HID & NOVETE® High Intensity LED

High intensity LED luminaire

NOVETE® high intensity LED luminaire is an ideal alternative to traditional high intensity discharge lamp (HID) for effective saving of operation cost for commercial and industrial applications. In particular, the following characteristics are significant.

Construction

HID lamps are mostly constructed of internal arc tube enveloped by an outer bulb made of glass that operates under high pressure at the temperature of approximately 1100°C.

Unlike HID lamps, NOVETE® high intensity LED luminaire is uniquely designed to integrate with lighting fixture and the thermal management system as an all-in-one unit. It uses either high power LED chips or hybrid COB (chip-on-board) operates under operating temperature of not exceeding 70°C. Thus, it anticipates no risks of burn, fire or rupture as compare to HID lamps.

Luminous Efficacy

The electrical power (watts) convert into light (lumens) is measuring by LPW (lumen per watt). LPW is commonly referred to as key factor for evaluating the economy of lighting applications.

The LPW of NOVETE® high intensity luminaire is found very much higher than that of the traditional HID lamp. The collective LPW data of HID lamp exhibits in figure 1 may be of good reference for decision maker in the proposed LED replacement plan. Nevertheless, operating cost relates to electricity and maintenance could be substantially reduced by 60~75% if NOVETE® high intensity luminaire is adopted.

Life Span

The rated life of HID lamps as specified in most of the lighting catalogues are based on laboratory test under controlled conditions. In reality, its life span is mostly affected by the on/off cycle versus the total on time. Generally, if the burning cycles is shorter

than 10 hours per start, its life could be shorten by 75% of rating according to physical application.

In the case of NOVETE® high intensity LED luminaire,, the rated life is proven stable attributed by its unique design of thermal management system. Under any operating conditions, the junction temperature would be sustainably maintained not exceeding 57°C irrespective of lighting cycles.

Color Rendering

The appealing of light source in visual clarity to various objects is represented by color rendering index (CRI). It is a relative measurement of a scale from 0 to 100 basing on rates of light sources. The higher CRI could render more vibrant colors appearance. For example, a source like a low-pressure sodium vapor lamp which is monochromatic, the CRI is nearly zero, but a source like an incandescent light bulb, it emits essentially black body radiation, it is nearly one hundred. Good CRI (70~80) could make an object looks more appealing whereas excellent CRI (>80) could increase visual clarity and create more pleasing and productive working environment.

Comparison

Ceramic Metal Halide

Power Consumption		Efficacy (lumen)			NOVETE® High Intensity LED		
Rated	System	Mean	Effective	LPW (HID)	Watt	Lumen	Saving
50W	72W	1700	850	11.80	9W	855	87.50%
70W	90W	4100	2050	22.80	21W	1995	76.67%
100W	129W	6400	3200	24.80	35W	3325	72.87%
150W	185W	9500	4750	25.70	50W	4750	72.97%

Quartz Metal Halide

Power Consumption		Efficacy (lumen)			NOVETE® High Intensity LED		
Rated	System	Mean	Effective	LPW (HID)	Watt	Lumen	Saving
1000W	1080W	63000	26500	24.50	280W	26600	74.07%
1500W	1650W	90000	45000	27.30	2x240W	45600	70.91%
1650W	1770W	145000	72500	41.00	3x250W	72200	57.63%
2000W	2140W	17000	85000	39.70	3x300W	85500	57.94%

Multi-Vapor Metal Halide

Power Consumption		Efficacy (lumen)			NOVETE® High Intensity LED		
Rated	System	Mean	Effective	LPW (HID)	Watt	Lumen	Saving
50W	72W	1700	850	11.8	9W	855	87.50%
70W	93W	4000	2000	22.2	21W	1995	77.42%
100W	120W	6200	3100	24.0	35W	3325	70.83%
150W	185W	8600	4300	23.2	45W	4275	75.66%
175W	208W	12500	6250	30.0	65W	6175	68.75%
250W	290W	17000	8500	29.3	90W	8550	68.97%
320W	368W	25000	12500	34.0	130W	12350	64.67%
400W	452W	31000	15500	34.8	160W	15200	64.60%
750W	818W	60000	30000	36.7	300W	28500	63.33%
1000W	1080W	90000	45000	41.7	2x230W	43700	57.40%

High Pressure Sodium

Power Consumption		Efficacy (lumen)			NOVETE® High Intensity LED		
Rated	System	Mean	Effective	LPW (HID)	Watt	Lumen	Saving
50W	66W	3600	1080	27.3	12W	1140	81.82%
70W	93W	5450	2725	29.3	30W	2850	67.74%
100W	130W	6550	4275	32.9	45W	4275	65.38%
150W	188W	14400	7200	38.3	75W	7125	60.10%
200W	250W	19800	9900	39.6	100W	9500	60.00%
250W	300W	25200	12600	42.0	130W	12350	56.67%
310W	365W	23200	16650	45.6	175W	16625	52.06%
400W	465W	45000	22500	48.4	240W	22800	48.39%
600W	670W	81000	40500	60.4	420W	39900	37.31%
750W	840W	99000	49500	56.9	2x250W	47500	40.48%
1000W	1100W	128000	63000	57.3	2x300W	57000	45.45%