



INDUSTRIAL LED LIGHTING

**MAINTENANCE  
REDUCTION  
REFERENCE GUIDE**

**5**  
YEAR LIMITED  
WARRANTY

Built for engineers, maintenance planners, reliability teams, and operations leaders focused on reducing the true lifecycle cost of industrial lighting across hazardous Oil & Gas environments. In Oil & Gas facilities, lighting maintenance is rarely about the fixture alone. The real cost lives in shutdown coordination, hot-work permits, lift rentals, contractor labor, and operational disruption tied to every service event. This guide identifies where maintenance costs compound across upstream, midstream, and downstream operations, and how long-life LED platforms help reduce interventions, improve reliability, and extend service intervals in hazardous environments.

**5 COST DRIVERS THAT DEFINE LIGHTING LIFECYCLE**

The true economics of industrial lighting are determined long after installation. Across refineries, compressor stations, terminals, and wellpads, maintenance costs compound through repeated service events, shutdown coordination, labor requirements, and access challenges tied to legacy HID systems. These operational cost drivers typically create the largest long-term maintenance burden across Oil & Gas facilities.

<p><b>1</b> <b>Relamping Frequency</b></p> <p>Legacy HID often requires repeated lamp replacements across elevated or hazardous environments. Long-life LED extends service intervals.</p>	<p><b>2</b> <b>Permit Requirements</b></p> <p>Every fixture intervention inside a hazardous location may trigger permit reviews, safety procedures, and operational coordination overhead.</p>	<p><b>3</b> <b>Lift and Access Equipment</b></p> <p>Elevated fixtures require aerial lifts, certified operators, staging, and additional safety coordination. Longer intervals reduce rentals.</p>	<p><b>4</b> <b>Shutdown Coordination</b></p> <p>In many processing environments, lighting maintenance cannot occur during normal operations. Extended fixture life reduces scheduling pressure.</p>	<p><b>5</b> <b>Labor Exposure</b></p> <p>Each relamping cycle may involve electricians, operators, safety personnel, rigging crews, or contractors. Fewer interventions, less exposure.</p>
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**WHERE THE MAINTENANCE COST LIVES**

Maintenance burden is not evenly distributed. The highest lifecycle costs occur where hazardous classifications, elevated mounting, difficult access, vibration, and shutdown coordination intersect.

<p><b>01</b> COST FIT</p>	<p><b>UPSTREAM   Well pads, drilling, separators, vapor recovery, lease facilities.</b></p> <p>Lift access, vibration-induced failure on legacy HID, frequent crew mobilization across distributed sites. ZLM (high mast) · AR (flood) · BL (linear)</p>
<p><b>02</b> COST FIT</p>	<p><b>MIDSTREAM   Compressor stations, pump stations, pipe racks, pipelines.</b></p> <p>Vibration on legacy HID near compressors. Hot-work permits required at every fixture intervention. MR (vibration tolerant) · XR (high output) · BL (linear pipe racks)</p>
<p><b>03</b> COST FIT</p>	<p><b>DOWNSTREAM   Refineries, tank farms, marine terminals, chemical processing.</b></p> <p>Shutdown coordination for rated zones. Lift rentals at process units. Highest permit volume per year. MR / XR (process) · AR (flood) · BL (linear) · EXC at Div 1 points</p>

# Legacy Fixture Conversion

Most Oil & Gas facilities operate a mix of aging HID platforms installed across multiple decades and multiple expansion cycles. As these fixtures age, relamping frequency, vibration failure, warm-up delays, and maintenance coordination costs increase significantly. The effect is most acute in hazardous and elevated environments. The chart below maps common legacy fixture families to recommended Cooper Lighting Solutions LED conversion paths.

