

# LED-ing the way forward

by Kelly Lewis on Wednesday, 09 July 2008



Beau McClellan is recognised as one of the world's leading lighting designers.

## **The push for more environmentally responsible technology has lighting designers turning their focus to LED-based fixtures.**

LED technology has come under much scrutiny in recent years in its capacity to be recognised as a holistic lighting solution, but as the drive for environmentally friendly technology continues to grow some lighting designers are pushing their LED agenda arguing it is the way forward as the most energy efficient and reliable lighting solution available.

**Leading international lighting designers, industry experts, architects and key industry decision makers converged on the Dubai International Convention Centre in May for Light Middle East with many of them advocating LED technology had come far enough to be recognised as a light source for the future.**

In this feature, S&S turns the spotlight on the industry's best asking them, "is LED the future of lighting and why?"

McClellan's burgeoning reputation as one of the world's leading lighting designers has been further enhanced in recent years, with the designer winning four Red Dot Design Awards in 2007, and being named runner-up for the Light of the Year Award in 2008.

He is also currently a nominee for the Design Preis 2008. McClellan describes himself as a designer working to change the focus of the lighting industry through the implementing of LED technology.

His designs are well recognised throughout the Middle East and currently he is working on the world's largest LED chandelier, which will be unveiled in Qatar later this year.

"The chandelier I am working on is for an office building for Al Hitmi Property Development," McClellan says.

"The concept of the chandelier was inspired by nature, so I have designed it to be both modern and functional, while still working with environmentally friendly measures.

"The chandelier is the largest of its kind in the world measuring 64 metres long and every single light has its own pixel address. The software I am using has been designed by software engineers in Montreal.

"These designers have undertaken some large projects, including the design of Bon Jovi's LED curtain backdrop for their current tour, which incorporates video technology. The software they have designed for my chandelier employs the same technology, but it allows me to work with the lighting in a very specific way. So I am using similar technology to what's used in stage lighting applications."

## **Why the shift to LEDs?**

The most important technology to impact lighting design in the last six years has been LEDs. The technology represents the future in ecological terms, in terms of its possibilities, in terms of its design, and control and that is the direction I am going with in terms of developing my designs.

**Are companies changing their attitude towards lighting technology?**

I think the new eco-legislation being implemented globally is a great initiative to get companies to pull their socks-up and invest in 'green' technology. There certainly is a shift occurring globally.

**Some experts claim LED technology is limited in its true capabilities. What's your view?**

I tend to disagree. LED technology is constantly improving in terms of its technical capabilities. As far as I am concerned, LEDs represent the future of lighting.

**What benefits do LEDs offer lighting designers?**

I'm a fan of LEDs not only because they are more efficient than typical light sources, but from a design point of view they are small, lightweight and powerful. I've developed a number of large chandeliers in the past and a major dilemma I've encountered is how do you change the light bulbs? With the use of LEDs I don't have that problem because they have a longer life span and are much easier to work with.

**What factors do you consider when designing for the Middle East market?**

I try and give the LEDs as much light and power as possible and to do that I give them heat sinks, which removes the amount of heat they are exposed to.

In the Middle East you have to contend with harsh conditions, such as heat and dust, which makes it essential to enclose the LEDs in a protective ring.

I also consider other environmental factors when developing my designs. For example the mirrors on the chandelier I design have a special anti-static coating so dust won't stick to the surface.

Additionally, we have designed a small robot that runs along the inside of the chandelier to remove any exterior dust.



Lighting Design Alliance (LDA) president Chip Israel believes that while LED technology still has a way to go, it remains at the forefront of environmentally friendly lighting.

I am very conscious about the maintenance issues with certain projects because I am a designer with a background working with a lot of different materials and I consider the key issues facing a project even after installation.

I'm involved from the conceptual design, the manufacturing and installation.

I make sure the maintenance is all worked out from scratch, so I look at the whole project when I design it.

Kai Piippo is the design principal for the leading lighting design practice in Scandinavia.

His previous projects range from the exotic Ice Hotel to the new Swedish embassy building in Washington D.C.

Piippo lectures in universities and at lighting industry events staged worldwide, with a key focus on the environmental impact of lighting design.

"LEDs represent the future of lighting technology because their design is more environmentally responsible,"

Piippo says.

"There are many positive aspects to LED technology; the main point being its energy efficiency.

"However, it's important to remember with LED technology that it must be applied in the right application and not just overdone for the sake of it, otherwise the technology will be abused and the end-result will not be energy efficient.

"Artistically, LEDs allow you to design some really nice installations and you can accomplish outstanding design with them, but it's important lighting designers promote good quality lighting not quantity lighting to make LED use appropriate."

### **What is the future of lighting in terms of commercial advertising applications?**

Well it's no longer just the company sign on the roof; it's now the whole building that has become the basis as the advertising product.

The most published pictures you see of famous buildings are at night time because they look outstanding.

This is because of the architect's knowledge of the lighting required and because of their application and involvement with those projects.

Going forward, I feel these close-working relationships will continue to develop as more people recognise the benefits of lighting being applied in commercial advertising applications.

Light as a concept on buildings and as a permanent artistic installation, is something I have been working to promote.

