News of Interest for and from the Connecticut Association of Home Inspectors, Inc.

CAHI MONTHLY NEWS

August 2011 Volume 3, Issue 8

President's Corner

The date and time of every Board of Directors meeting will be posted on the web site, and there will be a "member's comments" time listed on the meeting agenda. Members will be given time to address the Board with their questions, concerns and suggestions. There is no need for advance notification, as this will be policy from now on. The next Board meeting will be at the Holiday Inn, North Haven on September 9th, at 9:00 AM. This is the annual election meeting for officers. Member's comments will be at 10:30 AM.

At our most recent Board meeting on July 27th there were no members present to address the Board, however there were emailed comments and suggestions that were presented to the Board and discussed at the meeting, there will be follow up discussions and further evaluation. Some suggestions we have already addressed, such as to try and build a better relationship with the brokers and agents in the State. In the past we spent considerable time and effort on communicating with the Real Estate Association leaders and members , and ended that project about 2 years ago after a disappointing response.

Member John Koch, Home Quest, Shelton CT, has had disappointing experiences with E&O insurance and shared that information in a letter, hoping to help other members resolve an ongoing dilemma about insurance, and its pitfalls. In his letter he described his viewpoint and how he resolved this unpleasant business aspect by attending a "Law and Disorder" seminar, which he highly recommends. To learn more about the seminar and John's results please contact him.

Other correspondence included letters from members that for one reason or another have not renewed their home inspection license, and consequently not renewed their membership with CAHI. We certainly appreciate their support over the years as members and wish them well. Annual membership dues for CAHI were due by the end of June, a reminder to all Inspectors and Interns that did not renew was sent out at the end of July.

The Board reviewed applications for the Associations $1000 scholarship award, all of the candidates are very deserving and presented great essays, have excellent grades and are involved in community activities, making choosing one over the other very difficult. At the end of the discussion and by paper ballot , the decision was to present the award to Jennifer Kulakowski, Daughter of Bob Kulakowski. Jennifer is attending Northeastern University, studying Civil Engineering.

During this past year we were able to put aside additional money, and collecting additional funds for the scholarship program through 50/50 raffles, because of that we will be awarding three additional scholarships of $500 each, to Dale Aliberti, Alex Caliendo, and Jacob Dingfelder.

Dale will attend U Mass for Aviation and Music courses.
Alex is attending Regis College in Weston MA studying Nursing.
Jacob is attending Quinnipiac University studying Biomedical Science.

The house that we had petitioned for in Wallingford has been sold to a private party, we will be looking at other housing opportunities as they arise.

Pete Petrino, President

INSIDE THIS ISSUE

Meeting Dates

Aug	No Meeting
	Vacations
Sep 28	Septic Systems

Regular Meeting Location:
(otherwise noted)

Holiday Inn

201 Washington Ave.

North Haven, CT. (203) 239-6700

Expanding a Kitchen

Removing a bearing wall created a brighter, better kitchen with a stronger connection to the dining and living areas

We were wrapping up the latest in a series of renovation projects on a suburban Maryland split-level home when I casually mentioned to the owner that her Thanksgiving family gatherings would be a lot more enjoyable if her small kitchen weren't separated from the dining and living areas by a wall. "Can we get rid of it?" she asked. That brief exchange led to the kitchen renovation described in this article.

The wall was supporting significant roof loads, so removing it would involve some structural work. Our client also wanted a new radiant tile floor to match the one we'd already installed in the adjacent sunroom. But the existing tile was riddled with cracks, so before we installed the electric heat mat and new porcelain tile, we would need to reinforce the floor joists and beef up the subfloor.

Flitch Beams

To help with the structural work, I decided to make a contour map of existing conditions; that way, we could gauge any settling and bring finishes back to their original elevations if necessary. The living room would mostly remain untouched during demolition, so we set up a laser there, projected a level line, and measured up to the ceiling and down to the floor in a number of locations. We recorded these data points on the walls and on a plan view sketch, and referred to them often throughout the project.

The kitchen designer originally wanted us to simply replace the bearing wall with a dropped beam that would be partly buried in an upper peninsula cabinet. But cabinetmaker Joe Zabkar suggested we install a flush beam instead to simplify cabinet construction and create a stronger visual connection between the kitchen and dining area. That would entail considerably more work but would result in a much better-looking kitchen (**see Figure 1**).

