDs is associated with a number of challenges because a clean, dust-free environment is required. In the special case of the manufacturer Microelectronica S.A., the situation is even more complex due to the fact that the company is installing its LED production in the basement of a closed-down semiconductor factory where space is limited and humidity a problem. In spite of this, specialists at the Fraunhofer Institute

The new information obtained will be used to optimize factory planning. The engineers at the Fraunhofer IPA are also coordinating all the construction work to ensure that a turnkey LED factory will be ready to go into operation by the end of 2012.

Discussions are presently being held about continuing both the project and the technical alliance with the Romanian project partner: the aim is to conceive and erect a research and production area for OLEDs, i.e. organic LEDs. OLEDs are even cheaper to produce than conventional LEDs. As well as being utilized as a display for screens and mobile phones, an excellent future for OLEDs as a light source is also anticipated. Through the use of EU structural funds, a decisive advantage can be created for the EU core country compared to other regions in the world. ●

## Clean LED production



for Manufacturing Engineering and Automation IPA in Stuttgart are currently planning how to achieve optimum conditions for a LED production. Planning the cleanrooms is only the first of many steps to be taken. Thus the Fraunhofer team is also developing strategies to set up a research line for process optimization.

Fraunhofer Institut  
Produktionstechnik und  
Automatisierung (Fraunhofer IPA)  
Department Ultraclean Technology  
and Micromanufacturing  
Head of Department  
Ultraclean Technology and  
Micromanufacturing  
Dr.-Ing. Dipl.-Phys. Udo Gommel  
Nobelstrasse 12; 70569 Stuttgart  
Tel.: +49 (0) 711-970-1633  
Mobile: +49 (0) 17 55 72 76 98  
Fax: +49 (0) 711-970-1007  
e-mail: gommel@ipa.fhg.de  
www.fraunhofer.de  
www.mikroproduktion.de  
www.technische-sauberkeit.de  
www.ipa-csm.com  
www.ipa-qualification.com