Paint Booth Lighting Retrofit Reduces Energy Consumption at Ford Manufacturing Plants.

DESCRIPTION OF THE FACILITY

Ford paint spraybooths use continuous conveyor systems to move units past stationary paint applicator equipment. Each assembly plant has several booths ranging in length from 500 to 1000 lineal feet. Cars and trucks are primed and painted in controlled conditions of airflow, temperature, and humidity.

DESCRIPTION OF THE OPPORTUNITY BEING ADDRESSED

Most spraybooths built in the last 30 years have utilized T-12 VHO fluorescent lamps enclosed in vapor-proof fixtures. The initial light output for these lamps is very high, and the energy consumption is also very high. The lamps have extremely poor efficacy, lamp life, lumen depreciation, and color rendering index. Maintenance costs are high due to frequent replacements. Energy costs are high due to the efficacy. Quality and operator comfort are affected when lamps burn out.

DESCRIPTION OF THE IMPROVEMENT

New fluorescent lighting technology has advanced the development of T-8 lamps to about double the efficacy of T-12 VHO lamps. High output versions of the T-8 lamps were compared to T-12 VHO lamps for energy consumption, light output, maintained lumen level, life, and light quality (color rendering index). A retrofit has been designed and installed in 11 of 21 Ford North American paint shops. Lighting energy costs are reduced by more than 50%. Initial light levels are lower, but since the depreciation is less, the maintained light level is equal. Color rendering index is higher, and the new lamps will last two to three times longer.

SUBSTANCE ADDRESSED	**REDUCTION OBTAINED**
Energy Use	17,500,000 kWh/yr

SAVINGS (OPERATIONAL): $500,000 / YEAR

ENVIRONMENTAL HIERARCHY LEVELS:

Source reduction, waste stream elimination, and energy reduction.