Figure 1. *In the original floor plan, a bearing wall separated the dining room from the kitchen (left). The first step in combining*

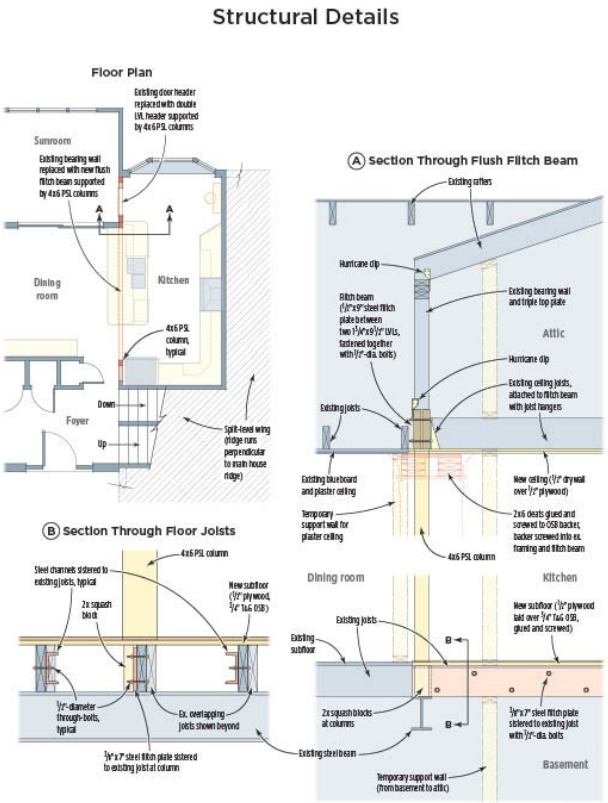
the two spaces was to provide temporary support for the ceiling and remove the wall in preparation for installation of a flush beam (right).

Working from the engineer's stamped drawing, we assembled a flitch beam using two 1 3/4-inch-by-9 1/2-inch LVLs sandwiched around a length of 1/2-inch-by-9-inch steel (**Figure 2**). We built temporary shoring walls in the basement, kitchen, dining room, and attic to hold up the ceiling and roof while we removed the bearing wall and cut back the ceiling joists. We hoisted the 400-pound beam into position with the help of a pair of come-alongs rigged up in the attic. Each end of the flitch beam bears on a new Parallam PSL column.

Figure 2. *The double-LVL and steel flitch beam was fastened together with 1/2-inch-diameter bolts 16 inches on-center (top). A pair of come-alongs rigged in the attic helped hoist it into place (bottom left). Each end of the beam was supported by a 4-inch-by -6-inch Parallam column (bottom right).*

Stiffening the Floor Framing

With the beam in place and the ceiling joists supported in hangers, we removed the temporary support walls, stripped off the existing floor sheathing, and pulled out any wiring and ductwork that was in the way. The plan called for 3/8-inch-by-7-inch steel plates the full length of the joists supporting the Parallam posts; this would both reinforce these joists and provide the compressive strength needed to transfer the roof loads from the posts through the joists. We installed the plates so that they bore directly on the existing steel I-beam girder below and added 2-by squash blocks underneath the columns, per the plans.



The new flush beam between the kitchen and dining area carries both roof and ceiling loads, and helps to support the glass-door cabinet above the new peninsula. To strengthen the floor for tile, the author reinforced the joists with plate steel and C-channel, installed a new 3/4-inch AdvanTech subfloor, then glued and screwed a layer of 1/2-inch plywood on top.

We reinforced the rest of the joists with C5x9 steel channel attached with 1/2-inch-diameter bolts spaced 12 inches on-center (**Figure 3**). These C-shaped channels are sized a little narrower than the existing 2x10 floor joists, so maneuvering them into position was easier than working with sistered wood joists; also, they're more effective at limiting deflection.

Figure 3. *The engineer's plan called for steel reinforcement - plate steel and C-channel - to be bolted to the existing floor joists (top right and top left). The old subflooring was replaced with 3/4-inch AdvanTech T&G sheathing glued and screwed to the framing (bottom).*

To further strengthen the floor, we replaced the existing subfloor with 3/4-inch AdvanTech T&G sheathing, followed by a layer of 1/2-inch plywood installed with full-spread Titebond wood glue. We fastened the second layer of sheathing to the first with 1 1/4-inch-long Grabber subfloor screws (800/477-8876, grabberman.com) spaced 8 inches apart; these fasteners are far more effective than drywall screws at drawing the layers together.

