

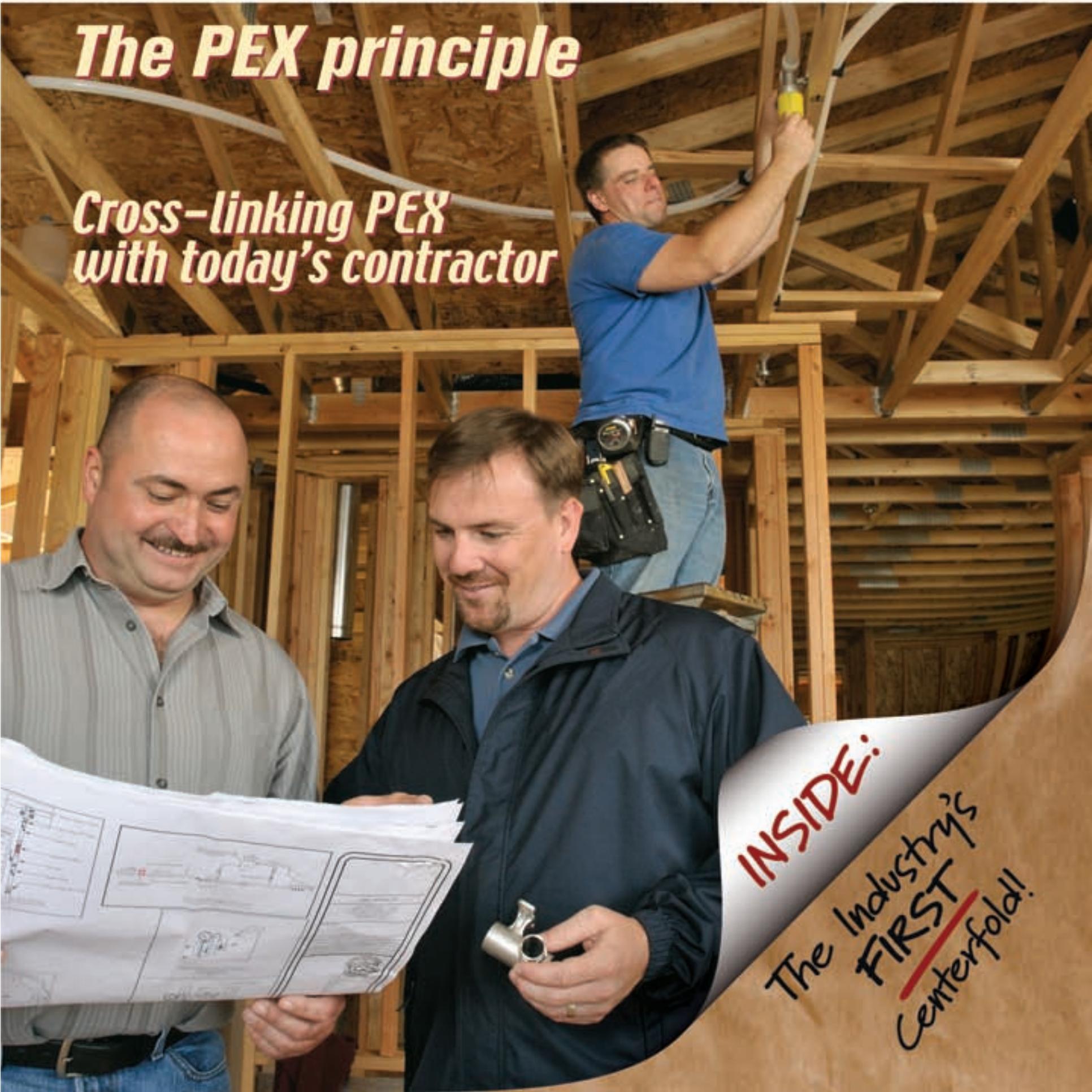
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Phc News

plumbing & hydronic contractor news

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Circle 1 on Reader Reply Card

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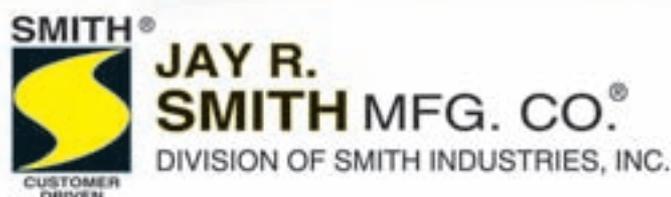
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On the Cover

Contractors everywhere are learning the value and versatility of PEX tubing for applications that traditionally required galvanized, copper or PVC tubing. In this issue we explore the many uses for the amazing material that is more correctly called cross-linked polyethylene tube.

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PEX makes installing residential fire protection systems an easy job in new construction.

44 Using it right

Here are guidelines for the proper sizing and installation of the increasingly popular material.

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PEX is coming into its own as a viable piping material and has been tested six ways from Sunday.



Phc News

plumbing & hydronic contractor news

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Circle 5 on Reader Reply Card

Zoeller launches website, branding initiative

LOUISVILLE, KY. — Zoeller Company has launched a new website for the corporation and the four brands in the Zoeller Family of Water Solutions.

The new site is organized, easy to navigate and utilizes a cohesive template reinforcing the relationship between the different brands. The site also incorporates new features and enhanced benefits to its users, including quick and easy product navigation through the drop-down menu, a “News & Events” section and an interactive literature index.

The new site also unveiled new



logos for all brands, which initiated a new branding project. In an effort to emphasize the family of Zoeller brands the logos feature similar designs with differentiating features to enforce the unique characteristics of each brand.

To visit the new sites and view the new logos, go to www.zoeller.com.

Taco to deliver 3D pump models

CRANSTON, R.I. — Taco, Inc. has announced that it is making its commercial pump lines available through the Autodesk Seek Web service. This will enable mechani-



cal design professionals to search for and access Taco's data-rich, high-quality digital design files di-

rectly from AutoCAD and the Revit desktop design applications for Building Information Modeling (BIM) or through the Web. (<http://seek.autodesk.com>)

Three file formats will be available via Autodesk Seek: Revit (.rfa), AutoCAD 2D and AutoCAD 3D. The Taco files can also be accessed using any mobile smart device.

Taco's KS pump line is the first product line to be made available through Autodesk. KS Vertical Split Coupled Inline Pumps are designed for optimum performance and ease of installation and maintenance. They are ideal for HVAC and industrial applications. Additional Taco commercial pumps lines available as AutoDesk Revit files will follow.

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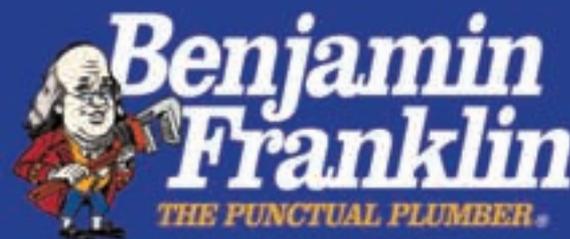


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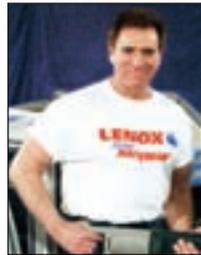


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THE PULSE

TOOL TIPS with Hackman

Fleam ground blades



Tool Tips feature trade tips from Lee "HACKMAN" Breton, marketing services manager for LENOX, team HACKMAN event manager and car cutter extraordinaire. Every month, HACKMAN shares insight from his 25+ years in the tool industry.

Fleam grinding on saw blades began in Asia over a hundred years

ago with the invention of the Japanese cross-cut saw tooth form (tate-noko-giri). The fleam angle, also known as the angle of inclination refers to the amount of twist to the tooth face. Fleam ground teeth are very sharp — making them the fastest and smoothest cutting of all saw tooth designs, because of the fine point of a fleamed

tooth, it cannot be used to cut all materials. They are best used when cutting all kinds of wood and many hard plastics. Modern fleam ground bimetal reciprocating blades are a bit stronger and can cut through an occasional nail.

Fleam ground jig saw blades are used by many tradesmen when their job requires them to have a very smooth cutting surface. Fleam blades are popular with cabinet manufacturers and furniture builders — both of which require a smooth finished piece. The fleam ground blades are ground to precision sharpness, providing a smooth finish and greater precision, meaning fewer deflections, straighter cuts, less ruined material surfaces and decreased sanding for the user — saving valuable time and cost.

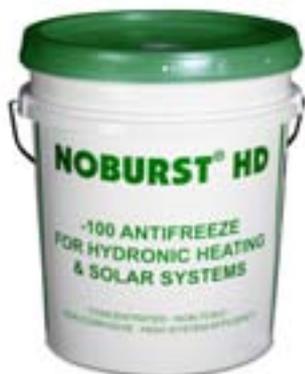
If you need a very smooth and fast cut, fleam ground blades will be the best choice. If you have any questions or comments for HACKMAN, email him at hackman@lenoxtools.com or visit www.lenoxtools.com. ■

Quietside Corp. joins Facebook & Twitter

CARLISLE, PA. — Quietside Corporation, a master distributor of HVAC products in North America, has announced they have joined the social networks of Facebook and Twitter. Since 1998 Quietside has been the exclusive sales and product support partner for Samsung mini-split air conditioning throughout the United States and Canada. In addition to Samsung, Quietside is now offering PVC vented on demand tankless and dual purpose water heaters and mini-split air conditioners under the Quietside brand name. They have dedicated themselves to providing the highest quality equipment, technical support, and parts and accessories available.

The Quietside Facebook profile gives those facebook members a firsthand look inside the operations of Quietside. It shows photos and details of all product lines, gives updates on the latest news and sales promotions, and gives you an outlet to ask questions with fast responses.

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East Coast	2.596	↑
New England	2.676	↑
Central Atlantic	2.657	↑
Lower Atlantic	2.528	↑
Midwest	2.519	↑
Gulf Coast	2.459	↑
Rocky Mountain	2.614	↑
West Coast	2.958	↑
California	3.037	↑

DIESEL

Area	\$/gal.	Change
U.S. average	2.674	↑
East Coast	2.691	↑
New England	2.742	↑
Central Atlantic	2.779	↑
Lower Atlantic	2.649	↑
Midwest	2.649	↑
Gulf Coast	2.618	↑
Rocky Mountain	2.692	↑
West Coast	2.802	↑
California	2.893	↑

METALS

*Copper	\$2.85/lb.	↑	**Aluminum	\$0.81/lb.	↓
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Prices valid as of 8/31/09. Fuel information courtesy of the U.S. Department of Energy <http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp>. Arrows indicate change from previous issue. * Copper prices according to NYMEX.com. ** Aluminum prices according to metalprices.com.

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Circle 8 on Reader Reply Card

Viega to begin using Mc4 software for CAD designs

WICHITA, KAN. — Members of the Viega Technical Services department are quoting and designing jobs daily. Now, they have found a way to decrease their turnaround times and provide customers with more detailed drawings. By 4Q 2009, Viega will switch to a software developed by Mc4.

Mc4 is the most advanced HVAC design software on the market. The fully integrated program makes radiant and snow melt drawings easy. It can easily calculate heat loss and radiant cooling designs, and also has AutoCAD OEM capability.

“This is an exciting time for the

Viega Design Services team,” said Mark Parent, Viega director of technical services. “With Mc4 software we are going to increase our efficiencies, make better use of our time, provide enhanced visuals and above all, improve our design services to provide best-in-class support.”

Regenerate your business and yourself in the Big Easy

NEW ORLEANS, the location for the PHCC's CONNECT 2009 (Oct. 21-23), is known for unforgettable dining, intoxicating live music, Old World charm and good time living. And, since the devastation from Hurricane Katrina, it has become known as an epicenter for creative and innovative construction practices and home designs. Those attending the convention will be able to experience the city's vibrancy, charisma, regeneration, and a whole lot more. It's been a stressful year, so why not add a little fun to your life at the same time you're learning how to improve your business?

Wednesday's educational lineup features sessions on emerging markets — such as residential fire sprinklers and green technologies — as well as pre-fabrication and improving your profit margin. Unwind later that evening at our opening reception and enjoy the warm hospitality of our sponsors Bradford White and InSinkErator. A Casino Night and auction benefiting the PHCC Political Action Committee round out the night's activities. Try your luck at one of 12 gaming tables or get some early holiday shopping in at the silent and live auctions.

Thursday's Product and Technology Showcase offers a focused and intimate setting to learn about new developments in products, technologies and services from the industry experts. In addition to exhibits, there are a number of product demonstrations and vendor learning labs available. Evening receptions hosted by PHCC's Quality Service Contractors and the Union-Affiliated Contractors.

A very special part of the convention that is offered by the Louisiana PHCC will close Thursday night's activities. All convention attendees are invited to a Hospitality Suite with a Bourbon Street wrap-around balcony at the Royal Sonesta Hotel.

On Friday, after a morning keynote by Stuart Varney, business and financial journalist for Fox news and a panel discussion with industry manufacturers, the fun will continue at the entertaining InSinkErator luncheon and a Closing Reception at the World War II Museum that night. There also will be a special tour Friday afternoon of how the Inner Harbor Navigation Canal Lock has been renovated and strengthened to withstand storm surges, followed by a tour of the Global Green Holy Cross Project's Visitor Center and the Make it Right Project of renovated homes in the 9th Ward. Register at www.phcweb.org/convention.

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Siphonic roof drains as a value engineering solution

Burns Brothers Mechanical, a MCAA contractor in Syracuse, N.Y., has knowledge of the efficiency and savings that siphonic roof drains can provide on large commercial projects, especially jobs with large flat roofs. As these types of installations work well



Carousel Center Mall addition – Syracuse, New York —Jay R Smith Mfg. Co. Siphonic Roof Drain, figure #1005

with an engineered siphonic roof drain system. The building owner also knew about siphonic roof drains and wanted Burns Brothers to use them on the Carousel Center Mall project based on the value engineering benefits of the system*. The decision was made by the owner and Burns Brothers to use Jay R. Smith Mfg. Co.'s siphonic roof drains and to install a siphonic roof drain system on the Carousel Center Mall shopping addition because of these benefits. The shopping mall addition is to be built in three phases. The project scope is in excess of 1.3 million square feet.

(*Smaller Piping = Cost Savings: In a siphonic system, the pipe diameters on any installation can be cut in half. In other words, if traditional pipe sizing for horizontal pipe requires an 8-inch pipe, a siphonic roof drainage system can drain the same quantity of water with a 4- or 5- inch pipe. This translates to cost savings. There have been many cost-saving numbers posed but a conservative estimate is around a 40 percent savings overall compared to a traditional system.)

The Carousel Center shopping addition is the first siphonic roof drainage system project for Burns Brothers Mechanical. To aid them with the design and product education, the Jay R. Smith Mfg. Co. representative in Upstate New York, Kolstad Associates, worked closely with the MCAA contractor during the design process. Mike Kolstad of Kolstad Associates knew that on a job of this size the siphonic roof drain system design had to be done correctly so that the installation went smoothly. To ensure the proper design of the system, the SiphoniTec® Siphonic Roof Drain Design software (by Rainwater Management Solutions and distributed by Smith) was used. Using the siphonic software provided many benefits in designing the roof drainage system for the mall addition. It ensured that all of the si-

phonic calculations were correct and that the installed system would work as engineered. At the conclusion of the design, Smith figure number 1005, siphonic roof drains were specified and used with the engineered siphonic system.

The siphonic roof drainage system is an excellent way of transporting rainwater from the roof to a single point of discharge from the building*. The full-bore flow of the siphonic system also reduced pipe diameter on the project and allowed the piping to be run horizontally. The horizontal piping allowed for additional open space in the mall's design and did not interfere with the mechanical systems.

(*Pipe Consolidation: The ability to run drainage pipe horizontally overhead gives the designer the opportunity to combine several drain systems into one manifold and one stack. So it is possible for a building's roof drain system to use one eight inch stack (just for example) instead of three eight inch stacks.

Benefits of using a siphonic roof drainage system on the Carousel Center Mall:

- The smaller horizontal pipe diameters reducing material costs — 2", 3", and 4" pipe vs. conventional 6" and 8" pipe;
- Labor savings due to horizontal piping — Less manpower to install as the pipe is hung without pitch;
- Fewer main rain leader conductors instead of multiple rain leader conductors;
- Less sleeving and coring — One main riser as opposed to four risers;
- Below slab piping — Separate main conductors as opposed to several connection points; and
- Maximum use of space without intrusion of piping — Avoid elevation conflicts with HVAC and lighting systems.

Dan Grove, a project manager for Burns Brothers Mechanical, has been impressed with the installed siphonic roof drain system and said, "Anytime you can use smaller diameter pipe and less of it you really open up the ceiling, which creates more room for mechanical systems and makes the architect happy." He also understands the importance of saving money for the building owner and stated, "We quoted the job using a traditional system versus a siphonic system and the savings that the siphonic system provided really opened the eyes of the owner."

