

# Metal Halide: Probe Start vs. Pulse Start



## What's Different?

The difference between Probe Start Metal Halide (MH) and Pulse Start Metal Halide (PSMH) is the removal of the probe from the MH lamp and addition of the ignitor to the PSMH system. This ignitor sends 3kV-4kV pulses to strike the lamp in place of the probe. With this change, lamp manufacturers have been able to increase the pressure inside the arc tube resulting in many performance improvements over MH. With the addition of the ignitor, it is important to insure the lamp sockets are pulse rated to 4kV.

NOTE: Because of the ignitor, re-lamping these ballasts is important as an ignitor will continue to pulse if the lamp has reached the end of its life, is damaged, or is missing from the socket. If untreated, this has the potential to degrade the ballast insulation system over time.

**Pulse start metal halide** systems are used to replace many of the probe start metal halide (MH) systems in the market today. This transition will continue to accelerate as no new MH luminaires between 150W and 500W will be sold. Two of the primary drivers for this shift are improved lamp/ballast performance and legislation.

## Why Pulse Start Metal Halide?

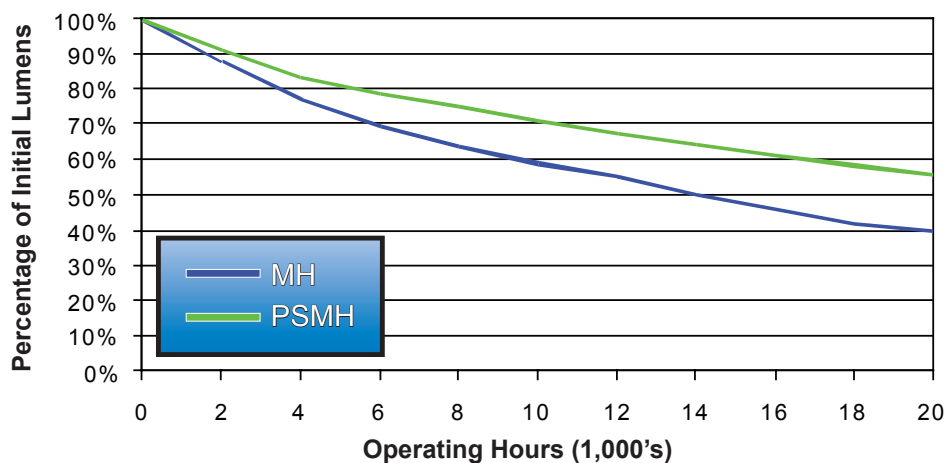
PSMH systems are currently the replacement of choice for the old style MH systems. While these systems are slightly more expensive, they offer many advantages over their life that make them well worth the investment. In addition to meeting the 88% EISA efficiency requirement, these systems offer additional advantages including improved lumen depreciation, increased lamp life, and greater efficiency.

### Better Lumen Maintenance:

- 400W PSMH = 29,820 mean lumens
- 400W MH = 24,000 mean lumens

### Longer lamp life means less maintenance:

- 15kHrs PSMH
- 10kHrs MH



## Greater efficiency means greater energy savings and potential for a reduced luminaire count

Qty of Lamps	Lamp Type	Ballasts	Mean Lamp Lumens	System Watts	Mean System Lumens Delivered	Mean Lumen Comparison	System Delivered L/W	Energy Savings (Watts)	Annual Energy Savings
1	250W MH	Standard C&C	17,000	<b>297</b>	13600	100%	45.8		
1	250W PSMH	P250MLTAC4L	17,000	<b>283</b>	13600	100%	48.1	14	<b>\$5.60</b>
1	200W PSMH	P200ML5AC3M	16,800	<b>233</b>	13440	99%	57.7	64	<b>\$25.60</b>
1	175W PSMH	P175MLTAC4L	13,000	<b>198</b>	10400	76%	52.5	99	<b>\$39.60</b>

Qty of Lamps	Lamp Type	Ballasts	Mean Lamp Lumens	System Watts	Mean System Lumens Delivered	Mean Lumen Comparison	System Delivered L/W	Energy Savings (Watts)	Annual Energy Savings
1	400W MH	Standard C&C	24,000	<b>458</b>	19200	100%	41.9		
1	400W PSMH	P400MLTAC4M	33,000	<b>454</b>	26400	138%	58.1	4	<b>\$1.60</b>
1	350W PSMH	P350ML5AC4L	27,500	<b>397</b>	22000	115%	55.4	61	<b>\$24.40</b>
1	320W PSMH	P320ML5AC4L	25,500	<b>363</b>	20000	104%	55.1	95	<b>\$38.00</b>

Qty of Lamps	Lamp Type	Ballasts	Mean Lamp Lumens	System Watts	Mean System Lumens Delivered	Mean Lumen Comparison	System Delivered L/W	Energy Savings (Watts)	Annual Energy Savings
1	1000W MH	Standard C&C	86,000	<b>1080</b>	68800	100%	63.7		
1	1000W PSMH	P1000MLTAC5M	96,000	<b>1080</b>	76800	112%	71.1	0	<b>\$0.00</b>
1	875W PSMH	P875MLTAC5M	80,500	<b>945</b>	64400	94%	68.1	135	<b>\$54.00</b>
1	750W PSMH	P750MLTAC4M	57,400	<b>825</b>	45920	67%	55.7	255	<b>\$102.00</b>

Savings based on 4,000 annual operating hour @ \$0.10/kWH

System Mean Lumens = Mean Lamp Lumens x # Lamps x est. 80% fixture efficiency

### Additional Advantages of Pulse Start Metal Halide

- Better Cold Starting
- Improved Color Rendering
- Faster Warm-up Times
- Shorter Re-strike Times
- Cooler Operation
- Reduced color shift

### EISA 2007

The Energy Independence and Security Act of 2007 has started to push the transition from the standard MH systems to the more efficient PSMH systems. OEM manufactures are now required to meet efficiency standards of 88% for PSMH and 94% for MH systems with few exceptions. These requirements affect all new luminaires from 150W-500W which will be marked (E). Currently, PSMH systems are the only ones that can meet the efficiency requirement. While this legislation does not directly affect the distribution and replacement business, when ballasts in these luminaires marked (E) need replacing, they must be replaced with compliant ballasts.

\*When conducting any ballast retrofits, attention needs to be given to system compatibility to ensure ballasts will function properly in existing fixtures.

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