



PRESS

FOR IMMEDIATE RELEASE:

LED packaging: new relays of growth are required for LED companies to survive

LED Packaging 2016: Market, Technology and Industry Landscape report – Yole Développement – November 2016

LYON, France – November 29, 2016: Within a highly competitive landscape due to a strong price pressure, most of the LED¹ companies are looking for business opportunities and adopt different strategies of development. Vertical integration, product, application and activity diversification... New relays of growth are required for LED players to survive.

From a packaging point of view, more and more packaged LED manufacturers selected the vertical integration strategy to move towards the module level and add more and more value in their LED components.

Under the new report titled [LED Packaging 2016: Market, Technology and Industry Landscape](#) report, [Yole Développement \(Yole\)](#) reviews the LED industry and market status. The “More than Moore” market research and strategy consulting company Yole, details process flows and related technologies in LED packaging. Yole proposes also a comprehensive analysis of the cost reduction and its impact at the LED packaging level.

According to Yole’s analysts, the packaged LED market represented a revenue of nearly US\$15.7 billion in 2015. This industry should grow to a size of nearly US\$18.2 billion by 2020.

Following the overcapacity caused by the recent LED TV crisis and the entry of Chinese players, industry consolidation was expected to decrease competition and stabilize price erosion. This eventually happened in China during 2014 and 2015, but with unforeseen effects on the overall industry. Indeed, several smaller players went bankrupt and many midsize players have since been acquired, leading to a situation where dozens of companies are having “going-out-of-business” sales. This has triggered strong price decline and, naturally, other LED players had no choice but to match the price trend initiated by the Chinese industry.

¹ LED : Light Emitting Diodes

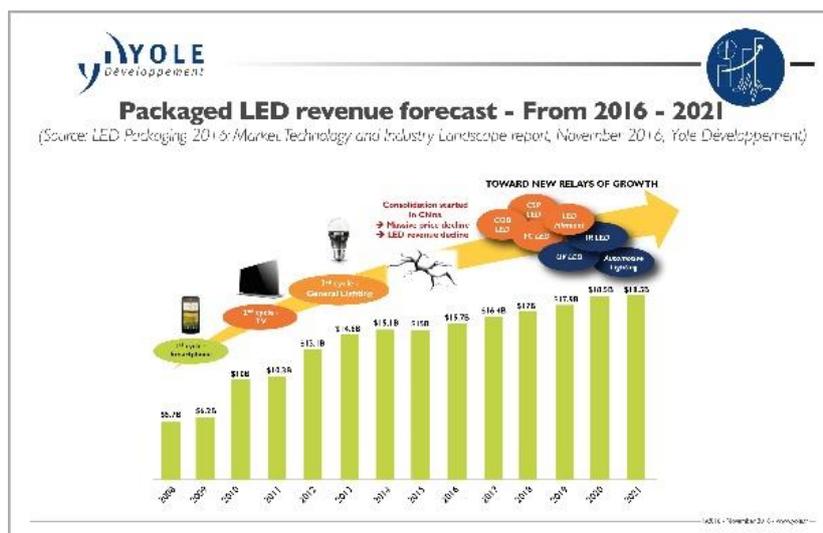
ASP² for low and mid power LEDs declined 30% - 40% in the second half of 2015. In parallel ASP for high power LEDs, though less affected, still declined 20% - 30%. Globally, 2015 was a rough year for the LED industry, with packaged LED revenue declining for the first time ever: from US\$15.1 billion in 2014 to US\$15 billion in 2015.

This decrease was emphasized by lower-than anticipated demand in the LED backlight and LED lighting markets. Moreover, strong evolution in currency exchange rates due to the US dollar's rise contributed to many players' declining revenue.

2016 has seen the industry begin recovering, and packaged LED ASPs have mostly stabilized for highly-commoditized stock keeping units like the low-power 2835 and mid-power 5630.

Higher power grades for lighting applications are seeing increasing demand, but also stiffer competition, which likely will lead to a significant ASP drop as competition intensifies.

"Thus we expect the packaged LED market to show moderate growth in the coming years, reaching US\$18.5 billion in 2021 (CAGR 2016 - 2021: +3.4%)", explains **Pars Mukish, Business Unit Manager at Yole**.



LED packaging market is still a strong opportunity for materials suppliers. Indeed, LED packaging requires specific materials in agreement with application requirements.

Regarding packaging substrates, the high power density of devices induces the use of ceramic substrates, a market that will grow from nearly US\$684 million in 2015 to US\$813 million in 2021, according to Yole's LED packaging report.

Encapsulant/optic materials will follow the same trend: Yole's analysts announce US\$400 million in 2015 and US\$526 million in 2021. This market segment is driven mostly by the increased use of silicone material offering better reliability/lifetime than traditional epoxy material.

² ASP : Average Selling Price

In parallel, with major YAG³ IP⁴ expiring from 2017, the phosphor market will face strong commoditization and price pressure. Consequently, market will only grow from nearly US\$339 million in 2015 to US\$346 million in 2021.

The LED packaging report (2016 edition) provides a comprehensive overview of all LED packaging aspects. Each step of the packaging process flow including equipment and materials used is described, along with associated trends. Associated technological breakthroughs are also analysed.

A detailed description of the LED packaging report, 2016 edition from Yole is available on i-micronews.com, [LED reports section](#).

³ YAG : Yttrium aluminum garnet

⁴ IP : Intellectual Property



For more information about
this report, please contact:

[David Jourdan](mailto:David.Jourdan@yole.fr)

Phone: +33 472 83 01 90

About [LED Packaging 2016: Market, Technology and Industry Landscape](#) report:

- Author:

Pars Mukish holds a master's degree in Materials Science & Polymers (ITECH - France) and a master's degree in Innovation & Technology Management (EM Lyon - France). Since 2015, he has overseen developing LED, OLED, and sapphire activities as a Business Unit Manager at Yole Développement. Previously, Pars worked for several years as a Marketing Analyst and Techno-Economic Analyst at the CEA (French Research Center).

- Companies cited in the report:

3M, A-Bright, ACC Silicone, Accretech, ADT Dicing, Advanced Photoelectronic, ALSI, AM Technology, American Bright, American Opto Plus, AOT, APT, Asahi Glass, ASM Pacific, Assymtec, Autec, Avago, Bayer, Brightled, Brightview, BYD, Cascade Microtech, Century Epitech, Ceramtec, CETC, Chroma, Citizen, CMO, Cree, CS Bright, Curamik, Daitron, Datacon, Delphi Laser, Denka, Dian, Disco, Dominant Semiconductor, Dow Corning, Dowa, Dupont, Dynatex, Edison Opto, Epistar, Epitex, Epoxy Technology, Epworks, ESEC, ESI, Essemtec, Everlight, EV-Group, Evident Technologies, Excellence, Fangda, Fitech, Formosa Epitaxy, Friatec, GE, Gia Tzoong, Golden Valley, Han's Laser, Harvatek, Hauman, Heesung, Heptagon, Hilight, Holy Stone, Huixin... And more.

About Yole Développement – www.yole.fr

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, Displays, Image Sensors, Optoelectronics, Microfluidics & Medical, Advanced Packaging, Manufacturing, Nanomaterials, Power Electronics and Batteries & Energy Management.

The “More than Moore” company Yole, along with its partners System Plus Consulting, Blumorpho and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business.

- Consulting & Financial Services: Jean-Christophe Eloy (eloy@yole.fr)
- Reports: David Jourdan (jourdan@yole.fr)
- Press Relations & Corporate Communication: Sandrine Leroy (leroy@yole.fr)

####