

RAW LUMENS vs. COLOR RENDERING

The Light Edge, Inc. designs and manufactures state-of-the-art, energy efficient fluorescent luminaires for use in commercial and industrial environments. Our products use T5HO technology to provide excellent quality of illumination for far less energy than conventional lighting systems.

Many times when T5/HO luminaires are mocked-up next to HID light sources the test comparison criteria involves taking out a light meter and reading the raw foot-candles under each source.

If all lamps compared are new, the HID will usually trump the T5/HO system in raw foot-candles. In the case of a brand new generic 400 watt Metal Halide HID the raw lumens are 36,000 and the Color Rendering Index is .65. A brand new 400 watt High Pressure Sodium lamp has 51,000 raw lumens with a Color Rendering index of .22. Four 54 watt T5/HO lamps produce 20,000 lumens at a Color Rendering Index of .90 (new rating). It cannot be argued that RAW LUMENS are in fact higher in both HID sources than the T5/HO source. **HOWEVER, RAW LUMENS DON'T TELL THE WHOLE STORY.**

The traditional method of measuring the amount of light produced by a source is based on the Photopic Lumen. This method provides the “raw” lumens listed in lamp catalogs. The Photopic Lumen method is based on the eye’s 2 degree central field of vision, which is only 0.02% of the human total visual field.

Following is a direct quote from the **IESNA Manual (ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA)** regarding lumens and the ability to see (visual acuity) under different sources;

COLOR RENDERING. ... agreement exists concerning the psychological effects of variations in lamp color rendering. Lower luminances are required from lamps with good color rendering properties to achieve judgments of brightness, visual clarity, and visual satisfaction, in comparison with lamps having higher poorer color rendering properties. For example ... lamps with color rendering indices of 70, 85 and 100 require about 10 percent, 25 percent and 40 percent lower luminance levels than illuminants with a color rendering index of 60 respectively, to achieve impressions of equivalent brightness.”

Lamp System Comparison Table

Source Type	CRI	System Watts	Initial Lumens	Rated Life	Lumen Maintenance	EOL Lumens	End of Life Lumens/Watt
400W MH	60	465	36000	20000	60%	21600	69
400W HPS	22	465	51000	20000	60%	30600	69
4x F54T5/HO	90	220	20000	30000	96%	19200	87

From a design standpoint the three most important columns are CRI, EOL lumens/watt and rated life.

Raw foot-candles or Visual Acuity plus Energy Savings? You decide.