

SDERC Lighting Display

Hibay Applications: T5HO Fluorescent Hibay

Location: Fixture #10

Technology Description: Many hibay applications use 250 – 1000W standard (also known as probe start) metal halide (MH) lamps and magnetic ballasts, but T5HO hibays can often replace them, cutting wattage about 50% and improving lighting quality and flexibility. Hibay generally refers to applications 25ft or higher, but the technology is relevant for lowbay applications as well. High output T5s have a CRI of 82-86 while metal halides have a CRI of 65 for clear lamps and 70 for coated lamps. Luminaire efficiencies for T5HO hibays range from percentages in the high 80s to low 90s, while MH hibays with common basic grade spun aluminum domes are approximately 75%.

Also, at the end of their life, T5HOs maintain approximately 92% of the initial rated lumens while standard MH lamps lose over half of the initial lumens. T5HO lamps have a mean lumen rating of 4100 at 25°C (77° F) and 4600 at 35°C (this is the optimal operating temperature). The service life of the T5HO lamps is 20,000 hours (with a 3hr start), the same as 350-400W standard MH lamps, but the MH lamps are rated with 10 hour cycles.

Linear fluorescent hibays produce less glare and cause fewer shadows than basic grade spun aluminum dome MH hibays, because the light from linear fluorescent lamps is less concentrated. The display fixture is an Amerillum surface/pendant mount with a luminaire efficiency of 88.9%. It has 4 Philips F54T5/850 lamps and two programmed start Advance REZ-2S54 ballasts with a 1.00 BF.

Applications: Industrial, sports arenas, retail, warehouses. In extreme temperature applications, above 52°C (125°F), T5HO lamp performance may degrade and manufacturer warranties for lamps and ballasts may not apply. For hot applications, it is important to use T5HO lamps that have good thermal designs; because most T5HO hibays are narrow, heat dissipation is a significant potential problem and can make a big difference in light output and keeping ballast case temperature below manufacturer warranty. The program start ballast allows use with occupancy sensors without reducing lamp life. However, in cold applications, such as unheated warehouses, it can take quite a while for lamps to get sufficiently bright; in this case with occupancy sensors, it may be good to have one or two extra lamps in each fixture all controlled by the occupancy sensor or have some of the lamps on, not controlled by the sensor, in each fixture.

Energy Savings: Replacing a magnetically ballasted 400W standard MH hibay, that consumes about 460W, with a 4 lamp T5HO hibay, that consumes 234W, will save 226 Watts. The energy savings amount to \$237 per year (assuming 7,000 hrs/yr and \$0.15/kWh).

Costs: Four foot 4 lamp F54T5HO hibays cost between \$90 to \$200, depending on quantity, quality and options, such as wire cage or lens. T5HO hibays can be hard wired mounted or with hung with a cord and plug

Discussion: Yes, standard MH and also HPS hibays, especially ones with basic grade spun aluminum domes, should be eliminated. T5HO hibays are one good replacement, but T8, induction, or electronically ballasted quartz or ceramic pulse start (PS) MH with high performance domes can often be a better solution for specific applications. For example, ceramic PS MH, with 90+ CRI in a clear prismatic dome, looks aesthetically pleasing and provides uniform upright and can be the best solution for retail. Coated PS MH lamps in clear prismatic domes with light colored ceilings can significantly reduce glare compared to clear MH lamps and metal dome.