high performance T-8s.

by Michael Lane LC

Super", "Premium", "Enhanced", "High-Lumen" T8's. What are they? Who makes them? Should you use them, and most importantly what should you call them? High Performance T8's is the correct name.

The basic definition is a lamp that produces 3100 or higher initial lumens and 2915 or greater mean lumens, a Color Rendering Index (CRI) of at least 82 and a rated life of 24,000 hours or greater.

The three major fluorescent lamp manufacturers make lamps that meet these specifications. The GE–Starcoat HL, the Osram/Sylvania–Octron 800 XPS and the Philips–Advantage T8 are the lamps families that comply.

There seems to be two main reasons to use this lamp – higher lumens per watt and longer lamp life.

For the lumens per watt issue, using the mean lamp lumen data (lumens at 8,000 hours) and not including the ballast data (more later on ballasts) the 70 series lamps produce around 83.6 (2675/32) mean lumens per watt, the 80 series lamps produce around 87.5 (2800/32) mean lumens per watt and the "high performance T8" lamps produce around 92.0 (2945/32) mean lumens per watt. This is a 10% increase in light output over the standard 70 series T8, using the same wattage.

Figure 1 below does not fully tell the lamp life story. Using instant start ballasts, which make up between 70% – 90% of the market, on these rapid start lamps may shorten lamp life. Operating lamps longer than the industry standard test procedure of 3 hours per start will increase lamp life (see Fig 2.).

High Performance T8 lamps should be thought of as a system (lamp+ballast). Used by themselves they will produce 10% more light and last 20+% longer than standard T8's, but will save NO energy.

Combined with an industry standard low-power instant start ballast (0.77 ballast factor) that uses 51 watts will have a 12% energy savings while producing almost as much light (96%). Using one of the new high-efficiency ballasts saves even more power (17%).

As an example: A 2-lamp F32T8/7xx at 2675 mean lumens on a standard instant start ballast (0.88 ballast factor) will use 58 watts and produce 4708 mean system lumens. A 2-lamp "high performance T8" at 2945 mean lumens on a high-efficiency low-power ballast (0.77 ballast factor) will use 48 watts and produce 4535 mean system lumens. A 4% reduction in mean lumens but it has a 17% reduction in power with a 20% increase in life.

Fig 1: High Performance T8 Systems Comparison

Manufacturer	Catalog #	Initial lumens	Mean lumens	Life	CRI
GE	F32T8/SPxx	2850	2710	20,000	75 -- 78
Philips	F32T8/TL7xx/ALTO	2850	2710	20,000	78
Sylvania	FO32/7xx	2800	2520	20,000	75
GE	F32T8/XL/SPXxx/HL/ECO	3100	2915	24,000	82 -- 85
Philips	F32T8/ADV8xx/ALTO	3100	2950	24,000	86
Sylvania	FO32/8xx/XPS/ECO	3150	2992	30,000	85

Fig 2: Lamp Life on Ballast Systems

		Lamp life at 3 hours per start		
Manufacturer	Catalog #	Instant Start ballast	Program Start Ballast	Osram PSX ballast
GE	F32T8/SPxx	15,000	20,000	
Philips	F32T8/TL7xx/ALTO	15,000	20,000	
Sylvania	FO32/7xx	15,000	20,000	
GE	F32T8/XL/SPXxx/HL/ECO	24,000	24,000	
Philips	F32T8/ADV8xx/ALTO	24,000	30,000	
Sylvania	FO32/8xx/XPS/ECO	15,000	24,000	30,000

super T-8 resources.

Consortium for Energy Efficiency (CEE)
www.cee1.org/resrc/news/03-05nl/12_t8.html

NationalgridUS
www.nationalgridus.com/non_html/shared_energyeff_super_t8.pdf

ReBuild America
www.rebuild.org/attachments/presentations/EdFacLightingBirleanu03.pdf

Public Interest Energy Research
www.archenergy.com/lrp/advlight_luminaires/4.5_presentation_Nov_2003.pdf

Energy Trust of Oregon
www.energytrust.org/Pages/trade_allies/Ally/030225_Form_190.pdf

LDL Articles - Cutting Edge Fluorescent
www.lightingdesignlab.com/ldlnews/cutting_edge_fluor_rs.pdf

Bonneville Power Administration
www.bpa.gov/energy/n/projects/conserve_augmentation/eso/high_per_fluor_faq.pdf

Energy User News
www.energyusernews.com/CDA/ArticleInformation/features/BNP__Features__Item/0,2584,95134,00.html

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