## 01 / LEGACY HID TO LED CONVERSION

Legacy fixture	Where it lives	Nemalux LED fit	Conversion benefit
Crouse Hinds Champ FMV / VMV (HID)	Refinery walkway, tank farm pole top	Nemalux MR	Retrofit through existing hood. No conduit work. Factory-tunable lumen output.
Crouse Hinds EVF / EVA	Control panels, separator vapor	Nemalux XR or MR	Fewer fixtures cover the same area. Ends quarterly relamping cycles in Div 1.
Crouse Hinds Pauluhn 4-ft	Class I Div 1 vapor zones	Nemalux BL or GS	Direct linear replacement. Lower lifetime cost on rated linear runs.
Crouse Hinds N2L explosion proof	Class I Div 1 process points	Nemalux EXC or BL	Higher output. IP66 standard. Eliminates HID warm-up cycles.
Killark VML series (HID)	High output, loading racks	Nemalux XR	Modular driver. Service at module level, not full fixture replacement.
Legacy 1000W HID high mast	Drilling crown, lease floods	Nemalux ZLM	Fewer fixtures, higher lumens per pound on the pole.

## 02 / SERVICE INTERVAL COMPARISON

Metric	Legacy HID	Nemalux LED	What it means
Lamp / engine life	10,000 to 20,000 hr	50,000+ hr	Service interval extends beyond a typical turnaround cycle.
Warm-up to full output	10 to 20 minutes	Instant	No restart penalty after a momentary loss of power.
Cold-start capability	Degrades below -20°C	BL to -50°C, MR to -40°C	Reliable start in upstream Canada, Alaska, and northern winters.
Vibration tolerance	Fails near compressors	MR rated for vibration	Avoids early failure at midstream compressor stations.

### GOOD TO KNOW

The **Top Hat Retrofit Adapter** allows Nemalux fixtures to install directly into existing Eaton Crouse Hinds hoods without disturbing conduit, mounting infrastructure, or junction boxes. For facilities operating under tight shutdown windows, this helps reduce hot-work permit requirements, commissioning scope, labor hours, conduit modifications, and installation downtime during turnarounds.

# Maintenance ROI By Application

The operational value of LED conversion varies significantly by application environment. Facilities with elevated mounting heights, hazardous classifications, vibration exposure, distributed assets, or shutdown-sensitive operations often see the greatest lifecycle maintenance reduction from long-life industrial LED systems.

Application	Where ROI compounds	Cooper Lighting Solutions fit
<b>UPSTREAM</b>		
Drilling crown and lease floods	Fewer fixtures, fewer total interventions	Nemalux ZLM (high-mast modular)
Wellpad and separator deck	Distributed sites, crew mobilization cost	Nemalux BL, AR, MR
Tank vents and vapor recovery	Permit volume in Div 1 (AHJ confirms)	Nemalux EXC (only Div 1 option)
<b>MIDSTREAM</b>		
Compressor stations	Vibration-induced failure cycles	Nemalux MR (vibration tolerant)
Pipe racks and pipeways	Elevated linear runs, lift access cost	Nemalux BL (linear), MR, NL
Pump stations and terminals	Hot-work permits at Div 1 points	Nemalux AR, XR, JR. EXC at Div 1 points.
<b>DOWNSTREAM</b>		
Refining process units	Shutdown coordination, lift rentals	Nemalux MR (low/mid bay), XR (high output)
Tank farms and loading racks	Wide-area photometric, fewer fixtures	Nemalux AR (flood), XR (pole top)
Control rooms and operations	Indoor occupancy, lower failure rate	Metalux UHBS2 (NEMA 4X, IP65 high bay)
Perimeter and access roads	Pole-top relamping cycles	Streetworks portfolio (verify specific model)
Egress and emergency	Battery test labor, code inspections	Sure-Lites (verify specific product family)

## COMMON MISTAKES TO AVOID

- 1 | Evaluating Fixture Cost Instead of Lifecycle Cost.** The majority of industrial lighting cost occurs after installation through relamping events, lift access, permit coordination, shutdown scheduling, and contractor labor. A lower fixture price does not translate into lower operational cost over the life of the facility.
- 2 | Treating Retrofit as a Simple Fixture Swap.** Retrofits that require conduit modifications, mounting changes, or junction box replacement often trigger additional permits, inspections, and commissioning. Preserving existing infrastructure wherever possible reduces turnaround complexity and installation cost.
- 3 | Ignoring Vibration Exposure in Midstream Applications.** Compressor stations and rotating equipment environments are among the most common causes of premature HID failure. Specifying vibration-tolerant LED platforms reduces repeated maintenance cycles.

*Cost ranges and service-interval expectations vary by site conditions, ambient envelope, and operating hours. Confirm with Cooper Lighting Solutions application engineering before final spec.*