



KPE

ENGINEERS - ARCHITECTS
FORENSIC EXPERTS

What differentiates KPE from other firms is KPE design professionals are also forensic engineering experts. Our staff use the lessons learned from investigating construction defects and the design errors of others to maximize the quality of KPE's own designs.

April 2016

INSIGHT from Your Trusted Facility Design Team

LED Lighting

Light Emitting Diodes (LED's) are a fairly new form of lighting solution that is quickly becoming desirable for a wide variety of building applications. LED's themselves have been around since the early 60's, but weren't bright enough to be useful for anything besides indicator lights on electronic devices. In the last two decades, advances in electronics and material sciences have paved the way for highly efficient, bright, and increasingly versatile LED lighting fixtures.

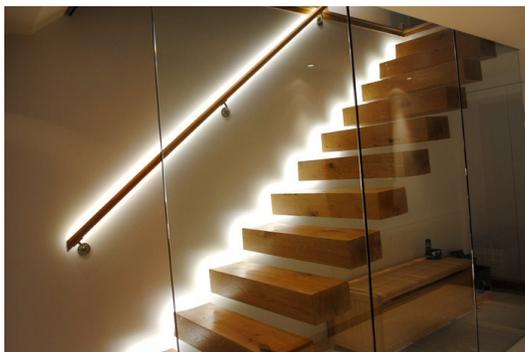


Individual LED's are very small and don't put out much light on their own, but are typically combined together to make lighting fixtures which put out light levels similar to other sources and are flexible enough to mimic the shapes of these sources as well. LED fixtures

can be made to fit into existing incandescent and fluorescent fixtures for retrofits but really shine when shaped to fit the natural contours of the building and create a unique lighting experience. This makes it very easy to create a traditional lighting system using LED's or produce innovative solutions that really stand out.

Advantages of LED's

One reason for the rapid rise of LED technology is their potential to be one of the most efficient forms of lighting to date. Currently LED's have caught up with, and in some cases, surpassed fluorescent lighting in terms of light output per watt of electricity consumed. This is very important, as energy codes require interior building lighting be as energy conscious as possible.



LED's offer a wide range of other advantages besides energy savings which include, but are not limited to:

- LED bulbs do not contain any hazardous or harmful chemicals or gasses that require special disposal or environmental concerns.
- LED bulbs are safer and more durable, as they will not break, shatter or explode.
- LED bulbs are instant on-off with no warm up required, excellent in emergency type fixtures, and have completely silent operation, no ballast hum.
- LED fixtures are easily dimmable from 100%-10% light output. This is vital for new energy efficient lighting control standards.
- Special RGB LED's can be programmed to change colors for accent walls or cove lighting.



Costs

One downside to LED's is that in some cases they are still relatively expensive when compared to other light sources. In common troffer applications they are comparable in upfront cost to traditional fluorescent fixtures and are only much more expensive in less common applications. This has made them less than financially viable in the past and in some situations today. To overcome these high initial costs, LED's have a naturally long life span in the range of 50,000 hours for most fixtures.

LED's Going Forward

The Future of LED technology is on the rise as development of better materials and circuitry shows no signs of slowing down. Their popularity increases every year as they become more energy efficient, cheaper, and even more adaptable to every environment. It's not hard to see LED's becoming a standard light source for almost every application within the next few years. KPE has already designed entire buildings using LED's in order to minimize energy use and become Net-Zero Energy Ready.



For more information, please visit our website at www.kpe-inc.com.