LIGHT GOES SMART

HOW COMPANIES AND INVESTORS ARE PREPARING THEMSELVES FOR THE NEXT WAVE OF INNOVATION ON THE LIGHTING MARKET

LED AS A COMMODITY

If furniture stores start offering LED-luminaires for less than 20 euros, the writing on the wall becomes clear to everyone: LEDs, which, not long ago, were praised to be the future of luminaire technology, are now omnipresent. LED is not the „future“, it’s the present. An estimated two thirds of all luminaires sold in Germany are integrated LED luminaires. As LED retrofits are still showing increasing performance and decreasing prices, they continue to conquer the sockets of traditional luminaires. The production of traditional luminaires has recorded a double-digit decrease; they are even becoming increasingly prohibited: incandescent bulbs now followed by high-voltage halogen lamps.
No more than six years ago, the LED luminaire was considered to be an innovation promising attractive margins. So three years ago it had arrived in the broad middle field and today LED-luminaires are standard, even in the lower price segment. And gone are the attractive margins of the technology thought of as innovative just a few years prior. With an unprecedented effort the lighting industry mastered the transition from traditional to a semiconductor-based lighting technology. However, some were left behind.

Due to a continuous dynamic development of LED light sources, R&D expenses are still at a high. But the margins are under pressure. Quite a few „manufacturers“ are only quasi-manufacturers, who primarily import their product range from China. They create added value by product specification, quality assurance, marketing and sales benefiting from low manufacturing costs in the Far East.

So the obvious question is how an ambitious lighting manufacturer can rise to the top with the next innovation to once again create growth and achieve premium margins.

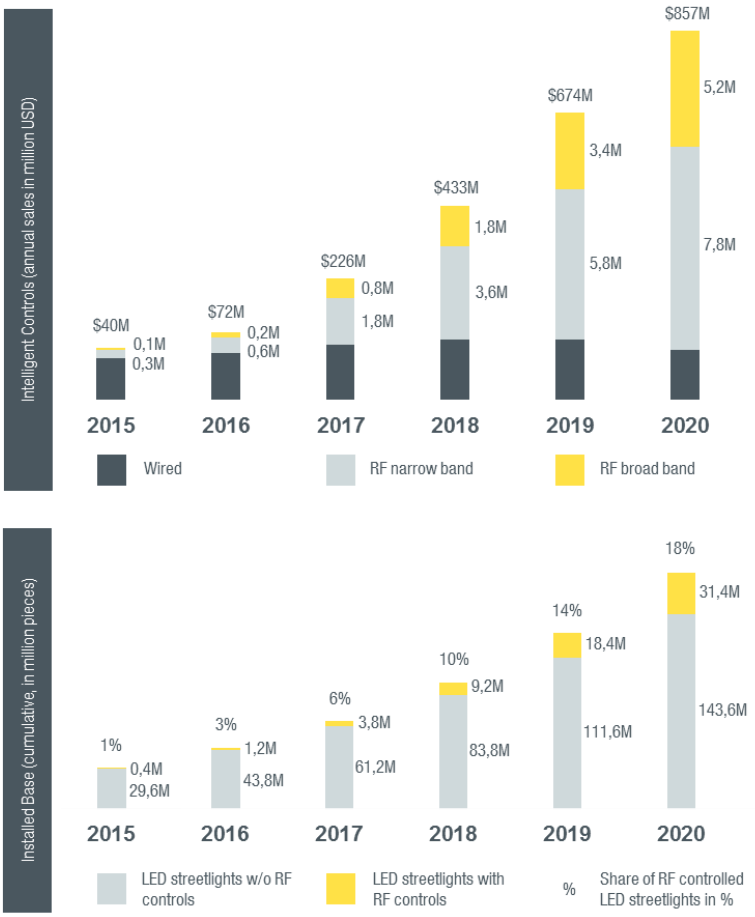
Possible new developments

In the past, the growth momentum within the lighting industry was generally connected to new light sources. This was no different when halogen lights, compact fluorescent lamps or metal halide lamps were introduced. Thus the question arises which innovative light source will follow and once again offer attractive entrepreneurial opportunities?

For many years, high hopes have been vested in OLEDs, organic semiconductors. They provide promising opportunities: arbitrarily-shaped panel light sources can be formed, they are extremely thin and they can even be bent. The large lighting manufacturers, such as Philips and Osram, but also chemical giants Merck and DuPont, have invested several millions into this surely interesting technology of

the future with the help of public funding. In General Illumination, marketable results have been disappointing so far. Except for a few “pilot”-luminaires, they aren’t present on the market. And what is even more problematic, is that it’s hardly possible to tell if this technology will establish itself on the lighting market. Wheter the OLED can achieve a competitive lumen-cost relation und how the problem of its „perishability“ can be solved, are too unsure.

Interestingly enough, a completely different kind of innovation is now entering the lighting industry – digitalization. It pretty much came hand in hand with the LEDs. As LEDs are semiconductors, already carry electronics within them and need electronic drivers, it seems reasonable to make them „smart“ with the already existent intelligence potential within the luminaire. If it is possible, to provide the users with a new, insightful benefit, the lighting industry is at the verge of a major turning point. As always, in times like these, huge challenges emerge while at the same time long-awaited new chances arise.



Graphic 1: Market overview intelligent controls

Sources: Global Smart Lighting Research, Reports and Reports (2015), Smart Streetlights Forecast, ABI Research (2015), Global LED and Smart Street Lighting: Market Forecast (2015 - 2025), NorthEast Group (2015), Philips annual report (2015), Global Smart Light Fixture, Control and Services Market 2015 - 2020, BIS Research Report, Dec. 2014, Aquin & Cie. AG research

What is smart lighting?

