LED module market:
Everyone wants a piece of cake...
LED Lighting Module Technology, Industry and Market Trends 2015

LYON, France – December 4, 2015: “The choice of the right LED\(^1\) lighting module technology depends on the application and its requirements,” announces Yole Développement (Yole). Indeed LED lighting module becomes a key step in the development of lighting solutions. According to Yole’s latest technology & market analysis, LED Lighting Module Technology, Industry & Market trends (2015 edition), the value is today mainly located at the module level...

Yole’s analysts estimate that the open LED lighting module market including flexible LED strips will nearly reach US$3 billion in 2015 and will grow to more than US$10 billion by 2020. Yole’s market metrics take into account mid- and high-power modules, COB\(^2\) and flexible strips sold on the open market.

The “More than Moore” market research and strategy consulting company, Yole proposes today a comprehensive survey dedicated to the LED module technologies, markets, applications and associated limits. It also details the main functions and integration into lighting systems. This new Yole’s report describes each LED module type. Additionally, it provides insights into the positioning of each module type. Yole’s analysts describe the LED lighting module industry structure, the evolution of the supply chain and future market and technical trends.

This analysis has been performed in collaboration with PISEO, an independent lighting innovation platform. PISEO proposes high added-

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\(^1\) Light Emitting Diode (LED)
\(^2\) COB: Chip-on-Board
value services to the lighting industry, such as consulting, testing lab, and training.

“Many LED lighting modules are currently available, including mid-power and high-power modules”, explains Joel Thomé, PISEO’s General Manager. And he adds: “Mid-power LED modules offer low power consumption, high flux in association to large led count and lighting surfaces whereas high-power LED modules deliver more flux and in smaller LES\(^3\). COB LED modules provide a compromise between size of light, LES, flux power and power consumption.” However they need additional components to give the light effect desired, such as clamp holders and optics. The choice of the LED module technology will depend on an application’s system requirements with regards to power consumption, LES and light flux.

“The main benefits to lighting integrators of using LED modules cover faster product development cycles, less complexity for integration as well as the management of high level parameters, which is directly handled by the LED module supplier,” explains Pars Mukish, Business Unit Manager, LED, OLED\(^4\) and Sapphire at Yole. But the choice of the module requires a deep knowledge and understanding of the three areas: application, technology and system architecture. These factors are highly interdependent. As a consequence, specifications of the main functions of the module, including thermal management, optical design and power supply, need to be carefully studied to ensure the right components and materials are used.

Growth of the LED industry initially came from small display applications and was driven forward by larger LCDs. Since 2012, most companies have been participating in the ultimate application for the LED business, general lighting. Now, for solid-state lighting to grow, the industry expects strong price decreases though development of new LED platforms.

\(^3\) LES: Light Emitting Surface  
\(^4\) Organic Light-Emitting Diode (OLED)
Furthermore, complete standardization of these sub-systems is still difficult as integration of LED modules must follow specific rules in areas such as design and electrical insulation. In this context, the Zhaga consortium has been created to develop guidelines for interchangeability of LED light sources made by different manufacturers. Standardization will further reduce development and maintenance but will also limit the possibility of differentiation between suppliers.

Most LED lighting module suppliers are packaged LED manufacturers that have used vertical integration to capture more value within the supply chain. These players have a strong competitive advantage in terms of mastering the LED binning strategy. However, some other types of players are also involved in this business. They mainly want to diversify their activities and/or define new strategies to support the development of their primary business. They are: LED luminaire, LED driver, optic, connector, heatsink … manufacturers.

Under this new report, both organizations, PISEO and Yole highlight the emergence of flexible LED strips. Flexible LED strips represent a new form of LED lighting module that can also be directly used as LED lighting systems. They were initially developed by Asian manufacturers for the Asian market. But today, they are spreading to other regions of the world. “Such modules allow new applications due to their design flexibility and are mostly driven by indirect lighting applications and high-end applications at the moment”, asserts Pierrick Boulay, Technology & Market Analyst, LED, OLED and Lighting Systems at Yole. “In the future, we expect, at Yole, these modules to continue penetrating indoor lighting applications such as residential lighting, and commercial lighting.”

Yole’s report includes a comprehensive survey of flexible LED strips, describing technology, market and industry trends… A detailed presentation of the LED module report is available on i-micronews.com, LED reports section.
FOR IMMEDIATE RELEASE

Rates: Euros 5,990.00 (Full report - Multi user license).
For special offers and the price in dollars, please contact David Jourdan  
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Pars Mukish holds a master’s degree in Materials Science & Polymers and one in Innovation & Technology Management. He works at Yole Développement as Senior Market and Technology Analyst in the fields of LED, OLED, Lighting Technologies and Compound Semiconductors. In 2015, Pars has also taken on responsibility for developing LED/OLED and sapphire activities as Business Unit Manager at Yole Développement. Previously, he worked as Marketing Analyst and Techno-Economic Analyst at the French Research Center CEA.

Pierrick Boulay works as a Market and Technology Analyst in the fields of LED, OLED and Lighting Systems at Yole Développement. He has experience in both LED lighting and OLED lighting. In the past, he mostly worked in R&D departments for LED lighting applications. Pierrick holds a master’s degree in Electronics from ESEO.

Joël Thomé is the General Manager of PISEO and Sr Consultant Innovation. He holds a Master Degree in mechanical engineering and has 25 year experience in the lighting industry. He spent many years working for Philips Lighting where he held lately various global Marketing and R&D senior management position with a strong focus on Lighting Controls and LED based luminaires. Before heading PISEO he was Associate Director at INGELUX Lighting Consultants. He is an expert member of the CENELEC 34A standardization Committee.

Dr Olivier Andrieu is System Architect and Sr Research and Innovation Consultant. He is in charge of R&D projects and technical consultancy at PISEO. He holds an engineering degree, a Master and PhD. His career allowed him to exercise different responsibilities in R&D in the automotive industry before joining the professional lighting division of Philips Lighting where he was in charge of LED lighting platforms R&D projects. He designed many LED lighting systems.

Companies cited in the report:

About PISEO
PISEO is an independent Lighting Innovation Platform located in Lyon, France. It provides high added value services to the lighting industry in the following fields.

- Consulting: LED technology, system design, optical design, lighting controls, sourcing strategy, standards and regulation, reliability, applications, markets.
- Testing lab: photometrical, electrical, thermal, reliability and safety tests.
- Training: LED Technology, system design, optics, photometry, reliability improvement, standards and regulation.

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About Yole Développement
Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole Développement group has expanded to include more than 50 collaborators worldwide covering MEMS, Compound Semiconductors, LED, Image Sensors,
Optoelectronics, Microfluidics & Medical, Photovoltaics, Advanced Packaging, Manufacturing, Nanomaterials and Power Electronics. The group supports industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to develop their business.

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