The Carousel Center Mall is a massive project. It is still in the construction phase. However, most of the siphonic roof drain system has been installed and both the MCAA contractor and the Smith representative are pleased with the results. This project is a great example of how siphonic roof drainage can save time and money in a value engineering application.

For more information about siphonic roof drains and to download the free SiphoniTec® Siphonic Roof Drain Design software, please go to www.jrsmith.com. ■



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Circle 10 on Reader Reply Card

Plumbing Industry Council selects new president

ST. LOUIS — Mark Trojahn of Trojahn Plumbing Systems has been selected by the Plumbing Industry Council Board of Directors to serve as the Association's president/chairman of the Board through the end of 2009 filling the unexpired term of the retiring president/chairman of the Board.



Trojahn

Fluidmaster announces CMO

SAN JUAN CAPISTRANO, CALIF. — Fluidmaster has appointed Robert Roth as its new chief marketing officer (CMO). In this new role, Roth will serve as the driving force in building and leading the growth of the



Roth

company on a global scale. His primary responsibilities as CMO will include piloting the company's marketing efforts within its three global channel organizations, (retail, OEM and wholesale).

Gerber announces Eastern national Accounts manager

WOODRIDGE, ILL. — Gerber Plumbing Fixtures LLC announced the promotion of Brian Dougherty to the position of national account manager of new construction in the Eastern division. Dougherty previously served as the regional builder manager for Gerber on the branded sales team.



Dougherty

Egan employees earn LEED accreditation

MINNEAPOLIS — Jack Galvin, vice president of electrical, Gary Stommel, project manager, Ron Oelrich,

business development, Adam Rikkola, electrical designer, and Beth Scheldrup, sheet metal estimator and account manager, have received their LEED accreditation from the U.S. Green Building Council (USGBC). The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is a certification program and a nationally accepted benchmark for the design, construction, and operation of high performance green buildings.

Taco appoints senior manager

CRANSTON, R.I. — Taco, Inc. has added Todd A. Facey to its executive operating committee. Facey has joined Taco as senior vice president of residential sales and marketing, replacing Bob Coons, who plans his retirement from Taco in April '10. Facey will report to Taco president, John Hazen White, Jr.



Facey

BrassCraft names senior director of wholesale sales

NOVI, MICH. — Jim Pletcher has joined BrassCraft as senior director of wholesale sales. In this position, Jim will add his extensive experience in contractor services and building products to BrassCraft's growing customer support staff.

Dexter + Chaney appoints VP of business development

SEATTLE — Construction software developer Dexter + Chaney has chosen Mark Reich, a long-time construction software sales and management executive, to the new position of vice president of business development. Reich joins Dexter + Chaney from Sage/Timberline Software, where he spent 24 years as a business partner and company executive.



Reich

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Circle 11 on Reader Reply Card

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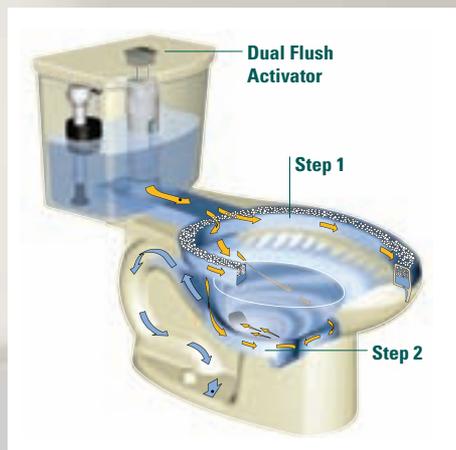
Everybody wants to save water, but nobody wants to sacrifice a good, effective flush. The new H₂Option™ Siphonic Dual Flush Toilets solve that dilemma by delivering a stronger, cleaner and quieter flush than typical dual flush toilets. Our patent-pending, siphonic-action technology provides exceptional performance in both 1.0 gpf light flush and 1.6 gpf heavy flush settings. The result? Cleaner bowl and improved water savings.

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- 1.0 gpf setting yields an impressive 400g MaP score for bulk removal
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* MaP testing performed by IAPMO R&T Lab per MaP protocol outlined by Veritec Consulting and Koeller Company.



Two-Step Siphonic Action

Step 1
Pressurized PowerWash™ rim scours the bowl clean

Step 2
Jetted siphonic bowl action quickly and completely evacuates bowl contents



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Style That Works Better

Circle 12 on Reader Reply Card

'Cap-and-Trade' pitfalls have some U.S. manufacturers uneasy

ACCORDING TO TMB Publishing's economist and PVF industry emeritus Morris R. Beschloss, Conbraco Industries, Inc.'s CEO Glenn L. Mosack has written a letter to the four U.S. Senators from North Carolina

and South Carolina in response to the dangers of the upcoming Senate vote on "Cap-and-Trade" and its impact on the American consumer, as well as business and industry. The contents of the letter to Senator Jim

DeMint (R-SC) were similarly transmitted to Senators Lindsey Graham (R-SC), Kay Hagan (D-NC) and Richard Burr (R-NC).

The contents of the letter from Glenn L. Mosack state:

Dear Senator DeMint,

As an owner of a U.S. manufacturing company, I am writing to express my dismay at the proposed "Carbon Cap-and-Trade" legislation currently before Congress. If passed in its current form, this reckless bill will impose massive new costs on U.S. companies, drive jobs out of the country, and do little or nothing to reduce global pollution.

I have been to China and seen the industrial districts myself. Pollution control is virtually non-existent, and the Chinese government has no real intention of complying with anything remotely resembling existing U.S. standards, much less stricter standards. At a time when the United States is struggling with high unemployment, this bill will inflate our unemployment, as many companies will not be able to withstand the effects of this legislation. It will drive more companies to move production offshore, increase unemployment, impose higher energy costs on individuals and families, and erode the tax base.

I urge you to vote against this or any similar bill, and reach across the aisle to organize opposition to this legislation with other like-minded senators from the Democratic Party.

Very truly yours,
Glenn L. Mosack
President & CEO
Conbraco Industries, Inc.

Chicago Faucets launches reward program

DES PLAINES, ILL. — Contractors can earn dollars that turn into tools by participating in Chicago Faucets Gear Up! Program, which offers rewards for purchasing specified products from a local Chicago Faucets distributor.

Qualifying Chicago Faucets' products in the program include:

E-Tronic™ 40 Faucets — the company's newest electronic lavatory faucet. Available in both AC and DC versions, the E-Tronic™ 40 incorporates advanced technology for dependability and convenience. With hermetically sealed, above-deck electronics for easy maintenance and long-term reliability, the E-Tronic™ 40 is a great new option for commercial lavatory applications.

420-CP Faucets — the company's popular Deck Mounted — Single Control lavatory faucet with 4⁵/₈" C-C Integral Spout, a 1.5 GPM (5.7 L/min) Pressure Compensating Laminar Flow Outlet and metal lever handle.

Repair Parts — with the largest installed base of faucets in the country, Chicago Faucets offers support for its products through national distribution. Parts are readily available through the distribution channel for most of the company's product line. For more info, www.chicagofaucets.com.

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Circle 68 on Reader Reply Card



Chicago Faucets & The Buy American Act

The American Recovery and Reinvestment Act recently signed into law includes a Buy American provision favoring domestic sources. Selecting products that meet the requirements of this Act can help support jobs across the USA and assist in our economic recovery. Over 95% of Chicago Faucets products, more than 1,700 items, meet these requirements. Chicago Faucets... unwavering commitment to quality, backed by know-how and determination that is uniquely American.

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ECAST™ Products from Chicago Faucets



ECAST, from Chicago Faucets, is the line of durable, high-quality brass faucets that are designed and manufactured with less than one quarter of one percent (0.25%) total lead content by weighted average. These products are intended for installation where state laws and local codes mandate lead content levels or where lead content is a concern.

Visit ecast.chicagofaucets.com for more information.

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Bubblers from Chicago Faucets

Chicago Faucet bubblers have been re-designed, with added durability and safety in mind. Available new models include bubblers with anti-microbial flexible heads that inhibit the spread of germs and protect against injury by flexing on impact. Vandal-resistant features have also been added to discourage tampering. Choose from four ADA compliant models, all featuring the performance, quality and craftsmanship you expect from Chicago Faucets.

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GRUNDFOS 

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Examining the 'Buy American' challenge

Although Buy American laws date back to the 1930s, there has been renewed focus and controversy on what is "Buy American" since passage in January of the American Recovery and Reinvestment Act of 2009 ("the stimulus package"). That Act contained a provision found in Section 1605 relating to the "Use of America Iron, Steel, and Manufactured Goods."

Faced with strong pressure from long-time American trading partners and international companies, the Section includes a provision that "This section shall be applied in a manner consistent with United States obligations under international agreements." Such obligations would include The World Trade Organization Government Procurement Agreement and the

United States-European Communities Exchange of Letters. The Office of Management and Budget has published an updated implementation guidance, 74 Federal Register 18449 (April 3, 2009) recognizing this exception.

Viega LLC is the North American company owned by Viega GmbH & Co. KG, Attendorn, Germany. It manufactures flexible plastic pipe (PEX) and

various fittings and other connections in the United States and has made a substantial investment in facilities in McPherson, Kansas. It also purchases and imports from its parent company a wide variety of metal press fittings manufactured in state-of-the-art facilities in Germany.

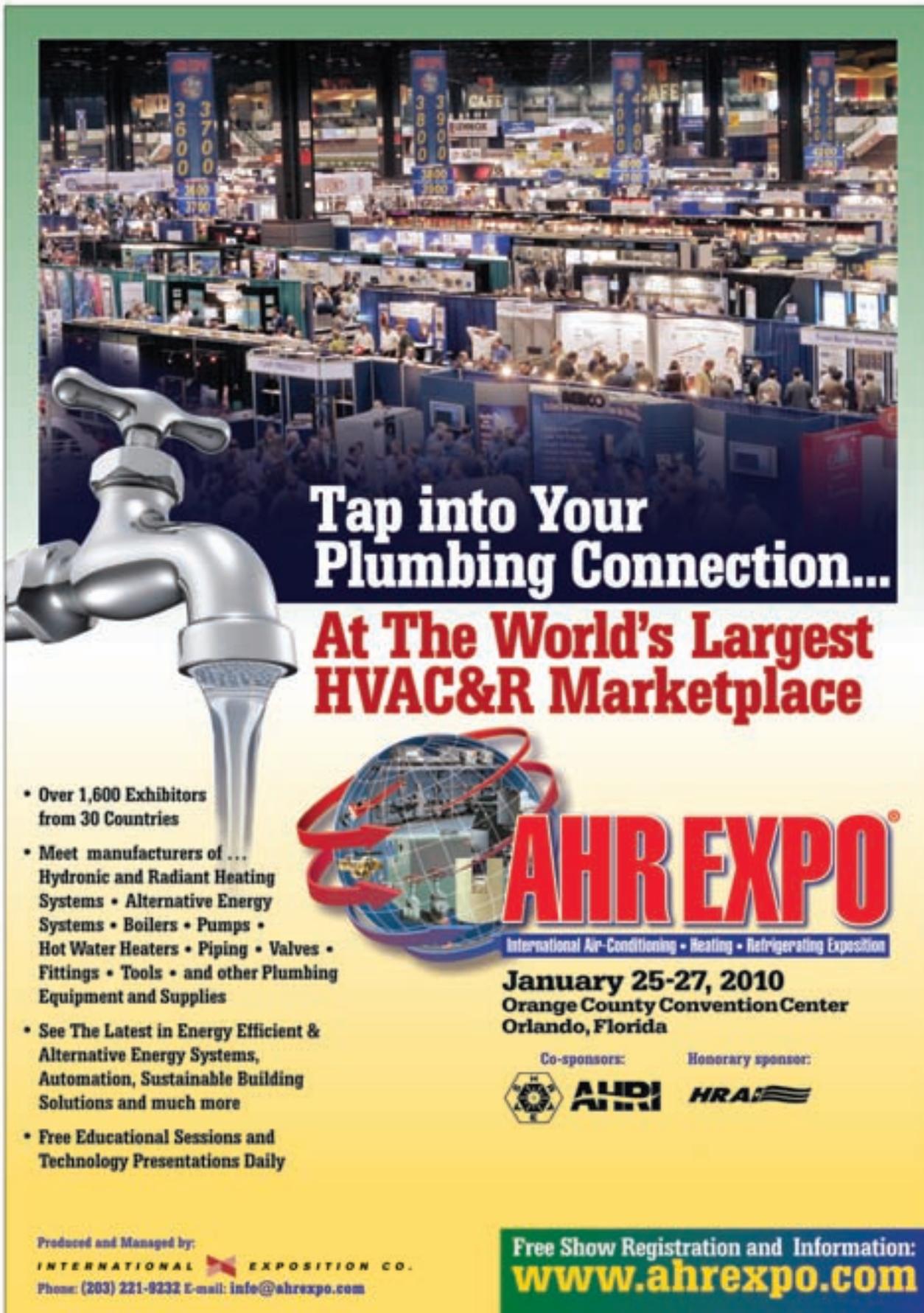
Viega illustrates the challenge faced by international companies under the Buy American provisions. It has committed to not exporting core manufacturing jobs from either the U.S. or Germany to low wage countries. On the other hand, it cannot compete internationally with imported goods from low wage countries if it does not concentrate various manufacturing efficiencies and quality into single plants. Viega employs approximately five hundred persons in the U.S. in manufacturing, sales, and distribution of its various products. Those jobs are potentially impacted if there is not recognition and fair interpretation by the U.S. of its treaty obligations under the Buy American provisions. Because of the treaty obligations between Germany (European Union) and the United States, Viega products imported from Germany are eligible for use under the "Buy American" provisions.

A number of competitors to Viega in the plumbing and heating industry also are European-owned and, like Viega, have brought innovative products into the American market. Research and development is shared to the benefit of both the U.S. and European companies. In the plumbing industry, vigorous requirements for third-party listings to established standards provide protection to the American buying public.

Promotion of American jobs is important but many American jobs are involved in the growing internationalization of business. If unfair enforcement or interpretation of Buy American provisions results in the dampening of imports of goods and foreign investment in U.S. subsidiaries, then the goal of economic recovery will not be reached.

For persons interested in further information on the federal guidelines developing under the Buy American provisions, you may consult Rules and Regulations by the Office of Management and Budget, dated April 23, 2009, and an implementation guidelines letter from the Office of Wastewater Management of the United States Environmental Protection Agency dated April 28, 2009. The Canadian government also has posted information relating to Canadian manufacturers, engineers and contractors doing business in the U.S. ■

William (Bill) Seiler, Jr. is the General Counsel of Viega LLC and been a general counsel in the American plumbing and heating market since 1989.

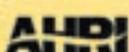
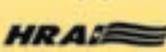


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Habitat for Humanity goes solar

MORRISVILLE, N.C. — SOLARHOT, a manufacturer of renewable energy products in Morrisville, North Carolina, has donated a solar energy system to the Chatham Habitat for Humanity, for one of their recently constructed homes located in Pittsboro, North Carolina.

“Chatham Habitat For Humanity, was interested in offering a very energy efficient home,” said Dan Gretsche, vice president of engineering of SOLARHOT, regarding their donation. “Both SOLARHOT and the installer, Solar Consultants, have done volunteer work with Chatham Habitat For Humanity in the past and working together on this project seemed a natural fit.”

The solar equipment donated by SOLARHOT, valued at over \$7,000, included a SolVelox drainback pump/control/heat exchanger module mounted on an 80-gallon electric water heater, a 10-gallon stainless steel drainback reservoir, four 4' x 8' Silver collectors, mounting hardware and connection fittings. This equipment was primarily installed by Solar Consultants, a solar energy installation company based in Carrboro, North Carolina, who donated over 50 worker-hours on this project.

“This system was installed for both hot water as well as space heat for the home,” explained Gretsche. “The homeowner was really excited about the prospect of getting a solar home.”

The homeowner, Tracy Lynn, and her seven-year-old son Tristan, are enjoying the energy savings in their new 1,100-square-foot home and expressed gratitude to SOLARHOT for the donation of their solar products.

“There’s nothing like having hot water at your disposal! It feels great not being utility dependent,” said Lynn. “SOLARHOT has a very knowledgeable, caring staff and the best reputation of any solar parts distributor that I could find. I am indebted to them for contributing this cutting edge technology so that my energy costs will be manageable in my new active solar home built through Chatham Habitat for Humanity.”

Chatham Habitat for Humanity was established in 1989 as an affiliate of Habitat for Humanity International.

With over 30 years of manufacturing, sourcing, distribution and engineering experience, SOLARHOT offers pre-assembled residential solar heating systems, as well as en-

gineering support for large scale commercial and industrial solar heating projects. SOLARHOT is based in the Research Triangle area of North Carolina.

For more information on SOLARHOT, visit online at www.solarhotusa.com.



