



Multi-Measure Energy Retrofit

March 2013 - PepsiCo Plant Chicago, IL



INFRARED HEATING
\$102,000 saved
ROI < 4 years

WEATHERIZATION
\$12,600 saved
ROI < 3 years

COMPREHENSIVE ENERGY EFFICIENCY SOLUTIONS

It gets cold in Chicago, and heating costs at Pepsi's 51st Street bottling plant were high. Pepsi's Sustainability Group contacted ECM Holding Group to evaluate the building conditions and identify energy efficiency technologies that would reduce utility spend while enhancing the comfort and productivity of their work environment.

ECM developed a comprehensive list of energy conservation measures expected to save the plant over \$115,000 annually:

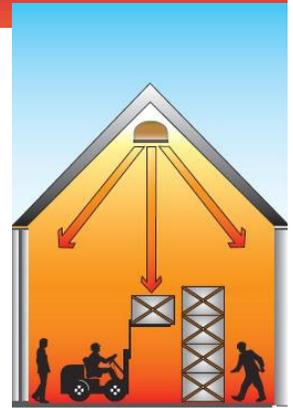
- Weatherization and Air-Leakage Sealing
- High Efficiency IR Heating System
- HVAC Rejuvenation Coatings
- Air-quality-monitoring Based HVAC Controls
- High Efficiency Lighting & Controls

Improved heating saved energy while increasing employee comfort and productivity.



INFRARED HEATING: STOP HEATING EMPTY SPACE

With high manufacturing ceilings, ECM found Pepsi's steam boiler inefficiently heating all plant air unnecessarily. ECM proposed eliminating the gas-fired boiler and installing radiant tube heaters.



With IR heaters, when heat is required, the burner control box ignites a gas/air mixture and hot gases are pushed through steel radiant tubing by an internal fan.

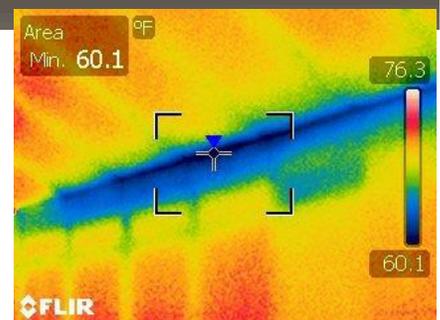


As gases pass through the assembly, tubing is heated and emits infrared energy, which is directed toward the

floor by highly polished reflectors. This energy is absorbed by objects in its path, such as the floor, machinery, and people. Objects in the path of the infrared re-radiate this heat to create a comfort zone at the floor level. This method of heating -- as opposed to filling a room with warm air -- allows the source of heat to begin at the floor level and not the ceiling. Besides saving \$102,000 annually, the project was incentivized via a \$67,200 rebate from the ComEd utility.

ENVELOPE WEATHERIZATION: STOP AIR LEAKS

Sealing the gaps, cracks and holes throughout the building to eliminate air leakage losses is called Air Leakage Control (ALC). ALC is the first priority in any building envelope retrofit, and the primary scope of this project was to seal off 2,550 feet of roof/wall joints from leaking cold air in or warm air out, utilizing a 2-part foam. Exterior doors were weather stripped and sealed with door sealing foam tape and sweeps.



ECM subsequently implemented similar solutions at about a dozen Pepsi facilities.