Application Case Study

Champ® VMV LED offers new solutions for old challenges

Lighting considerations for brand new facilities are fairly straightforward. Engineers and Lighting Designers will typically choose the most energy efficient or "green" solution. But what about lighting upgrades installed in older buildings designed well before the push for energy efficient luminaires?

In the example below, a Facility Engineer contacted Cooper Crouse-Hinds to investigate options for upgrading the lighting system in their hazardous chlorine processing facility. The customer's objective was simple: **Improve light levels, reduce maintenance costs, and save energy at the same time.**

Existing Lighting System

The chlorine processing facility was constructed 25 years ago and still used outdated 175W Mercury Vapor Lamps in Class I, Division 2 rated light fixtures. The lamps frequently burned out at various intervals, and re-lamping was difficult and timely because many of the light fixtures were located over large tanks and other equipment.

Workers also complained that the current lighting was insufficient. The facility was lit with (36) pendant mounted, 175W "jelly jar" light fixtures at a mounting height of 24 feet. The fixtures were evenly spaced in the work area.

To save on installation costs, the Facility Engineer wanted any new lighting proposals to re-use existing conduit, wiring, etc. and preferred a retrofit solution.

Champ® VMV LED Solution

As part of the complete package from Cooper Crouse-Hinds, a complimentary lighting layout analysis was first completed to create a model of the facility's existing lighting system to confirm actual light levels. It was determined that the 175W mercury vapor luminaires provided just above 10 foot-candles of light. The specification for the lighting upgrade required that light levels provide an average of 15 foot-candles.

The Cooper Crouse-Hinds Lighting Layout team then replaced the existing fixtures with the same number of new **Champ LED VMV7L** luminaires. Using less than 100 watts, the VMV7L is designed for wide area illumination and for mounting heights of greater than 12 feet. The luminaire provides light output equivalent to many 175W metal halide (MH) fixtures while providing 60K hours of illumination; over 6 times the life of a typical MH luminaire.

Application:
Chlorine Processing Facility

Cooper Crouse-Hinds Product:
98W Champ® VMV LED

The Champ® VMV LED Series provides the same durability and reliability of traditional Champ® luminaires, coupled with the low cost of ownership and energy efficiency of Cooper Crouse-Hinds LED technology.

VMV7L Benefits

- **50% reduction in energy usage**
- **Light levels improved by an average of 25%**
- **Reduced maintenance costs (labor & lamp replacement) from long life LED's**

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Application Case Study

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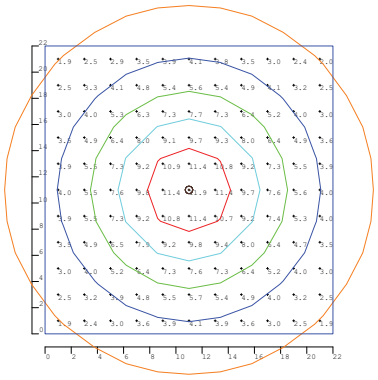
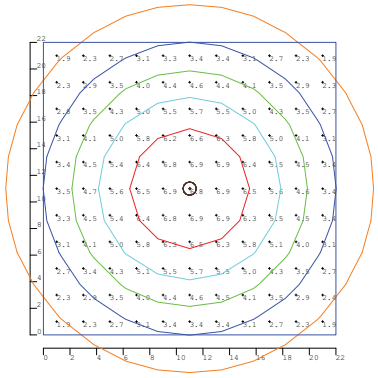
Beam Patterns



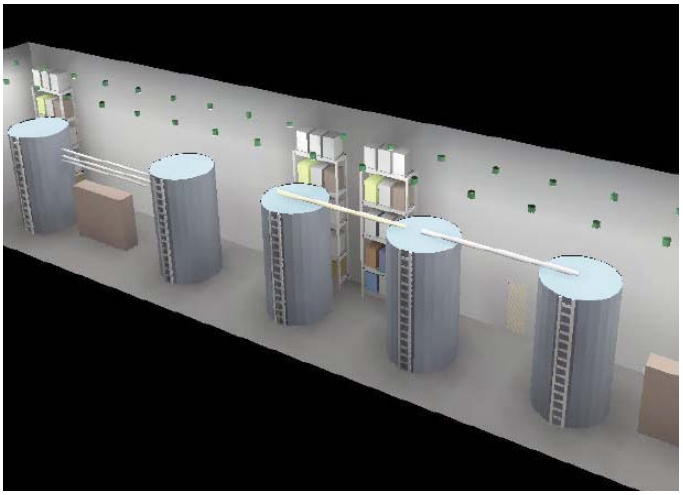
98W Champ® VMV7L



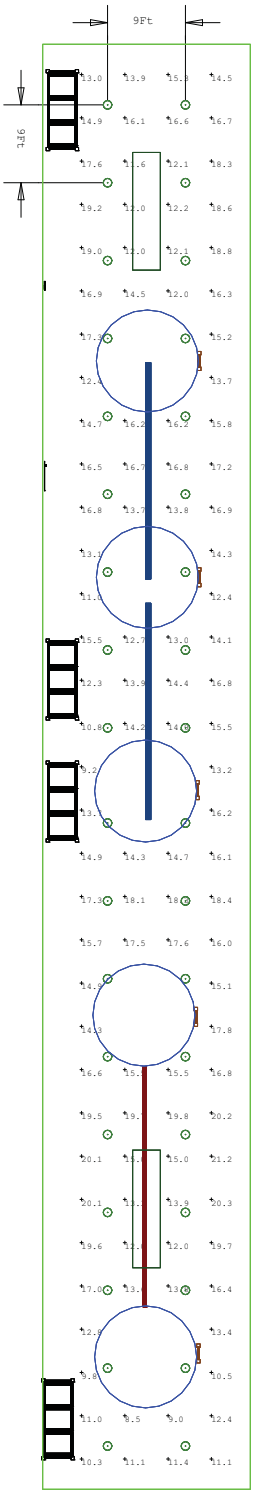
175W Mercury Vapor

The 98W Champ LED VMV7L has a beam pattern that is virtually identical to the 175W Mercury Vapor.

Facility Rendering and Lighting Layout Diagram



The Lighting Layout Team at Cooper Crouse-Hinds provided the customer with a 3D rendering of the chlorine processing facility with Champ VMV LEDs, as well as a point-by-point footcandle diagram



Point By Point Lighting Analysis

Calculation Summary	Units	Avg	Max	Min	Avg/ Min	Max / Min
(36) 175W Mercury Vapor	fc	11.44	16.20	6.30	1.82	2.57
(36) 98W Champ LED VMV7L	fc	**15.04**	**21.20**	**8.50**	1.77	2.49

Comparisons

Champ LED VMV7L	Versus	Mercury Vapor
36	Number of fixtures	36
98	System Input Watts	205
15	Hours of Operation / Day	15
15	Average Foot-Candles	11
$1,262	**Annual Energy Savings ***	$0
50%	Energy Savings %	0%
25%	**Light Level Improvement**	0%
$2,774	**Annual Maintenance Cost Savings ****	$0
$44,355	**Lifetime Savings (Energy and Maintenance)**	$0

* Based on 105 hours/week for 52 weeks/year at $0.06 kWh
** Based on $40.00/lamp; $75/hour labor rate; 2 person; 1.5 hours labor; $6 disposal cost

Interested in how Champ® LED can impact and improve your facility?
Contact us! Our dedicated team of Lighting Engineers will assist you with lighting layouts, analysis and designs.

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