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BY DAN HOLOHAN,
contributing writer

A bit about vacuum pumps

Steam systems that make vacuum with pumps have been around for more than 100 years. In 1899, D.F. Morgan wrote an article in *The Metal Worker* magazine, suggesting that designers skip the pump and let the steam make its own vacuum by expanding when it formed, and contracting when it turned back into condensate. He wanted to take advantage of the 1,700:1 expansion ratio between water and steam. The trick was to make all the pipe joints tight so that air couldn't get back into the system once the steam had shoved the air out, and to use special air vents that had check valves at the outlets. When steam turned into condensate and shrank, you'd wind up with a naturally formed vacuum and water would then boil at a lower temperature. This took advantage of the lower Btu input of a coal pile that was burning down as the hours went by.

These systems worked well, but only on coal-fired systems. When we started using oil and natural gas instead of coal as a fuel, these systems became automatic. A thermostat started and stopped the burner, and when the fire stopped, there wasn't as much residual heat left in the boiler (compared to coal, that is). The vacuum formed quickly, and that was the problem. Not all the air escaped from the system on

the first firing cycle, and when the vacuum formed, that air expanded tremendously. It moved out of the radiators and down into the pipes, stopping the steam from reaching up to where the people were (where there is air, steam will not go).

So when the fuels became automatic, the vacuum vents on the radiators and near the ends of the main became a problem. The Dead Men removed them. Or at least they were supposed to remove them. If you have an oil- or gas-fired steam system and it has this type of vacuum vent, replace those vacuum-type vents with standard air vents and the system will balance better.

There were some other systems that used mercury-filled devices to make vacuum. Trane was one company that made such a device. It allowed the expanding steam to push the air through the pipes and the radiators and then into a tube that dipped into a pot of mercury. The air would bubble up through the mercury, and when the steam collapsed back into water, air couldn't reenter the system through the mercury pot. It worked beautifully with coal, but if you should come across one of these antiques, be careful with it. Mercury is no longer something we should be rolling around in our hands, as we did when I was a kid. Who knew?

Vacuum systems that used pumps to make the vacuum have been around even longer than the naturally induced systems I just described. You'll see vacuum pumps on big jobs, such as the Empire State Building. The advantage of having a pump is that it increases the differential pressure across the system by lowering the return-side pressure. That allows you to design with smaller pipes, valves and fittings.

Typically, a vacuum pump runs between 3" and 8" of mercury vacuum. It tries to maintain an average of 5 1/2". Two inches of mercury vacuum is equal to one-psi of positive pressure, so when you add the positive boiler pressure to the negative vacuum pressure, you get the total system pressure differential. If the folks in the Empire State Building run 3-psi steam pressure on a frigid day in February (which they do), and the vacuum pump is maintaining about 3-psi negative pressure (or about six-inches of mercury vacuum) the system will have a 6-psi pressure differential from supply

to return. That gets the steam to where it needs to be.

Now think about what happens when the vacuum pump fails in a big steam-heated building and the people in charge decide not to have it repaired because it costs too much. Suddenly, all of their pipes, valves and fittings are undersized because the pump isn't there to help pull the air through the pipes. The steam now has to do all the work of pushing that air, but the pipes are too small for that; they put up a lot of resistance. The steam slows down and some of the tenants have to wait a long time for their heat. And while they're waiting (and complaining), other tenants are getting too much heat. These people are opening their windows. The person in charge of the boiler will no doubt raise the boiler pressure to satisfy all the tenants, but this just burns more fuel.

Crazy, isn't it? We're now burning more fuel to heat a building that has its windows open.

So we can say this for sure: Once it's a vacuum system, it's always a vacuum system. This is because the Dead Men sized every pipe, valve, fitting, and steam trap in that building for a pressure-to-vacuum differential. Without the vacuum pump, nothing works as it should.

And the reason why the pump failed is probably because the steam traps failed. You have to maintain those steam traps. There's no way around that. It's like painting a bridge. You're never really done when it comes to steam traps.

And by the way, the reason why they can get by with such low pressure in the Empire State Building is because the pipes are the right size for the load (and the vacuum pump is working). It's like this:

When steam forms, it goes off like microwave popcorn. I mentioned earlier that the expansion ratio is 1,700:1. Try to see that in your mind's eye. Imagine a pint glass, one that you'd use to hold a big, cold draft beer. It's tapered, right? It's wider at the top than it is at the bottom, but if we measure in the middle of the pint glass we'll come up with about 2 1/2" in diameter.

Think of that pint glass as a pipe that we're going to fill with steam. How tall is it? About six inches, right? It's filled to the brim with water (the beer's for when we're done working). We're going to turn

(Turn to Holohan, page 22.)

Once it's a vacuum system, it's always a vacuum system. This is because the Dead Men sized every pipe, valve, fitting and steam trap in that building for a pressure-to-vacuum differential. Without the vacuum pump, nothing works as it should.

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Circle 19 on Reader Reply Card

Sloan Valve Co. installs water-efficient plumbing at U.S. Equities

FRANKLIN PARK, ILL. — Sloan Valve Co. announced that U.S. Equities Realty has installed its water-efficient plumbing products and hygienic restroom systems in its Chicago headquarters.

U.S. Equities Realty, a full-service commercial real estate firm with offices worldwide and a 30+ million-square-foot management portfolio, provides clients with sustainable solutions. When U.S. Equities renovated its headquarters in downtown Chicago, management was given a prime opportunity to emphasize green objectives in their own offices. Improving water efficiency in its restrooms became one way for U.S. Equities to make measurable environmental improvements.

Sloan Valve Company recommended and installed appropriate plumbing products and systems, which effectively overhauled the building's restrooms to improve water efficiency and offer greater convenience for its restroom visitors. Initial plumbing decisions were based primarily on water savings. The building's decades-old toilets flushed with 3.5 gallons of water, and the urinals consumed 1.5 gallons per flush

(gpf) — both water volumes exceeded today's plumbing fixture standards of 1.6 gpf and 1.0 gpf, respectively.

U.S. Equities replaced its toilets with two Sloan Flushometer types: the Sloan ECOS® electronic dual-flush Flushometer for its handicap stalls and the UPPERCUT® manual dual-flush Flushometer for the remaining

stalls. U.S. Equities also replaced its manual urinals with sensor-operated Flushometers that utilize only a pint of water to flush.

The company further achieved both water and energy savings with the installation of sensor-operated, solar-powered Sloan SOLIS® faucets, which have a 0.5 gallon-per-minute (gpm) flow rate, in place of its 2.2 gpm manual faucets. U.S. Equities also installed energy-efficient XLERATOR® hand dryers.

Holohan

(Continued from page 20.)

right? It's filled to the brim with water (the beer's for when we're done working). We're going to turn that water into steam, so we'll need 1,699 more pint glasses. We'll cut holes in the bottom of each and stack them. Try not to let them tip.

Or we can just make it easier by just getting ourselves a pipe that's as tall as 1,700 stacked pint glasses. That pipe would rise about 850 feet into the building, or about 85 sto-

ries. The Empire State Building has 102 stories.

Now to get one pound of water (that's about what's in that pint glass) from 32° F to 212° F, we need 180 Btus (one Btu raises one pound of water one degree on the Fahrenheit scale). We add the 180 Btus and we now have liquid water at 212° F. It's not yet steam. To get the liquid to change state, to make those water molecules so excited that they just want to leap off the surface of the water and head out for the radiators, we need to add an additional (and astonishing!) 970 Btus per pound of water. That's more than five times the amount of heat it took to get the pint of water from 32° F to 212° F, and at this point, the steam is at 0-psi pressure.

This is the stuff that heats the building, and it's there at no pressure at all. The steam will move on its own. Add a bit of pressure (but not much) to overcome the slight pressure drop of the properly sized piping and the steam will go a very long way. Insulate the pipes so the steam doesn't condense before it reaches the radiator and it will go further still. Put a vacuum pump on the return to create a greater differential pressure from supply to return and you can use smaller pipes, valves and fittings throughout the whole building when you're doing the design. And if you were building that building isn't that what you would do? I sure would. It saves a ton of money.

But if you inherited the service on that building, or some other building that has a vacuum steam system, everything is already sized and in place. And this is why you do have to maintain that vacuum pump. And the steam traps.

And the vigilance you have to pay those key components never ends. ■

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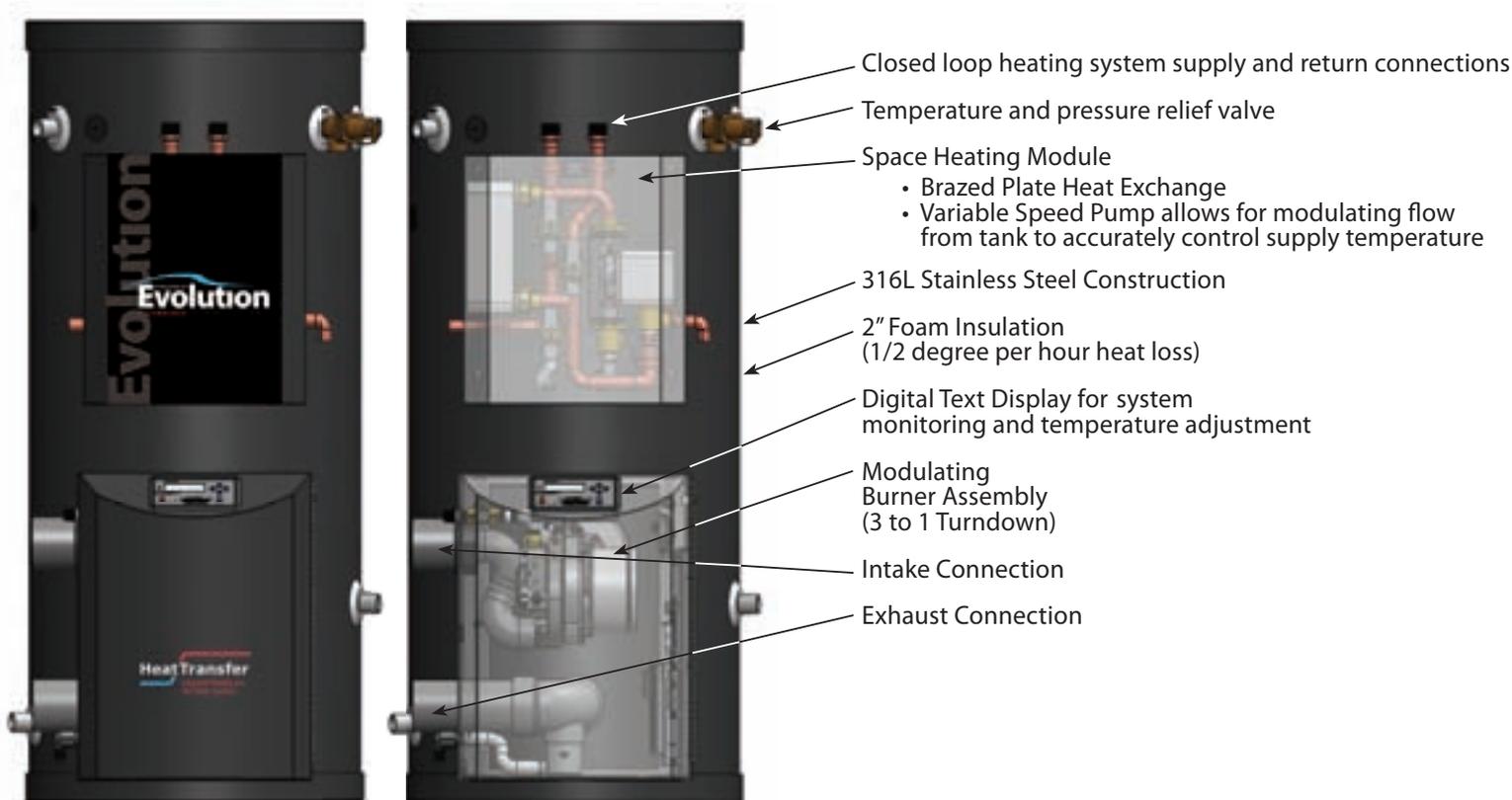
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Circle 23 on Reader Reply Card



BY PAUL ROHRS
contributing writer

First at the dinner table

Installing multiple storage tanks or water heaters is a pretty common occurrence for contractors. With a focus on the time to pipe up these units, let's look at the cost differences of piping multiple units, as well as the reverse return method. Most manufacturers have recommended piping diagrams for the water heaters and storage tanks they produce and sell, but will approve alternate piping methods if asked.

There is a hotel going up in our area and they have slated three AO Smith BTH400s to be installed to provide domestic hot water. Figure 1 (below) shows the water heaters already installed in the manufacturer-recommended method of a properly manifolded three heater system.

Piping with 3", 2", and 1½" piping, it took approximately 16 hours to pipe. Copper tube and fittings for this manifolded install cost \$1,798.00 and with burdened labor our total installed cost \$2,470.00. (This did not include the cost of the water heaters, gas piping or venting, as they would be the same.)

Manifolded water heaters have been around quite a while and one of the primary considerations is that all piping must be equal to get equal flow and pressure drop through each unit. If this piping is out of kilter a little bit, one of the three water heaters will be the workhorse and will have quite a large percentage of the heating responsibilities. This usually equates to a premature death of a single heater, which then throws the remaining units out of balance.

Now, let's talk about reverse return method. This staple of hydronic piping can often be found in heat emitter piping with the basic premise that the first radiator or fin tube supplied on the inlet will be the last radiator returned to the outlet.

Growing up in rural Nebraska has given me ample opportunity to work on farms. If I had a nickel for every bail of hay/alfalfa/brome I have "put up," I would have a big bag of nickels. One of the perks to putting up bails for farmers is that sometimes they would feed you lunch. It's not just any ol' lunch either. It's the kind of lunch that you want to be the first one at the table and the last one to leave. Now keep that in mind as we segue back to hydronics.

Let's simplify this line of thought and apply it to our heaters and call it "First-In Last-Out" or FILO for short. Figure 2 will illustrate our three-water-heater set-up with the reverse return method. Notice that with water heaters being set with equal distances, this will dictate that the piping to the cold supply will be equidistant as



Figure 1. Three properly manifolded AO Smith BTH400s as installed to provide domestic hot water in a hotel.

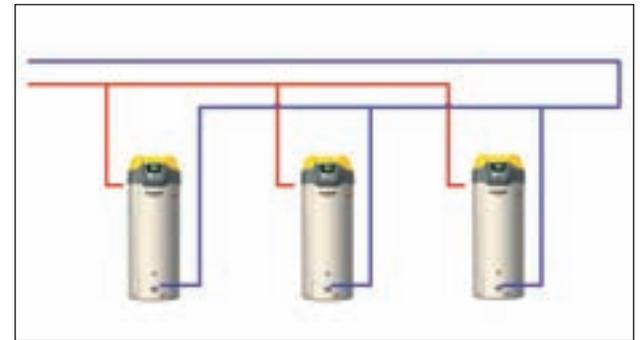


Figure 2. Three equidistant water heaters set up with the reverse return method.

is the hot outlet piping. We will not need circuit setters in this set up as the flow and pressure drop will be inherently balanced.

As we did with manifolded heater set-up, let's look at the installed cost difference with the reverse return method. Right away you will need less Tees for the install but a little more pipe. With reverse return, we were able to shave two hours off the install time. Copper tube and fittings came to a total of \$1,241.00, which is 31% less than the materials needed for the manifolded piping arrangement. Calculating 14 hours of labor at the same rate previously used brought our total install cost to \$1,829.00, again not including the cost of the heaters, gas piping or venting.

Look again at Figure 2 and see if you can determine if flow will be affected if one unit is taken down for service. Let's close the ball valves on the inlet and outlet of the first heater. Now, only heaters 2 & 3 are in service. Will the flow in and out of the heater be balanced? The answer is yes. Removing any one of the three heaters out of service will not affect the entire system balance. I will agree that in the service life of the heaters, taking a unit out of service would be for a very small percentage of time, but this is a hotel and most occupants know when they do not have sufficient hot water.

This particular job moved along fairly quickly, but be aware of requirements in your region for requesting piping changes. This would have been an excellent opportunity to write up a RFC, "Request for Change," sometimes also considered and RFI, "Request for Information." The premise of these requests are that if you think there is a better way to do something on a commercial project and you want to deviate from the engineered print, you have to request, and typically prove, that what you want to do is:

1. Going to work;
2. Shows some kind of benefit, i.e. works better, more cost effective, quicker;
3. Going to work; and
4. Oh yeah, did I mention it has to work.

The last thing an architect, engineer or project foreman wants is for a requested change to be accepted and not work.

