



# GENERAL MOTORS RETROFITS ORION ASSEMBLY PLANT WITH STARCO LIGHTING'S TLEDs

*Will Save More Than \$300,000 Annually in Energy and Maintenance*

**G**eneral Motors Orion Assembly plant is a 4.7 million sq. ft. building structure located in Lake Orion, Michigan, about 30 miles north of Detroit. The facility was built in 1983 and is where the Chevrolet Sonic and the Chevrolet Bolt EV are assembled.

More than 5 million vehicles have been built at the Orion plant, which holds the distinction of becoming the first GM facility to receive the Clean Corporate Citizen designation by the state. In addition, it received a U.S. Environmental Protection Agency's Green Power Leadership Award for 2016, recognizing the country's leading green power users for their commitment and contribution to helping advance the development of the nation's voluntary green power market.

As Energy Optimization Leader, Edward Fish is responsible for driving and supporting corporate energy conservation initiatives in GM's manufacturing and non-manufacturing facilities. With linear fluorescent lamps from various manufacturers approaching end of life, Fish and his team performed an extensive evaluation of various tubular LED (TLED) product manufacturers. The company executed a technical review, followed by an on-site product evaluation to assess performance. When all was said and done, Fish selected Starco Lighting of Buffalo, New York after competitive bidding of qualified products.

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**"The business case for the corporate energy conservation project was based on engineering calculations, which demonstrated a simple two-year payback from energy savings," Fish stated.**

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Starco's extensive line of 2, 3, 4 and 8-foot product lengths and wattages ranging from 9W in a 2-foot tube to 36W in an 8-foot tube was first tested in April 2015 at the GM Components Holdings facility in Grand Rapids, Michigan.

DES Electrical Services of Detroit was brought in to perform the retrofit. Gaining access to some areas without impacting production required good communication, planning and coordination with tech support teams, specifically above the robotic welding cells in the body shop.

Work began in September 2015, was done in various phases and was completed in November 2016. Ceiling heights ranged from about 12 feet in office areas to approximately 24 feet in manufacturing areas. The retrofitting of the light fixtures was accomplished mostly during non-production hours, but some work was done during normal business hours. The plant has only one work shift from 6:30 a.m. to 3:30 p.m.

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**"We upgraded areas from linear fluorescent to tubular LED in the body shop and throughout general assembly, material storage, kitting, paint shop, final assembly, trim shop, maintenance areas and administration building office areas," Fish explained.**

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“The Starco lamp results in a 40 percent reduction in energy consumption in manufacturing spaces, and a 54 percent reduction in office areas,” Fish said. “We expect to save just over \$300,000 annually in energy and maintenance costs from this lighting change.”

Contactors on the energy management system serve as master controls for large banks of lighting fixtures throughout the plant. Some areas use occupancy sensors on individual fixtures for improved control, which provide additional energy savings.

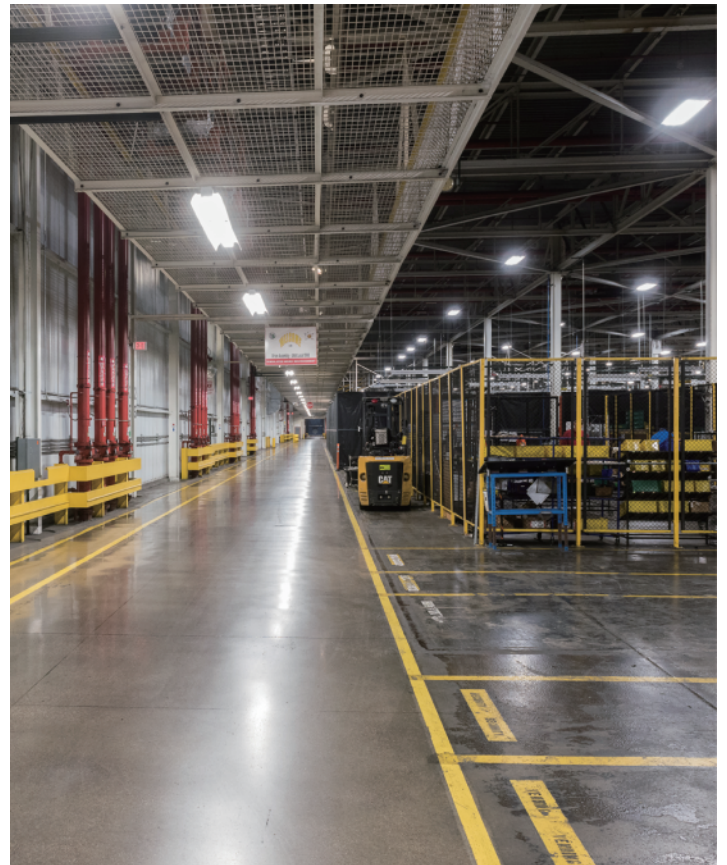
Starco lamps were installed in retrofitted TCP Elite 6 lamp fixtures in the manufacturing space. Starco lamps were also fitted to 2-lamp open task line lights used for line lighting. Office lighting retrofitting was accomplished in 2'x 2' and 2'x 4' troffers.

The only issue with the project was employee feedback that 18W lamps initially installed in the office areas were too bright. These areas were re-lamped with 15W lamps to achieve a more comfortable desirable light levels.

Overall, light levels with Starco LED lamps were consistent with linear fluorescent. Later phases of the project used an improved technology Starco lamp with increased lumen output and higher efficacy. This increased initial light levels from 29 foot-candles to 34 foot-candles and assured that lighting intensities remain adequate even at the end of the lamp's life. The increased light levels from initial provided a safer work environment.

Starco Lighting was one of the first manufacturers approved on the Design Lights Consortium (DLC) product listing with 140 lumens per watt tubes as early as March 2016, before the new DLC standards were released in April of that year.

Starco Lighting products are on the forefront of the technology curve in terms of performance and reliability and are constantly looking at how to deliver cost-effective solutions to the market while never undermining these two important aspects. These tubes are backed with an unconditional 8-year warranty. The shatterproof lamps are designed for the challenges of energy reduction and industrial safety compliance. The polycarbonate circular lensing is shatterproof and doesn't require any extra protection.



Starco's robust LED driver system withstands extensive surge voltage and high ambient temperatures and works seamlessly with Starco's innovative "Fast-Fuse" socket kit for less labor and more safety.

Employee feedback has been positive. They liked the 5000K color temp lamps, which allowed them to better see part number labels in the material storage areas. And Fish says that "employees also mentioned they liked that GM was using LED technology to save energy, reduce cost and help protect the environment."

The 5000K lamps were installed in the production area while 4000K lamps were used to retrofit the office areas and assembly line lighting.

Starco has retrofitted 17 General Motors plants in the U.S. and Canada since June 2015. GM has awarded Starco another Blanket Order contract for Tubular LED Lamps.

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