

QuarkStar: award-winning waveguide technology

26th February 2023 / John Bullock / Company News, Featured, Latest Products, Manufacturers News, Podcasts, Podcasts (video), Technology

Developments in lighting technology have tended to focus on – no, more than tended, have always been focused absolutely on – light sources. It's little wonder, of course. We have shifted from light created by hot tungsten filaments and excited gas discharge tubes into a world dominated by solid state electronics. what we have not spent so much time thinking about is how we manage to get efficient illumination from the source material – the optical systems. It's time to look at waveguide technology.

Optical system design has always been obliged to follow the form factor of the light source, and if the light source is as big as your fist, then the optical control could be as large as a frying pan. But what happens when the light source isn't much bigger than a full stop . or a line of full stops
I exaggerate, but only slightly.

I first became aware of **Quarkstar** in February of 2018 when I met the management team at Strategies in Light in Long Beach, California. My notes from that meeting said; "This is one to keep an eye on . . ." and that has proved to be the case. A month later, we met again, this time in Frankfurt at Light + Building 2018. It was there that we were shown a prototype for a waveguide solution to light management in a commercial product – the recessed downlight. That product, from Concord Sylvania is now a production item – so this seems to be the ideal time to get some background information on what waveguide technology is all about and how Quarkstar went about producing such an efficient way of controlling distributed light from a luminaire.

I spent a happy half-hour talking with **Wilson Dau** of **Dau Design and Consulting Inc.**, and **Ingo Speier**, President of **Gaia Photonics** who were heavily involved in the development of this waveguide phenomenon.



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