Reducing energy and operational costs, while maximizing productivity and safety, are the biggest challenges manufacturing facility owners and managers face.
Choosing the correct lighting system in manufacturing facilities is crucial for the safety, productivity and comfort of employees.

Inadequate lighting cause eye strain, headaches, reduced productivity and poor concentration which can lead to frequent mistakes and accidents.

Not only are proper lighting levels required, the right color temperature and color rendering for each task can contribute to an increase in productivity.

Comparing the average cost per hour of a factory employee versus the cost of a kW h, a gain as small as 1% in productivity beats any kind of energy savings from not having the optimal illumination levels.

Good lighting creates a productive working environment for employees.
Top Performance in Hot Environments

Many factories are semi-conditioned or non-conditioned spaces. As heat rises, hot air gets trapped in the ceiling, and over time, it is common to have ambient temperatures at the mounting height of the light fixture reaching 55°C and even 65°C.

The only way to have a well-lit factory for many years is to install LED fixtures designed and rated for high ambient temperatures.

Our Essentials Series 4.0 provides a nearly constant light output over 10 years, unlike conventional light sources or inferior LED fixtures that lose light dramatically in just a few months.

At the mounting height of light fixtures, the ambient temperature can reach 55°C and even 65°C, which can dramatically reduce the life of a light fixture.
Saving Energy in 24/7 Environments

Nowadays, manufacturing facilities never sleep

Operating 24 hours a day increases capacity and productivity, but upsurges the energy bill from having the lights on all night.

Increase the profitability of your factory with highly efficient LED fixtures and control systems to achieve up to 80% energy savings in lighting.
Reducing your TOTAL COST OF OWNERSHIP

Think twice before buying the cheapest fixtures you see

They may come at an unexpected price, ending up costing as much as three times the initial investment versus spending money on high quality LED fixtures.

Conventional light sources are expensive to operate while cheap LEDs will not sustain the advertised efficacy, life and light output you expect, forcing you to buy again after a short period of time.

Example:

200 fixtures

Lower Energy Bills
with higher energy efficiency

Essentials Series 4.0 needs less wattage than similar light fixtures to deliver the same light output, increasing energy savings.

Reduced Maintenance
with longer lasting LED fixtures

LED fixtures made by Flex Lighting Solutions have a longer life span than conventional fixtures and most competitor LEDs, helping you reduce maintenance costs and time spent replacing lamps, ballasts and drivers.

Total Cost of Ownership Over 10 Years (24/7)

<table>
<thead>
<tr>
<th></th>
<th>HID</th>
<th>T5HO</th>
<th>Flex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>$900K</td>
<td>$800K</td>
<td>$700K</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$0</td>
<td>$600K</td>
<td>$200K</td>
</tr>
</tbody>
</table>

71% lower cost of ownership vs.

62% lower cost of ownership vs.

Benefits of a Well-lit Factory

Higher Productivity
When the right light levels are met, workers experience better visibility and higher concentration, increasing their accuracy and work speed. Light fixtures with too much glare can make workers feel uncomfortable and may cause visual fatigue and headaches.

Improved Product Quality
Manufacturing and inspection tasks involve recognizing shapes, surfaces, and colors in order to successfully compare products and find defects or imperfections. Optimal light levels with good uniformity and high color rendering are required to discern those important details and avoid costly errors.

Safer Machine Operation
Some tasks involve the use of sharp tools; proper light levels with low glare and good uniformity are required to prevent accidents. Flicker-free light sources prevent the hazardous stroboscopic effect that happens when rotating objects appear to be standing still or moving at slow speeds, seemingly safe to touch, but in reality move at much higher speeds which can cause severe injuries.

Accident Prevention
In industrial work environments fall hazards are common due to wet or greasy floors, obstacles in walk paths, crooked steps and irregular walking surfaces. Proper lighting makes those obstacles and hazards more visible, preventing fall accidents.
Responsive Illumination

Lighting On Demand, When and Where Needed

Our LED fixtures with integrated occupancy sensors control lighting levels in unoccupied areas to maximize energy savings. When activity is detected, light levels go up instantly to meet the required illumination for people working in that area.

After a period of inactivity, the sensors turn the fixtures off or dim them to a preset level, achieving additional energy savings and life.

