UNITED ENERGY ASSOCIATES, INC.

A Lighting Conversion Case Study

UEA PUBLICATION FORUM / VOL. 26 WINTER 1995

AEP — KINGSPORT
Kingsport, Tennessee

"American Electric Power is committed to helping customers find quality solutions that also provide maximum savings."

Facility Description:

The *Kingsport Power Company* was founded in 1917. Today, after a name change, the company is one of seven known as ***American Electric Power Company(AEP)***, which serves 3,000 communities and over 2.8 million customers.

AEP—Kingsport's administration building contained approximately 570 assorted types of light fixtures that utilized standard electromagnetic ballasts and fluorescent T-12 lamps.

Some of the fixtures provided the overhead light for individual, enclosed office cubicles around the perimeter of the interior space but the majority provide general lighting for the open-plan work space.

Goals:

AEP—Kingsport decided to convert its facility's lighting system to take advantage of electronic ballast and T-8 lamp technology, which would provide better quality light and save a considerable amount of energy. In December, 1992, *AEP* joined the EPA *Green Lights Program* (a totally volunteer program which encourages joining partners to retrofit their current lighting systems within a five-year period.) Due to the Utility's low energy costs and the fact that the estimated average fixture burn time within the facility was less than 50 hours per week, it was anticipated that the payback of investment might take as long as six years. Because *AEP* was eager to meet its Green Lights commitment before the end of the current year and because the conversion offered an upgrade in lighting quality that would also serve as an excellent example for the Utility's clients, *AEP* decided to proceed with its conversion.

Solutions:

United Energy Associates scheduled several different types of retrofits which were designed to produce maximum savings. All of the 2x4 and 1x4 fixtures within the facility were renovated by replacing all existing lamps, ballasts, end brackets and lamp sockets. In some fixtures, where more light was required, ballast covers were replaced with a UL approved reflector system which then serves as a ballast cover. Strip fixtures were rebuilt by removing all of the old components and replacing ballast covers with reflector systems. Electronic ballasts were installed and 8' T-12 lamps were replaced with (2) 4' T-8 lamps set in tandem. Although this later installation technique requires special skills on the part of the technicians; when done properly, the conversion produces very worthwhile results, and allows the facility to reduce its maintenance costs by standardizing to one lamp size.

Results:

In addition to removing almost 33 KWD from *AEP*'s energy requirements, this lighting retrofit produced a welcomed change in the overall appearance of the building's interiors.

Components:

The T-8 lamps used in this conversion were all triphosphored and provided improved levels of CRI as well as much higher lumen per watt output when compared to the T-12 lamps which were replaced. Electronic ballasts met or exceeded the utility's standards for THD (total harmonic distortion) as well as PF (power factor). The combination of electronic ballasts and T-8 lamps resulted in lowering fixture input watts 30% to 60%. The reflector kits were custom fabricated from *Alcoa* "Everbrite" lighting sheet. The fixtures utilizing reflectors required half the number of lamps formerly used.

Environmental:

This project eliminated the annual emission of 105 tons of CO2, 611 tons of SO2 and 224 tons of NO. Ballasts containing the hazardous waste, PCB, were properly disposed of through a *licensed hazardous waste disposal contractor*, and a certificate of destruction was presented to *AEP*, thus relieving the company of any and all liability.

Contact: Mr. Bill Brooks
AEP— Kingsport
422 Broad Street
Kingsport, TN 37660
(423) 578-2219