

Reprinted from

# phc plumbing + hydronic contractor news

## HYDRONICS

| NEW ENGLAND MAGIC |

### This old house warms to renewable energy

#### 19th-Century home gets 21st-Century heating

Where hydronics reigns as king, a young old-schooler takes on an inventive retrofit. In the area surrounding Haverhill, Mass., everything is done with a boiler. Well, that's how it's been for decades. But the Haverhill homeowners, surrounded by an abundance of "boiler-basemented" homes, wanted something different.

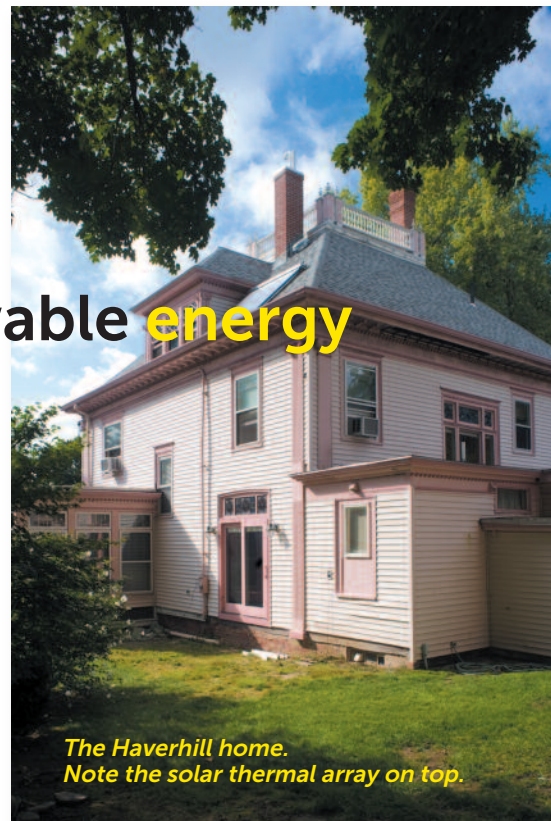
It's not like they woke up on the wrong side of the bed one morning, deciding that they were ready to evict the boiler from the lower level of their three-story, 3,200-square-foot, 1895 Victorian home. They just wanted a new approach.

was appealing.

Ultimately, the retrofit job was driven by a desire for maximum comfort and a need to modernize the heat distribution to some stately hydronic fixtures.

The homeowners hadn't considered a mechanical system overhaul at the start, but a phone call to Dunn's Plumbing and Heating based in Newton, N.H., started a journey in that direction.

Ken Dunn received a call from the homeowners who explained that they were in need of a mechanical pro to uninstall and later reinstall several radiators in their home so



The Haverhill home. Note the solar thermal array on top.

variety and flair. Grand porches, rooflines and luxurious woodwork all characterize homes built during the great years of development and growth in the Northern states. This home is among the finest examples of American architecture during those times.

Dunn made several trips to the home, each time dutifully removing and replacing radiators. Yet, all the while he was learning about the

With sufficient sunshine and an ideal roof angle, the thought of bringing more sunshine into the mix was appealing.

homeowners' intrigue with new mechanical systems, as well as an interest in renewable energy and improved operational efficiency. The process of removing the old radiators and replacing them after the painting and metal refurbishing was complete was quite the conversation-starter during visits to the home.

Eventually, Dunn inspired the homeowners' interest in a mechanical makeover; a big



The Haverhill mechanical room is a symmetrical work of art.

The homeowners' interest in a mechanical makeover was stirred in part by watching episodes of "This Old House." After all, their old house is located at the epicenter of the television show's area of operations. And, with sufficient sunshine and an ideal roof angle, the thought of bringing more sunshine into the mix

they could paint some interior walls. Things evolved from there.

#### New England at its best

New England is famous for its elegant, well-preserved homes that were built in the 1800s, and architecture that includes great

➔ Continued



## HYDRONICS ➔ Continued from p 1

makeover, in fact. Today, the stately old home, consuming a mere seven megawatts of power each year, has a carbon footprint that's tiny when compared to neighboring homes.

