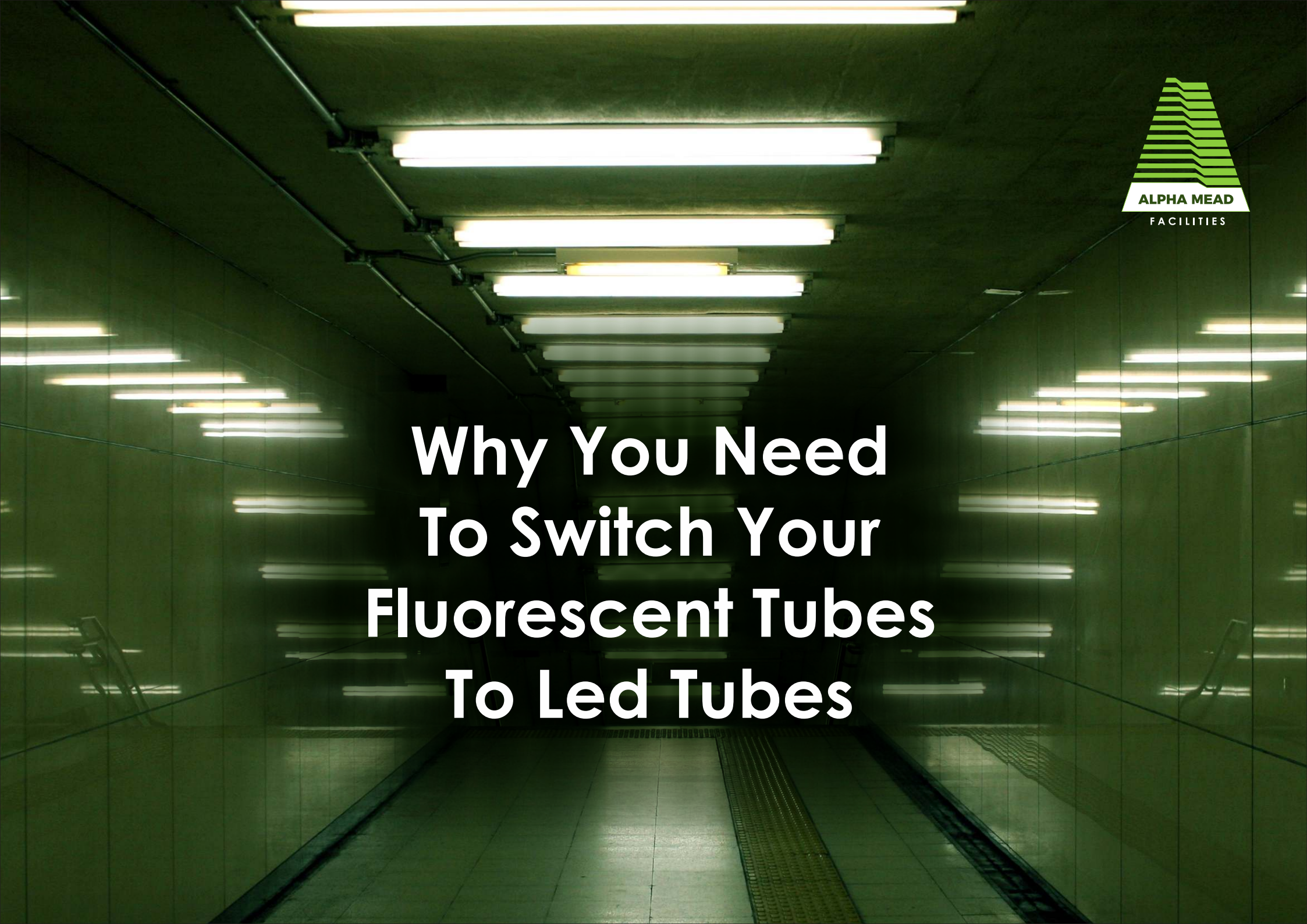

Why You Need To Switch Your Fluorescent Tubes To Led Tubes

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INTRODUCTION

Electric lamps dates their origin to the beginning of the 19th century. Designed from a phenomenon of natural lighting (Sun and Moon), lamps which act as an artificial illumination within and outside a facility (when necessary) have slowly and steadily become an important tool to a man's existence.

