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Fluorescent Lighting

Incandescent lights (traditional light bulbs) have a small strand of carbon which, when electricity flows through it, gets extremely hot, in fact, "white hot" and glows brightly enough to light our houses.

The fact that it gets hot, though, means that a great deal of the electrical energy is converted to heat, rather than light. If all of the energy were converted to light, this would be extremely energy efficient. Of course, this is not possible.

Fluorescent lights work differently. A gas inside the tube is subjected to extremely high frequency electricity and glows. Because it doesn't get very hot, it is 75% more efficient than incandescent light bulbs.

Ballasts

The component of the fluorescent lighting system that generates the high frequency is the Ballast. This device is responsible for maintaining the correct power level (regulation) and creating the correct frequency (frequency generator).

There are two kinds of fluorescent lighting ballasts, Electromagnetic (old type) and Solid state (new type).

Electromagnetic Ballasts

In an office or industrial setting, the standard type of ballast used for the last few decades is called an electro-magnetic type, which, although more efficient, has significant problems.

The frequency they use is 60Hz, or 60 cycles per second. Each lamp switches on and off 120 times per second, resulting in a barely noticeable flicker and a hum that some people can hear and even can become ill, with symptoms including headaches, nausea, itching and burning eyes, tension, eye fatigue, and general fatigue.

The most commonly used electro-magnetic ballast, the rapid-start type, draws a few watts of power when the lamp is switched off, or even removed.

They emit excessive EMF (Electro-Magnetic Fields), which some consider a potential cancer-causing agent.

Electro-magnetic ballasts produced prior to 1978 contain PCBs - a known carcinogen.

Electromagnetic ballasts have a relatively short life span of about 10 years and in the final 30% of their lifespan they require the same amount of energy, but produce far lower light levels.



Solid state fluorescent lighting ballasts

In recent years, solid-state electronic ballasts have become available. This ballast is lightweight, generates very little heat, and operates at about 25,000Hz, rather than the standard 60Hz. This last detail, high frequency operation, effectively eliminates all flicker and hum, and removes any health concerns.

They are highly energy efficient; producing more light while using 25-30% less energy. In many areas, utility companies offer rebate programs, reducing the costs of fluorescent ballasts and making them very economical.

Dimmable electronic ballasts are also available, although most dimmable ballasts do not shut off completely when fully dimmed. Our DC Ballasts feature electronic switching which can be turned completely off.

High frequency operation eliminates bothersome flicker and hum, improving the work environment and saving the company untold hours of lost sick time and worker fatigue.

Very low EMF emissions.

Long life - these ballasts and their fluorescent tubes will double the lifespan of their older counterparts, reducing associated maintenance costs.



T-12, T-8, T-5 Fluorescent Lamps.

The "T" number refers to how many 8ths of an inch in diameter the lamp is. T-12 is 1 1/2 inches in diameter. T-8 is 1 inch in

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diameter. When switching to solid state (or electronic) ballasts, it is also necessary to change to T-8 or T-5 fluorescent tubes, which are a full-spectrum type \bar{n} providing excellent, daylight-like color rendering.



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