

## **GE Appliance Park Upgrade to Heat Delivery Systems for Industrial Processes and Interior Environment Heating**

GE Appliance Park

Louisville, KY

GE Appliance Park, its main manufacturing facility for washers, dryers, refrigerators and other home appliances, has been operating in Louisville, Kentucky since 1953. The entire facility is laid out across one square mile of real estate, surrounded by nice neighborhoods and bustling businesses. The factory is somewhat of a fixture in the area, where it is not uncommon to hear that two or three generations of someone's family have worked their entire careers at the Park. In other words, the business has been around for a long time. It is GE's intent to be around for a long time to come.

In the interest of doing just that, the company in recent years has implemented a number of upgrades and modernizations to the facility. One such upgrade is the switch from steam generated by and delivered from a centralized utility (boiler house), to point of use boilers supplying hot water systems for indoor heating and conversions to electric immersion heaters for industrial processes. Additional improvements have been realized by applying the straightforward concept of simply replacing old boilers with current tech, highly efficient models and reusing some of the existing steam piping, where this made more sense.

Over the years, GE has continually looked to improve its steam heat process with the environment in mind. In 1999 a gas pipeline was installed from the Outer Loop Landfill to Appliance Park, so that reclaimed Land Fill Gas could be used to power the boilers, in lieu of natural gas supplied from newly drilled wells. In 2007, GE stopped altogether burning coal fuel for steam production. Most recently, by installing the upgrades described above, GE has replaced and repaired a system infrastructure which had deteriorated to a meager 50 percent efficiency in its delivery of BTU's into the end use work spaces. All these measures have resulted in the benefit of significant cost savings for the company. Just as importantly, these measures have benefitted the public by greatly reducing the company's environmental footprint.

For instance, the recent upgrades of switching to smaller point of use boilers, electric immersion heaters and high efficiency large boilers has netted a reduction in fuel usage of 158,947 MMBTU (million British Thermal Units) of gas and 221,920 KWHR of electricity per year. The reduction in emissions of Green House Gases and other pollutants is as follows:

- 963 metric tons of GHG (in CO<sub>2</sub> equivalents).
- 1 metric ton of Sulfur Dioxide (SO<sub>2</sub>).

To put that in laymen's terms, it is equivalent to adding 96,109 newly planted trees to the environment or removing 185 automobiles from the road. Each year.

Regarding the cost savings which the company has and will continue to accrue, the outlook is just as favorable. It breaks out like this:

- \$1,024,705 savings per year due to the 158,947 MMBTU reduction of gas fuel usage.
- \$10,852 savings per year due to the 221,920 KWHR reduction of electricity usage.

The combined total cost to install all of these upgrades was \$2,434,000, invested over approximately a one year period. With shared funding available through the American Recovery and Reinvestment Act, the project will realize a payback period for these costs through energy savings alone of approximately 2 years and 4 months.

Through this and other programs and initiatives, GE continues to improve its operational efficiency, while at the same time making a positive impact on the environment, because of these improvements. And, its making a positive improvement on their bottom line.



Above is a picture of the hot water boilers that supply heat to the front office areas.



The picture to the left is an example of an electric immersion heater placed into a process tank that replaces the use of steam in a paint process.



The picture above is of the electric panels that control a set of electric immersion heaters.



The picture above is part of the boiler #8 system upgrade to supply steam to heat the warehouse (AP10).