Backerboard. To prepare the floor for the heat mat and tile, we screwed 1/4-inch cement backerboard to the plywood, first bedding it in thinset mortar (**Figure 4**). We did this because we were planning to use a self-leveling underlayment (SLU) in conjunction with the heat mat. Usually, expanded metal lath is required when an SLU is poured over a wood subfloor (see "Working With Self-Leveling Underlayments," 4/11). However, according to Laticrete - manufacturer of the self-leveling compound, thinset, heat mat, and grout we used on this project - a heat mat is an acceptable alternative to metal lath. Expanded metal lath can't be used with a heat mat, of course, but in its absence we felt that the backerboard would provide a more stable substrate for the SLU than plywood alone.

Figure 4. *Carpenters troweled thinset onto a layer of 1/2-inch plywood installed over the AdvanTech sheathing (top left), then screwed down 1/4-inch backerboard (top right). The surface was skim-coated and edged with dams and a perimeter expansion joint in preparation for electric heat mats and self-leveling underlayment (bottom).*

Before installing the heat mat, we taped the backerboard joints with alkali-resistant fiberglass mesh and skim-coated the surface with thinset (a good way to use up partial bags of thinset from previous jobs). After the thinset cured, we rolled on a coat of SLU primer.

Heat mat. We've used electric heating mats from a number of different manufacturers but have come to prefer Laticrete's Floor Heat Mat system (800/243-4788, laticrete.com). After we send a drawing of the floor to the distributor, Laticrete lays out the mat combinations using stock sizes and provides both a cutting diagram and a photo showing how the cut-out sections should be laid out (**Figure 5**). Compared with other systems - which can take weeks for delivery - turnaround time is very quick, usually no more than three days.

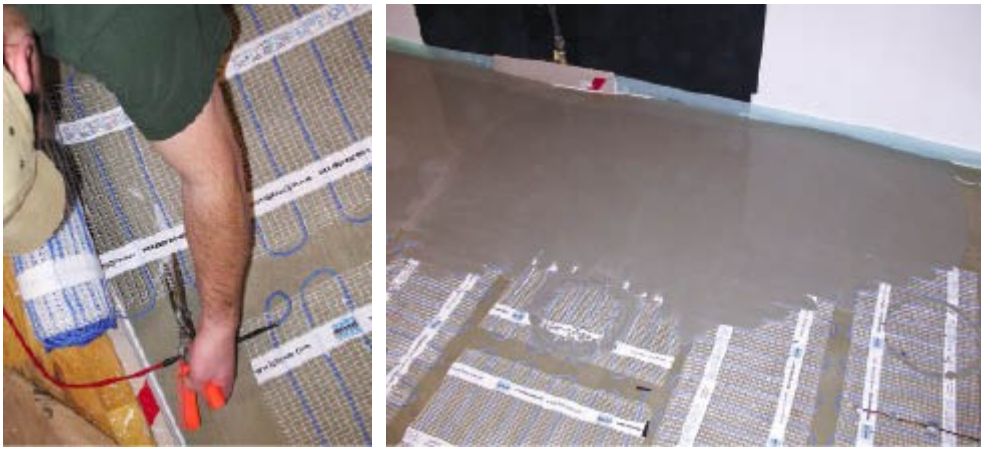


Figure 5. *Laticrete's electric heat mats are designed to be cut to fit in the field (left) and have a self-adhesive backing that holds them in place; tape and thinset are also useful to hold down edges and wiring connections. While the mats can be covered with thinset, the author prefers to use a self-leveling underlayment (right).*

We needed two 1.5-foot-by-30-foot 240-volt mats to cover 100 square feet of floor area. Since sizing wiring and circuits for in-floor electric radiant heat can be tricky, I always work closely with my electrician at this stage.

After snapping layout lines on the floors for the cabinetry, we cut the mats and put them in place. Even though they have self-adhesive backing, we also used duct-tape "Band-Aids" and some thinset to hold them and the wiring in place until we poured the SLU. Then we double-checked the wiring continuity with a multi-tester before giving the installation another coat of SLU primer, using a brush to agitate the primer and make sure the mats were adequately covered.

Once the primer was dry and we had checked once again for continuity, we poured a 3/8- to 1/2-inch-thick layer of SLU over the heat mats. Before tiling, we also rolled a thin primer coat and two full coats of Laticrete's Hydro Ban liquid waterproofing and crack isolation membrane over the cured SLU.

Cabinetry

Normally, we like to install floor tile before the cabinetry. But this project featured two full-height cabinets, and we were worried that we might run into clearance problems when we tilted the cabinets into position from the horizontal to vertical position. Because we'd raised the elevation of the floor with the backerboard and SLU, and had dropped the ceiling elevation slightly with an added layer of 1/2-inch plywood under the drywall (to simplify can-light installation), actual clearances were less than the cabinetmaker had anticipated when he built the cabinets. So, to gain a little room, we opted to hold off on the tile installation until after the cabinetry was installed.

