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Controller Cuts Hotel Hot Water Cost 33%/Month

By PATRICIA RAFFAELE

PITTSBURGH, In its first month of operation, a Pro-Temp water temperature controller manufactured by Fluidmaster Inc., Anaheim, Calif., has cut domestic hot water costs at the Green Tree Marriott Hotel here by 300 percent, saving \$1,300, according to Jim Behr, vice-president of Energy Savers, Inc., a Pittsburgh energy management contractor who installed the system.

Behr said the project cost approximately \$4,000 and will pay for itself through savings in under four months based on the figures obtained during a six week trial period.

Dan Krawowski, director of engineering for the hotel, said he had been looking for a way to cut the cost of oil for heating domestic hot water by at least 25 percent, and considered installing the Pro-Temp after the Harrisburg Marriott realized savings of \$900 in one month with the device. The day he contacted Fluidmaster, he received a mailing from Energy Savers describing the Pro-Temp.

Behr said that although original savings projections for the system were \$1,000 a month, actual savings of \$1,300 a month were realized after the system was adjusted. Krawowski said fuel bills for firing the domestic hot water system before the installation averaged \$4,000 a month.

According to Krawowski, the savings achieved at the Green Tree in the trial period, between July 3 and August 18, exceeded the requisite 25 percent, and the system has been installed permanently.

The Pro-Temp is controlling domestic hot water temperature for the hotel's 480 guest rooms and the laundry. Krawowski said the water is heated by three oil-fired boilers that have a total capacity of 6.6 million Btu. Currently, the boilers are firing at approximately 4.5 billion Btu.

The adjustment process involved setting minimum and maximum temperature perimeters, Behr said. He said this involved making sure there is adequate hot water for the guests at specific times, but not a temperatures hotter than needed. Currently, the Marriott is using a range of 130 degrees F to 175 degrees F.

The hotel's 10 year-old boilers burn No. 2 fuel oil and were manufactured by Raypack Corp., Westlake Village, Calif.

The Pro-Temp consists of two temperature sensors, a relay and a wall-mounted microprocessor. Behr said the Pro-Temp measures demand for hot water, storing information in an electronic memory. Peak demand time for hot water in a hotel such as the Marriott is between 6 a.m. and 10 a.m. Usually, he said,

boilers are constantly heating water to between 175 and 180 degrees F to meet the four-hour peak demand, he said.

Behr said one temperature sensor measures the temperature of the hot water as it leaves the storage tank. The temperature is recorded in the computer memory every half-hour during a seven-day period.

The other temperature sensor, Behr said, measures user demand for the hot water every half hour, and relays the information to the computer memory.

After the seven-day history is recorded in the computer memory, during the next week, the Pro-Temp will compare the demand of one half-hour to the demand of that same half-hour a week ago, and if there are demand changes, the system will update its memory. The temperature of the water is raised or lowered through the thermostat relay wired to the existing boiler thermostat.

Krawowski said the boilers usually consume 4,000 and 5,000 gallons of oil a month. He said oil consumption has dropped by between 700 and 1,100 gallons a month since the Pro-Temp was installed. Currently, he said he has a 98-day supply in storage tanks, compared with last year at this time, when he had a bout a 41-day storage surplus.

Krawowski said he received no complaints from hotel guests regarding hot water since the Pro-Temp was installed.

Krawowski can read the status of the Pro-Temp on a LCD readout, and via a push button can access information regarding actual water temperature, flow volume, whether the heater is on or off, the programmed maximum and minimum temperature, the percentage of time the water heater was on in the past seven-day period, percentage saved over the last seven days vs. the first seven days, and the total number of days the system has been on line.

The relay operates on a 120 VAC or 24 VAC or millivolt system. The product includes a transformer which reduces a 120 VAC to 10 VAC 16-watt output. The product also has a battery backup in case of power failure.

The Pro-Temp can be monitored over a phone line system from a remote office, Behr said. He also said the Pro-Temp can be linked to an EMS and can be used with oil, gas or electric hot water heating system.

The hotel currently has no EMS.

Plans are now in the works to add another 4.2 million Btu natural gas heater and another 2,700 gallon tank for hot water storage to enhance the hotel's hot water capacity and Krawowski said he anticipates installing a Pro-Temp on the natural gas system. The additions will serve 119 rooms and a laundry facility.