Industry Collaborations

Re-innovating LED Illumination

Cities are filled with majestic and brightly lit skyscrapers vying for attention. But on the flipside, if a few out of hundreds of tiny LED chips burn out on a building's architectural façade lighting, the resulting uneven illumination could make it look sloppy and outdated.

A typical LED strip of one meter consists of 100 LED chips that are spaced at equal intervals for even illumination. However, LED chips are notoriously unreliable, and it is common for a few to fail before others, causing irregular illumination along the whole strip. In worst-case scenarios, owners have to replace the whole strip, thus increasing unnecessary cost. Furthermore, LED strips are limited in flexibility, which could affect the appearance of the building, or make it hard to install along curved surfaces.

However, a collaborative project by The Photonics Institute (TPI) and Technolite could make unreliable LED illumination a thing of the past. This partnership aims to solve the problem of LEDs with an innovative solution, which results in uniform distribution of LED light, higher luminance and better flexibility.

Michael Chia, the Managing Director of Technolite, says that TPI has helped his company "realise this dream [of re-innovating LED illumination] much earlier". He explains that while Technolite has the commercial experience to identify products for the market, the company was previously limited by technical and scientific expertise.

"We needed a capable research institute to assist our quest for development," Chia says. With the help of the extensive knowledge and capability of NTU Professors, coupled with the Industry-IHL-Partnership grant from the National Research Foundation (NRF), Chia's dream is fast becoming a reality. The collaboration has been seeded and launched quickly with the LUX Photonics Consortium.

In fact, the LUX Photonics Consortium could pave the way for similar collaborations between local universities and SMEs in the future, giving birth to more home-grown innovations that could change the market, both in Singapore and internationally.

"I am proud of this project because of the close collaboration between academia and the industry," says George Loh from the NRF. "[The project] will benefit not only the company [Technolite] but also many customers, who will have access to newer and better products and services."

This cutting edge technology has huge implications in the architectural lightning market, with projected revenue of USD 6.1 billion in 2020. Its importance is emerging in Singapore, as a way to promote high value-added manufacturing, creating more employment opportunities locally. From key manufacturing technologies to new innovative designs, the possibilities are limitless.

Capital Green, Singapore, a commercial facade lighting project by TECHNOlite Pte Ltd.