Grossly simplified, anything that exceeds the basic switching on and off as well as dimming can be called „smart“. However, the possibilities of intelligent lighting are endless. Typical and already existing applications can be found in areas such as energy-saving: Daylight Harvesting and adjustment of the lighting according to room occupation can be mentioned in this field. Human Centric Lighting (HCL), also known as biodynamic light, is currently gaining a lot of attention. Several examples of usage and field trials prove that dynamic lighting can increase well-being and concentration.

Lighting systems, mentioned in the specified fields of application, which independently regulate and control themselves, are „smart“. But lights can also be part of even more extensive and intelligent systems, as found in the areas Smart Home, Smart Factory or Smart City. In these cases, lights act as the backbone of a communication network, which are used for control, regulation and measurement activities.

The actual revenues achieved with „smart“ lighting systems are still low – their advantages are discussed more than they are actually bought. Nevertheless, many customers want to keep the option open of using them in the future. For the luminaire manufacturers this means effectively dealing with the topic of Smart Lighting. Once again additional R&D-expenditures are necessary; once again it is easier for bigger market players to cope with these tasks.

One typical example is the implementation on urban roads: a sensor attached to the luminaire detects the approaching vehicle at night and the surrounding luminaires increase and then decrease the level of illumination. Today, the communication between the luminaires is often still line-based; however wireless communication is growing at a rapid pace (see graphic 1). The existing data network is able to activate sensors that measure air pollution, create “heat maps”, help control traffic lights and direct traffic in real time. The mere function of lighting moves to the background in comparison to the function of being „Internet of Things“ (IoT), which enables smart lighting systems.

Of course, smart lighting systems are also possible indoors and already being applied. In retail stores, for examples, “smart“ luminaires, which are based on data networks, can register the path of the customer to optimize the presentation of products. In sensitive spaces, the presence of a person or dangerous object can be sensed. Here too, the sky is the limit and as in most cases the majority of the ideas
of usage don’t come up until technology offers a solution.

Graphic 2: Investments in IoT-companies on the lighting market

Company mergers in response to market changes

When it comes to digitalization, three different approaches can be observed in the lighting industry. The first group is represented by young, non-industrial and highly dynamic companies, which focus solely on the intelligent control of lighting and the connectivity of the light points for different IoT-applications, but not on lighting itself. All employees of these companies understand the concept of a protocol pack; however, only a few might know what a Lux is. They are software companies into which investors invest two- to three-digit millions of Euros in order to create IoT-solutions based on light installations (see graph 2). These investors look rather puzzled when asked about the EBIT of their companies. But what they can immediately tell you is the "monthly burn rate" – the necessary capital requirements per month in order to cover losses and investments.

Those lighting companies that already existed before the start of the digitalization wave represent the other two groups: on the one hand, companies actively seeking to create a competitive advantage through the intelligent control of light and the applications that go beyond that; on the other hand, those companies – dominating in terms of quantity – which mostly passively observe the developments as a result of financial restrictions in terms of research and development and hope for "standardized solutions".

The aforementioned IoT-software companies or start-ups are in the spotlight of investors. On a monthly basis, new financing rounds or strategic takeovers are published. The players that take part in bidding processes are diverse, only few traditional lighting players are present. Only those large lighting corporations who recognize that luminaire hardware could become more of a commodity and those who have the necessary resources, are

fighting the information and communication (ICT) industry battle.

To play in the front row of this battle, the necessary financial resources are essential; the cheapest "entrance ticket" probably costs EUR 10m. Only very few lighting players have sufficient spare liquidity for such a risky investment. OSRAM recently acquired a minority stake in the Dutch IoT-specialist Tvilight, a start-up focusing on intelligent road lighting. The American lighting market leader Acuity invested in a Tvilight-like company. Although Acuity has joined Sensity's investment consortium headquartered in Silicon Valley, Verizon, the telecommunications group, has finally taken over the start-up. A comparison of the size: Verizon generates nearly 50-fold sales compared to OSRAM after the spin-off of Ledvance.

Five years ago, the concern was great that the Far Eastern LED-giants could push themselves into the European lighting market. However, the direct customer access of the established lighting companies has proven to be an insurmountable barrier for new LED-suppliers. Now ICT companies such as Cisco, Huawei and IBM have reserved billions to invest into lighting as an important part of a comprehensive Smart City or Smart Building solution. In essence, unlike the semiconductor manufacturer, they do not see themselves as component suppliers but rather search for the direct contact with professional end customers.

In addition to the spectacular transactions in the technology field, numerous strategic takeovers are taking place in the lighting industry. They give the merging companies the opportunity to prepare themselves for new challenges in the light market, such as the digitalization. In addition, it also helps to improve access to markets and product groups, as well as to reduce costs. Due to the enormous fragmentation of the luminaire market, numerous strategic alliances are still to be expected.

With all the disruptions in the lighting industry, more and more entrepreneurs are dealing with the question whether they are willing to carry the full financial risk in this changing market environment all by themselves. After all, entrepreneurs are also investors in their own company. Highly-funded entrepreneurial families, who invest into companies through their family office, would never invest all their assets into a single, medium-sized company – especially not, if said company is active in an industry going through a technological transformation.

The only constant in the lighting market remains change. At the moment, an ending of technological turmoil is not in sight and neither is the takeover- and fusion wave.

Authors:
Aquin & Compagnie AG
Dr. Kurt Gerl – gerl@aquin-cie.com
Martin Kanatschnig – kanatschnig@aquin-cie.com

Address Office Munich:
Schackstraße 1
80539 Munich
Germany

Tel.: +49-(0)89 4135 39-0
Fax: +49-(0)89 4135 39-29
www.aquin-cie.com