HEAT-TIMER® CORPORATION

CASE NO. 11

BUILDING TYPE: Residential
NO. OF UNITS: 1650 sq ft
LOCATION: Chatham New Jersey

Homeowner Customizes Radiant Heat Comfort with InjecTemp Control

PROBLEM: The heating system of the 2-story Cape Cod style home did little to enhance its charm. While the 1650 sq. ft. home was set on a choice piece of property in Chatham, NJ, right next to a 7000 acre wild life refuge, the owners were dissatisfied with the comfort and efficiency of the steaIJ1 system.

Built in 1942, the home was heated by a one pipe steam system. An ancient oil fired boiler produced the steam and indirectly heated the domestic water via a tankless coil.

In the winter, the owners suffered wide temperature swings between boiler cycles. The boiler would shut off once the thermostat was satisfied, but then the cast iron radiators, which were built into the wall of the home, would get very cold. These hidden radiators, which were used for aesthetic reasons years ago, were a major source of drafts and inefficiency. With no insulation between the radiators and the exterior walls, the radiators became icy cold during the winter whenever the boiler cut off, creating drafts throughout the home. When steam circulated through the radiators, a large part of the heat was lost to the outside air.

SOLU110N: It was dear that the home was due for some mechanical upgrades. The owner was well aware that radiant floor heat was one of the most comfortable and efficient forms of home heating. But was it practical -*or even feasible* -to retrofit an existing home? In August, 1995, he decided to find out.

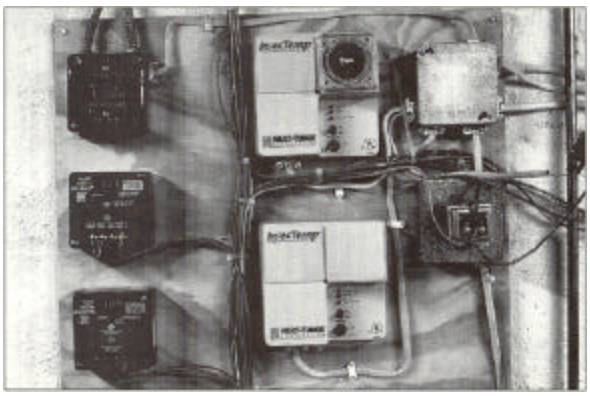
With just a few short weeks before the heating season began, the project was underway. The first step was to replace the existing, outdated boiler with a new, high efficiency boiler. The next step was to retrofit the existing one pipe steam system for radiant heat.

Since the home had a basement, Pex tubing could be installed beneath the first floor without disturbing the solid oak flooring. The tubing was simply placed in the joist spaces along the basement ceiling, approximately one inch below the first floor surface.

Unlike other injection type controls, the InjecTemp can be piped in almost any position and requires very little space. Its low cost makes it a smart investment for any homeowner who wants to make the most of a new or existing radiant heat system.

Superior Heat & Lower Fuel Costs

The InjecTemp *customizes* home heating to the tastes of the owners without producing higher fuel costs. In fact, it lowers overall energy consumption by preventing overheating. While the owners enjoy the unique head-to- toe comfort of radiant heat, they also watch their fuel cost go down. After the first heating season, these homeowners saved an estimated 20% on their fuel bills. They've also found that with the characteristic comfort of radiant heat, they're able to set their thermostats lower(67 to 68 o F) and still feel warm and comfortable.



Wide temperature swings are no longer a problem since homeowner installed a new radiant heat system and two InjecTemp reset controls -one for each zone.

A rigid foam insulation was placed approximately one inch below the tubing. This insulation directs heat from the tubing upward to the living area of the home.

After the tubing was installed beneath the first floor, the various components of the existing steam system were removed, including the cast iron boiler, steam mains and returns, and supply piping.

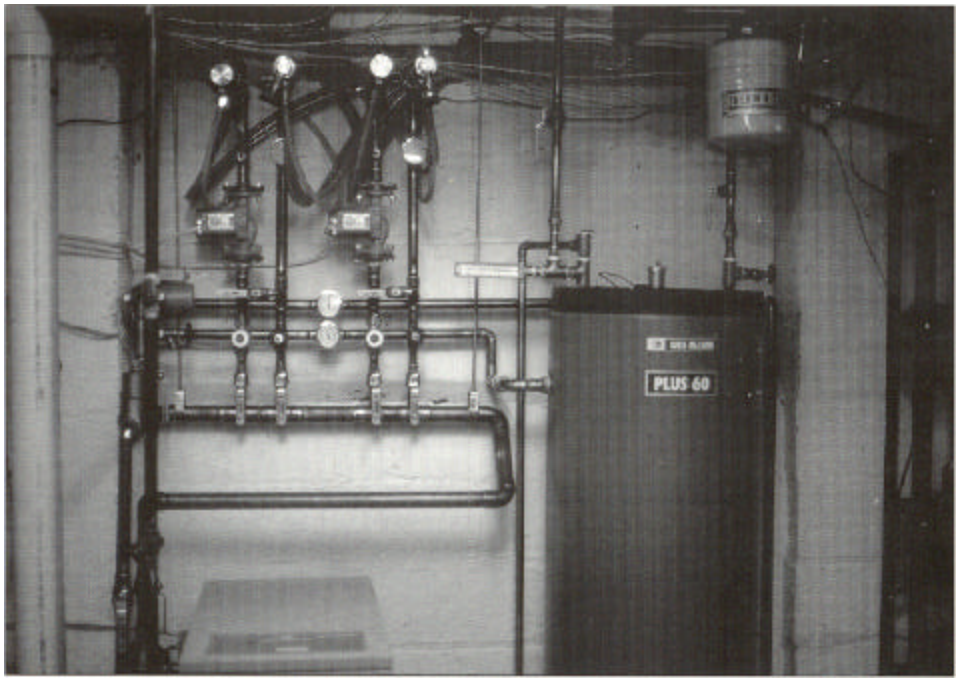
Since installing tubing beneath the second floor was not practical, the owner selected radiant wall panels for the second level of the home. This European style radiator uses a large surface area of steel to radiate heat, creating a similar comfort effect to radiant floor heat. Removal of the l-inch steam pipes left a handy opening through which the Pex tubing could be routed to the second floor panel radiators. Insulation was also installed between the panel radiators and the exterior wall of the house.

Fine Tuning A Comfort System with Heat- Timer InjecTemp Controls

Having already suffered the consequences of a heating system with poor temperature control, the owner was careful to select a radiant heat control that would maximize both the comfort and efficiency of his new system. He chose Heat-Timer's InjecTemp passive injection system.

This control injects hot water from the boiler loop into the secondary radiant loop as needed to maintain comfortable indoor temperatures. The control incorporates an indoor/outdoor reset function which automatically adjusts the radiant water temperature based on outdoor temperatures. As the outdoor temperature drops~ the InjecTemp activates the heating system. The control adjusts. the position of a motorized valve, allowing the precise amount of hot water needed into the radiation loop. All the components, including the control, valves, and tee are included in the InjecTemp control package.

Two In:iecTemp controls were selected for the job, one for each zone. The second floor control included a nighttime setback dock which automatically lowers the radiation loop temperature at night, since the owners preferred cooler temperatures for sleeping. A morning boost feature quickly brings the system back to temp so the house is warm when the occupants rise.



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