One of the positive aspects of working with LED technology is that it allows you to create complex designs.

LED technology is not so much about actual light sources, as it is about the software behind it. I think we will see a lot of new commercial applications where people as a guest or user, will be able to change their own environment through sophisticated software enhancements.

### **How does that impact the world of lighting design?**

In the industry there will be a lot of focus on LED technology, but the most focus will be on the software and for us in the lighting design industry, we are the ones pushing things forward in terms of new demands and how to use the technology. The thing is there are so many LED fixtures now on the market. The question is how are we going to best utilise them?

Israel is the founder of LDA - a full-service architectural lighting design firm. He lectures at numerous universities and at national and international conferences.

He has been awarded the GE Award of Excellence, the GE Award of Merit and the Illuminating Engineering Society of North America Award of Merit.

"I think the biggest thing for the future of lighting design will be energy efficiency achieved through the implementation of LED technology.

Being from California we have been dealing with some of those issues for the last 20 years and in the last nine months it has been a major topic of discussion in the Middle East. So the whole key is to make designs that are still aesthetically desirable and functional, but ultimately save energy," claims Israel.

"LEDs are probably the most publicised aspect of energy efficient lighting; it's a great accent source and is colour efficient.

If you are after a blue light source it's much more efficient to use an LED than it is to take an incandescent lamp and colour gel it, because in doing so, you actually block out about 95% of the light coming out of the lamp.



Marwan Hawwa, marketing manager for Martin Professional Middle East.

"We're still not 100% proven on white lighting LEDs, the efficiencies aren't there, nor is the colour rendition, but having said that there is a tremendous amount of effort being put into research and development.

So the strides we have made in the last three to four years I think are going to triple.

Governments are now also keen to invest in developing LED technology."

**What factors do you have to consider when working in the Middle East?**

You face issues in terms of specification, and sourcing the right products can be challenging. Another concern is the severe climate. You have to consider the heat and the dust and employ the right application for each project you are working on.

**Has LED technology proven itself capable of withstanding harsh environmental conditions?**

The problem is everybody talks about LEDs not generating heat, they actually produce a tremendous amount of heat, but it's the way they transmit the heat away from the electronics of the lamp that makes them effective. Many outdoor applications in this region expose LEDs to severe elements, which mean they can overheat easily.

**As LED technology is constantly evolving, is there a chance replacement models in the future won't function in-line with applications of today?**

There are definitely questions surrounding future LED technologies. The issue is will you be able to get the same or similar products in the future? Will designs change when the technology changes?

In five years, is the technology going to be different and what happens when we snap in the updated LED? Is it going to be five times brighter than the other LEDs or will the colour temperature be different? Will you have to replace the whole installation? It's important we find answers to these questions now rather than learn from mistakes in the future.

**Do you think there's a role for legislation in lighting design?**

I think legislation can play a positive role because ultimately our goal is to raise the efficacy levels or the lumens per watts minimum to make lighting fixtures as environmentally friendly as possible.

Both in Europe and the US there is legislation banning the typical incandescent lamp. Additionally there are new movements in the US to raise the efficiency levels of lighting.

**What projects are you working on in Dubai?**

The Lagoons Tower is probably the single most exciting project we are working on right now. The four towers have been fashioned after a candle so the lighting on the buildings will appear like a glow. The design we have used is a really unique shell, which is applied to the curtain wall of the building. Each floor overlaps with threaded glass, so in this case we can actually do a band of LEDs around the building.

Each band will be illuminated, so we can actually twist the lighting on the building, we can chase it vertically, or we can just have a soft glow and then give the crown some special accent lighting, which means it will be 100% LED lighting on the facade.

### **Is LED technology as green as it claims to be?**

There are a lot of different components to LEDs, so while people say there's no mercury in them, there are other processes that are not beneficial to the environment. But, all-in-all it's a great technology and I'm really looking forward to the next couple of years because I think it will really come out of its infancy. What I am really hoping is that the success of LEDs inspire manufacturers of traditional lighting sources to raise their own game.

#### **Elie Battah, regional sales manager for ROBE Middle East**

"When we started using LEDs it was only for RGB decorative lighting. As the technology has improved and become more dynamic, we have been using it in more traditional applications," Battah says. "We will not only focus on LEDs, but we will expand our production of LEDs to cater for market demands. LED technology is constantly evolving and we are now seeing new LEDs manufactured with higher output capabilities."

#### **Marwan Hawwa, marketing manager for Martin Professional Middle East**

"Moving forward Martin is looking to develop more environmentally friendly lighting. A natural extension of this is working with LED technology and solar energy. We have only been developing LED lighting products for the last 12 months, but already we have a very advanced external LED in the market and we are going to have it IP rated in the coming months. Additionally, we will produce customised LEDs for clients," states Hawwa.

#### **Angus Chau, manager IDP lighting Hong Kong**

"We are looking to expand our business into the Middle East and see Dubai as a major centre of development in terms of lighting design concepts. Our products are IP65, which means they are already designed to cope with the weather conditions in the GCC," claims Chau. "Currently we market a 100 watt LED module and we are working on extending that to a 300 watt LED, which will enable us to use LEDs to completely replace outdoor flood lighting."