### Bring the sunshine in

Dunn's master plan started with a 30-tube solar thermal array and a Taco 008 solar pump. He then replaced all the old pipe to the



heated floors now provide the comfort they were looking for in the home's kitchen and sitting area." With antique construction, complications are the norm. On this particular job, the boiler venting had to be sent down the chimney, while supporting the PVC the whole way. To get connected with the second floor risers, Dunn's plan of action was to determine which pipe went upstairs to which radiator. This was accomplished with pressurized air. Once confirmed, Dunn took those fittings apart and adapted them to the copper and PEX that awaited the connection. "The home's new mechanical

*The restored cast iron baseboard radiators add charm to the Victorian home.*

radiators; Watts RadiantPex was chosen to transition between the copper and manifolds. "I'm very confident using Taco and Watts technology," explained Dunn.

According to Dunn, the once three-zone home was converted to

an eight-zone system powered by a wall-hung, modulating condensing boiler. "The mechanical system includes two four-zone Taco zone controls, one for each floor. Two variable Delta T pumps serve four zone actuator valves. Delta T circulators are based on temperature return, so when return water warms, the circulators sense it and begin to slow down."

The home's new zone was one right out of an episode of "This Old House." Dunn explained, "The owners had learned enough about radiant heat that they just had to have some of it, so I installed 1,000 lineal feet of Watts Radiant's Onix synthetic rubber, oxygen barrier tubing. It's the best material to use for tight, old-home, staple-up applications. The new, radiantly-

system also includes a 120-gallon indirect water heater for domestic hot water. This is where the large solar array sends its heat," he explained. Next to the boiler is a 30-gallon "thermal target" buffer tank used as a reservoir of hydronic heat. The small tandem tank adds mass to a low-mass boiler, helping to eliminate the possibility of boiler short-cycling.

### Blending old with new

Once upon a time, ingenious manufacturers made sure that the most visible sources of hydronic comfort — standing radiators or, in this case, uniquely intricate wall-hung masterpieces — also contributed to a home's aesthetics. In various sections of the Haverhill home, the original intricate cast iron radiators skirt the rooms, providing admirers a constant reminder of its classical Victorian origins.

Since the mechanical makeover, Dunn continues to provide system service for the home and has kept in touch with the homeowners. They talk occasionally about the home and its mechanical systems and soon plan to sail in the bay together.

The Haverhill homeowners have helped immensely as sources of referral among their neighbors. As is the norm for plumbing and mechanical needs within older homes, jobs have varied widely. At one home in the neighborhood, Dunn fixed a sink. Another needed a new water heater; yet another



*Ken Dunn tweaks flow through the stainless steel manifolds.*

referral led to one of Dunn's largest radiant heat retrofits, a job that provided weeks of steady, profitable employment.

Ken's base camp for business, and the place he calls home, is just five miles away, in Newton, N.H. His 7,500-square-foot contemporary home, built eight years ago, is equipped with a radiant injection system tied to outdoor reset, two LP gas boilers, 18 zones of heat, and a 24 X 24 foot mechanical room that would make any hydronic pro feel like a kid in a candy shop.

Ken Dunn has been in the industry for more than 30 years. He entered the realm with the inspiration of his uncle, who made a very good, lasting impression on him at an early age. With one helper, this master plumber has a full plate year-round. As a result of his hard work, talent and ability to get things done beyond



*A solar thermal array installed by Ken Dunn at the Haverhill home.*

the bounds of efficiency, Dunn has had success with mostly referral-based work. Although his territory spans 50 – 60 miles, he's landed jobs as far away as Maine, many miles from home base.

To keep pace with changes to technology, Dunn is always looking to learn. He takes all the classes offered by industry manufacturers, wholesalers and rep firms that he can. These are necessary to stay on top of renewals for the five licenses he currently holds. Among the most

➔ Continued

To keep pace with changes to technology, Dunn is always looking to learn. He takes all the classes offered by industry manufacturers, wholesalers, and rep firms that he can.



The Haverhill homeowner, left, and Ken discuss the solar thermal system's operation.

active resources are Watts, Taco and the rep firm, Emerson-Swan. Ken also subscribes to a plethora of magazines to keep him ahead of the game.

The largest project Dunn's Plumbing and Heating has ever tackled was a complete radiant renovation of a multimillion dollar home in Swampscott, Mass. The 12-bathroom, 18-zone home turned out to be a \$270,000 job for Dunn. It was one of those jobs that serve as a landmark accomplishment.

Today, Dunn has his eyes on another landmark job. The jobs are never a breeze but, if you have the right skill set and an ever-growing appetite to learn and to stay abreast of the latest technology, things happen. ●



Ken Dunn, at home in his own mechanical room, checks boiler operation. The largest project Dunn's Plumbing and Heating ever tackled was a \$270,000 job for a 12-bathroom, 18-zone home.