**How to Find the Right LED Equivalent Wall Pack to Replace a Metal Halide Wall Pack: Printable Worksheet**

**1.) Determine the Wattage of Your MH Wall Pack**

*Example: I have a 250w MH fixture.*

**2.) Find the Mean Lamp Lumens of Your Metal Halide Lamp**

Use the table below to determine the *mean lamp lumens* of your MH wall pack:

| Metal Halide (MH) Lumens and System Watts | | | | |
|---|---|---|---|---|
| **Lamp Type** | **Initial Lamp Lumens** | **Mean Lamp Lumens*** | **System Watts** | **Lamp Life** |
| 50w MH | 3,400 | 1,935 | 62 | 15,000 |
| 70w MH | 5,600 | 3,842 | 79 | 15,000 |
| 100w MH | 8,500 | 5,785 | 114 | 15,000 |
| 150w MH | 11,000 | 8,837 | 161 | 15,000 |
| 175w MH | 17,500 | 11,925 | 187 | 15,000 |
| 250w MH | 23,000 | 17,883 | 263 | 15,000 |
| 320w MH | 32,000 | 21,887 | 331 | 15,000 |
| 350w MH | 36,000 | 25,650 | 364 | 15,000 |
| 400w MH | 42,000 | 29,800 | 416 | 15,000 |
| *Mean lumens measured at 40% of life. | | | | AccessFixtures.com |

*Example: The 250w MH fixture throws 17,883 mean lamp lumens.*

**3.) Find Visually Effective Lumens (VELs)**

Multiply the mean lamp lumens found in step two by the S/P ratio for the fixture (see following chart for S/P ratios).

*VELs = Mean lamp lumens x S/P ratio*

| Light Source | S/P Ratio |
|---|---|
| 1700K Low Pressure Sodium (LPS) | 0.25 |
| 2100K High Pressure Sodium (HPS) (35w or greater) | 0.40 |
| 2100K High Pressure Sodium (HPS) (34w or less) | 0.62 |
| 2700K Incandescent | 1.36 |
| 3000K Fluorescent (830w) | 1.29 |
| 3000K LED | 1.21 |
| 3000K Quartz Halogen | 1.50 |
| 3500K Fluorescent (735w) | 1.24 |
| 3500K Fluorescent (835w) | 1.41 |
| 3500K LED | 1.41 |
| 4100 Fluorescent (741w) | 1.54 |
| 4100 Fluorescent (841w) | 1.65 |
| 4100K LED | 2.04 |
| 4300K Metal Halide | 1.49 |
| 5000K Fluorescent (850w) | 1.96 |
| 5000K LED | 1.80 |
| 6000K LED | 2.00 |
| 6500K Fluorescent (865w) | 2.20 |
| 6800K Mercury Vapor | 0.80 |
| AccessFixtures.com | |

*Example: 17,883 x 1.49 = 26,646 VELs*

**4.) Find Luminaire Efficacy of MH Wall Pack**
Use the following equation:

*Luminaire Efficacy (%) = Emitted Lumens / Lamp Lumens*

Or, use the following chart:

| Luminaire Efficacy of MH and LED Wall Packs | | | | |
|---|---|---|---|---|
| | | | MH | LED |
|  | | Traditional Wall Pack | 65% | 83% |
|  | | Semi Cutoff Wall Pack | 74% | 62% |
|  | | Full Cutoff Wall Pack | 43% | 93% |
| | | | | AccessFixtures.com |

*Example: The luminaire efficacy of a traditional MH wall pack is 65%.*

**5.) Adjust for Mean Visible Luminaire Lumens**
Multiply the VELs found in step three by the luminaire efficacy found in step four.

*Mean Visible Luminaire Lumens = VELs x Luminaire Efficacy (%)*

*Example: 26,646 VELs x 65% = 17,320 mean visible luminaire lumens*

**6.) Calculate Mean Visible Luminaire Lumens for the LED Replacement Wall Pack**
Divide MH wattage in half and find the closest LED match.
*Example: 250w / 2 = 125w. Closest LED wattage manufactured is 126w*

Find initial light source lumens.
*Example: 126w LED throws 17,724 initial light source lumens.*

Multiply initial light source lumens by 85%.
*Example: 17,724 initial light source lumens x 85% = 15,065 mean lamp lumens*

Use the S/P ratio chart to select the S/P ratio for the LED wall pack. Multiply S/P by the mean lamp lumens.
*Example: 2.04 S/P x 15,065 mean lamp lumens = 30,732.6 VELs*

Use the “Luminaire Efficacy of MH and LED Wall Packs” chart to find the efficacy of the LED wall pack.
*Example: The efficacy of a traditional LED wall pack is 83%.*

Find mean visible luminaire lumens of the LED wall pack by multiplying its VELS by its efficacy.
*Example: 30,732.6 VELs x 83% = 25,508 mean visible luminaire lumens*

**7.) Compare the Mean Visible Luminaire Lumens of the MH and LED Wall Packs**

*Example: The 250w MH wall pack threw 17,320 mean visible luminaire lumens. The 126w LED wall pack threw 25,508 mean visible luminaire lumens.*

**8.) If Desired, Calculate the Mean Visible Luminaire Lumens of Other LED Wall Packs**
Repeat steps six and seven until you find the right LED wall pack for you.

*Example: An 81w LED wall pack throws 16,398 mean visible luminaire lumens, which is reasonably close to the MH wall pack. This may be the best replacement.*