Check your current piping practices to see if there are any avenues to save in labor and material costs, because in these difficult economic times, keeping more \$\$\$\$ in the bank at the end of the week is what it is all about. With a few more dollars in the bank, you can afford to be the first one to the buffet line, and the last one out, but would you be so kind as to leave me a piece of pie? ■

Paul Rohrs welcomes your comments. Contact Paul at paul@biggestaffradiantsolutions.com.

Check your current piping practices to see if there are any avenues to save in labor and material costs, because in these difficult economic times, keeping more \$\$\$\$ in the bank at the end of the week is what it is all about.

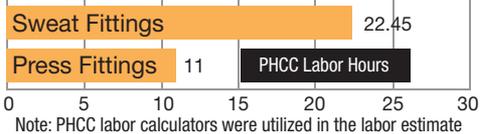
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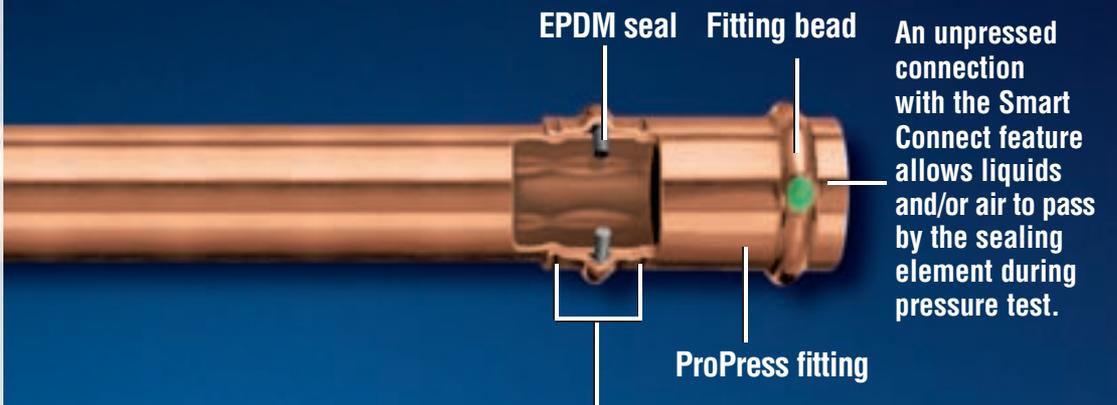


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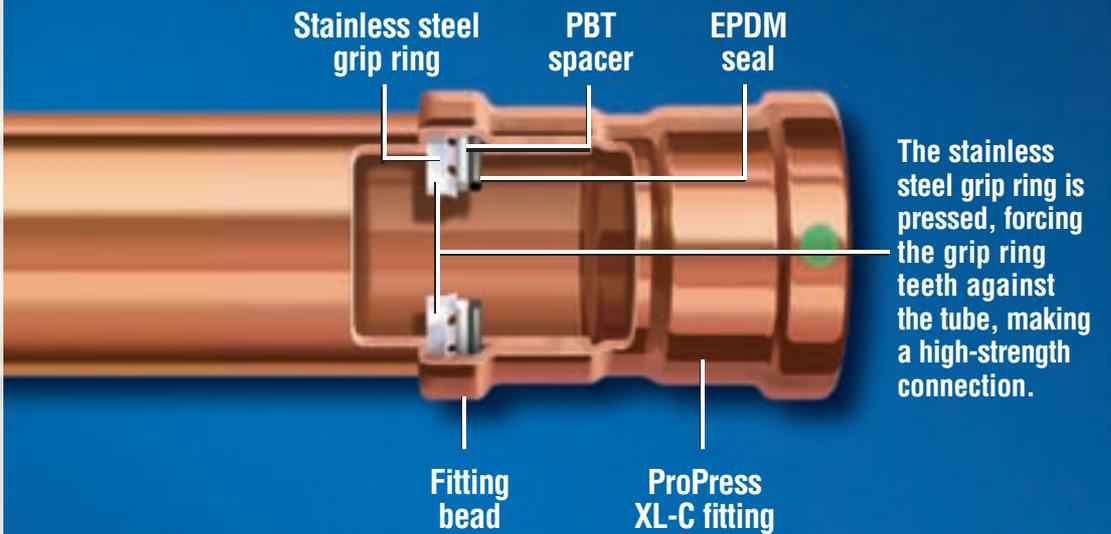
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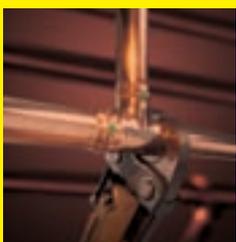


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BY ELLEN ROHR
contributing writer

Real health care

"Someday I hope you'll get the chance...to live like you were dying."

~Tim McGraw

The health insurance debate rages on with town hall meetings, public options, death panels...politics as usual. What does any of this have to do with healthy living? Yes, we need insurance reform and yes, we need to address what we will and won't pay for. In the meantime, we can impact our health by making better decisions and taking personal responsibility.

Addictions will kill us. If you weigh too much, drink too much and smoke, you are going to get sick.

Stress will kill us. If you regularly boil over with frustration and rage, get red in the face, forget to breathe... you are going to get sick.

Why not take a vacation? Your health depends on it.

I was fortunate enough to take a vacation in Italy this summer. Right before we left the USA, I arranged to have my smart phone upgraded to work with European phone and Internet providers. Didn't want to be out of touch! Once I got to Italy, none of it worked. I panicked for about five minutes. Then, I got a grip. Am I so darn important that the world will stop spinning if I can't check my voice messages for two weeks? No. Everyone will be fine. And, if the team burns the place down while I am gone? We get to start over fresh and that will solve a lot of problems.

So, I dropped the self-importance and picked up the present moment. I visited with my family without looking at the clock on my phone (which was stuck on 7:42 Missouri time.) We strolled (no power walking) on thousand year-old cobblestones. We stayed up late and slept in. We watched electrical storms move from one end of the horizon to the other. We looked at sculptures and paintings and architecture. I even tried out my few Italian words, and experienced the warmth of the lovely, Italian people. It was incredible.

Italians eat wonderful food, fresh and perfectly prepared. They sip wine and lots of water during leisurely meals. You don't see very many overweight people. And, they express themselves! If they are angry or happy, you know it. Are they healthier? According to this poll, Italy ranks 4th in worldwide life expectancy. The same poll ranks the USA 50th. <http://www.cnn.com/2009/HEALTH/06/11/life.expectancy.health.care/index.html>. Perhaps it's the Italian lifestyle. Perhaps it's because they take vacations. Most Italians take 4-6 weeks paid vacation every year.

You just must punch out now and then, for your physical and mental health. Did you take some time off this summer? No? Pull out your calendar and block out some time. If you have forgotten how to vacation, here are...

Ellen's viva vacation dos and don'ts

- Do pack light...however, always take one nice outfit and good shoes. What if you did get invited to meet the Queen?
- Don't look outside the USA for the USA. Enjoy what a foreign country has to offer and act like an invited guest. Be polite and offer to do the dishes.
- Do learn how to say, please, thank you, nice to meet you, excuse me, hello and goodbye in the local language.
- Do smile.
- Don't sweat the small stuff.
- Do something you usually don't do. If love going to the beach, try a trip to Alaska.

- Do consult a guidebook. Look for an author with a travel "tone" and philosophy that resonates with you. I like Rick Steves. Rick says, "If something is not to your liking, change your liking." Nice!

- Do a couple of tourist-y things, like tours and popular sight-seeing spots. They are popular for good reason.

- Don't overdo the agenda. One organized event per day is plenty...and it's nice to enjoy a day as it spontaneously develops.

- Do eat local food.

- Don't insist on a steak, "well done."

- If you have kids, do find activities that kids really like.

I guarantee your 3-year-old will hate 95% of Disneyworld and 100% of a tour of Versailles. Do take your Lego-ma-

Am I so darn important that the world will stop spinning if I can't check my voice messages for two weeks? No. Everyone will be fine. And, if the team burns the place down while I am gone? We get to start over fresh and that will solve a lot of problems.

niac to Lego-land and your 17-year-old hot-rodder to a race car driving school. Set them up for vacation success and do kid things while your kids are young. When they are older, and they will be...in about 10 minutes...you can enjoy adult adventures together.

- Do plan to be out of touch. Once upon a time, not so long ago, your great-great-grandfather traveled across the ocean on a wooden ship with fingers crossed. He didn't call in.

- Do travel with the family. So many of your family stories are born on vacation.

- Don't over-react when your mother starts in on her crazy political views (about health care?)

- Do expect the stories to come from the things you didn't plan.

- Do go for at least a week if you can. If you can't, take a day or a long weekend, and dive into vacation mode.

- Don't forget a camera.

- Do leave the camera behind now and then.

- Don't go into debt with too much of a good thing. It defeats the purpose to be stressed out over the tab.

- Don't complain.

- Do count your blessings.

- Do keep a journal and jot down a couple of things and thoughts that you don't want to forget.

- Don't pay attention to anyone's list of Vacation Dos and Don'ts.

Vacation tips for your team

You can help develop healthy, happy lifestyle habits for your team, too.

- Eliminate "sick" days and embrace days "off." This eliminates the temptation to adopt a sore-throat-voice and call in "sick" when you are really going to the Pearl Jam concert and want to get a head start on the drive. Does it matter if they are off "sick" or "well" as long as they let you know ahead of time?

- Do limit the number of paid days off as per your budget, and apply disciplinary action to those who abuse the privilege.

- Do stagger vacation requests. It's rough when your whole team is deer hunting on the first cold snap of no-heat calls. Have a sales contest and the winner gets first pick of vacation days.

- Make sure your over-achieving team members actu-
(Turn to Ellen Rohr's prescription...page 58.)

A vacation...for an afternoon or a month... is a sorbet for the mind. It's a chance for your soul to expand and create. It's a time for your body to stretch and engage, to breathe and relax.

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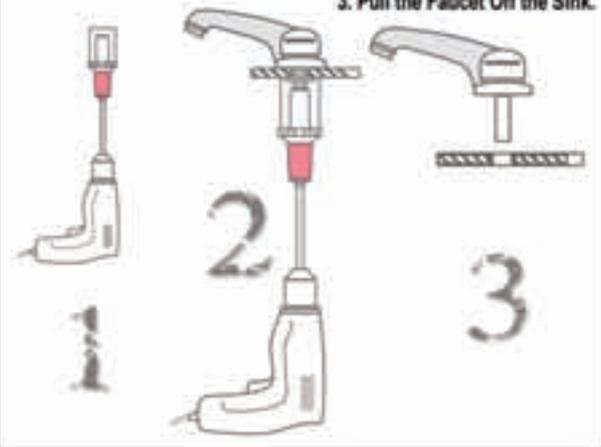
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BY BRISTOL STICKNEY
contributing writer

Bristol's six principles of good solar hydronic design

Basic Combi-System Controls

In previous columns I have introduced and explained some of the elemental concepts of hydronic solar home heating. Water tank heating, mass floor heating, thermostat control, glycol loops, combi-systems and flow centers have been discussed in earlier issues. These individual concepts are typically grouped together and installed in every Solar Hydronic Combi-system that we have built in the past five years or so. Of course, every solar home heating system was installed with the wiring and controls to make it work properly. Let's take a closer look at a Primary Check-Loop solar heating system and the controls that make it work. In this column I will discuss the Solar Combi-system we most commonly install and the Basic controls required for reliable operation. Please look online to review the previous columns in the PE and Phc News archives.

Primary Loop "Flow Center" Piping

In our region, the most typical Solar Hydronic Combi-system includes a (1) solar heat collector array, a (2) gas boiler backup, a (3) domestic water heater and a (4) radiant heated floor. I introduced this application in an earlier issue (spring 2009) as Combi-system 101, since I have installed these features so many times in home heating projects. This system includes only four items, two heat sources and two heat loads and so presents a relatively simple example for discussion.

The diagram seen in Figure 14-1 shows the configura-

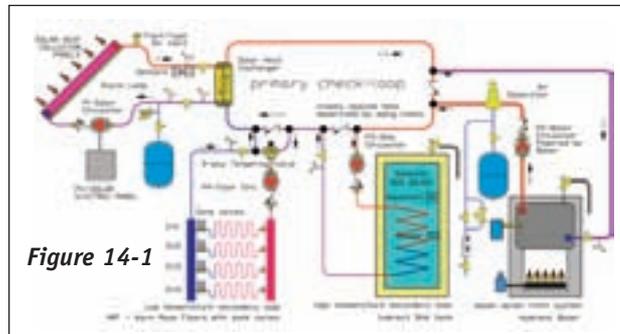


Figure 14-1

tion that has become my basic standard piping arrangement for over a decade for Combi-system 101. There are a number of additional benefits when using this system in real-world installations. The primary loop is typically installed horizontally, hanging from the ceiling. The swing check valves must be installed horizontally or "flow upward," since they might not close properly if installed "flow downward."

For the purpose of this discussion, I will present the very simplest control system that will provide the homeowner with Reliable and Effective use of the solar heat available from this sample heating system. Keep in mind, that as a simple example, it does not include night cooling, baseboard heat, heat storage tanks for space heating or other relatively common options. Each additional option would require additional control components to be included in our wiring and control system. So to keep this article brief we will limit the discussion to the bare minimum heating system components using the bare minimum controls.

This type of system is typically installed with an economical number of collectors that are tilted to maximize winter space heating. With a limited number of collectors, all the solar heat can normally be delivered to the cool mass of the radiant heated floors, or stored in the domestic water heater. If the collector tilt is matched to the summer load properly, all the solar heat available can be controlled

by storing it in the domestic hot water tank and any excess solar heat can be dissipated to the floor mass without overheating the rooms. When properly designed and installed, this version of the Solar Combi-system can be about as simple, economical and effective as any active solar home heating system can be. This is because most of the heating equipment (boiler, tank, radiant floors) had to be there anyway, even without the solar collectors.

Basic Control Requirements

A complete wiring diagram for the Combi-system 101 is shown in Figure 14-2. This diagram is adapted from the control boxes that we have deployed on many similar installations. It contains a 2-stage set-point control, a differential control, four relays (DPDT), a 2-stage room thermostat for each zone valve, a zone valve control box, and two pump control relay boxes. The models and brand names of the components are included for example only, and do not constitute an endorsement or recommendation. There are certain controls for this heating system that are required, and then some that are optional. Here is a short list of the most important functions. All the "required" functions are included in the components shown on Figure 14-2.

Combi-System 101 — Solar Domestic Hot Water Tank Control (DHW) Required Temperature Controls

- Low limit aquastat "AQ" (Usually comes with the hot water tank.)
- Solar heat storage ON (Provided by Tekmar 155 differential control.)
- Solar heat storage OFF (Provided by Tekmar 155 differential control.)
- High Limit OFF (Provided by Tekmar 155 differential control.)
- Safety High Limit (P & T valve shown on the DHW tank in Fig. 14-1.)

Optional Temperature Controls for DHW

- Low limit aquastat priority (Requires another relay control.)
- Solar heat source low limit (ON delay requires another temp. control.)
- AC solar circulator instead of PV (Requires another differential control.)

Combi-System 101 — Solar Heated Warm Mass Floor Zone Control Required Room Temperature Control (Provided by 2 Stage Room Thermostats)

- Auxiliary low limit "Stage 2" Heat ON (Backup or Auxiliary ON)
- Minimum comfort temperature "Stage 2" Heat Off (Auxiliary OFF)
- Solar Heat Banking Allowed — "Stage 1" Solar Room Heat ON
- Maximum comfort temperature "Stage 1" Solar Room Heat OFF

Required Solar Collector Temperature Control (Provided by Tekmar 152, 2 Stage Set-Point Thermostat)

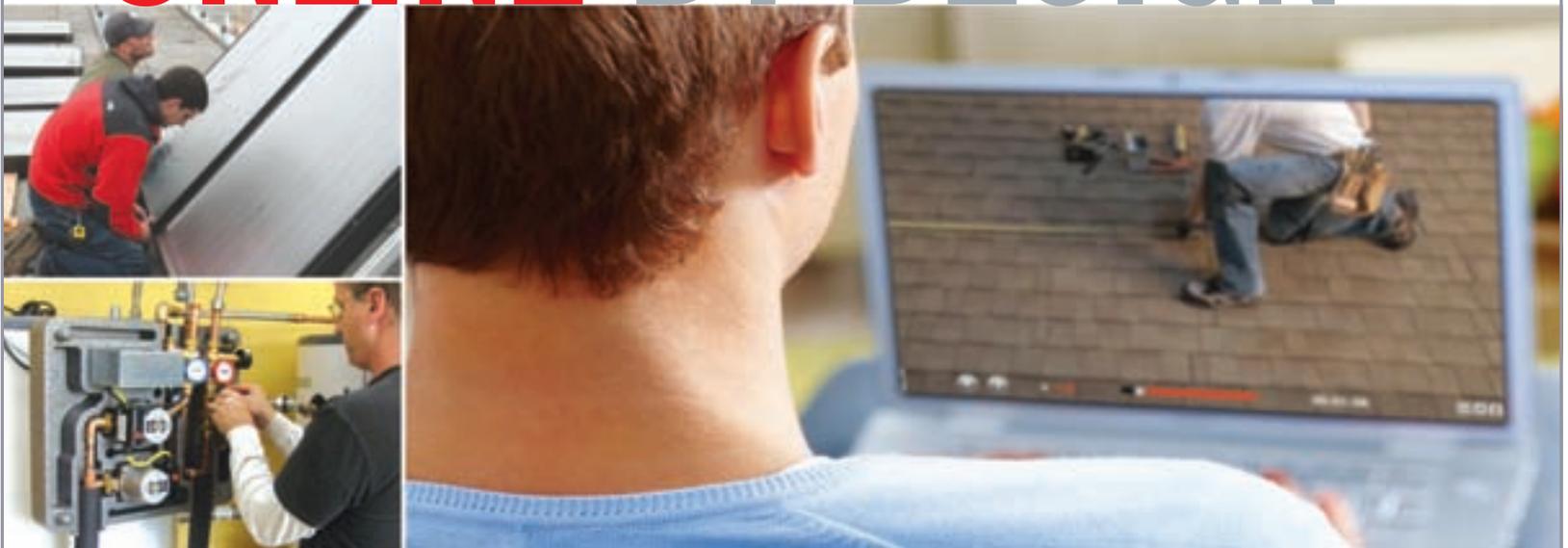
- "Solar Priority" low limit (Solar Only ON, Boiler OFF, Heat Banking ON)
- "Heat Dissipation" high limit (a.k.a. Solar heat dump, Overheat protection)

(Turn to Control freak, page 30.)