Our occupancy sensors include a daylight function that constantly measures the light coming from other sources and sets the lumen output according to the requirements of each area.

In most factories some areas are often not in use. Lighting control systems ensure proper illumination when and where you need it, increasing energy savings and safety.
**IoT and Industry 4.0 Ready**

Manage your facilities from anywhere with cloud-based systems, collect data to gain insights and optimize your business.

Our LED fixtures can easily connect with IoT devices and building management systems. You can set limits of consumption, create illumination scenes by zones, define minimum and maximum lighting levels, program time schedules, measure activity by area, monitor fixture status, and receive insights that help to optimize your business operations, reduce operating costs and increase productivity.

**Fixtures Integrating your Choice of Controls**

Flex Lighting Solutions is controls agnostic, letting you choose which control system you want us to install in our LED fixtures. Our standard offering includes controls from WattStopper, IR-TEC and EnOcean.

**Maximum Flexibility with EnOcean Wireless Controls**

Reduce infrastructure complexity and installation costs with our LED fixtures equipped with EnOcean wireless controls.

Our fixtures can be ordered with an integrated control module that connects to the EnOcean portfolio of wireless self-powered sensors and switches for maximum flexibility and maintenance-free installations.
Recommended Products

Essentials Series 4.0
LED High Bay with the Highest Performance and Life

- PATENTS PENDING -

Model 6M
6 LED Modules, Long Frame

Lumen Range
43,000 lm to 73,000 lm

High Efficacy
up to 168LPW

Ultra-Long Life
L70 at 309,000 hours

Rotatable Outer Modules
0°, 45°, 90°, 135°

- Aluminum Heatsinks and Wireway -
Lightweight, durable and designed for maximum heat evacuation, allowing ambient temperatures up to 65°C

- Wireless Controls -
Integrated EnOcean Module available as an option

- Knockout for Integrated Sensors -
Occupancy and Ambient Light Detection

- Clear, Frosted and Aisle Lenses available -
Clear and Frosted: Area lighting with high uniformity. Aisle: Directs the light to the center of aisles and to the floor.

- Dust Resistant and Wet Location Rated -
Available as options

- Rotatable Outer Modules -
To optimize the light distribution

- Dimmable Driver -

Other Recommended Models (same features as above)

Model 6MS
21,000 lm to 41,000 lm

Model 4M
31,000 lm to 54,000 lm

Model 4MS
13,000 lm to 27,000 lm

Flex Lighting Solutions
Improved Factory Illumination

The Best Optical Solution for Every Industrial Application

Clear Lenses for Horizontal Illumination of Open Areas
Our Clear Lenses provide the best uniformity in the horizontal plane. Loading docks, work desks, and floor obstacles require excellent horizontal light levels and uniformity to ensure employees can see properly.

Frosted Lenses for Softer Light and Less Shadowing
Our Frosted Lenses reduce glare and improves uniformity, increasing the accuracy of scanners and reducing eye fatigue by creating a more comfortable light compared to other light fixtures.

Narrow Lenses for Focused Illumination
Our new Narrow Lenses concentrates the light down, achieving the highest illumination levels on the floor, and good vertical illumination for narrow aisle racks.

Rotatable Outer Modules
Essentials Series 4.0 feature rotatable outer modules that can be set at 0°, 45°, 90° and 135° allowing customization of light distribution, uplight capability, and flexibility to adapt to future lighting needs in a facility.
Improved Factory Illumination

More Efficient and Better-lit Factories with Essentials Series

Factory Floor Plan.

SPACE CHARACTERISTICS
Size: 100,000 sq.ft.
Reflectances:
- Ceiling 65%
- Wall 50%
- Floor 20%
Ceiling Height: 16.5’
Fixture Mounting: 16.5’
Calc. Plane Height: Floor
Fixture Spacing: 17.5 ft

RESULTS
500 fc average

BENCHMARK: POWER CONSUMPTION AT SAME LIGHTING LEVELS

Essentials Series 4.0
Quantity: 817
Wattage: 66 kW

Fluorescent 4L T5HO 54
Quantity: 817
Wattage: 191 kW

Metal Halide 250 W
Quantity: 817
Wattage: 236 kW

MODEL USED
Essential Series 4.0
ES40P-A1-13K-4MS
Quantity: 817
Lumens: 13,438 lm
Lenses: Frosted

Flex Lighting Solutions
Company: Delaco Integrated Terminals
Partner: Future Energy Group
Location: Woodhaven, MI
Building: Factory, 78,000 sq. ft.