The big double-sided cherry cabinet hanging above the peninsula sink base isn't the largest cabinet we've ever hung from a ceiling. But we knew it would be plenty heavy once the glass doors were attached and the shelves were loaded up with china and stemware. To install it, we first fastened a 3/4-inch-thick AdvanTech cleat to the ceiling framing and new flitch beam (**Figure 6**). We used 1/4-inch-diameter GRK RSS structural screws (800/263-0463, grkfasteners.com), which have over 900 pounds of withdrawal resistance per inch of penetration. Then we fastened 2x6 cleats to the AdvanTech, again using RSS screws and spread-

ing construction adhesive onto each 2-by. To make fitting easier, we sized the cleats only about 1/8 inch less on each side than the interior cabinet dimensions, and we carefully shimmed the cleats so that they were plumb, level, and square.

Figure 6. *To anchor the hanging peninsula cabinet, a crewmember fastens double 2x6 cleats to the ceiling framing with structural screws and glue.*

After blocking the cabinet up into position, we fastened it to the cleats with RSS screws driven through predrilled holes in the upper rails. Field-applied crown mold covers the holes and the gap between the upper cabinets and the ceiling (**Figure 7**).

Figure 7. *The finished kitchen features custom cherry cabinetry and a tough porcelain tile floor dressed up with stone tile insets.*

Cost

The structural work in the kitchen boosted the project budget by about $8,000, including $2,200 for the steel flitch plates and C-channel and another $1,000 for the engineering. Heat-mat installation accounted for roughly $2,500 - $500 each for the two 50-square-foot heat mats, $150 for the programmable thermostat, $300 to wire the new 240-volt electrical circuit, and about $1,000 in labor. And prepping the floor for tile cost almost $2,000 - $1,300 in materials and labor to pour 15 bags of self-leveling compound over the heat mat, and $700 to apply the Hydro Ban waterproofing membrane.

Hydronic Heating for Low-Load Houses

With the right hardware and layout, hot-water heating saves energy and makes ideal use of the sun

In the hvac industry, the term "hydronics" refers to any technology that distributes heat (or cooling) using water as the transport medium. Think of a hydronic system as a conveyor belt for thermal energy; the energy can come from a variety of sources and can be released through an equally wide variety of heat emitters (or heat absorbers, in the case of cooling).

JLC readers are familiar with radiant floor heating, the most widely marketed hydronics technology in recent years. During the late 1990s and the early 2000s, hydronic radiant heating saw annual growth rates above 25 percent. The subsequent downturn in residential construction inevitably took its toll on this trend. While hardware for hydronic radiant heating remains widely available, it's not generating the market growth it did a decade ago. That decline in interest is at least in part because radiant heating came to be perceived as expensive and dependent on complex installations that were costly to maintain and troubleshoot.

There is some truth to those perceptions, but it's important for builders to understand that there are other kinds of hydronic systems that provide comfortable, reliable heating without the expense and complexity associated with radiant heating. In this article, I'll focus on hydronic technology that can be incorporated into high-performance, low-load houses and that can make use of heat pumps and solar thermal collectors as energy sources.

Adapting Hydronics to Low-Load Houses

Houses that consume far less energy than average pose a different challenge for the hydronic heating designer. Take, for example, a 2,000-square-foot house that is built with SIPs, ICF blocks, or some other super-insulated approach and has a design heating load of only 10 Btu per hour per square foot. If radiant floor heating were installed in 1,800 square feet of this home, the average floor surface temperature would have to reach only about 73°F to maintain the internal air temperature at 68°F, and that's on a design day (when the outside air reaches the lowest expected temperature for the region). Under partial load conditions, the floor surface might need to reach only 71°F or 72°F to provide enough heat to maintain typical indoor temperatures. Although floor heating could easily satisfy the indoor air temperature requirement - and do so at very low water temperatures - the occupants will likely be disappointed by the lack of "barefoot friendly" floors, which are so frequently advertised as a benefit of floor heating.

There are several characteristics that a hydronic system intended for a low-energy-use home should have. I'll list them here, then later explain how these design goals play out in specific systems.

Accepts heat from a range of sources. Although boilers are still the most widely used hydronic heat source, modern systems can be flexibly designed to accept heat from devices like air-to-water heat pumps, ground source heat pumps, solar collectors, or a combination of these. This multi-source capability provides versatility in the original installation and also allows for future modification, such as adding thermal solar collectors.

