TRULY GREEN SOLUTIONS

APPLICATION CASE STUDY

FLEXOPTIX™ HIGH BAY | BOEING C3PF RENOVATION

HOME OF THE BOEING CST-100 STARLINER

NASA

BOEING

SPACE FLORIDA

APPLICATION CASE STUDY

Truly Green Solutions is one of 350 American companies working across 35 states to reassert America's space travel independence. In collaboration with Boeing, Space Florida, and NASA, Truly Green Solutions supplied aerospace grade industrial LED lighting solutions for C3PF – Space Florida's Commercial Cargo Processing Facility at the Kennedy Space Center.

The Facility:

Formerly referred to as Orbiter Processing Facility 3 (OPF 3), a multi-million dollar renovation project begun in 2013 has reinvented the 30,000 square foot facility as Space Florida's Commercial Crew and Cargo Processing Facility (C3PF), a modern and commercially friendly aerospace facility. The repurposing of this asset is the result of a first of its kind partnership between NASA-KSC, Boeing, and Space Florida whereby the Boeing Company will manufacture and test the company's Crew Space Transportation (CST-100) Spacecraft. The CST-100 capsule will have the ability to transport up to seven passengers to low earth orbit (LEO) destinations including the International Space Station. C3PF is ideally situated for commercial use, with direct access to the 15,000 ft. runway at the Shuttle Landing Facility which lies less than two miles away, as well as close proximity to all commercial, NASA, and Air Force launch pads located at Kennedy Space Center and Cape Canaveral Air Force Station.

- 30,000 sq ft (197 X 150 X 95)
- Two 30-Ton Bridge Cranes with 66 ft max hook height
- Main door is 95 X 35
- Titanium ESD floor

The Challenge:

Provide customized high bay lighting solutions that reduce energy use by at least 55% while generating a 220% increase in overall light (measured in foot candles). Commercial manned spacecraft construction has the world's most rigorous engineering standards and the workspace required specialized high intensity lighting. Truly Green Solutions was tasked with improving delivered foot candles at the work surface from 35 FC average to 85 FC average at a mounting height of 102 feet. The existing 1000W MH High Bays provided about 30-40 foot candles at the work surface of the facility, with even less performance in obstructed areas.

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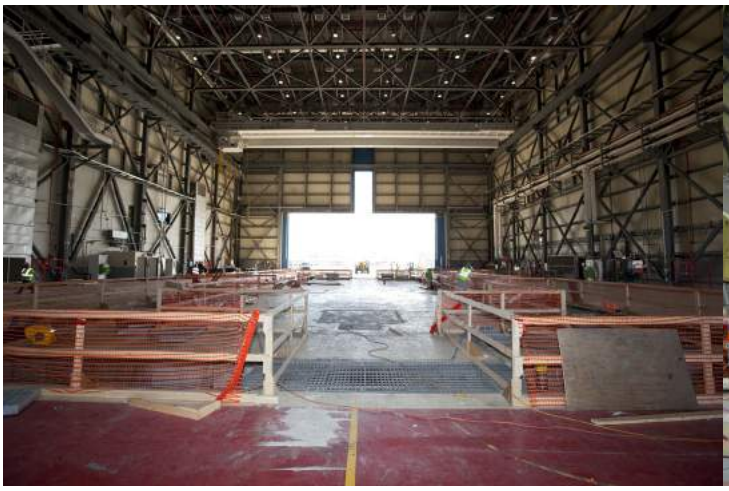


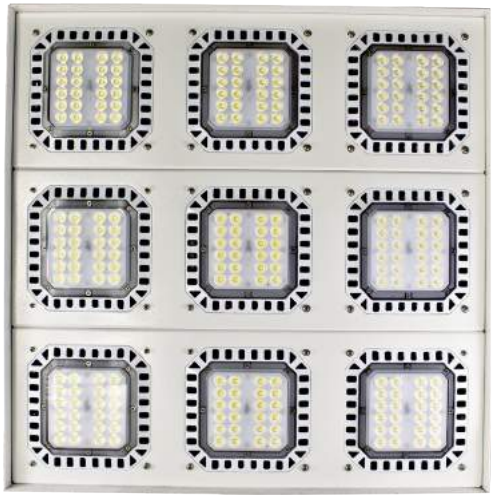
BEFORE: 1000W HPS High Bays

AFTER: 450W FlexOptix™ High Bays

The Truly Green Solution:

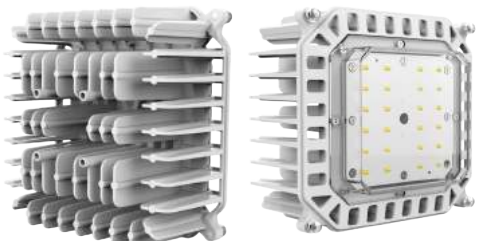
Replace 87 existing 1000W metal halide high bays with the proven FlexOptix 450W LED High Bay with a 45 degree beam angle and special ¾ NPT mount for easy installation with existing hardware. Provide detailed photometric data and application advice as well as after-sales support.

