

LED vs Fluorescent lights for industrial and commercial use.

LED lighting and fluorescent lighting are just two of the types of lighting technologies which are available to reduce energy consumption and save on the cost of energy. Both have their own advantages and disadvantages which will be discussed in this article. One key area that they differ in is the area of energy consumption and lifespan. Comparing LED lighting and fluorescent lighting requires taking a good look at key specifications.

Classification

LED lights are light emitting diodes and are also called solid state lights. The light is generated by electrons releasing energy. The LED lights are found either as single diodes or as a cluster of diodes to create shining surface of the light bulb.

Fluorescent lighting comes in two primary types: tube lighting and CFL (compact fluorescent lighting). Fluorescent lights can range in size from tubes multiple feet long to the compact bulbs that are about the size of a standard lamp light bulb.

Life span

Depending on quality and purity of materials used, LED lighting can last anywhere between 60,000 and 100,000 hours of continuous operation before needing to be replaced. During 70% of the lifespan the lumen retention or light intensity stays the same and the warranty usually covers the light intensity factor. The remaining 30 % of life the light quality may deteriorate gradually. Warranty for LED lights varies from 2 to 5 years depending on manufacturer.

Fluorescent lighting can last around 10,000 – 15,000 hours before needing to be replaced. The light intensity however changes after about 3000 – 5000 hours. The ends of the tube become darker and the quality of light may change. Flickering and darkening of light is usually not covered by warranty. You would have to replace the average fluorescent tube 6 times to equal the lifespan of one LED light. Warranty for the tube lights is from none to 3 years. As far as energy efficiency goes, LED light bulbs are about 5 times more efficient than fluorescent lighting, according to the website MegaVolt.

Energy Consumption

LED light bulbs use about half the energy of fluorescent lighting, about 16 watts of power versus 32 watts of fluorescent tube. Both types of light don't produce a lot of heat. In addition to the light source energy is also consumed by driver or power supply of the LED lights and by ballast of the fluorescent lights. LED lights are about 50% more efficient than fluorescent tubes.

Lighting Ability

LED lighting is ideal for directional lighting. Led emits light 120 degree from the face where is installed where fluorescent tubes emit light all around. Depending on the construction of the reflector in the LED light, the light focuses on where the bulb is pointed or is bathing the wider area in light falling into 120 degrees angle.

Fluorescent light bulbs are ideal for lighting up full rooms, Light however is needed only in specific areas when lighting the room with full-size tubes. It is critical to use good quality reflectors to direct the light where is needed the most.

Considerations

Both types of lighting are energy efficient when compared to traditional incandescent bulbs. However, LED technology costs more up front than fluorescent lighting. It is important to find out if there are incentive programs that promote specific light source. These programs can significantly reduce the cost of LED lights and are available usually to support the environmental aspect of lighting.

Over longer time (one year and up) LED lights can save significantly more on energy, maintenance and on disposal fees. **Fluorescent lights contain Mercury which is poisonous and tubes should be disposed by authorised waste management companies.**

Another consideration is the makeup of the bulbs and the voltage on which they can operate. LED bulbs are more durable than fluorescent bulbs due to their compact size and materials used for build. LED's can be powered with 24 or 470 Volts which is important when considering use of solar panels. **Fluorescent lights can not work on low voltage.**

Summary

| Characteristic | Fluorescent | LED's |
|---|----------------------------|-----------------------------|
| Energy consumption | Good | Best |
| Life Span | 10,000 – 15,000 Hrs | 60,000 – 100,000 Hrs |
| Warranty depending on manufacturer | 0 - 3 years | 2 - 5 years |
| Up front cost | \$ 0.67 per watt | \$ 1.33 per watt |
| Cost of installation per fixture | \$90 | \$25 |
| Recyclable | No | Yes |
| Disposal cost | Yes | No |
| Capital asset increasing value of the property | No | Yes |
| Durability | Poor | Good |

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