Project: Delaco Integrated Terminals has become one of the largest suppliers of aluminum and steel components for the Ford F-150 trucks in the Detroit-area. Experiencing rapid growth, this manufacturing plant expanded from 16 employees to over 100 in the past three years, which lead to the 85,000 sq. ft. expansion of their plant.

Challenge: Manufacturing facilities running 24/7 experience high energy costs from operating with three shifts a day. At Delaco, like most manufacturing and logistics facilities, the high ceilings were an obstacle to provide a well-lit working environment. Low-light levels created concerns for safety, worker productivity and affect the accuracy of quality control inspections.

Solution: Considering the varied ceiling height and use of space in the expanded facility, Future Energy Group selected 259W and 224W Essentials Series LED high bays as the superior solution to meet Delaco’s lighting requirements. “We selected the product based on the application while understanding their facility’s needs - what is the space going to be used for and how to best accommodate the space with the lighting solution - then choose the right lighting for the long-term” stated Michael Abraham Jr., Co-Founder and President of Future Energy Group.

Key Results

- $200,000 total savings over 10 years
- 56% energy reduction

“When my employees can see what they are doing better, it increases their performance and I have less accidents.”

Jason Crout
Operation Manager at Delaco
Company: Dana Incorporated
Partner: Future Energy Group
Location: Warren, MI
Building: Factory, 1M sq. ft.

Project: In 1940, this facility was built solely for the production of American military tanks then armored vehicles until 1997. Now Dana Inc. is a leader in technology and a top tier automotive supplier. As the type of manufacturing changed so did the machinery and illumination needs.

Challenge: “When we sat down to discuss the different applications with the Dana team, the high temperatures on the manufacturing ceiling and uneven light levels were some of their concerns” shared Michael Abraham, Jr., President of Future Energy Group. This coupled with low light levels that needed to be addressed.

Solution: Future Energy Group selected Flex as the best manufacturer to meet Dana’s lighting and ambient temperature requirements. The best-in-class thermal management of Flex Lighting Solutions LED high bays ensure high performance up to 65°C. The lighting design featured a lighted path of egress that would allow employees to evacuate in case of an emergency loss of power. In total, Future Energy Group replaced 1,150 T8 and T5 fluorescent fixtures with 1,500 Essential Series 4.0 LED high bays.

From day one, since the new Flex high bays were installed, the employees have been really happy and mentioned how bright it is (...) they have increased visibility in their work cells, which improved their performance.”

Paula Zucaro
Engineering Assistant at Dana Inc.

Key Results

- $359,900 total savings over 10 years
- 449,880 kWh annual energy reduction
- 5x brighter
Flex Lighting Solutions is a global manufacturer of innovative, reliable and high-performance LED fixtures for industrial and commercial applications. We help businesses and property managers lower their utility bills, meet energy efficiency targets and reduce their total cost of ownership.

**Pre-Sales Support**
- Design Consulting
- Field Survey Analysis
- Project Design / Fixture Layout
- Specials / Custom Products
- Business Case / ROI Calculation

**Post-Sales Support**
- Helpdesk
- Field Installation Support
- L70 Replacement Warranty
- Fixture Repair Support
- Spare Parts Access

**Why Flex Lighting Solutions?**

**Best Thermal Management**
Our LED fixtures are designed to perform at higher ambient temperatures than others.

**Superior Lumen Maintenance**
Our LED fixtures maintain higher lighting levels over time than other LED products.

**Lowest Total Cost of Ownership**
We provide the best combination of cost, efficacy and life for your lowest total cost of ownership.

**Warranty Replacement**
We stand behind the quality and performance of our products with an up to 10-year warranty.

**Responsive Customer Support**
Our inside sales and technical support teams are experienced to solve all your lighting needs.

**QuickShip Program**
Access to our fastest-moving fixtures. We guarantee your order will ship in 2 business days.