FlexOptix™ 450W High Bay



- Modular construction with advanced thermal management
- 45º Optic lens for high mounting heights
- IP65 rated power coated aluminum housing
- MeanWell award winning power supply
- 44,000 lumens
- 100,000+ hour

FlexOptix™ 50W Light Engine



- 50W Light Engine with Cree XT-E LED's
- IP65 Listed
- Interchangeable optic lenses with 5 available beam angles
- Proprietary cold-forged aluminum heatsink

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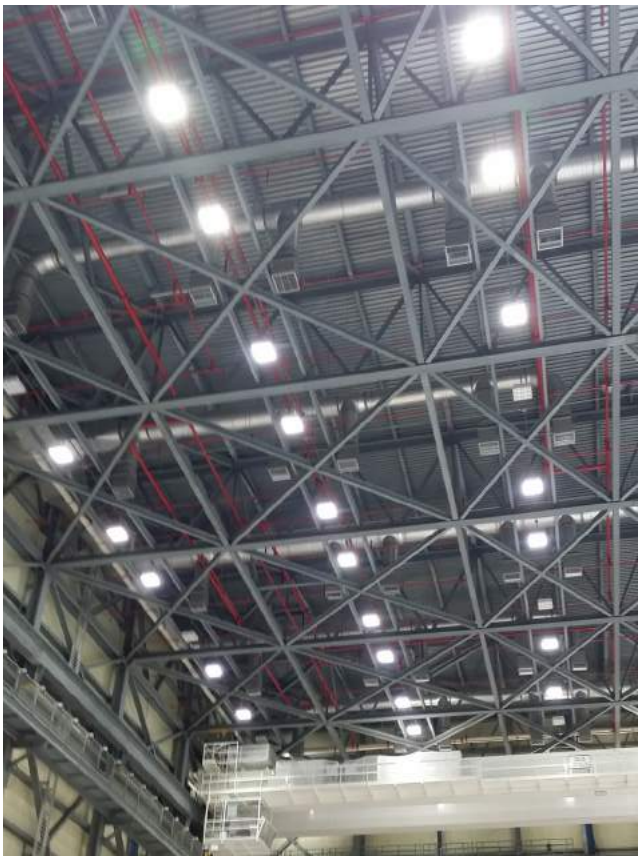
The Installation:

Scheduled for three weeks, the complete installation of all 87 pieces was completed in four days. Mil-Con, who completed the multi-million dollar renovation of the building, credited the fast installation with customized installation instructions, military grade mounting hardware, and knowledgeable application support provided by Truly Green Solutions.



Energy Savings Breakdown - One for One Replacement

1000W MH FlexOptix™ 450W LED

Energy Use Reduction: 58%

Total Wattage Reduction: 55kW

Annual Energy Savings: 240,068 kWh

Maintenance Cost Reduction: 100%

Five Year Operating Cost Savings: $131,209

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Environmental Impact:

This project will reduce carbon emissions by approximately 165.54 metric tons each year, which is equal to the greenhouse gases produced by the following:

Gas Consumed
18,627 gallons

Barbeque Propane
6,897 tanks

Coal Burned
177,808 pounds

Oil Consumed
385 barrels

Passenger Vehicle
394,140 miles

Waste Sent To Landfill
118,666 pounds

BEFORE: 1000W HPS High Bays

AFTER: 450W FlexOptix™ High Bays

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The Testimonial:

"Installing the FlexOptix fixtures was the easiest part of this two year renovation project. We were extremely impressed with everything from the performance, build quality, and even the packaging. The fixtures have raised foot candles to over 100 at the ground with no shadows, which is exactly what we wanted for this project."

Tom "Mule" Pettit,
Construction Foreman, Mil-Con Corporation

"It currently costs $76 million per astronaut to fly on a Russian spacecraft. On an American-owned spacecraft, the average cost will be $58 million per astronaut...all part of our ambitious plan to return space launches to the U.S. soil, create good-paying American jobs and advance our goal of sending humans further into the solar system than ever before."

Charles Bolden, NASA Administrator