Provides space heating and domestic water heating from the same heat source. This is now standard in nearly all residential hydronic systems. Using a single combustion or refrigeration system to supply both loads reduces both initial and maintenance costs. It also reduces short-cycling, thereby improving fuel efficiency and reducing emissions in combustion-based heat sources.

Provides room-by-room zoning. The ability to control heat output on a room-by-room basis has always been a benefit of hydronic heating. This is equally important in low-energy-use buildings, especially those with the potential for significant and unpredictable internal heat gains. Solar gains through generously sized south-facing windows are a good example. There are several ways to implement room-by-room zoning using hydronics. One of the simplest approaches uses wireless thermostatic valves that regulate flow through each heat emitter. **Figure 1** shows one of these valves mounted on a panel radiator.

Figure 1. *A thermostatic radiator valve provides room-by-room zoning for panel radiators arranged in a home-run layout. A wax-*

filled sensor in the valve contracts and expands in response to temperature fluctuations in the room, modulating the flow of warm water through the radiator and maintaining the desired room temperature.

Includes low-temperature heat emitters. The future of hydronics is all about low water temperatures, which improve the efficiency of heat sources like modulating/condensing boilers, solar collectors, and heat pumps. My suggestion is to design all future hydronic systems so that they can meet design heat loads without exceeding a supply water temperature of 120°F. Even lower water temperatures are possible with some heat emitters, including extended surface baseboard and micro-fan-enhanced panel radiators (**Figure 2**); both of these can be sized to deliver design load output using supply water temperatures as low as 95°F.

Figure 2. *Smith Environmental's high-output fin-tube baseboard convector (left) uses parallel piping and closely spaced copper fins to deliver 400 Btu/hr per foot of length, with a water temperature of only 110°F. Jaga North America's panel radiator (middle and right) is enhanced with low-voltage micro-fans and can operate at water temperatures as low as 95°F.*

Includes low-mass heat emitters. Energy-efficient houses may be subject to wide temperature variations due to localized thermal gains. To prevent unacceptable temperature swings, it's necessary to quickly stop heat emission when the desired comfort condition is achieved. One of the criticisms of radiant floor heating - especially those systems where tubing is embedded in slabs - is that it cannot respond fast enough to temperature swings. Low-mass heat emitters, like the panel radiator shown in Figure 2, can react much faster and thus reduce temperature variations.

Figure 3 compares the thermal mass of several hydronic heat emitters. These masses are based on the amount of heat emitter required to release 1,000 Btu/hr at a supply water temperature of 110°F. Notice that the micro-fan-enhanced low-mass panel radiator has less than one percent of the thermal mass of a 4-inch-thick heated floor slab.

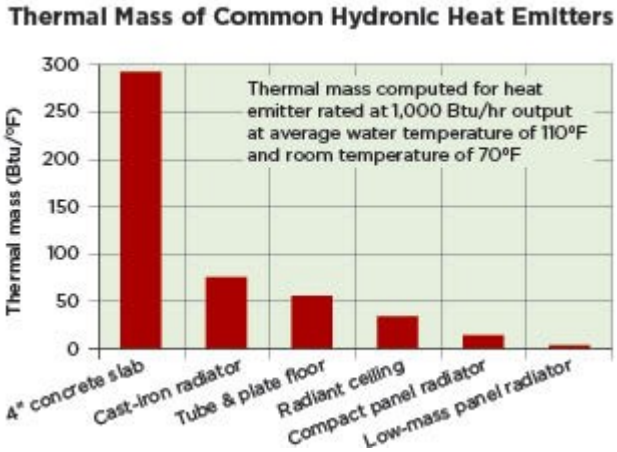


Figure 3. *This graph compares the thermal mass of several common hydronic heat emitters, from a concrete slab on the left to an extremely lightweight panel radiator on the right. The comparison assumes each emitter is sized for an output of 1,000 Btu/hr with an average water temperature of 110°F and room temperature of 70°F.*

Incorporates parallel piping of heat emitters. Many older hydronic systems connected multiple heat emitters in series, meaning the outlet of one heat emitter was piped to the inlet of the next heat emitter, and so forth. While this may at times be convenient and less expensive from an installation standpoint, series piping can create significant temperature drops from one heat emitter to the next. This requires designers to size each heat emitter based on the temperature of the water where that heat emitter is located within the circuit, which is not always desirable. Series piping also eliminates the possibility for room-by-room zoning and increases the pressure drop of the overall distribution system, making it necessary to use larger circulators with higher wattage motors.

