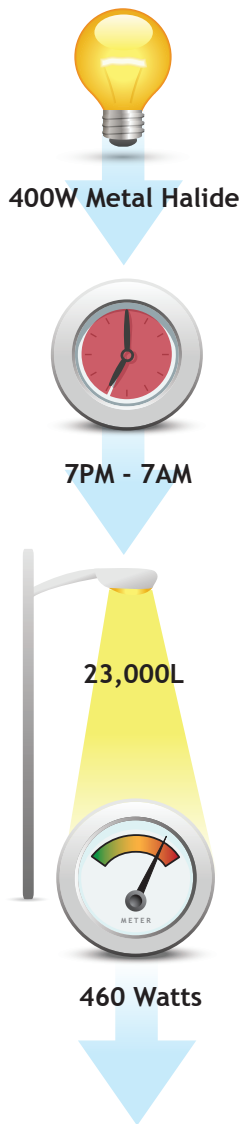




How Elmer Watts Saved \$123 Per Lamp Fixture Per year

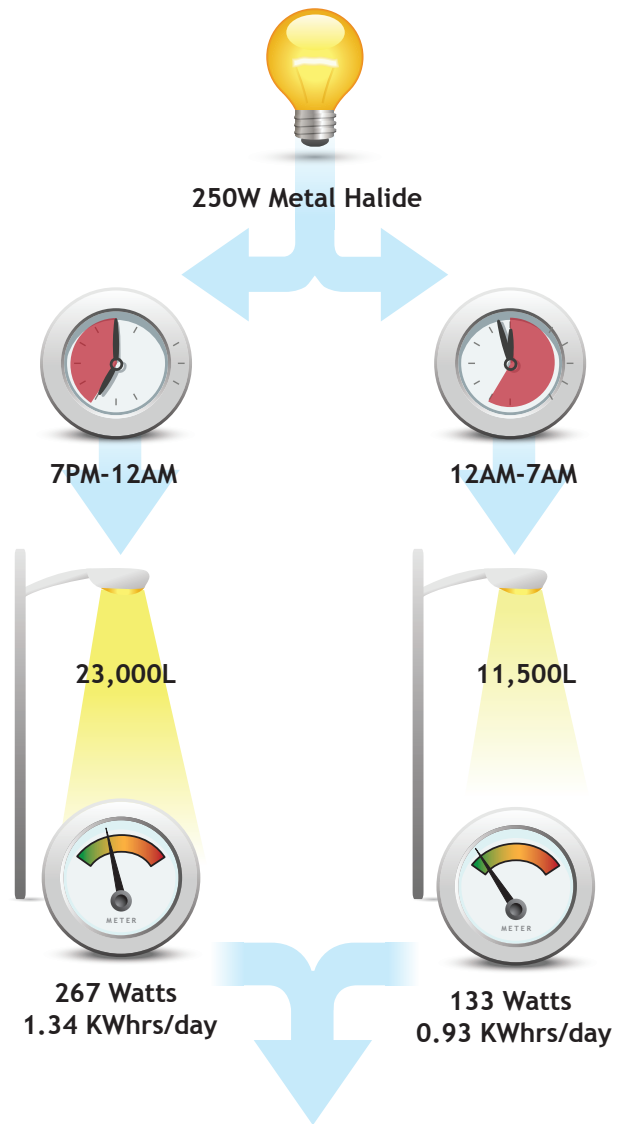
Standard Magnetic Ballasts



5.52 KWhrs/day
LifeSpan:20K Hours

\$214/yr

Empower w/ Programmable Dimming



2.27 KWhrs/day
LifeSpan:30K Hours

\$91/yr

A Savings of
\$123 Per Lamp Fixture

Magnetic Ballasts and Lumen Depreciation - They're Costing You Light, Energy and Money

Magnetic ballasts for High Intensity Discharge (HID) lighting use a low frequency signal that produces lamp flicker and accelerates electrode decomposition. The discharged material blackens the interior of the lamp, rapidly and continuously reduces light output and shortens lamp life.

This phenomenon is called "lumen depreciation". HID lamp manufacturers specify a measurement of lumen depreciation called "mean lumens". Mean lumens, in the case of metal halide lamps, is defined as the light output measured at 40% of the lamp's forecasted life. Forecasted mean lumens for most 400 watt metal halide lamps is about 70% of initial lumen output. Lumen output continues to decline thereafter.

To compensate for expected lumen depreciation of lamps driven by magnetic ballasts, experienced lighting designers over-specify lamp wattages.

Empower's digital ballasts virtually eliminate lumen depreciation and are more efficient than magnetic ballasts. You save money by installing Empower ballasts with lower wattage lamps that maintain desired light output levels for the life of the lamp. And since our ballasts reduce lamp electrode wear, you also extend the life of your lamps - **by up to 50%**.

Finally, since our ballasts are microprocessor based, you can program them to dim your lamps at times when full lighting is not needed - saving still more energy and money.

The story shown on the reverse of this page is based on comparisons of Empower digital ballasts with actual manufacturer's specifications of performance of their lamps with magnetic ballasts.

The story examines annual operating cost for the application shown in the chart at right. The cost of electricity is assumed to be the national average which is \$0.10 per kilowatt hour.



12 hours per day, 365 days per year

- » 23,000 lumens of light output from 7 PM until midnight
- » Reduced (11,500 lumens) light levels from midnight until dawn (approx. 7 AM)
- » Metal halide lighting is preferred because of its high Color Rendering Index (CRI).

Standard Magnetic Ballasts

The previously installed 400 watt lamps and magnetic ballasts provided 33,000 lumens initially but only 26,000 lumens within 22 months and less than 23,000 lumens for the last half of their life. These lamps could not be dimmed and ran at full power from 7 PM to 7 AM each night. Calculating the operating cost:

- » 460 watts (to drive 400 watt lamps per magnetic ballast manufacturer's specifications) X 12 hours per day X 365 days per year X \$0.10 per kilowatt hour = \$201.48/fixture per year.
- » Amortized cost of relamping: Life with a magnetic ballast = 20,000 hours or 4.57 years at 12 hours per day. Cost of a new lamp is \$40. Cost to relamp is \$20 per fixture. So \$60 needs to be spent every 4.57 years to relamp. Amortized, this results in costs of \$13.13 per year.

Total previous annual operating cost of a 400 watt lamp with magnetic ballast = \$214.61

Empower Digital Ballasts

Comparing this with the cost of using Empower digital ballasts with 250 watt metal halide lamps that consistently produce 23,000 lumens and can be dimmed 50% from midnight to dawn:

- » Empower ballasts require 267 watts of input power to drive 250 watt lamps. Cost of electricity = (267 watts X 5 hours per day + 133 watts X 7 hours per day) X 365 days X \$0.10 per kilowatt hour = \$82.71 per year.
- » Amortized cost of re-lamping reflecting expected additional 50% lamp life or 30,000 hours (6.85 years) is \$60 every 6.85 years or \$8.76 per year.

Total annual operating cost - 250 watt lamp with dimmable Empower ballast = \$91.47

Annual savings with Empower is \$123.14 per fixture!

To learn how Empower digital ballasts can improve your lighting and save you money, contact us

(858)536-8711
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