

# New home bucks the trend with radiant, ductless HVAC

SPECIAL TO CONTRACTOR

YORK, PA. — When Dave Yates received a call from Bob Myers, a local building industry entrepreneur, to tell him that he was planning to build a new home, he also learned that his firm — F. W. Behler Inc., York, Pa. — was already chosen to do the job. The business owner informed Yates that he had researched Behler's work and reputation thoroughly and knew he'd made the right choice.

"We'd dealt with Bob on a few jobs in the past, and recently had completed a main frame computer room cooling system at his building supply warehouse and office center," explained Yates. "I think that helped to tip things in our favor when he began his plans to build a large home not far from York."



Photos by John Herr Photography

Several weeks after that call, Yates got an urgent request that he visit Myers at his office complex. As Yates put it, he dropped everything (even the baby in his hands, if there'd been one), jumped in the truck and was at the customer's facility 10 minutes later.

Myers was at his desk, perusing new house plans just in from the architect. According to Yates, the blueprints were first rate. Yet, as Yates bore down on the details, he made several suggestions, changes



A technician installs Watts Radiant Onix tubing within SubRay channels.

that would permit easier, more sensible plumbing and mechanical solutions. His customer

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## Home Star passes House, moves to Senate

SPECIAL TO CONTRACTOR

WASHINGTON — The U.S. House of Representatives passed the Home Star Energy Retrofit Act, H.R. 5019, sponsored by Representative Peter Welch (D-VT.), Thursday, May 6. The bill was sent to the Senate and referred to the Committee on Finance the following day. Its companion bill, S.B. 3177, sponsored by Senator Jeff Bingaman (D-N.M.) was referred to the Committee on Finance March

25, 2010, and a revised version, S.B. 3434, was introduced in the Senate May 27, 2010. If signed into law, the bill will provide incentives to consumers to make their homes more energy efficient.

According to the White House website, Home Star, if passed, would provide two types of consumer incentives — the Silver Star Rebate and the Gold Star Rebate. The Silver Star rebate consists of up to 50% rebates up to

\$1,000-\$1,500 for upgrades, such as water heaters, HVAC units, insulation, duct sealing, windows and doors, roofing and air sealing. Consumers could do a combination of upgrades for rebates up to a maximum of \$3,000 per home, and rebates would be limited to the most energy-efficient categories of upgrades, focusing on products made primarily in the U.S. and installed by certified contractors.

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## Passive house utilizes integrated HVAC, solar system

BY CANDACE ROULO  
OF CONTRACTOR'S STAFF

MILLCREEK TOWNSHIP, UTAH — The Breezeway House, a passive 2,800-sq.ft. home located here, near Salt Lake City, was completed last December, taking approximately eight months to build. Since energy efficiency is at the heart of passive houses, many energy-efficient technologies and systems were used, including an efficient HVAC system with an energy recov-

ery ventilator and a photovoltaic system.

HVAC systems can be minimized in passive houses because these houses focus on conservation first, employing the strategy of minimizing losses and maximizing gains through super insulation, air tightness, high performance doors and windows, and ventilation with



The Breezeway is one of 10 certified passive houses in the U.S.

highly-efficient heat recovery, according Katrin Klingenberg, executive director of the Passive House Institute of the U.S.

"The remaining peak loads

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tommer made notes, approving each recommendation quickly.

"Before long, it was apparent to me that Bob Myers was indeed very concerned about the quality of mechanical and comfort systems for the home," explained Yates. "Essentially, he built the home around his desire for the best work we could do."

Blueprints revealed plans for a home that would be 8,500-sq.ft. with an additional 4,000-sq.ft. of living space below ground. There, the mechanical room would be nestled among a fully equipped exercise room, a wet sauna, a '50s style snack bar with soda n' beer jerks and a movie theater.

Up above, the home's focal point would be an interior entryway with a curved rock wall, as though built around an old German fortress, and a great room with exposed beams 30-ft. off the ground and surrounded by a galley, plus a grand fireplace and, opposite that, a wall of windows — all fit for a king. Next to the large garage there was a full-sized basketball court, radiantly-heated, of course.

## Sealed with a handshake

Yates was also glad to see that he'd be given plenty of space for mechanical equipment, pipe and tubing runs within the home. But the best news of all was the handshake that sealed the deal at the end of the day.

"The customer turned to me, offered his hand, and said 'I'm confident you and your crews will do terrific work on our new home; you've got the job,'" said Yates.

When excavation for the home was complete, preparations were made for the basement's concrete slab. This included two inches of rigid insulation under the entire home, and its perimeter. "It looked like a giant, pink swimming pool," said Yates.

Following that work, Yates' crews showed up at the site with truckloads of Onix, Watts Radiant's EPDM rubber radiant tubing with aluminum oxygen barrier.

"We put in about 12,000 lineal feet of tubing in the concrete slab at 9- and 12-in. centers and the day after we were done tying it down the trucks arrived with concrete," said Yates. "The construction schedule at that point was going like clockwork."

As the house progressed, plans changed from time to time. "At certain stages, there were changes on top of changes," said Yates. "But because that was the nature of the job, we adjusted to it."

By month nine of the 16-month construction schedule, Yates' crews felt like they could drive to the jobsite with their eyes closed.

"We rotated crews in and out of there to give everyone a chance to work on such a magnificent project," said Yates. "It was like a large commercial job, only more detailed ... and prone to change. That meant a task completed three weeks earlier might need to be un-done, and re-done at a later point."

## Low-temp radiant

A few months later, one of the most interesting facets of the job took place. Yates and his crews installed 14,000-sq.ft. of Watts Radiant SubRay above-

subfloor panels.

This task took more than a week and made way for the installation of many more miles of Onix tubing, easily laid in SubRay channels.

"This radiant heat solution puts BTUs close to the finished floor surface, so we were able to reduce sys-

Photos by John Herr Photography



**Dave Yates uses a Testo to perform a combustion analysis of the wall-hung boiler as the job nears completion.**

tem delivery temperatures dramatically," said Yates.


Because of the SubRay, and with an extremely well insulated home, Yates said that even with ambient temperatures at zero degrees last year they were warming the entire home with first- and second-floor temperatures of 88°F, and basement slab temps of just 78°F on a design day.

Yates' crews also installed three Watts home-run domestic water manifolds and miles of WaterPEX tubing to feed them, a 95 AFUE wall-hung boiler, a mod-con with an input range of 55-172 MBH, and two indirect water heaters.

The home's cooling solution entailed two main central HVAC systems with the addition of multiple Fujitsu high-efficiency inverter-driven mini-splits.

"When I studied the home's room-by-room designs, it was clear that there was a need to comfort-condition rooms, like the movie theater, separately from the central-system A/C," explained Yates. "One of the many advantages provided by the Fujitsu mini-splits is the ability to use air conditioning during extremely cold weather."

So if Bob hosted a group to watch a movie or for a '50s sock-hop, the mini-splits would quietly do the job of removing body-generated BTUs, even at a time of year when that would seem so unlikely," added Yates.

"The Behler crews did an incredible job for us," said the homeowner, shortly after experiencing their first winter in the home. "He [Yates] will tell you, I'm sure, the job was a challenge from time to time. But through all the changes, they lived up to their promise to do the best possible job. It was an adventure for all of us." 

For information circle **XXX**