As long as the floors and water tank are even a few degrees warmer than the boiler control set points, the boiler will not fire. This delay and prevention of boiler operation is where the solar savings comes from.



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Control freak

(Continued from page 28.)

Features and Functions of the 101 Basic Controls

The 101 control system allows the warm floors and the DHW tank to warm up more when it is sunny and less when it is not sunny, all within a comfort range that is programmable using the 2 Stage thermostats and Tekmar controls shown in Figure 14-2. As long as the floors and water tank are even a few degrees warmer than the boiler control set points, the boiler will not fire. This delay and prevention of boiler operation is where the solar savings comes from.

Auxiliary Backup Only

When there is no solar heat, the

hydronic boiler operates the same way a conventional heating system works. The DHW aquastat "AQ" keeps the hot water tank up to shower temperature, and the Stage 2 switch in each room thermostat keeps the rooms at a minimum comfort level using the boiler.

Solar Preheat

During partly sunny weather, the solar collector pump will run on Photovoltaic power. This will circulate warm glycol through the heat exchanger on the primary loop. If water is circulating around the primary loop, it is preheated by the solar heat exchanger before reaching the boiler. The boiler provides the final temperature boost. The internal aquastat that controls the boiler temperature can be set to the

lowest required temperature to give priority to solar heat.

Solar Only

When the solar glycol loop temperature exceeds the low-limit settings in the Tekmar controls, the boiler is shut off, and both water heating and floor heating will continue using solar heat only. The floors will continue to heat up until the room thermostats reach the Stage 1 high limit. The DHW tank will continue

to heat up until it reaches the high limit setting in the Tekmar solar water tank control. If all the solar heating loads are at their high-limit, the heat dissipation control keeps the collector from overheating by using cool fluid from the floor to maintain a safe collector temperature. If the sun sets or cloudy weather causes the solar loop to cool off below the solar low limit, the solar-only functions will stop, and the boiler will be allowed to take over.

Common optional functions

All of the following options have been designed and installed on local Combi solar heating systems in our area. Each requires some additional thought and explanation to wire it properly into an integrated control box. All of these options have been successfully installed many times using the flow center piping as shown in Figure 1, along with temperature controls and relays added to the Basic 101 system. This approach allows piping modules and control modules to be added together with a minimum of redesign.

- Wireless 2-Stage Room Thermostats for difficult retrofits.
- Programmable 2 Stage thermostat set points, differentials and deadbands.
- Larger heat storage tanks with storage in and storage out controls.
- Baseboard zones (do not require 2 Stage room stats).
- Pool or Spa solar heating (Similar to a low temp. solar water tank.)

- Solar only switch for room heat, DHW, or whole house heat.
- Night tank cooling through the solar panels.
- Night floor cooling through the solar panels.
- Solar heat dissipation using pools, ice melt zones or other controlled heat sinks.
- Additional collector cooling 'fins' or panels.
- Web interactive t'stats that can be operated from any remote computer.
- Data logging and BTU meters for recording solar heat and energy flow.

Flow Center Control Systems are evolving

If there is one thing you may have gathered from this article, it is that there are a lot of control decisions to be made by a Solar Combi control system. Some of the control decisions are conditional or multi-layered, and the architecture of the components and the wiring can be complicated. I have often wished for a single control box that allowed all of these control decisions to be easily modified and installed.

In the past year I decided to stop waiting for a better solar home control, and develop one locally. So, with two other partners, we have formed a new company Solar Logic LLC which is developing a "Control Center" for the Flow Center Combi. This control box is known as the Solar Logic Integrated Controller (SLIC) and our first prototypes are in operation in our solar home heating laboratory. This control system is capable of implementing all the Basic functions along with all the optional features mentioned above. Web access will be a standard feature of the SLIC control box and we are operating the prototypes entirely by remote control. While we continue to build control boxes full of relays at the present time, I believe those days are numbered. ■

Bristol Stickney, partner and technical director at Cedar Mountain Solar Systems in Santa Fe, N.M., has been designing, manufacturing, engineering, repairing and installing solar hydronic heating systems for more than 30 years. He holds a Bachelor of Science in Mechanical Engineering and is a licensed mechanical contractor in New Mexico. He is the chief technical officer for SolarLogic LLC and is involved in training programs for solar heating professionals (visit www.cedarmountainsolar.com for more training information.)

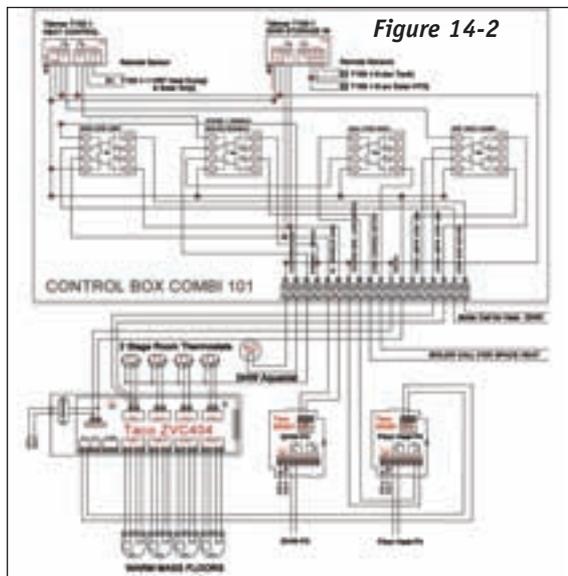
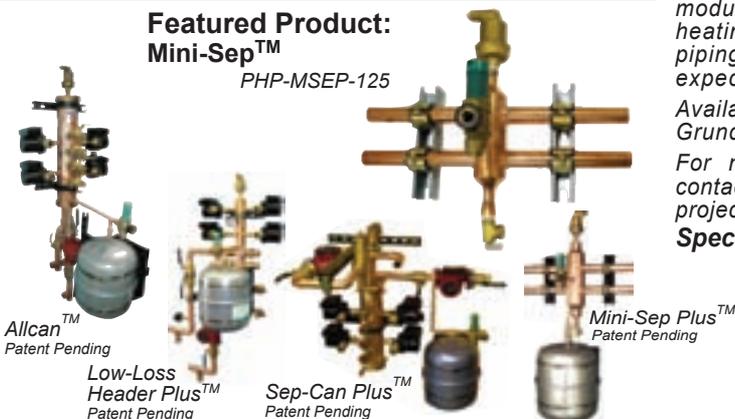


Figure 14-2

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- >> Domestic hot water priority



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BY RICHARD P. DiTOMA, L.M.P.
contributing writer

Know when to hold 'em

If you don't believe in gambling, but are in business, I have a surprise for you. You are a gambler. Denial of that fact will hinder your own ability to succeed in your business.

People in business and gamblers are part of the same makeup. Each bets an amount of money on the outcome of an event to have an opportunity to earn a monetary reward, which is larger than their wager on that event. It could be a horse race, roll of the dice, hand of poker, or fiscal year of a business. Some are good at it. Most are not.

In each instance, the outcome is unknown until it occurs. In business, the event constitutes the business activity during any period in time, usually a fiscal year — and the revenue acquired from that activity. The question to ponder is whether the business will bring in more money than it cost to operate the business for that period.

Like the result of a game of chance, you can't predict your business activity with any degree of accuracy. Therefore, you are a gambler. Obviously, you should always aim to win. But hopes are not often realized by most contractors because of the flawed actions of those people running contracting businesses.

The most prevalent is the use of the "going broke rate" of others. Most gamblers lose because they are bad gamblers. Most contractors do not succeed to their fullest capability because they are not good business people. Mimicking the actions of people (especially through the use of the "going broke rate") who are not good at what they do is foolish at best. It will cost you money.

The fact that some people in business don't believe in gambling is proof positive that everyone is not really cut out to be in business. Non-belief in the fact that people in business are gamblers linked with flawed business practices are the main reasons most businesses fail or never reach their intended goals. After all, it is difficult to hit the target when you don't know how to aim and take into consideration the effect gravity, trajectory and cross winds will have on the projectile you have just launched as it makes its journey toward the target.

Many contractors think they are running their businesses correctly. They believe they hit the target because they bring in to their business money from their clientele. However, if the accumulation of revenue from their clientele doesn't cover their true cost of operation for the time period, they have in reality missed the target completely.

Those who do hit the target once in a while almost never even come close to the bull's eye. They usually hit the target by working longer hours (more than 40 hours/week) for no pay to make foolish numbers and absurd business protocols seem to work out. If they actually paid themselves (as they would expect to be paid if they worked for another contractor) for those hours they too would not hit the target.

The similarities

There are many similarities between a contractor and a gambler. The gambler must understand the correct rules of gambling games. Contractors must know the correct rules of the contracting business game both technically and administratively. The gambler must know the odds any hand, roll of the dice, spin of the wheel etc. has of making him/her a winner. In poker, knowing the value of each hand (e.g. two pair is better than one pair etc.) is imperative. Contractors must recognize the chances of making a profit on any job.

In Texas Hold'em (a popular variation of poker), each

gambler, to start, is dealt two cards, for their eyes only. Each gambler must then make a decision to check his/her hand (stay in the hand but not bet), bet on his/her cards, call or raise another player's bet, or fold that hand, and wait to play the next hand.

If he/she remains in the hand, he/she will see three more cards dealt at one time to the middle of the table for the common use of all players in the hand. Those three cards are referred to as the "Flop." Then, another check, bet, call, raise or fold decision must be made.

Those players who stay in the hand will then be shown one additional common card in the middle of the table called the "Turn." Next, another check, bet, call, raise or fold choice must be made. Then, the same process is repeated. This time the next additional common card is called the "River."

Each remaining player must decide whether his/her hand (best five cards using two or one of his/her individual cards in combination with the choice of three or four of the common table cards) is better than the hands of other players still involved in that hand. Then, the gambler must choose to check, bet, call, raise or fold. After the betting is done, the showdown takes place. The cards of the remaining players (those who did not fold) are shown to everyone and the best hand wins the pot. This process is continued for each hand played during that session of poker playing.

In the contracting business, your gambling session is that time period which is usually considered your fiscal year. Each task you perform for your clientele can be compared to a hand of poker. During the session you will win some hands and lose others. The object is to have more money than you started with at the beginning of the session. In both poker and contracting, the better you play, the more money you will have. The more money you have, the happier you will be.

In Texas Hold'em, the "pot" is the accumulation of chips (which have monetary value) gathered in the middle of the table from blinds, antes and bets. "Blinds" are the chips from two players (in rotation) for each hand to start the pot. "Antes," if any, are additional chips from all players to increase the pot. "Bets" are the chips added to the pot during the play of each hand. The operational costs of contractors for any job can be considered as their blinds, antes, and/or bets for each hand (job) in the contracting business game of chance.

If no one bets during a hand, the pot will only consist of the "blinds", and the additional "antes," if any. The amount of chips won will be low. And, the winnings dependent upon the number of hands won in the session may not cover the cost of getting to the game. Many of the players, if not all but one, will be actual losers.

That's similar to contractors who charge artificially low selling prices based on the "going broke rate" set by other contractors who don't know their true costs and buy jobs, in part, with their own money rather than sell their services at proper profitable selling prices.

In your contracting business, the first two dealt cards to you can be compared to the call from the consumer, which gives you the opportunity to sell your company's services to them to address their requests for that hand of your session (fiscal year).

Using proper numbers and strategies for your prices and business protocols is similar to the gambler's ability, playing style and decisions to check, bet, call, raise or fold
(Turn to All contractors... page 34.)

...To give yourself the opportunity to win the hand, you must know the cost you incur and the risks you take being in business. Then, you must be able to attribute the proportion of that cost as it pertains to each individual job [hand].

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Circle 28 on Reader Reply Card

All contractors gamble. Will you win or lose?

(Continued from page 32.)

after seeing the first two cards, and likewise, for the “flop,” the “turn,” and/or the “river.” And, they will determine whether you recover your cost to perform the service; lose money; or earn a profit on the job (hand).

In other words, to give yourself the opportunity to win the hand, you must know the cost you incur and the risks you take being in business. Then, you must be able to attribute the proportion of that cost as it pertains to each individual job (hand). And, you should take into consideration the value you deliver to society in the performance of your services.

That's just like the gambler who must know the odds of winning or losing each hand. Truly successful contractors know which jobs to take on (whether to play a hand or not); and, at what price they must charge to be profitable (their betting strat-

egy). Kenny Rogers' song, “The Gambler,” says it all. “You gotta know when to hold 'em, know when to fold 'em, know when to walk away, and know when to run.”

Bluffing or not

In the game of Texas Hold'em, aside from the obvious luck factor surrounding the cards dealt to you and your ability to evaluate your hand, you must also be able to read the demeanor and methodology used by other players in the game.

Bluffing is a strategy by which other players with hands of lesser value than yours try to make you believe that their hand is better than yours. That's similar to consumers who try to make you believe that contractors are a dime a dozen and you had better cut your price to the bone if you want to do their job. However, you should keep in mind that prices that are cut to the bone

are usually losers so there is no logical reason to want to do the job.

Some consumers won't use you if your price allows you recover to your cost and earn the profit you deserve. But by knowing your cost and the value of your hand, you can call their bluff. You can decide not to play that hand. You might even consider raising the bet, which puts the pressure on the bluffer. You may be pleasantly surprised to become the winner. To accomplish this “you gotta know when to hold 'em” and “know when to fold 'em.”

Winning the game

Obviously, not all players who raise the bet are bluffing. If the raiser's hand is better than yours you will lose at the showdown. Therefore, at all times you have to know the game, the odds and the value of each hand in which you are involved. That's the difference be-

tween being a good gambler and a loser. Both types of players are in the game. But, only one will win. A good gambler knows which hands to play. In the contracting business, when you know the game, the costs and the value you deliver to society, you will know when to take on the job or let it go.

In poker, no one plays the game with the intention of losing. No one goes in the contracting business, with the intention of not earning the reward they deserve for the value they deliver. But, more often than not, contractors lose rather than win. That's because they don't know the odds and proper protocols that will show them when to hold 'em or when to fold 'em. It's your choice. Do you want to be a good gambler or just another loser?

All players but one, in any poker session, lose or are not the big winner. If you are in business and realize you are gambling, you have an upper leg on the non-believers in business who don't believe in gambling. You know who you really are. The only thing left to do to become the big winner is to play the game intelligently. That requires knowing, inside and out, the rules of game, the odds of the hand and how to read the other players at the table.

If you want to discover how to figure the odds and implement protocols that will help you to be a winner in the game of contract business gambling, give me a call at 845/639-5050. I'll show you how to calculate your true cost, develop proper profitable selling prices and utilize strategies that take into consideration the odds and people relations needed to give you the opportunity to be the big winner. If you don't want to have a chance to be the big winner, or are satisfied with the results your business produces, don't call to learn a more profitable and better way. Good Health! Good Luck! Good Gambling! The game is starting. It's time to ante up! ■

Richard P. DiToma is a business consultant and contractor with 36 years of experience in the PHC industry. He conducts seminars, evaluates business operations, publishes customized price guides for contractors and offers continuing support.

