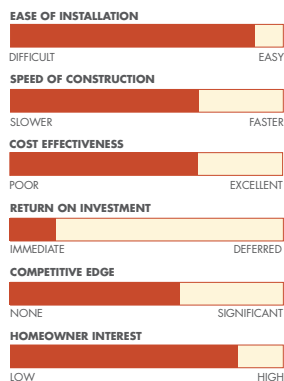


# Radiant Floor Heating:

## Increased Customer Satisfaction Adds Sizzle to a Custom Builder's Business

### Builder's Experience



**Challenges:** It can be difficult to coordinate in houses that have forced air or another type of heating in some rooms and radiant floor heating in others.

**Would he do it again?** Yes

#### PATH Attributes:

 Energy Efficiency

**Builder Tips:** "This is the technology to use when building with concrete slabs. For best results, plan early and consult your system designer for the correct amount of BTUs and loop of pipe."

#### Builder:

Chris Meinhart, President  
Hart Builders  
Media, Pennsylvania

**The Technology:**  
Radiant Floor Heating

#### The Project:

This large, single-family home in Williston, Pennsylvania, has radiant floor heating in the foyer, garage, and master bath.

*"Different is not complicated. You can't allow yourself to be afraid of it. There's nothing scary about radiant floor heating. Get over the old and jump into the new."*

— Chris Meinhart



PEX piping is easily uncoiled and quickly embedded in the floor.

## MEINHART'S STORY

Chris Meinhart was attracted to radiant floor heating because of its ability to easily heat large open spaces, especially those with high ceilings.

Although radiant floor heating can be used in any room in the house, it is especially popular in rooms with tile and concrete floor finishes, which easily store heat.

"I use radiant floor systems to heat rooms such as foyers, master baths, basements, and garages where heating an uncontained space would be inefficient or almost impossible with a traditional forced-air system," Meinhart says. "Given the size of many of the rooms that I build, it's been difficult to manage and control temperatures. With radiant heat, you warm

surfaces rather than having to circulate high volumes of air. It's been a perfect solution."

Radiant floor heating systems are becoming increasingly popular due to their efficiency and added comfort. Rather than experiencing the feeling of hot, dry air being blown through a room, customers instead get even, consistent heat without stuffiness.

"In my own home, I have installed a radiant heating system in the basement, which I love because it actually keeps the floor dry. You can stay warm while maintaining a certain amount of crispness in the air. It's also great for large rooms that are hard to heat, and for rooms with cathedral ceilings because the heat



Chris Meinhart, President of Hart Builders in Chester County, Pennsylvania, has been building residential and commercial sites since 1988. He began his business building low- and mid-range homes; he now builds high-end custom homes using innovative materials and technologies.

#### Why he uses radiant floor heating:

"It's a more efficient and effective method of heating large, open spaces than traditional forced air systems."



This radiant heating system uses PEX piping to transport water for heating.

doesn't get lost 15 feet up. It also cuts your heating load significantly, which saves money on energy bills."

Radiant floor heating is also quieter and less drafty than conventional systems because there are no heat registers or radiators. Because they don't force air through ducts or registers, radiant systems are ideal for customers sensitive to airborne allergens. Households with radiant floor heating host 50 to 80 percent fewer dust mites, according to the Association for Applied and Experimental Research of Allergies.

### JOURNEY INTO THE UNKNOWN

"Radiant floors are more popular in custom homes right now, but I would love to see more track builders adopt them," Meinhart says. "Unfortunately, many are reluctant to abandon forced air systems. For them, it's a journey into the unknown—but you know, sometimes that's what it takes."

Meinhart first learned how to install radiant heating systems from an experienced HVAC contractor.

"He had already installed several of these systems so he was happy to walk me through the process. The installation is actually the easiest part."

"In large rooms, the biggest challenge is learning how to incorporate and coordinate multiple systems with different heating sources and circulators, but even that can be overcome through hands-on experience, just like any other trade. First-time users should start with smaller

### HOW IT WORKS

Various forms of radiant floor heating have been in use since the ancient Romans channeled hot air beneath the floors of their homes. Today's systems usually work by pumping hot water through PEX pipes encased in a concrete slab or installed beneath the finished floor. The heated water flowing through the tubes heats the flooring material, which radiates the heat evenly throughout the room.

Wet radiant heating is installed by laying down a network of piping or tubing, usually PEX, and then pouring the concrete slab. Dry radiant heating is installed beneath a finished floor without pouring material over the tubing. In this case, tubing is often sandwiched between layers of plywood, or under the subfloor. Dry heating is more common in retrofits and when the floors in new homes are not poured concrete.

Read PATH field evaluations of dry radiant floor heating:

- Farnham Construction: Hailey, ID
- Habitat for Humanity: Schenectady, NY



## TECHNOLOGY HIGHLIGHTS

This project included the following PATH-profiled technologies:

- Geothermal heat pump
- Radiant floor heating

projects. Don't attempt to install the systems on multiple levels of the house. Use it on something like a basement so you can learn how it works and what the challenges are."

"Beyond that, don't be afraid to call in an experienced HVAC professional to help you with the project. Some manufacturers of the systems even offer technical support to new users. Now I've worked out the kinks in the system and it's second nature to me. I have used radiant floor heating in four of my projects. You build a house one brick at a time. The same is true with learning how to install a heated floor system."

## CLIENT SATISFACTION

"My marketing is mainly word-of-mouth," says Meinhart. "I cultivate new customers through the recommendations of former ones. Radiant floor heating adds value to my homes by making them more comfortable, which is a huge draw for potential customers. It also helps in my sales meetings with potential clients because it adds to the image of quality that I try to bring to the table."

"Radiant systems aren't appropriate if the floor is covered with a thick carpet, or in climates that only require heating systems a couple of months of the year. But for projects where I feel it would be appropriate, no customer has ever turned it down."

"I try to be careful about how I introduce technologies to customers. The technology has to serve a purpose. My customers aren't always concerned about the cost of installing the systems but they are concerned about maintenance and comfort. With radiant floor heating systems, maintenance is almost zero and comfort is guaranteed."

"Clients may have to get accustomed to the fact that it takes a little while for the systems to heat up and that the air around them feels a little different than it does with a traditional HVAC system. But once they do, they'll come to appreciate the improved indoor air quality and the overall feeling of comfort. My clients love it."

The Partnership for Advancing Technology in Housing (PATH) brings together builders, manufacturers, researchers, government agencies, and other members of the housing industry. PATH partners work to improve the quality and affordability of new and existing homes. The program is administered by the U.S. Department of Housing and Urban Development's Office of Policy Development and Research.

To learn more about PATH, visit [www.pathnet.org](http://www.pathnet.org). To learn more about PATH-profiled technologies, visit [www.toolbase.org/techinv](http://www.toolbase.org/techinv).



The opinions expressed in this document represent those of the builder and do not necessarily reflect the views of PATH.



The completed project, whose heating is more even and efficient with a radiant system.