Overtime, the initial concept of electric lamps have been improved on by some notable scientists such as; Sir Humphrey Davy, Joseph Swann, Henry Woodward, Matthew Evan, Charles F. Brush, Peter Cooper Hewitt, Ami Argand, Thomas Edison, Georges Claude, Friedrich Meyer and Edmund Germer.

Just like every invention, the design and functionality of lamps have been consistently improved to suit man's need, and one of the result of such modifications is the Fluorescent lamp - which is categorized among discharge lamps because of its principle of operation and composition.

A fluorescent lamp (low pressure mercury vapor) is coated with certain powder which glows when subjected to ultra-violet rays (i.e. it is a low-pressure mercury-vapor gas-discharge lamp that uses fluorescence to produce visible light by exciting mercury vapor through electric current in the gas, which in turn produce short-wave ultraviolet light that causes a phosphor coating on the inside of the lamp to glow).

By virtue of its design specifics and capacity, a fluorescent lamp is a superior and advanced means of illumination when compared to incandescent filaments lamp (regular bulb). This is simply because of the former's ability to conserve energy and produce a brighter output.

The fluorescent lamp comes in different shapes and sizes, the latest been the Compact Fluorescent Lamp (CFL), which is popularly known as Energy Saving Lamps. To boost its usability, most CFL's integrate the auxiliary electronics into the base of the lamp, allowing them to fit into a regular incandescent lamp or light bulb holder.

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THE FLUORESCENT FAMILY
& its shortcomings

Fluorescent lamps are a large family of light sources prominent for emitting visible lighting.

There are three major types of fluorescent lamps: cold cathode, hot cathode, and electroluminescent which all use phosphors excited by electrons to generate light.
A fluorescent lamp converts an electrical energy into useful light much more efficiently than incandescent lamps leveraging on its luminous efficiency of about 50 – 100 lumens per watt.

Despite its major relevance, the fluorescent tube suffered a major setback in December 2007 when President George Bush of the United States of America signed the Energy Independence and Security Act into law, mandating the phasing-out of incandescent light bulbs for the use of energy efficient fluorescent lamps.

To further echo this mandate, a new study revealed that the mercury contained in fluorescent lamps posed a significant cancer risk to facility users. The study also added that fluorescent light bulbs emit high levels ultraviolet radiation – specifically, UVC and UVA rays. In addition to burning skin cells, expert say the radiation could initiate cell death and cause skin cancer in its deadliest form – melanoma.

In every lamp tested, the researchers discovered that the protective phosphor coating of the light bulb was cracked; allowing dangerous ultraviolet rays to escape thereby increasing the ability of exposed skin cells to loose collagen.
In addition to these findings, waste industry officials and environmentalists warned that fluorescent light bulbs which had lit homes for more than a century and assumed to be alternatives to incandescent bulbs possessed poisonous innards which are threat to human health and the environment.
It is pertinent to note that when fluorescent tubes first hit the store shelves several years ago, consumers complained about the loud noise they made, harsh light, bluish color, clunky shape and warm up duration prior to illumination. While these complaints were addressed by both manufacturers and strict government guidelines, one problem hasn't gone away: All CFL's contain mercury - a neurotoxin that can cause kidney and brain damage.

LED bulbs as an alternative to Fluorescent tubes

A better lighting option to the fluorescent tubes is the Light-Emitting Diode (LED) bulbs. LED lamps have a lifespan and electrical efficiency which are several times greater than incandescent lamps, and are significantly more efficient than most CFLs. Other major advantages of LED tubes over fluorescent tubes are listed are;

1. LED's don't contain Mercury like CFLs

A fluorescent lamp is completely harmless while in its tube, however, when an accident occurs and the tube is broken, a small amount of mercury can be released into the surrounding area, thus affecting the health of the people within. For instance, over the past decade, hundreds of workers at lighting factories in China where most fluorescent tubes are produced have suffered mercury poisoning and the effect on them has been devastating with many diagnosed with cancer.