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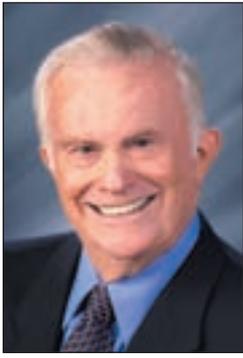
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Circle 30 on Reader Reply Card



BY MORRIS R. BESCHLOSS
PVF & economic analyst emeritus

Mechanical contractor's role enhanced by new flow-control and piping technology

Although there is continued concern regarding credit problems inhibiting much of current commercial development (hotels, shopping centers, high-rise apartment buildings, etc.) the prominence of our industry's mechanical contractor is being dramatically enhanced.

Whether focusing on traditional new projects and maintenance of our nation's existing commercial infrastructure, or dealing with expansion of ethanol or renewable energy mandates, the increasingly complex piping and flow-control systems are dependent on the cadre of our industry's expert mechanical contractor organization.

Having closely observed the proliferation of America's multi-faceted energy sector, I have become increasingly impressed with the involvement of mechanical contractors in arenas that had previously not been their areas of expertise.

When it comes to any areas of piping and flow control, the reputation of our mechanical contractor practitioners has spread deeply into the industrial sector. Where such contracting organizations were previously limited to the commercial sector, mechanical contractors are gaining an increasing footprint in all functional areas of piping systems wherever they may be found.

Although this started out as a temporary expedient several years ago, it has now become a permanent fixture, as these professional mechanical contractor businesses have gained the respect of turnkey constructors, who were hard-put to harness comparable areas of expertise. These were mandatory to deal with the ever-growing complexity of piping systems to accommodate industry's evolving technology.

The need to develop additional technicians to join existing contractor enterprises is becoming manifest. The need for recruitment will be even more intense as economic recovery and internal development join to put greater demand on this indispensable component of the plumbing-heating-cooling-piping contracting sector of our industry.

Independent business threatened by Administration initiatives

The small- and medium-sized businesses comprising the overwhelming majority of the PHCP industry's contracting sector could be threatened by the rash of initiatives being instigated by the Obama Administration.

Topping the list is climate control and its "cap and trade" component which will enforce strict limitation on the emanation of carbon dioxide and greenhouse gases. This will put severe restrictions on future building, and increase the cost of construction immeasurably.

The penalties on established businesses and homes will be even more costly as electric utilities pass on their additional costs to consumers, whether individuals or businesses.

Further pressure on private businesses will come from projected single-payer universal healthcare and pressure for enforced unionization by what's become known as card-check. Both would vastly increase business costs through taxation to support government healthcare, even if the current benefit package costs were transferred to a government program. Massive additional taxation would cut substantially into private establishments' profit margins.

But most obnoxious of all to non-union enterprises could

be "card-check," which would put undue pressure on individual employers, as their votes for or against a shop's unionization would be open to "enforcers" from the relevant union local. Secret ballots will cease to exist if this Administration-inspired initiative eventually becomes law.

War on fossil fuels could cripple economic recovery

The illogical attempt to snuff out the U.S. production of coal, oil, and even natural gas, could accelerate if the Congressionally-approved "cap-and-trade" bill is eventually passed by the Senate.

The attempt to tie this misbegotten Obama Administration initiative to lessening dependence on OPEC oil is turning reality upside down. In fact, the eventual passage of this bill would put the U.S. further in thrall to foreign oil producers, with eventual price increases on both oil and natural gas eventually making last summer's "spikes" look tame by comparison.

Three additional factors making the 'fossil fuel future' of oil production in the U.S. infinitely worse are:

1) A last-minute amendment to cap-and-trade to garner Congressional votes would impose stiff tariffs on all imports that don't share America's CO₂ and greenhouse gas restrictions.

2) Oil producing states are now seriously considering taxing fossil fuel production, raising its costs, which, of course, will be passed on to the consumer.

3) If the cap-and-trade amendment stands, with or without the bill's passage, protectionism will have taken a major step forward, precluding access to Canadian oil, converted from tar sands, comprising America's No. 1 import source.

Renewable energy is a long-term expedient that will not reach two percent of global energy needs in the foreseeable future. For those not in the know, wind and solar have no relation whatsoever to the all-encompassing transportation sector, unless sailboats are your major method of movement.

China lobbies for global reserve currency

Like a bad penny, China's push for a global reserve currency keeps turning up. Although this sentiment has previously been stated, it had not prevented Beijing from continuing to hold and buy a massive amount of U.S. Treasuries.

But two recent factors are making China's latest "call for monetary change" more ominous. First, the Peoples' Bank of China, the mouthpiece of the Communist government, has made this declaration officially.

The Chinese central bank went further by declaring that only such an international reserve currency can protect global investors from being victimized by the instability of one nation's monetary standard (i.e. the U.S. dollar).

Although this initiative has been floated by various Chinese spokesmen intermittently, this is the first time that it carries the imprimatur of an important organ of the Chinese government.

Secondly, Chinese tilt toward protectionism in supporting the growth of its domestic economy puts it at loggerheads with massive U.S. imports at a time when its exports to the U.S. have been drastically cut.

The Chinese central bank looks at its nation's future through the same prism as the U.S. In the short term, Bei-

(Turn to Global economic... page 38.)

Whether focusing on traditional new projects and maintenance of our nation's existing commercial infrastructure, or dealing with expansion of ethanol or renewable energy mandates, the increasingly complex piping and flow control systems are dependent on the cadre of our industry's expert mechanical contractor organization.



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Circle 31 on Reader Reply Card

Global economic turmoil a possibility

(Continued from page 36.)

China sees deflationary pressures temporarily widening as overcapacity creates a production overhang, while lower manufacturing material costs reduce prices in general.

However, like the U.S. Fed, the Chinese central bank sees this period being followed by mounting inflationary pressures, as the world economy recovers, with a record global money supply exerting upward pressure on goods in short supply the world over.

The Chinese have the additional problem of attempting to protect the \$1.5 trillion that they have tied up in

**Like a bad penny,
China's push for
a global reserve currency
keeps turning up.**

U.S. Treasuries. Their push for a multi-faceted reserve currency looms ever larger as the ravages of a worldwide inflation come ever closer in the time cycle.

Hyperinflation waiting in the wings

With the Federal Open Market Committee cancelling worry over deflation in their post-rate setting announcement last Wednesday, their concern is now becoming focused on a new era of inflation coming down the pike.

This anxiety has been heightened by former Fed Chairman Alan Greenspan and investing genius Warren Buffett, both of whom have issued stern warnings that hyperinflation is inevitable under present circumstances.

Although they characterize this oncoming financial tsunami more in terms of the Carter years' double

digit spurts, rather than the German Weimar Republic's 1920s cataclysm, both economic titans point to America's upcoming unsustainable debt.

With a budget deficit approaching \$2 trillion this fiscal year (4 times the previous record) and President Obama's front-loaded initiatives accounting for at least \$4 trillion to further universal healthcare, renewable energy, and climatological cap and trade, both Greenspan and Buffett claim that such monetary irresponsibility will spawn the worst inflationary spiral in more than 30 years. They specify that such certainty is not a matter of if, but when.

Time-wise, this state of affairs will likely coincide with the eventual global recovery, probably in mid-2011. At that point, labor costs and rising capacity utilization will be competing for the shrinking availability of funds. This will be espe-

cially true in the case of potential U.S. capital investments being crowded out by the voracious demands of uncontrolled government programs.

This is a potential nightmare that can only be required by increasingly cheaper dollars paying off government debts with the sheer volume of depreciated currency.

Major new taxes needed to support Obama initiatives

What has gotten lost in the turbulence generated by President Obama's controversial initiatives is the flood of additional taxes that will be needed to support these programs, if passed.

The Congressional Budget Office, considered to be the most realistic of non-partisan analysts, has predicted that even the most glowing projections of tax revenues in upcoming years does not even begin to close the government's projected income/outgo revenue gap. This means that such new tax-raising schemes as federal retail sales taxes, value-added taxes, and across the board increases for every American would have to be instituted to curb the inevitability of runaway inflation.

The combined impact of the \$800 billion stimulus plan, renewable energy, universal healthcare, and climatological cap-and-trade legislation would saddle the U.S. budget with trillions of dollars of additional debt.

In one week alone, the U.S. Treasury was floating \$104 billion of new Treasury bond offerings to support the funds needed for a partial down payment of a \$1.8 trillion trade deficit expected by the end of fiscal 2009 (Sept.30).

If all or most of the Obama initiatives become law, the national debt is due to jump well upwards of \$12 trillion next year and would be headed for \$20 trillion by the end of a second Obama presidential term, in January 2017.

Under such circumstances, interest on the debt alone would eventually exceed defense spending and all entitlements existing today. Even under economic boom conditions, this would not allow additional U.S. government spending on discretionary new programs, or a cost increase in existing ones.

There is, of course, the ultimate cop-out, hyperinflation, that could turn the U.S. economy into a hotbed of dreaded stagflation. But this choice of the lesser of two evils would convert the once invincible U.S. economy into a sorry shadow of its former self. ■

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Circle 33 on Reader Reply Card



BY JOHN BARBA
guest writer

Salesman?

What do you think of when you think of a “salesman?”

“Slime ball?”

“A guy who forces stuff down your throat?”

“Someone who sells you stuff you don’t need?”

“High pressure, used car-guy?”

Would you want your daughter to marry one?

Would you want your daughter to BE one?

Think for a minute about the really bad sales people you’ve encountered in your career. Probably not a short list. Think about what made them really bad. Now, think about the really good ones you’ve encountered in your career. I’ll bet the list isn’t as short as you’d have thought. What is it that made them good?

Think about your favorite wholesale salesperson. Is he a thief? Does he force stuff down your throat? Does he sell and run? Is he a used-car slime ball?

Probably not. Do you bust his chops about being a sales guy? Sure, it comes with the territory. But deep down you know he’s a good guy who truly wants to help.

When folks speak negatively about sales people, they usually speak of negative personal attributes. The mistake, however, is to tie those attribute to the profession when they should, in fact, be tied to the person engaged in the profession. A slime-ball salesman would probably be a slime ball in whatever career he chooses. Selling is a slimy profession only if a slimy person is doing it. If an honorable person is doing it, it’s an honorable profession.

What kind of person are you?

That’s pretty much what kind of salesperson you’ll be.

Let’s face it, most plumbing and heating contractors look forward to sales training with the same level of enthusiasm as they would a colonoscopy. In my seminars I’ve heard every objection and excuse you could imagine.

“I’m busy enough as it is, why would I want to learn to sell MORE?”

“I don’t feel right about selling people stuff they don’t need.”

And my personal favorite “I’m a contractor, not a salesman!!”

That one’s almost always said with a level of pride bordering on defiance. Unfortunately, it’s almost always followed with “yeah, the problem is most folks are cheap! They won’t pay for nothin’.” Then comes the “harrumph”!

Hmmmmmm.

Here’s a news-flash, gang: If you do something, and take money for it, a large part of your job description includes sales because, like it or not, there are other people out there who do what you do just as well as you do it, for the same price as you, or maybe even a little less. If you want to get hired, you GOTTA SELL! Whether you like it or not.

And let’s face it — most folks in our business don’t like it. At all. Ever.

Is it because “sales” is viewed as an unsavory enterprise? Is it beneath them?

Is it because they don’t need to be able to sell? Does their great work truly speak for itself?

Is it because the installation of plumbing and heating systems truly doesn’t need to be sold? Aren’t the benefits of superior plumbing and heating self-evident?

No, no and no.

I’ve lived in the contracting world all my life. My father, brother, two uncles and several cousins, along with myself, have all been there, done that, and bought the t-shirt. I have trained over 12,000 contractors since 1995, and we all speak a similar language — it’s the language of technology.

...No one really cares if you think your mousetrap is better. The only person whose opinion really matters is your customer’s. Does he think your mousetrap is, indeed, better, and if so, does he think he really needs a better mousetrap, or will a plain ol’ good quality mousetrap do the job?

As tradesmen, we believe in the technical superiority of stuff. We believe in the products we choose to install, most likely because we’ve installed most everything there is and know what stuff’s good and what stuff’s garbage. We know what works and what doesn’t. We know what zone valves we’ve had trouble with and what ones we haven’t, and we’re very brand loyal to the stuff that’s worked for us. If we had a problem, well, it’ll be decades before we go down that road again.

We’re technical people. We get truly aroused when debating the relative merits of push nipples or rubber gaskets for holding boiler sections together. We can talk for hours about the pros and cons of competing German wall-hung boilers. We’re the kind of people who think it’s perfectly normal to ask a complete stranger if we can visit their mechanical room. (Most people, believe it or not, think that’s a little weird).

The reason we hate selling is because we want to believe in the “better mousetrap” theory, the one that says “build a better mousetrap and the world will beat a path to your door.” Translation: What I do and the products I use are so freakin’ awesome that I don’t have to sell it, people will gaze upon my work, reflect with awe upon my greatness and open their hearts, their homes and their checkbooks to only me.

We’re hoping for James Earl Jones to tell Kevin Costner that “people will come Ray, people will most definitely come and give you their money.”

The flick was called “Field of Dreams” for a reason. If you’re waiting for it to happen, dream on.

Unfortunately, the better mousetrap theory is a load of hogwash for several reasons. The first of which is that the buying public out there really has no way of determining if what you’re offering really is a better mousetrap. They lack the background, understanding and expertise to intelligently and accurately assess your work and the products you use and determine that yes, indeed, this is truly the better mousetrap.

The second flaw in the better mousetrap theory is that your mousetrap doesn’t exist in a vacuum. You have competitors who have their own mousetraps, and they’re all telling your customer how great their mousetrap is. Now the customer not only has to figure out if your mousetrap is indeed better, he has to sort through tons of conflicting information from other mousetrap purveyors.

The third and maybe biggest flaw in the better mousetrap theory is the fact that no one really cares if YOU think your mousetrap is better. The only person whose opinion really matters is your customer’s. Does he think your mousetrap is, indeed, better, and if so, does he think he really needs a better mousetrap, or will a plain ol’ good quality mousetrap do the job?

Believing in and caring about product superiority, and striving to be the best technically at what you do are wonderful things, and should be part of your thinking. Just don’t expect it to sell stuff for you.

For that, you need other skills. We’ll tackle those next time. ■

John Barba has been in the trades since he could walk, carrying wrenches for his Dad in the family’s plumbing and heating business outside of Boston. John’s practical experience includes everything from ditch digging and drain cleaning to boiler piping and PEX installing, as well as business management and contractor sales. Since 1995, John has trained over 12,000 contractors on the fine art and subtle science of hydronic heating design and installation through highly interactive, entertaining and informative seminars. John is Contractor Training and Trade Program manager for Taco, Inc, a manufacturer of commercial and residential hydronic circulators, controls and accessories.



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Residential fire safety systems offer profitable service addition

BY JOEL WILLIAMS

Most plumbers have never considered installing residential fire sprinklers. After all, how can a professional plumbing, heating and cooling (PHC) contractor

fire safety systems, explains Fahey, is that because they combine the potable cold-water lines with the sprinkler system, they are a natural extension for the plumbing trade. A fire sprinkler connects to the plumbing-supply line just like any other fixture or fitting.

PacWest and Fahey represent Uponor, which pioneered the concept of residential, non-stagnant, multi-purpose systems in the United States a decade ago. Uponor AQUASAFE® Fire Safety Systems — both the Network version and the recently introduced Looped version — use crosslinked polyethylene (PEX) tubing to feed both the sprinklers and the cold-water plumbing fixtures in a home.

Low-hanging fruit

“Multi-purpose fire safety systems are the low-hanging fruit for new-construction-oriented PHC contractors, looking to squeeze more dollars from fewer jobs than in years past,” Fahey said. “Today, a plumber might do half the number of homes he did when the market was stronger. PHC contractors can recover some of this lost revenue by learning the basics of fire

sprinkler installation and securing their first jobs in less than a month.”

That’s precisely the path that plumbing contractor Steve Svedarsky took when the market showed signs of slowing last year.

“Like in any business, plumbers protect their turf,” explained the second-generation PHC contractor from Puyallup, Wash., and owner of Monarch Plumbing. “When we realized there was a shrinking pool of jobs, we had to figure out a way to expand our revenue base. Since we were already using PEX exclusively for our plumbing and radiant floor heating work, the fundamentals of sprinkler installation were very straightforward.”

For product training and design

support, Svedarsky turned to Fahey, who not only had the industry knowledge, but also helped him convince the local fire marshal that PEX-fed multi-purpose fire sprinkler systems performed as well as traditional stand-alone systems.

“The fire marshal was skeptical that the multi-purpose system could deliver the required water volume to each of the sprinkler heads,” recalled Svedarsky. “After he learned more about the system from PacWest and watched it exceed his code requirements, the fire marshal was impressed and pleased. After all, fire sprinklers save the lives of both homeowners and fire fighters.”

In fact, Svedarsky has learned that some fire officials actually prefer multi-purpose systems, since consumers cannot inadvertently shut off fire protection to their homes.

