

Poinsettia project in operation

Pennsylvania Power & Light Co.'s Montour Steam Electric Station has been helping to produce poinsettias as well as generating electricity during the past few months.

The poinsettias were grown in an experimental greenhouse near the power plant, about 10 miles north of Danville in Montour County. The greenhouse is owned and operated by Kenneth G. Bryfogle of Bryfogle's Inc.

A crop of 20,000 poinsettias was harvested recently in time to brighten the holiday season.

What makes the greenhouse unusual is the method used for heating the 2.75-acre structure. A sophisticated system is used to extract waste heat from the plant and carry it to warm the 120,000-square-foot greenhouse.

HOW THE SYSTEM WORKS

The production of electricity results in large amounts of waste heat being rejected through the cooling system of a generating station. This waste heat is normally vented to the atmosphere at the Montour plant, explained Dr. Heinz G. Pfeiffer, PP&L's manager-Technology & Energy Assessment.

The cooperative floriculture research project is making use of this discharge heat at its Montour plant, saving a significant amount of fuel oil which is traditionally used for heating greenhouses in northeastern Pennsylvania.

A 20-inch diameter

pipeline, buried three feet underground, transfers warm condenser-cooling water from the plant to the greenhouse. The system uses 7,000 feet of piping to establish a "loop" to supply the warm water to the greenhouse and return it to the power plant.

Inside the greenhouse, 3/4-inch diameter plastic pipes are embedded in gravel just beneath the porous concrete floor. The pipes, spaced about a foot apart, would total almost 24 miles if placed end-to-end.

The warm water flows from the supply pipelines to the pipes beneath the greenhouse floor. When the water reaches the greenhouse, it is between 95 and 115 degrees Fahrenheit. The water heats the greenhouse floor to about 70 F.

KEY TO RESEARCH PROJECT

This unique warm-water floor-heating system is the key component of the research project, Pfeiffer said. The system was designed at Rutgers University engineering research laboratories and constructed by Bryfogle.

"The project is designed to demonstrate how energy can be saved by tapping heat that has been previously wasted. The experiment has great potential in helping PP&L and its customers find practical and cost-effective ways of conserving fossil fuels," Pfeiffer said.

PP&L has long been interested in using this waste heat and has in the past



A crop of 20,000 poinsettias await shipment from the experimental greenhouse near Pennsylvania Power & Light Co.'s Montour Steam Electric

Station. Waste heat from the power plant is used to warm the 2.75-acre greenhouse, which is owned by Kenneth C. Bryfogle of Bryfogle's Inc.

engaged in other research projects designed to utilize power plant waste heat, according to Pfeiffer.

The potential for using waste heat at the Montour plant is promising. The greenhouse heating system, which is now in full operation, is using less than 1 percent of the waste heat from the Montour plant.

CONSTRUCTION SCHEDULE

Construction of the Montour greenhouse began in mid-June. It was in service, using power plant waste heat, five-and-a-half months after construction started.

The poinsettias were started from clippings last January in Bryfogle's greenhouse in Muncy (Lycoming County). The plants were transferred to the Montour greenhouse in October, when they were

re-potted and required more space to grow.

The floor heating system was first used in early November, with heat supplied by the backup oil-fired boiler. The supply-and-return pipeline system was completed, flushed,

pressure-tested and placed in service on Dec. 1.

Now that the poinsettias are gone, the greenhouse is being stocked with lilies, pot mums, geraniums, crysanthemums and bedding plants.

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W. Ray Crawford, an employee at Pennsylvania Power & Light Co.'s Montour Steam Electric Station, examines a control valve that is part of the sophisticated heating system used at the experimental greenhouse. Waste heat from the plant is transferred to the greenhouse through an underground pipeline.

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