LED lighting module market growing at 22.6% CAGR from $4bn in 2016 to $13.8bn in 2022, driven by mid-power modules

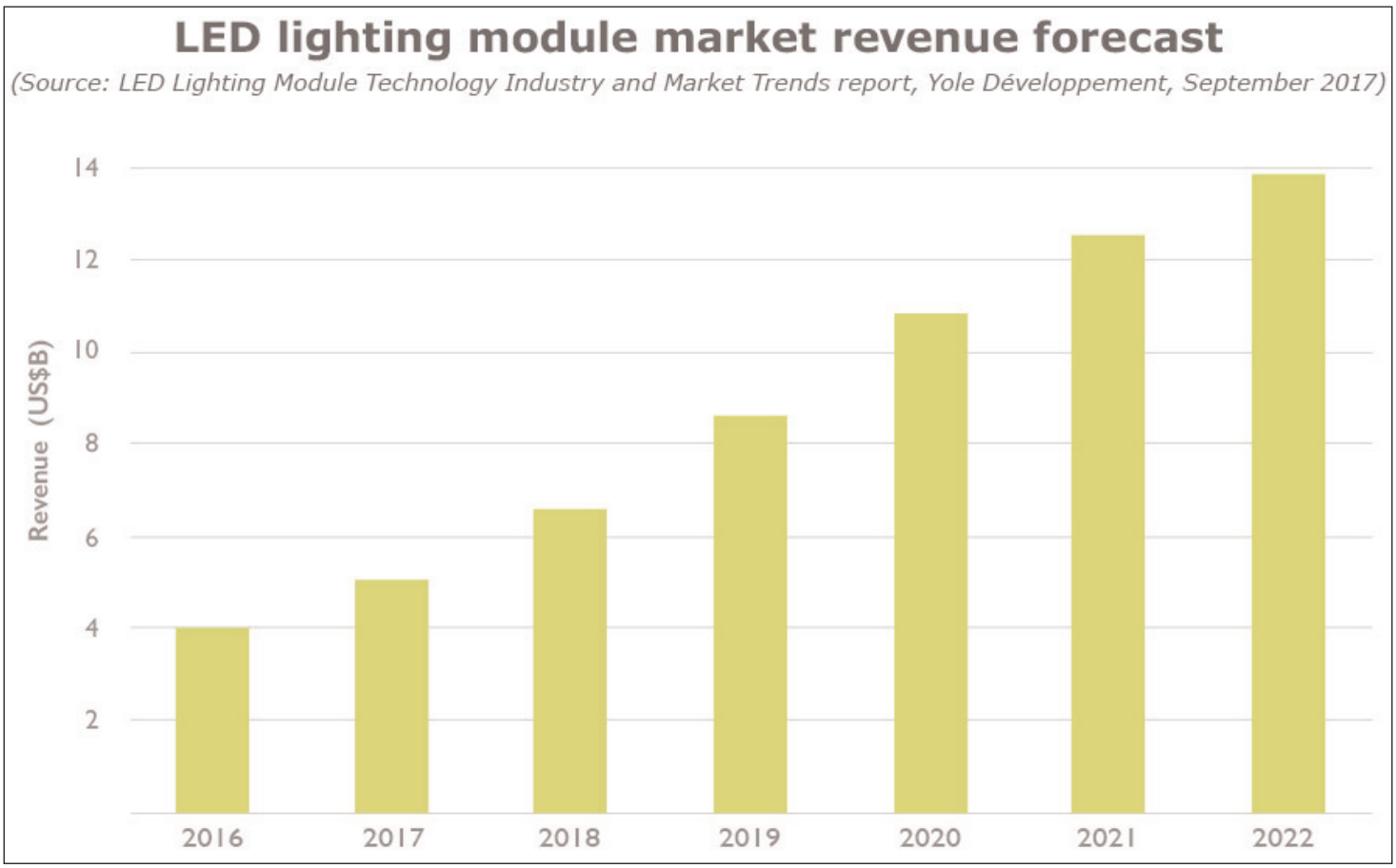
Module makers are seeking higher-margin new applications as general lighting penetration leads to intense price pressure and competition, says Yole.

The LED lighting module market (including flexible LED strips) reached nearly $4bn in 2016 and is rising at a compound annual growth rate (CAGR) of 22.6% during 2017–2022 to $13.8bn, boosted by the emergence of innovative functions and the introduction of new segments including the automotive, smart lighting and horticultural markets, according to Yole Développement's new report 'LED Lighting Module Technology Industry & Market'.

"LED technology is increasingly penetrating general lighting applications, thanks to how easily integrators can use it," says Pierrick Boulay, technology & market analyst, Solid-State Lighting.