“Because of the dual purpose of combination systems, homeowners know their fire protection systems are working each time a toilet is flushed, a faucet is used or the lawn is watered,” said Svedarsky, who notes that this feature also eliminates health concerns over stagnant water commonly associated with stand-alone systems.

Mandated demand

Overall, the addition of fire sprinkler installation has been a boon for Monarch and now accounts for roughly 10 percent of company sales. Owner Svedarsky credits Fahey with helping him to complete 20 sprinkler jobs and to secure an additional 30 multi-family units — all in less than four months in 2007.

“Once plumbers have the required training and/or certification, it is hard to avoid the business,” contended Svedarsky. “While local codes drive the majority of the work, I know of four or five instances in which the PHC contractor sold sprinklers into a job as an upgrade where they were not required by code.”

Research from the Home Fire Sprinkler Coalition bears out these claims. A 2005 study found 45 percent of U.S. homeowners preferred a home with fire sprinklers; moreover, nearly three in four survey respondents thought sprinklers increased the value of a home.

Not surprisingly then, more than 300 local governments have enacted residential fire sprinkler ordinances for all new single- and multi-family

residential homes, commonly referred to as National Fire Protection Association (NFPA) standard 13D, according to Jayson Drake, fire safety product manager for Uponor. And the number of ordinances across the nation is likely to grow with recent revisions to the International Residential Code, which will require sprinklers in all new one- and two-family homes as of Jan. 1, 2011.

“Demand will grow dramatically as more builders and homebuyers become aware of the quantifiable benefits of these systems,” said Drake. “This growth will also be fueled by jurisdictional mandates, as cities and fire departments realize the economical, life-saving advantages of PEX-based multi-purpose residential sprinkler systems.”

Drake notes that because multi-purpose PEX systems combine plumbing and fire safety lines into the same integrated system that uses flexible PEX tubing with fewer connections, they can save from 35 to 65 percent in installation time over stand-alone, rigid CPVC systems. (Source: U.S. Department of Commerce and the National Institute of Standards and Technology, NISTIR 7277.) Moreover, since multi-purpose systems are fed by a home’s domestic cold-water supply, there is no need for check valves, backflow preventers, or a separate water meter, further cutting installation time and costs.

Education is key

According to Fahey, educating local building inspectors and code enforcers about the benefits of multi-purpose fire safety systems can be a challenge.

“Some of the more foresighted municipalities have written ordinances allowing multi-purpose fire protection systems to operate off of a single water meter, which enables the builder to realize a significant savings over traditional stand-alone installations, as a second meter can cost upwards of \$5,000,” explained Fahey.

Another challenge in expanding residential fire safety systems is the piecemeal code requirements.

“Unlike the Uniform Plumbing Code that mandates a universal standard, NFPA 13D sets a minimum life-safety standard, and each municipality has the ability to add requirements unique to its jurisdiction,” noted Fahey, who adds that he keeps track of specific municipal requirements through an internal database.

“While the fire marshal often reviews the sprinkler plan and conducts the inspection, some states still allow the plumbing inspector or building department to approve the fire suppression system.” ■



Plumbing contractor Steve Svedarsky (left) credits Uponor rep Kelly Fahey (right) with helping him to complete 20 fire sprinkler jobs and to secure an additional 30 multi-family units — all in less than four months in 2007.

compete with fire sprinkler contractors who have a license, special equipment and complicated design knowledge?

“You’d be surprised how easy it can be to move from setting sinks to installing residential fire safety systems,” said Kelly Fahey, co-owner of Washington-based PacWest Sales, Inc. “Plumbers already have the knowledge, tools and, more importantly, the solid working relationships with home builders, to prosper in a market downturn.”

He notes that because plumbers are already a pivotal trade for builders, the market is ripe for PHC contractors to step up and claim this profitable line of work. The beauty of multi-purpose

Sometimes a hands on demonstration is all you need.

The heat exchanger in a Bobcat modulating condensing boiler uses one inch wide waterways, making it much less susceptible to mineral buildup. A popular heat exchanger used by many competitive heating companies has water passages only .20 of an inch wide. In addition, theirs requires regular cleaning or it could void the warranty. One more nice thing about the Bobcat is, that it is designed and built right here in America by Slant/Fin, a company with 60 years of experience in the heating business.

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The PEX Quotient

PEX has become an increasingly popular piping product. Several miles of Watts Radiant's oxygen barrier RadiantPEX tubing, for example, was installed in the concrete slab floor at Zylstra Harley-Davidson, St. Charles, Ill.

BY BILL ALLEN, PE

PEX tubing has proven to be a good system for radiant floor heating, ice melting and residential water piping. There are several processing methods to provide the cross-linking of the polyethylene material. Make sure you verify which performs best in your situation.

Caution: When used properly, every piping material or system can provide good service. Placing galvanized material in corrosive soil will cause it to turn into a sprinkler system. Place copper in contact with concrete or directly connected to steel and it will turn green and disappear. Plastic pipes, if not properly treated, will deteriorate when exposed to direct sunlight. Some plastics can handle high temperatures.

Some plastics are approved for use in drinking water and domestic water systems. Some should not be exposed to chlorine. Read the instructions!

There have been fitting failures of some PEX systems in the past when the metal alloys reacted with the water chemistry and failed. When invited to

analyze a home, which the night before, had 18 inches of water covering the first floor, it was discovered that the incoming water line had failed at a fitting resulting in a $\frac{3}{4}$ " diameter tube, pouring hundreds of gallons of water into the home. I must report that the builder did a great job on the seals for the doors as they contained the water in the home. Further inspections uncovered leaking fittings that were caused by inexperienced operators not crimping the fitting to specs or using the wrong ring material.

Every product goes through growing pains after they are released. As PoGo, the comic character, stated, "There are no problems, only unsurmounted opportunities."

When I started in this business back in the Dark Ages, water hammer was a problem. We had faucets that were not stingy with the flow and had valves that could be closed rapidly. The fast velocity of the large flow combined with the sudden stop resulted in noisy piping systems. On more than one occasion I have seen pipes peeled open like a banana from those forces. With improvements in valve design, water-saving design and the application of water hammer arrestors, this has generally be-

come a thing of the past.

Have you compared the inside diameter of the various piping products available? PEX has a smaller inside diameter than the other materials of the same trade size. This affects the velocity and pressure drop.

In some areas of the country plumbers have used $\frac{3}{8}$ " diameter PEX to reduce costs and to deliver hot water to the faucet faster. Care must be taken to avoid a low-flow condition due to low pressure and water hammer from the increased flow velocity.

During the last 20 years, I have had requests to inspect and correct PEX systems because the newly installed systems were having water hammer problems and other difficulties. The PEX design manual points out that the flexibility of the PEX allows it to absorb the forces of the pressure surge. This is true, but if the installer does not properly secure the tubing to the structure, the tubes will slap the wall surfaces and create a loud pop.

PEX cannot be stretched tight when secured to the structure. PEX can extend as much as 0.01 inch per foot for a 10°F rise (manufacturer's published specification). A hot water pipe can easily see variations from 60°F to 120°F. In an 8-foot high wall, the pipe can move $\frac{3}{4}$ ". This creates an installation problem as to how to provide expansion and contraction while preventing water hammer noise. The design guide shows examples of ways to solve this and prevent the offensive water hammer. To secure the tubing as it passes through the drywall use a prefabricated pipe support bracket that spans the studs to limit movement.

As the PEX is routed through the structure, the tubing must be located in the center of the stud. If located too close to the drywall an errant trim nail or drywall screw can penetrate it. Use metal plates where nails or screws may penetrate the tube — especially at the top and base plates of wood construction. A homeowner purchased some new solid oak flooring to dress up their new home. The installer removed the baseboard to install the wood and replaced it using 2-inch wire brads fired from a pneumatic gun. Need I say more? They had an interesting contoured flooring system. A small piece of metal where the tube came out of the floor for a water closet would have saved \$25,000.

My personal residence has PEX and it gives great service — now that a couple extra clamps have been added. ■

William Allen, P.E., is the mechanical engineering manager, Geo-Marine Inc., Knoxville, Tenn. He has held titles such as facility and environmental engineer with General Motors; corporate energy manager with Litton Industries; and an engineering consultant with several engineering firms.

1.5 GPM Flow — Similar to Lavatory						
Size	PEX Velocity	ΔP PSI/CFT	Type L Cu Velocity	ΔP PSI/CFT	Schedule 40 Steel	ΔP PSI/CFT
$\frac{3}{8}$ " — 0.350" dia.	5.00	15.61	3.30	6.57	2.52	4.22
$\frac{1}{2}$ " — 0.475" dia.	2.72	3.62	2.06	2.14	1.59	1.35
2.5 GPM Flow — Similar to Shower or Kitchen Faucet						
$\frac{3}{8}$ "	8.34	39.0	5.50	16.04	4.20	10.24
$\frac{1}{2}$ "	4.53	9.02	3.44	5.19	2.64	3.22

For flow noise control - 8 FPS is the maximum recommended velocity

The PEX info from The Plastics Pipe Institute and Plastic Pipe and Fittings Association Design Guide is a valuable addition to any designer's library.

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PEX in the modern world

BY RONNIE JACKSON

The plumbing industry has changed more in the last five years than it has in the last 30. Materials and methods are introduced at a pace that assimilation in some arenas will take decades to fully understand. Speaking of decades, in my 35 years of working in the plumbing industry I've seen many changes concerning materials and methods. Transitions like...

- Lead & Oakum to No-Hub
- Option to use PVC for water services below grade
- Galvanized iron eliminated below slab
- Copper branch extrusion
- Lead free solder
- Water-based flux
- PEX
- CPVC
- CSST

- Waterless Urinals
- Online plumbing training courses

• Copper Pressing

The roll out of PEX in California has been both comical and sad. While a representative of CSST, I was in attendance at the May 2001 California Building Standards Commission (CBSC) in Sacramento. Impressive testimony by the California Building Officials (CALBO) on behalf of PEX expressing support of the Housing & Community Development (HCD) was presented. Unceremonial dismissal of PEX products and methods ensued.

PEX manufacturers were reaching their apex in product offering in many states.

Six years earlier I watched as an Arizona wholesale purchasing director struggled to maintain ample PEX inventory. Immersed in a robust

residential building economy, plumbing-piping-progress in California was leaking reality while Phoenix Metro area found endless product application.

The CBSC acted during its meeting in Sacramento, January 22, 2009 for adoption on August 1, 2009 in a unanimous vote, approving the addi-

tion of PEX pipe and tubing to the California Plumbing Code (CPC). The adoption allows its use in hospitals, clinics, residential and commercial construction throughout the state. California is a generation behind the Europeans in the application of PEX

products. As a third-generation plumber, speaking on behalf of the two industry leaders that came before me, no other non-plastic building or plumbing material has ever been subjected to/or passed such scrutiny.

There is a perception among some that PEX piping systems are inferior

As a third-generation plumber, speaking on behalf of the two industry leaders that came before me, no other non-plastic building or plumbing material has ever been subjected to/or passed such scrutiny.

tion of PEX pipe and tubing to the California Plumbing Code (CPC). The adoption allows its use in hospitals, clinics, residential and commercial construction throughout the state. California is a generation behind the Europeans in the application of PEX

as a building product, generally based on knowledge of past failures of polybutylene (PB) piping systems. Because of the misunderstanding between PB, PEX and other polymers, hurdles exist. Even so there are nu- (Turn to Modern PEX, page 48.)

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Modern PEX

(Continued from page 46.)

merous non-technical benefits of PEX. These include:

- Immediate and available product training/certification provided by the PEX manufacturers with ample representatives. This cannot be said by the copper pipe & fitting manufacturers promoting capillary action

as the joining process (soldering/brazing).

- Your business will be positioned for continued success;
- Migration to other opportunities with sizes now available up to 2";
- Fewer joints equal fewer potential leak paths;
- Learning curve reduced by 90% (over copper capillary action as the joining process) with guarantees;

- No harmful chemicals: primers, solvents or flux;

- Open flame issues, including fire watch and/or fire permit do not exist;

- Smooth interior resists scale buildup and corrosion that can affect long term pipe flow;

- Freeze break resistant and can expand and contract as water freezes and thaws within the tub-

ing; and

- Joints perfected with residual or flowing water in the line.

Cross-linked polyethylene (PEX) materials are rated for long-term service at 180°F, as well as for cold water applications. Hot and cold water distribution system piping made from these materials has a working pressure rating of 100 psi at 180°F. Thus, such materials are suitable for hot water distribution where water heaters are installed with relief valves set at 150 psi, 210°F.

With 300' lengths of 1" & 2" now available, versatility abounds. Two simple examples would be the ability to transverse an existing commercial building ceiling space with only terminal points of connection and installing below grade water service with no joints between meter and building.

There are five basic joining processes to choose from: copper crimp ring, stainless steel (SS) press sleeve, clamp style, expansion and axial pressing. Each of these methods requires specific tools recommended by the PEX manufacturer. For joints up to 1", simple hand tools which are intended for the various joining methods are affordable and easy to use.

For joints 1 1/4" and larger mechanical tools should be utilized. Hand held battery operated pressing machines can make a 2" crimp joint or a SS press sleeve joint in as little as 4 seconds. There are several manufacturers offering battery-operated and corded pressing tools. Jobsite and shop demonstrations can be arranged by contacting the manufacturers' representative.

Currently many home and business owners are choosing to remodel or spruce up their buildings rather than move or relocate. PEX makes sense in this economy and can minimize impact in the rough-in phase.

The versatility of PEX tubing makes it perfect for numerous residential, commercial, institutional and industrial applications... Welcome to California, who could possibly want to stop the celebration.

Learn more by visiting the Plastic Pipe and Fitting Association website, <http://www.ppfahome.org>. ■

Ronnie D. Jackson is a regional sales manager for Stanley-Virax.



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Plumbers' Success International

It's in the name

Plumbers' Success International's (PSI) goal is to help independent residential service plumbers become more successful. PSI is like a Contractor's College where plumbers with the technical knowledge of the trade can discover the proven systems and strategies to become successful businesspeople. If you find yourself struggling to read a P&L

can provide the knowledge and skills that you need. By utilizing the PSI system, contractors can gain greater freedom of time, market dominance and financial independence.

PSI all started when, in the 1990s, Jim Abrams and John Young revolutionized the HVAC industry by helping independent contractors achieve an unprecedented level of success. They



Mike Diamond, CEO of Plumbers' Success International, addresses the crowd at this year's 10th-anniversary Summit.

statement, attract and hire the best employees, create marketing that gets the phone to ring, and all of the keys of running a successful business, PSI

realized that the independent contractor was facing the difficulties of business with only his own talents, knowledge and experience. They can't talk and get

help from their competitors, so most had nowhere to turn. Rather than leaving the independent to battle all on his own, they formed Contractors Success Group to help those contractors who were great tradesmen but needed the systems, knowledge and tools to become great businesspeople.

After that success, Abrams and Young set out to help plumbing contractors who had stepped out on a limb by starting their own companies. With their HVAC background, they had the successful business acumen, but to add the plumbing skills and knowledge they lacked, they searched for the model residential service plumber.

Throughout their search, one name continued to pop up — Mike Diamond. Mike Diamond was the largest, most successful residential service plumber in the country, and Jim and John partnered with him to combine his proven system for plumbing success with their own contracting knowledge. Together they formed Plumbers' Success International in 1999.

Since then, hundreds of independent plumbing contractors have joined PSI over the last 10 years to put these proven systems and knowledge to work in their companies.

Phc News proudly brings you this exclusive Q&A with Mike Diamond, CEO of PSI.

Phc: How did you get involved with the industry?

Diamond: Through my years in plumbing, I've tackled every challenge and obstacle that a contractor can face. I got started in the plumbing

industry by helping a neighbor who happened to be a plumber. As I grew a little older, I decided I wanted to try service work on my own, so I opened Mike Diamond Plumbing. I was only 19 when I got my California license and became the youngest licensed contractor in the state.

Even so, my company had a humble beginning. I started running my one truck out of my parents' garage and was making all of the classic mistakes like calling around to the competition and pricing myself just a little bit lower. I figured at that time that if I charged more I'd be ripping people off, but over the years I discovered how crucial pricing and value are to the success of a company.

My goal when I opened my company was to be able to add one truck every year. That's a goal I've been able to meet and exceed.

After a few years of doing every variety of work, I finally realized that residential service was the area with the most potential so that's where I focused my company. For a long time, I was doing everything. The company revolved around me. I ran the calls, did the marketing, bid the jobs, and tried to fit in paperwork and billing in my "down time."

I had no system or procedures, and I was getting tired. As we grew even larger, I eventually had to take myself out of the truck. There were days that I had to fight the urge to get back out there, but it was time to work on the business rather than in it.