Parallel distribution systems supply the same water temperature to each heat emitter and avoid the pressure drop associated with series piping. Parallel distribution also allows the flow rate through each heat emitter to be independently adjusted. The illustration in Figure 7 shows an example of parallel distribution - a simple home-run system in which each panel radiator is connected to a manifold with its own 1/2-inch PEX or PEX-AL-PEX supply and return tubes. The small-diameter flexible tubing is easy to route through framing cavities, much like electrical cable. Different types of heat emitters can be supplied by the manifold - you could use extended surface fin-tube baseboard in some rooms, panel radiators in other rooms, and a towel-warmer radiator in the bathrooms.

Is self-buffering. Whenever a highly zoned distribution system is combined with a heat source that either operates as an on/off device or has a limited range of heat output modulation, the result is short-cycling - meaning the burner or compressor in the heat source turns on and off frequently. This leads to shorter component life, reduced efficiency, and higher emissions.

In the past, a typical residential boiler might have contained 450 pounds of cast iron and perhaps 10 gallons of water. Those materials made such boilers self-buffering, and thus short-cycling was not a big problem. However, many current-day high-efficiency modulating/condensing boilers have much lower metal and water content. Even with the ability to modulate down to 20 percent of their rated capacity, these boilers can still experience short-cycling when connected to highly zoned distribution systems.

Some heat sources are now available that restore the desirable self-buffering characteristic. One example is the Versa-Hydro combined heating appliance from HTP (htproducts.com), which provides both domestic hot-water and space heating (**Figure 4**). Depending on the model, the tank contains up to 119 gallons of potable water for thermal mass; this mass in turn "communicates" with the space-heating system through a self-contained stainless steel heat exchanger. The Versa-Hydro is ideally suited as the anchor storage component in a hydronic system for a low-load house. It can also be ordered with an internal coil heat exchanger that allows heat input from solar collectors.

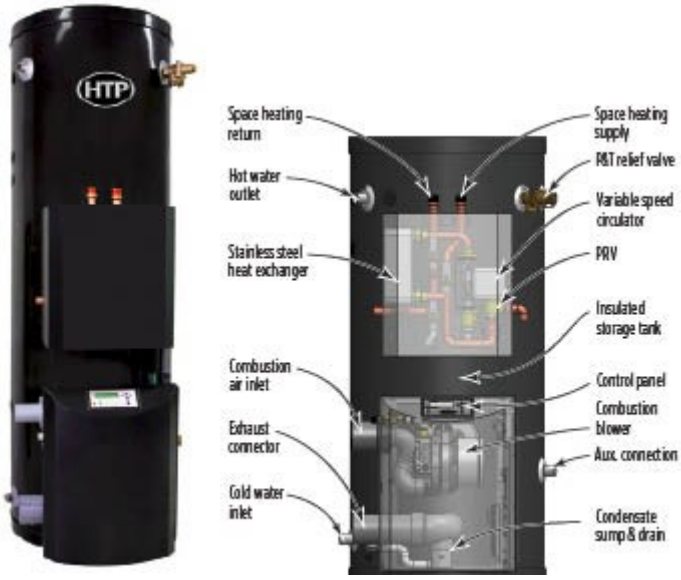


Figure 4. *HTP's self-buffering gas-fired water heater and storage tank can provide both domestic hot water and space heating, making it a good choice for low-load homes. It can also be ordered with an internal coil that accepts input from solar collectors.*

Makes minimal use of distribution energy. A properly designed hydronic system can deliver heat to a building using a fraction of the electrical energy required by a forced-air system. In some cases, the wattage required by the circulator is only about 3 percent of that required by a blower motor of similar heat-transport capacity. This is a tremendous advantage, and unfortunately one that's not often appreciated by those who focus solely on the thermal efficiency of the system's heat source.

A modern ECM (electronically commutated motor) pressure-regulated circulator can reduce the operating power requirements for a home-run distribution system in a 2,500-square-foot house to less than 30 watts under design load conditions. One example of such a circulator is the Grundfos Alpha (**Figure 5**). Similar products are also available in North America from Wilo, Bell & Gossett, and Taco.

Nation's Building News

The Official Online Newspaper of NAHB

In Victory for Remodelers, EPA Rejects New Clearance Testing Requirements for Lead

Marking a victory for NAHB Remodelers, the U.S. Environmental Protection Agency has rejected a proposal to add third-party clearance testing to the Lead: Renovation, Repair and Painting Rule (RRP).