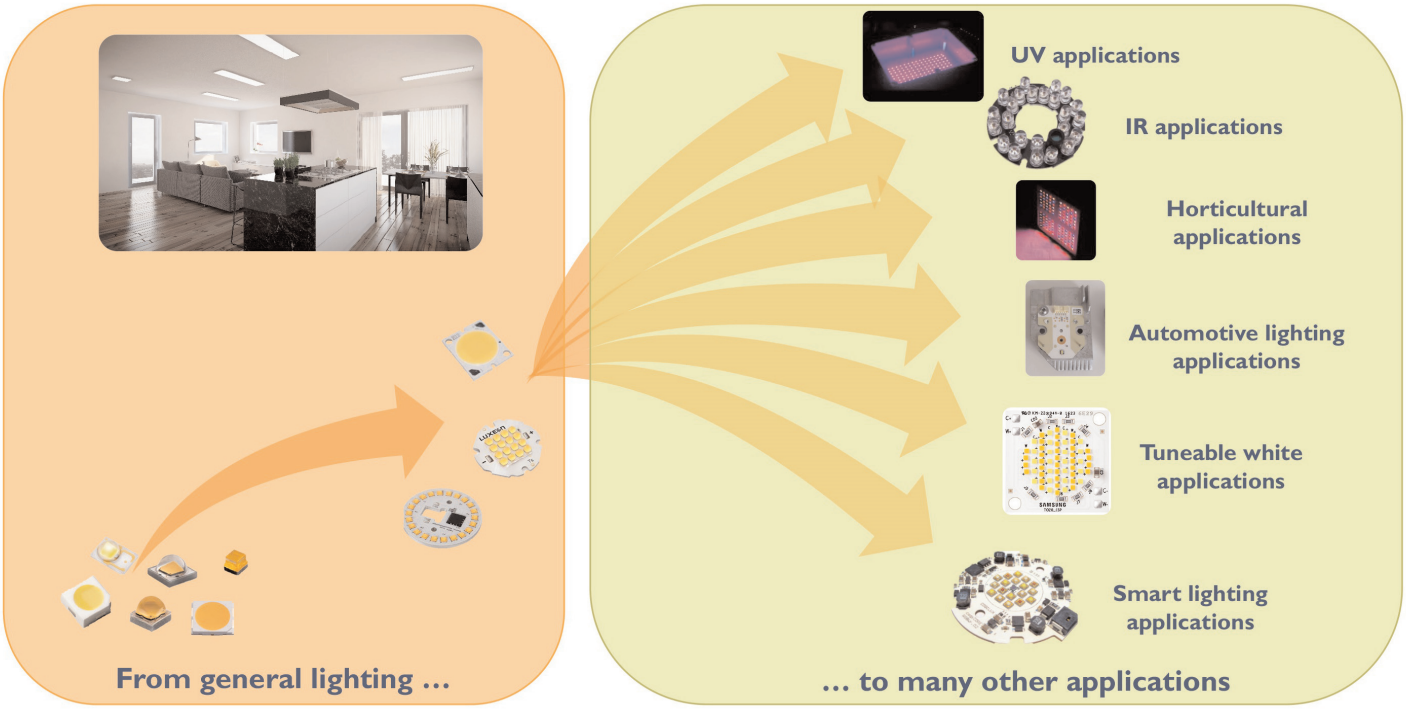
General lighting is not a 'blue ocean market' any more, due to strong price pressure and intense competition between LED players. LED module makers are therefore seeking growth engines, following the example provided by the packaged LED industry a few years ago.

LED companies are hence diversifying their activities and seeking market opportunities. These emerging market segments (including horticultural lighting, automotive lighting and smart lighting) are going beyond visible light into the infrared (IR) or ultraviolet (UV) parts of the spectrum. All of these applications are attractive since they yield much higher profit margins compared with general lighting applications.



From general lighting to many other applications

(Source: LED Lighting Module Technology Industry and Market Trends 2017 report, Yole Développement, September 2017)



The modules used in these applications require a high level of expertise, strong industrial knowledge, and technical skills, says Yole. So, LED module makers targeting these new applications are betting that integrators will not have the competences needed. In addition, high market demand will help them to move higher up the value chain.

"A good example is Everlight," says Boulay. "Initially positioned as a light source supplier, it then started developing COB [chip-on-board] technology. It is now seeking to enter the automotive lighting business, positioning itself as an advanced module supplier."

In parallel, beyond visible light, UV and IR LED modules are increasingly being used, pushed by rapidly growing applications like UV curing and IR surveillance cameras. Large numbers of LEDs are used in each module, and thermal management is crucial for performance, especially for UV applications.

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Driven by mid-power modules, this industry will treble in value in the next five years, it is forecast. Mid-power LEDs can therefore be used in almost all applications. In 2016, mid-power LED modules drove the market, providing 60% of revenue. In contrast, high-power LEDs are used only in applications requiring high luminous flux in a small module. As a result, the number of applications using high-power LED modules is limited and represents only 7% of revenues.

COB LED modules provide a compromise on size, light-emitting surface (LES) area, luminous flux and power consumption. They are therefore suitable for many applications, and lead the overall LED module market in volumes shipped. However, as these modules are relatively easy to manufacture in few steps, the associated average selling price (ASP) is low. Consequently, COB LED modules represent only 20% of market revenue.

In addition, flexible LED strips can be used directly as LED lighting systems, mostly in indirect lighting applications. Such modules can be easily implemented for residential and commercial lighting. Recent developments, like using LED chips instead of packaged LEDs on a flexible substrate, allow much higher efficiency, opening doors to new applications such as linear lighting, says Yole.

Yole participated in the LED Professional Symposium (LpS 2017) in Bregenz, Germany, at which Solid-State Lighting business unit manager Pars Mukish gave a presentation on '2017 LED Industry Update: Highlights and Future trends'. ■

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