



AGC Automotive Americas
1 Auto Glass Drive
Elizabethtown, Kentucky
“Lighting Retrofit Case Study”

AGC Automotive Americas Company is headquartered in Hebron, Kentucky. AGC Automotive Americas manufactures windshields and all other windows for vehicles. The Elizabethtown, Kentucky plant was built in 1988. Production started in 1989. The plant is 735,000 square feet and employees 480.

AGC’s project was to replace 899 original, existing 400 watt metal halide light fixtures in the Elizabethtown plant with energy efficient and environmental friendly T-5 fluorescent light fixtures.

- 1) The Elizabethtown Kentucky AGC Automotive Americas plant is the 2nd largest user of electricity in the Eastern Kentucky Power System
- 2) Upgrade to new fixtures
 - a. Fluorescent light fixtures
 - b. 4 lamp fixture
 - c. T5 lamps
 - d. 250 fixtures have occupancy motion sensors
- 3) Project cost
 - a. Total project cost \$251,577.57
 - b. ARRA grant funds \$83,990.00
- 4) Return on Investment [simple payback], 19.8 months
- 5) Kentucky benefits
 - a. 1,425 Kentucky electrician contractor hours
 - b. Electricians from local Electrical Contractor office
 - c. 246 Operating Engineer Fork-truck hours
 - d. Operating Engineer from local Electrical Contractor office
 - e. 6 weeks of man-lift rental for 3 man-lifts from a Kentucky rental company
 - f. Material purchased from local Elizabethtown Electrical Distributor
- 6) Projected Cost Savings
 - a. Energy savings per fixture per year without sensor: \$143.68
 - b. Energy savings per year without sensor: \$93,248.32
 - c. Energy savings per fixture per year with sensor: \$191.57
 - d. Energy savings per year with sensor: \$47,893.33
 - e. Energy savings total per year: \$141,141.65
 - f. Relamping cost based on:
 - i. \$64.49 to re-lamp existing fixtures
 1. Existing bulb’s life is 2 years
 2. $\$64.49 \times 899 = \$57,976.51$ [cost to re-lamp existing fixtures every 2 years].



- ii. \$24.80 to re-lamp new fixtures
 - 1. New bulb's life is 4 years
 - 2. $\$24.80 \times 899 = \$22,295.20$ [cost to re-lamp new fixtures every 4 years].
- iii. Re-lamp savings
 - 1. After first 2 years = \$57,976.51
 - 2. After first 4 years = $\$57,976.51 - \$22,295.20 = \$35,681.31$.
 - 3. Cycle repeats every 2/4 years.

7) Projected Annual Energy Savings

- a. Energy savings per fixture per year without sensor 2,274 KWH per year
- b. Energy savings per year without sensor 1,475,826 KWH per year
- c. Energy savings per fixture per year with sensor 3,032 KWH per year
- d. Energy savings per year with sensor 758,000 KWH per year

8) Environmental Benefits

- a. New T-5 fluorescent lamps have a longer bulb life which reduces disposal
- b. New T-5 fluorescent lamps are ECOLOGIC lamps designed to pass the Federal Toxicity Characteristic Leaching Procedure [TCLP] criteria for classification as non-hazardous waste
- c. Reduction in mercury level from 61 mg for the 400 watt metal halide fixture to 36 mg for the new T-5 fluorescent lamp fixture
- d. Greenhouse Gas Components savings per year

CO2 (Carbon Dioxide)	6,960	Metric Tons
SO2 (Sulfur Dioxide)	34.846	Metric Tons
NOx (Nitrogen Oxide)	9.225	Metric Tons
COAL:	9.605	Tons

9) Employee Benefits

- a. Constant light throughout life of bulb
 - i. Old 400 watt metal halide lamps lost 40% - 50% of their light over the rated life of the lamp
 - ii. New T-5 fluorescent lamps lose only 5% of their light over the rated life of the lamp
 - iii. Light is more uniform and shadows are greatly reduced
 - iv. Fixture's height and position can easily be adjusted for future equipment changes and task
 - v. Fixtures installed for easier maintenance
- b. Safety
 - i. Existing 400 watt metal halide lamps can have a violent end of life failure which can cause fire and/or employee burns from flying hot glass.
 - ii. New T-5 fluorescent lamps do not have the risk of a violent end of life failure
- c. New T-5 fluorescent lamps and ballast generate less heat which reduces plant temperature

Existing Fixtures





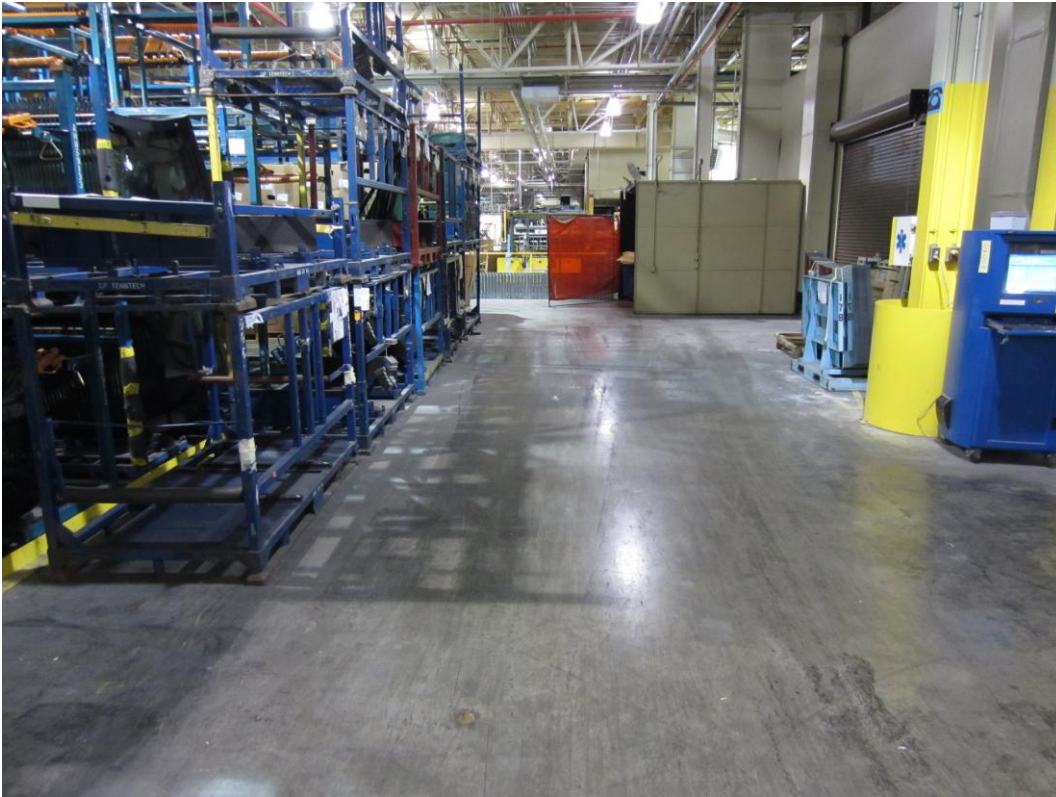
New Fixtures



Installation First Fixture



Reduction in Shadows



Existing
Fixtures



New
Fixtures