The lead rule applies to homes built before 1978 and requires renovator training and certification, adherence to lead-safe work practices, containing and cleaning dust and record keeping. "We're pleased that the EPA listened to the concerns of remodelers about the extreme costs the proposed clearance testing would have imposed," said Bob Peterson, NAHB Remodelers chair and a remodeler from Fort Collins, Colo. "Home owners are saved from spending a great deal of money on lead testing. If remodeling is more affordable, home owners will be able to hire an EPA-certified renovator to keep them safe from lead dust hazards during renovation," he said. "Many thanks go to congressional leaders for their support of remodelers and NAHB. Sen. James Inhofe (R-Okla.), Rep. Denny Rehberg (R-Mont.) and Rep. Bob Latta (R-Ohio) have been advocates on lead paint regulation issues and we owe them a debt of gratitude for their efforts," said Peterson.

Remodeler members and NAHB staff also worked tirelessly to oppose clearance testing by making visits to the EPA and the White House Office of Management and Budget, giving testimony to Congress and submitting comments about the potential harm of enacting the clearance testing proposal.

At NAHB's request, this regulation was selected for review by the EPA under the Presidential Executive Order for Regulatory Review (Improving Regulation and Regulatory Review, 76 FR 3821, issued on Jan. 21) examining the impact of federal rules on small businesses and job creation. The EPA has been under pressure by NAHB and lawmakers over the lack of a test kit that meets the rule's requirements and agency actions — such as removing the opt-out provision — that have raised the costs of the regulation.

Under the lead paint rule, contractors have been required to wipe down the project area after completing remodeling or renovation work and match the result with an EPA-approved card to determine whether lead paint dust is still present — a process that the EPA says is "effective at reducing dust lead levels below the dust-lead hazard standard." The proposal would have required contractors to hire EPA-accredited dust samplers to collect several samples after a renovation and send them to an EPA-accredited lab for lead testing. Because of the cost of this approach — as well as the waiting period for test results and the limited number of accredited labs nationwide — professional remodelers were concerned about the willingness of home owners to go through the process.

"The EPA has maintained its common-sense approach to keeping families safe during renovation," said Peterson. "Hiring trained professional remodelers to contain dust, use lead-safe work practices and clean up has been shown to successfully minimize lead hazards and protect individuals from lead exposure."

Several problems with the rule still remain. The EPA has yet to recognize an efficient, low-cost lead test kit that meets the requirements of the regulation. And last year the agency removed the opt-out provision — which allowed home owners with no children or pregnant women in residence to waive the rule's requirement. In today's soft economy, consumers are still balking at the extra costs of the rule and often choose to reduce the amount of work done on their homes, hire uncertified contractors or endanger themselves by attempting the work themselves.

To read the announcement from the EPA, click here.

For information on the lead paint rule, visit www.nahb.org/leadpaint.

For more information, email Kelly Mack at NAHB, or call her at 800-368-5242 x8451

Products

by Tom O'Brien

Innovative LED. According to GE, fins surrounding the new 9-watt Energy Smart LED bulb dissipate heat and disperse light, making it the world's first omnidirectional LED replacement bulb. Designed to replace a 40-watt incandescent, the light purportedly lasts as long as 23 years when operated for three hours a day. It's mercury-free, turns on instantly, and puts out a soft white light at 3,000 K. It's available online for about $35. **General Electric Co.,** 800/435-4448, ge.com.

Brighter Fan Lights. Broan and NuTone recently announced that they've improved the lighting for their Ultra Silent Ventilation Fans With Lights. They say that the two 18-watt (GU24) fluorescent bulbs illuminating the QTXE and QTRE series fans use 14 percent less energy than the bulbs in earlier models yet project more light, thanks to a new lens design. Prices for the Energy Star–certified appliances range from $335 for an 80-cfm model to $435 for a 150-cfm model. **Broan-NuTone,** 800/558-1711, broan.com.

Discreet Keyless Entry. The SimpliciKey Remote Control Electronic Deadbolt is designed to look just like a traditional mechanical lock (it even has a functional keyhole). But the locking mechanism can also be operated by clicking a key fob or punching a code into a keypad concealed beneath a sliding metal cover. Power comes from four AA batteries. The bolt is sold in brass, nickel, and bronze finishes and can be found online (with two key fobs) for $230. **SimpliciKey,** 703/904-5010, simplicikey.com.

