

eCurrentlines

from your Account Executive

Interior Fluorescent Lighting Update

One topic nearly all businesses have in common is the need to properly illuminate their facilities. In this issue of e-CurrentLines, we examine interior fluorescent lighting technology.

T-12, T-8, and T-5 Fluorescent Systems

The most common fluorescent lamp used in businesses today is called the T-12 ("12" being the diameter of the lamp in terms of one-eighths of an inch). A T-12 lamp is, therefore, 1½" in diameter. More efficient, smaller diameter lamps (1" diameter) are available and are referred to as T-8 lamps. T-8 fluorescent systems are a good option for companies needing to replace both lamps and ballasts.



The most recent innovation is the T-5 lamp, which is 5/8" diameter and 12 percent more efficient than the T-8. Compared to the T-12, T-8 and T-5 lamps incorporate more costly rare-earth phosphors to coat the inside of the lamp. These phosphors result in more efficient light output. The smaller diameter also allows more usable light to exit the fixture.

Why Use a T-8 or T-5 System?

- Both systems cost less money to operate than the traditional T-12 system.
- Both provide a better Color Rendering Index (CRI) of 75 or higher, compared to the standard T-12 lamp, which typically has a CRI of 50 to 60.
- Four T-8 lamps may be operated by a single electronic ballast, thus reducing the cost of ballast replacement. By comparison, only two or three T-12 lamps may be operated by T-12 ballasts.
- The T-8 produces less heat than the T-12 – and the T-5 produces less heat than the T-8 – therefore reducing air-conditioning operating costs and reducing sizing requirements when installing A/C equipment.
- Both have a long life of 20,000 hours and excellent lumen maintenance.

The table below displays cost comparisons of the new systems versus T-12 systems:

OPERATING COST COMPARISONS T-8/T-5 Systems vs. T-12 Fluorescent Systems

Fixture	Lamp Type	#/Type Lamp	Ballast Type	Watts/Sq. Ft.	Annual Oper. Cost*
2' x 4'	T-12	3 40-Watt Straight, 4'	Magnetic	1.50	\$3,600
2' x 4'	T-8	3 32-Watt Straight, 4'	Magnetic	1.00	\$2,400
2' x 4'	T-8	3 32-Watt Straight, 4'	Electronic	0.80	\$1,920
2' x 4'	T-5	3 28-Watt Straight, 4'	Electronic	0.68	\$1,640
2' x 2'	T-12	2 40-Watt U-tubes	Magnetic	1.50	\$3,600
2' x 2'	T-8	3 31-Watt U-tubes	Magnetic	1.20	\$2,880
2' x 2'	T-8	3 31-Watt U-tubes	Electronic	0.90	\$2,160

*Based on \$0.08/kWh, 3,000 hrs/yr operation in a 10,000 ft. building area with 50 footcandles maintained.

When to Convert to T-8 or T-5 Fluorescent Lamp Systems

If fluorescents aren't used frequently, it may not be cost effective to install new energy-efficient lamps until the old ones have burned out. However, for areas of greater use, potential energy savings may justify installing new lamps immediately.

Fluorescent T-8 and T-5 systems are ideal for use in new construction or renovation when you want smaller fixtures or higher outputs from fewer lamp/fixture combinations. In new construction or renovation, a T-8 system will require fewer fixtures than a T-12, and a T-5 system will require fewer fixtures than T-12 or T-8 systems, reducing project costs.

If you need new fixtures or simply want to replace both lamps and ballasts, consider either T-8 or T-5 fluorescent and electronic ballast systems. New lamps and ballasts can usually be installed in your existing lighting troffers, but sometimes it is cheaper to replace the whole fluorescent fixture. Check with your lighting vendor for more information on ballast and lamp conversion compatibilities.

Energy Efficient Compact Fluorescent (CF) Lamps

Another alternative for energy conservation is to replace existing incandescent or fluorescent lamps with new lower-wattage, energy-efficient compact fluorescents. Generally, the new lamps have lower light output so that the light level is reduced by about 3 percent to 5 percent – a level not usually detected by the human eye. High-efficiency fluorescents can reduce lighting energy costs by up to 75 percent, and last up to 10 times as long as incandescents. The following table shows a few incandescent lamps and the suggested compact fluorescent (CF) replacements.

Incandescent	Fluorescent Replacement (total wattage)
40-watt A-19	9-watt compact
60-watt A-19	13- or 15-watt compact
75-watt A-19	18- or 20-watt compact, or 22-watt circle fluorescent
75-watt reflector	18-watt compact, with reflector
100-watt A-19	28-watt compact, or 44-watt circle fluorescent

Each day that a business uses inefficient lamps means another day that it spends money unnecessarily to operate its facility. By upgrading to energy-efficient lamps, you can enjoy the benefits of lower energy bills, lower maintenance costs and, in most cases, a better lit facility with safer and happier employees.

For more information about making your business more efficient, contact your Progress Energy account executive. This article and other information pertinent to our commercial, industrial and governmental customers are posted on our Web site. To visit, [click here](#).