Mercury have also proven to be harmful to children and developing foetus. Hence, experts advise that pregnant women should avoid being within an area whilst a broken bulb is cleared up. In addition, they recommend that CFLs which have reached the end of their life should not be disposed in normal trash, as this may release mercury into the environment if the bulb is subsequently damaged.

On the other hand, LEDs are not associated with the harmful mercury substance.

2. LED is optimal for both cold and hot room temperature

While LED technology is optimal for both cold and hot room temperature, fluorescent lamps only work at their peak when in room temperature environment. LED technology is also much more flexible in the temperatures it can function perfectly, while, fluorescent bulbs are exclusively suitable indoors. Interestingly, research have shown that fluorescent lamps do not perform better than LED indoors. Consumers have also noted that when you replace fluorescent light with LED bulbs, you still get equal benefit, adding that the functionality of LED tubes does not depend on the room temperature.

3. LED technology is easily dimmable

The key word is 'easily'. Quite frankly, some fluorescent lights are dimmable, but not all. For few that are dimmable, they aren't as efficient as dimming a LED lamp. So, if you are in need of dimming capabilities and desire to achieve that effortlessly, LED tubes offer an easier and hassle-free option.

4. LED technology are directional lights

When you hear the words non-directional, what exactly does that mean to you? Well, for lightning purpose, it simply means that such fixture emits light 360 degrees (or in all directions). This causes 30-40percent of all the light emitted by a fluorescent tube to be wasted due to its design, however, with LED which has directional lighting capabilities, you can direct the light to your desired direction without recording any wastage.

5. LED replacement are 30% more efficient

In addition to its numerous merits, LED tubes are very cost effective when compared to fluorescent lamps. While the cost saving percentage might vary depending on the fluorescent products you had installed before and which LED products you are switching to, trends have shown that consumers record a staggering 30 percent reduction in energy consumption with LED tubes.

This savings becomes even more tangible in the long run when you consider the return on investment in using an LED over a fluorescent tube.

6. LED tubes emit less heat

Property owners and facility managers naturally favour technologies that emit less heat, thus the LED option. Considering that fluorescent lights naturally consume more energy, at hotter period when you need to fully power the air condition, the cost of running such facility will be off the roof. This can be quite pricey when your building is large and requires much more energy to cool it down and light it up throughout the day – this really increases operational cost.

7. LED has no adverse health effect

Besides the cancerous effects of fluorescent mercury on humans, the constant use of CFLs at home and in the workplace have proven to aggravate other health-related issues. A 2008 article in the UK Daily Mail Newspaper suggests that some people who use the fluorescent lightening might see an increase in their migraines. Equally, flickering a fluorescent tube lightening can contribute to incessant headache or even a seizure. Other negative health effects of using fluorescent tubes include eye strain, epilepsy, insomnia, stress/anxiety, autism, agoraphobia (anxiety disorder), seasonal affective depression, etc.
However, none of above mentioned health issues have been linked to LED lighting.

8. High environmental risk of disposing CFLs

The principal environmental risk of fluorescent lamp is recycling because there is a possibility of mercury release and its propensity to volatilize from landfill sites is high. Trends have shown that any accidental breakage or damage to fluorescent lamps will result in potential exposure to mercury vapor or dust, because heat and air movement increases mobility of the mercury dust.
In view of this, the United Stated EPA (Environmental Protection Agency) advised on safe clean-up of broken fluorescent lamps which includes but not limited to get people and pets out of the room, shut off the air-conditioning or heating system, opening of windows, wearing rubber gloves and double-bagging the broken pieces though this might not totally eliminate the menace.
In contrast, LED bulbs do not pose any of these dangers to users.

9. LED tubes do not expose the skin to Ultraviolet Radiation (UV)

Some fluorescent lamps emit ultraviolet radiation. The Heath Protection Agency of the United Kingdom in a recent research discovered that exposure to open (single envelope) CFLs for over a period of an hour at a distance of less than 30cm can exceed guideline levels as recommended by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).
Furthermore, the National Resources Canada released a report detailing the possible UV exposure from several types of lamps. According to the report, at 3cm distance, the recommended daily exposure to Ultraviolet radiation for skin and eye damage (if looking directly at the lamp) was attained between 50 minutes and 5 hours depending on the type of lamp.

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