Sun-Resistant Underlayment. Grace Ice & Water Shield HT provides the same protection against ice dams and wind-driven rain as the company's standard underlayment - but it's made with an adhesive that is unaffected by temperatures as high as 240°F, the maker says. The membrane is also coated with a UV-resistant film that can withstand as many as 120 days in the hot sun and resists oil bleed-through, says Grace. It's sold in 200-square-foot and 225-square-foot rolls for $107 to $117 per roll. **Grace Construction Products,** 866/333-3726, graceconstruction.com.

Fresh Fan. A new player has jumped into the high-end bath-fan market. Delta Products Corp. says Breez Ventilation Fans have ball-bearing-equipped DC brushless motors and 67-fin impellers for ultra-quiet energy-efficient operation. All nine models are Energy Star certified, with noise ratings from 0.3 sone to 2.0 sones. Fan-light combinations, dual-speed motors, and humidity-sensing options are available. A 110-cfm fan-light combo costs about $170. **Delta Products Corp.,** 888/979-9889, delta-breez.com.

Modern Membrane. IB-3 StormStopper is a self-adhering (50-mil-thick) mineral surface underlayment that can be used to protect trouble spots like valleys and rake edges or the entire roof. Made with a rubberized asphalt adhesive that self-seals around fasteners and projections, the liner separates easily and splits in the middle to simplify valley installations, says the maker. It comes in 3-foot-by-67-foot rolls. The company declined to provide pricing. **MFM Building Products,** 800/882-7663, solutions.mfmbp.com.

Lead-Safe DVD. If you sat through the eight-hour RRP training course and still can't figure out how to follow the law without going bankrupt, you're not alone. LeadSafe Video Solutions is a 90-minute DVD produced by a veteran deleading contractor that cuts through the confusion and presents straightforward methods for estimating, staging, and cleaning up various jobs that involve disturbing lead paint. A printable, 32-page manual is also included. The DVD can be purchased online for about $200. **LeadSafe Video Solutions,** 866/436-5663, leadsafevideosolutions.com.

Dressed-Up Drop Ceiling. Why settle for an institutional-looking ceiling just to provide access to mechanicals? Sauder says its WoodTrac Ceiling System can be used to make a new or existing grid ceiling look like custom-crafted wood. The product consists of replacement panels and moldings that fasten to a metal grid with clips; they're made of laminate veneer over an MDF core. A variety of molding profiles and finish options are available. The clips are compatible with any 15⁄16- or 1-inch-wide suspended ceiling grid. Prices for panels, moldings, and clips range from $3.50 to $5 per square foot. **Sauder Woodworking Co.,** 800/523-3987, woodtracbysauder.com.

Lightweight Green Pavers. Vast's Composite Pavers are made almost entirely from recycled materials - mostly scrap tires and plastic bottles - and weigh one-third as much as traditional brick or concrete. They come in 4-by-8-inch and 3-by-6-inch sizes and are installed over a grid base that takes the guesswork out of alignment. (The larger size can be combined with an open-graded base for a permeable surface.) Material costs for the pavers and the 16-inch-square grids run about $5 per square foot. **Vast Enterprises,** 612/234-8958, vastpavers.com.

Movable Blocks. US Block Windows' operable acrylic-block windows provide the appearance and privacy features of conventional glass blocks - but they open and close. Single-hung, slider, awning, and casement styles in three frame colors and seven block patterns are available. The company also offers custom shapes, including arch-tops, eyebrows, and hexagons. Prices range from $300 to more than $2,000. **US Block Windows,** 888/256-2599, usblockwindows.com.

Tough Grout. Laticrete says its new SpectraLock Pro Premium Grout is GreenGuard-certified (for low-VOC emissions) yet exceeds the toughest commercial performance standards. Features include advanced stainproof protection and a "non-sag" formulation that eases installation. The grout also contains an antimicrobial agent to inhibit mold and mildew growth, the company says. It comes in 40 colors. A package that includes all the ingredients needed to make and clean up 0.8 gallon of grout costs about $100. **Laticrete International,** 800/243-4788, laticrete.com.

Floodproof Subfloor. Tapered edges help PointSix Flooring go down flat and stay flat even when exposed to severe job-site weather or flooding, says the maker. All four sides of the subfloor panels are factory-milled to create a slight recess at the points most vulnerable to swelling. If the floor gets wet, the wood fibers expand just enough to flush out the gap. According to the company, PointSix costs about the same as competitive OSB subflooring. **Ainsworth Engineered Canada LP,** 877/661-3200, ainsworth.ca.

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Published by: JBDR & Associates, LLC

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http://www.jbdr-associates.com