That's when things started to click. I met a great mentor of mine, George Brazil, who introduced me to other successful business owners. I began to piece together successful systems that my employees could use to operate the business at a profit whether I was there or not. Those systems included a highly organized truck and bin system so that the technician always has the parts he needs on the truck. It included the call center procedures my dedicated call center still uses today. It included the recruiting and training procedures I've used to attract the best people. Those were just some of the systems that became the backbone of PSI.

In the 1990s, I started to acquire other contractors and began to grow at a rapid pace. It was possible now that we were operating on proven systems, and when the opportunity came to form Plumbers' Success International with Jim and John, I was excited about the opportunity to impact the lives of other plumbers with the systems I'd created. When a contractor joins PSI, they are receiving my 30 plus years of plumbing knowledge at once, and my hope is that this knowledge and these (Turn to Diamond Q&A, page 52.)

The Summit

The 10th anniversary of the PSI Summit just wrapped up in St. Louis. To mark the occasion, PSI brought together all of the founders of PSI — Jim Abrams, John Young, Mike Diamond and Terry Nicholson — for a very special All-Star Day.

These All-Stars shared the stage for a panel where they answered questions from those in attendance on topics from how to get more leads from direct mail to how a struggling contractor can grow their business in today's economy.

But the real highlight of the day was honoring all of the original members of PSI. Many of them were in attendance and were awarded an engraved Movado watch to mark the 10-year milestone. All of those founding members in attendance shared their stories and the impact that PSI has had on their lives over the past 10 years. A few of those who shared their stories were:

- Jimmy Hiller — how he battled through bankruptcy with his one-man company running out of his duplex to build the dominant plumbing and HVAC company in Tennessee. Today, he generates over \$23 million in revenue and is able to do things he only once dreamed of.

- Jamie and Lisa Carter — how they took over Jamie's father's business, grew it using the PSI systems, and sold it for a large sum of money. Today, they are retired in their 40s and working again in contracting because they want to... not because they have to.

- JR and Keresa Richardson — showed pictures of their amazing 20,000+ square foot home in Dallas that they've been able to build from the success of the residential service plumbing company they started with PSI.

- David Ratliff — proudly shared the fact that his success with PSI allows him to take off as much as three months a year from his plumbing company. In fact, he had just returned from a trip from Texas to Alaska and back on his Harley Davidson!

PSI hosts two Summits a year. At each Summit, the entire membership of PSI comes together to share the latest success strategies and enhancements, and members are able to network with each other and share ideas.

Summits begin with Leadership Essentials where the new members of PSI receive the knowledge and systems that guarantee success. In just these first three days, new members receive the management, pricing, training, marketing, and tracking tools that will guide them to increased results in their business and future success.

The fourth day of Summit is Member Day. This is where the focus is on the members of the organization and what they are doing to achieve success. This day also features a lesson in the PSI Management By Action program. This program highlights some of the most important topics for contractors today and goes in-depth to provide systems and analysis that members can use to achieve breakaway results.

The final day of Summit is where things get cutting edge. This is Success Enhancement Day and it's where PSI unveils the latest competitive advantages that our Research and Innovation Department has created to help members become even more successful. This day routinely highlights the latest marketing strategies or breakthrough sales tools that technicians can use in the home to boost results.

For more information on PSI and the next Summit, call 800-419-1108.



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WATER CONNECTORS

WATER STOPS

GAS BALL VALVES

GAS CONNECTORS

Diamond Q&A

(Continued from page 50.)

systems will save them years of heart-break and struggle.

Phc: *PSI staffs how many people? Please briefly describe the other co-founders and their roles with PSI.*

Diamond: Today PSI is part of the Clockwork Home Services family, which employs over 1,100 people.

Clockwork Home Services is guided by one of the co-founders of Plumbers'

Success International, Jim Abrams. Abrams built a track record of building businesses ranging from the world's largest Weight Watchers franchise to one of the fastest growing residential HVAC companies. The common thread in all his ventures has been their enormous success.

In 1990, Abrams and John Young founded Contractors Success Group (CSG), an HVAC affinity group for independent HVAC contractors. CSG offered step-by-step training for contractors aimed at increasing sales and prof-

itability and building value in their businesses. With Abrams as CEO, Contractors Success Group became a very profitable management and marketing consulting organization that revolutionized the residential air-conditioning service industry.

In March 1996, Abrams and Young founded Service Experts, Inc., where Abrams was president, chief operating officer and director of the nation's first publicly held consolidator in the HVAC industry. They took the company public in August 1996 at \$60 million in sales. It grew to a run-rate of \$288 million of managed or acquired companies by the time Abrams stepped down in September 1997.

In 1998, he teamed with Young again to form Clockwork Home Services, Inc., the parent company of Success Academy®, Benjamin Franklin Plumbing®, One Hour Air Conditioning®, Buy Max®, and SGI's Plumbers' Success International®, AirTime 500®, Electricians' Success International, and Roofers' Success International. He holds two patents and is the contract-

ing industry's most influential mentor.

The other co-founder of Plumbers' Success International is John Young. John Young has applied the knowledge gained from more than 30 years in the air conditioning industry to become one of the nation's most respected marketing and management consultants for mechanical service contracting and other similarly structured industries.

In 1990, Young partnered with Jim Abrams and co-founded Contractors Success Group, which eventually led them to found Clockwork Home Services as mentioned above.

Today, he is chief marketing officer of Clockwork Home Services, Inc.

Phc: *What are the main advantages of becoming a PSI member?*

Diamond: The main advantages of becoming a PSI member are tapping into proven systems and strategies and having access to other elite plumbing contractors across the country. Contractors that join PSI will make more money, grow their company faster, have more time for family and vaca-

(Turn to PSI, page 54.)



This year's Summit featured the PSI All-Stars and founders (from l to r): Terry Nicholson, Mike Diamond, John Young and Jim Abrams.

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The new Accelera® 300 can extract up to 80% of its energy requirements from the air around it. Heat pumps have been around for decades, but a heat pump water heater is a brand new concept. The Accelera® 300 works like an air conditioner - but instead of dumping the heat outdoors, it puts it into the water.

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- REDUCES HOT WATER COSTS BY UP TO 80 %
- COOLS AND DEHUMIDIFIES THE AIR AROUND IT
- LOW STAND-BY LOSSES THROUGH GOOD INSULATION



The new math: 1 = 4

The Accelera's compressor and fan consume only 1 kWh of electricity to generate the heat equivalent of 3 - 5 kWh. The efficiency of the unit goes up with increasing ambient air temperatures. This ground breaking efficiency redefines what a water heater is capable of, and what savings can really mean!

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instant energy savings



With energy conservation and roller coaster fuel prices on everyone's mind, it makes sense to choose Taco recirc and solar hot water systems.

The Taco D'MAND® system for instant hot water.

Ideal for both new construction and retrofit, D'MAND delivers instant hot water while eliminating the need for a conventional recirculation system. D'MAND is activated

by motion sensor or push-button, and leading tankless water heater manufacturers recommend it.

Taco solar systems.

We make solar water heating for a wide spectrum of applications. From our solar pumps and controls to our complete one-piece system, the Solar X-pump Block, Taco systems are easy to install and easy to trust.

Learn more online.

Visit us on the web and join our popular FloPro Team. Membership is free, and it's a great way to learn to work smarter through video training, tips, free software, and the online community.



PSI

(Continued from page 52.)

tions, will increase their success, and will perhaps create wealth and enjoy a potential wealthy exit strategy.

Most of all, the advantage of PSI is that on day one you receive the proven systems that I've used throughout my career to build my company that today runs over 100 trucks with revenue of more than \$20 million.

Phc: How can people sign up?

Diamond: The journey to success for a plumbing contractor interested in PSI starts at Profit Day. Think of Profit Day as a big superpowered success blender where we combine top management tips, concrete marketing ideas to get your phone to ring, no holds barred methods to cut your expenses, dynamic solutions for generating more revenue instantly, and the closely-guarded secrets of the most successful contractors in the country.

We blend all that dynamic information and pour it into one insanely pow-

erful yet entertaining day that brings you together with other like-minded business owners. You'll laugh, you'll cheer and you'll profit. But you have to be there to experience it.

We hold Profit Days throughout the country all through the year, and contractors can find out the latest schedule by calling 800/419-1108

Phc: How many members?

Diamond: Today, PSI has approximately 300 members and it is growing.

Phc: Describe the Success Academy.

Diamond: Success Academy provides the training for the front line employees of PSI members. PSI members receive the latest competitive advantages at each Summit, and Success Academy provides the training that allows the employees of each company to turn those advantages into surefire results. Whether it's the strategies that a call taker can use to book 90% or more of the calls that come in or the methods a technician can use every time they approach a home to boost their average ticket, Success Academy provides the hands-on training that creates success.

Phc: What is the contractor's investment in PSI and what is the ultimate return?

Diamond: The investment in PSI is less than the cost of a new truck and the ultimate return comes from improving your life, which you can't put a price on. The ultimate return is not just money, market dominance or improved success. It's being able to give back to your community, provide a better life for your employees than they never dreamed of, feeling the pride and personal satisfaction of being a successful business owner and stepping away from the idea of just being a plumber and becoming an elite business operator. If you're a member of PSI, the Contractors' College, you will not only be a master in plumbing, but you'll be a master business builder as well. The investment in PSI is one that provides returns for the rest of your life in increased happiness and success.

Phc: How is the website instrumental in PSI's success?

Diamond: Our website (www.plumberssuccess.com) provides access

for our members to all of our proprietary tools and information and it provides a forum where they can share successes and ideas. However, the website is not the primary focus of the PSI experience. Some other companies and organizations merely put material on their website for contractors to download and read, but at PSI, we are a Contractor's College that provides knowledge, education, and training on the exact, step by step process of what it takes to be successful.

Phc: What are your initiatives for the company?

Diamond: PSI is continually looking for ways to provide independent residential service plumbers with an edge. Twice a year the PSI membership gathers for our PSI Summits where we unveil the latest systems and programs based on the industry's technology and trends so that PSI members are always on the cutting edge. PSI's initiative is to keep providing our members with competitive advantages that will allow them to succeed. ■



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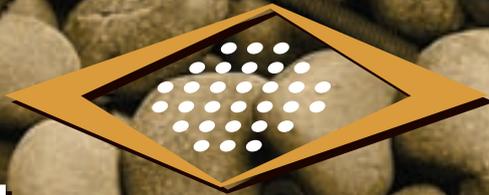
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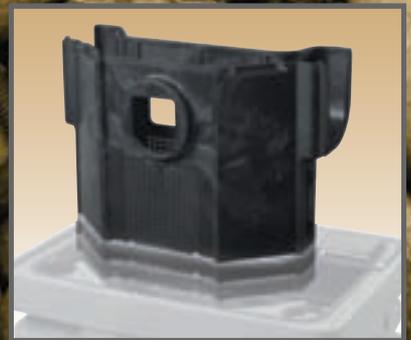
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The ENERGY STAR water heater way ...benefiting the environment

BY KARA RODGERS

Suddenly, it's simple to identify energy efficient water heaters. Contractors and specifiers just have to keep an eye out for the familiar ENERGY STAR® logo.

Energy efficient water heaters have been available for quite some time, but it was the beginning of this year when the ENERGY STAR label for residential water heaters (which can be used for light commercial) came into effect. The ENERGY STAR logo makes highly efficient water heaters recognizable to consumers who value the financial and environmental benefits that energy efficiency can provide.

ENERGY STAR, a joint program of the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA), has been around

since 1992. It is a voluntary labeling program designed to identify and promote energy-efficient products to reduce greenhouse gas emissions. As such, it relies on manufacturers and energy experts working together to reduce air pollution through efficiency by bringing ENERGY STAR products to consumers.

ENERGY STAR qualified products save energy and money and are of the same caliber or even better quality than non-ENERGY STAR qualified products. According to the annual survey of ENERGY STAR brand awareness, three quarters of the consumers surveyed recognized the ENERGY STAR label and nearly two thirds of households surveyed associated the ENERGY STAR label with energy savings.

It is obvious why a homeowner would be interested in an ENERGY

STAR water heater: water heating can account for 15 percent of a home's total energy bill — second only to cooling and heating your home. DOE estimates that the average consumer will spend \$360 to \$505 annually heating water, though this amount will vary depending on local utility rates and how individual homeowners use hot water. ENERGY STAR qualified water heaters are expected to save consumers from \$26 per year up to \$277 per year, depending on what kind of ENERGY STAR water heater is chosen. ENERGY STAR qualified water heaters could save end users across the nation approximately \$823 million in utility costs over the next five years. Plus, they could help to reduce carbon dioxide emissions by 4.2 million tons over the same time period.

The ENERGY STAR program encompasses a wide variety of water heaters, giving homeowners a number of options. The conditions in individual homes can vary, so some water heaters may be ideal for some homes and not for others. Be sure to follow manufacturers' instructions when installing ENERGY STAR qualified water heaters, and make it a point to discuss what the installation will entail with homeowners before you start the job. A little bit of time spent with homeowners up front to make sure that they are buying the right ENERGY STAR water heater for their homes and habits is likely to leave both installers and homeowners more satisfied with the job.

Wholesalers and installers also have clear reasons to appreciate the ENERGY STAR program. Because it is so widely recognized by consumers, the new ENERGY STAR labels make it easy for a contractor to get a conversation started with a homeowner.

North West Climate Controls, Inc. is one of the HVAC contractors within Puget Sound Energy's (PSE) service territory area in Washington State. Matt Painter, president of North West Climate Controls, has found ENERGY STAR qualified water heaters to be an important addition to the available water heater options.

"North West Climate Controls, Inc. believes that consumers have come to recognize and trust the ENERGY STAR label and seek to purchase equipment with the logo because of their knowledge of these products," commented Matt. "Financial savings, in conjunction with tax credits, are a great incentive and motivator for a consumer to purchase new, energy savings appliances. Customer satisfaction is achieved in added comfort in the home, lower energy bills, and monetary credits and rebates being an additional bonus."

Some local utility companies offer incentives to installers who successfully install an ENERGY STAR qualified water heater for a consumer. Other utilities may offer rebates to consumers that could help plumbing and HVAC professionals close the sale. Visit www.eswaterheaters.org to find a list of rebates offered by utility and state energy efficiency programs.

Being knowledgeable about the most recent industry changes, technological advancements, federal tax credits, and the ideal water heater for the end user's needs will position installers to become trusted experts in the (Turn to ENERGY STAR, page 58.)

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Circle 48 on Reader Reply Card

Ellen Rohr's prescription for robust health

(Continued from page 26.)

ally take their vacation. It isn't a badge of honor to be indispensable. It's an illusion.

- **WARNING:** Theft-prone employees NEVER want to take a day off, for fear of being discovered. Beware of the bookkeeper or Service Manager who is in early and stays late every day.

- As the owner may, you might jump in and cover these positions while the team members vacation. This could create empathy, appreciation and good ideas for improving the position. And, it could help you see how much time is wasted and how many mistakes are made. Ei-

**We are all going to die.
If that day were today,
would you be proud of what
you have accomplished?**

ther way...it's eye-opening.

- Encourage vacationers to bring their Top 3 photos and a fun story (maximum 5 minutes) to share at the next team meeting.

- Offer foreign language classes and add travel books to the company library.

- Remind team members that a career is just a part of a full life. Prioritize family and vacation and community service.

A vacation...for an afternoon or a month...is a sorbet for the mind. It's a chance for your soul to expand and create. It's a time for your body to stretch and engage, to breathe and relax.

One of the issues with this health care debate is "end of life counseling." Why not engage in some of this with yourself right now. Imagine the end of your life. It is going to happen. We are all going to die. If that day were today, would you be proud of

what you have accomplished? Would you be filled with regrets or awe or enthusiasm? Would you embrace death or fight it with every available cell and cent? Would you delight in a life well lived? ■

"The contemplation of eternity within the very moment of life."

~from The Elegance of the Hedgehog by Muriel Barbery

Need help? Reach me at 417.753.1111 or contact@barebonesbiz.com You can also join in on our NEW radio show at www.barebonesbiz.com I visit with super-smart biz builders who share ideas for expanding peace, prosperity and FREEDOM with your successful business.

ENERGY STAR

(Continued from page 56.)

customer's eyes.

Displaying ENERGY STAR water heaters in a showroom can also help the homeowner feel confident with the available options. As the survey data from the ENERGY STAR awareness survey indicates, consumers recognize and understand what the label represents. One of the hardest steps in the sales process — educating the customer — is made easier. The

next step will be to help determine which type of ENERGY STAR water heater is right for that homeowner's unique situation.

Five categories of residential water heaters are eligible for the ENERGY STAR program, each with their own specific requirements to qualify. The Department of Energy established criteria that took effect January 1, 2009 for whole-home gas tankless, high-performance gas storage, residential gas condensing, drop-in or integrated heat pump and solar thermal ENERGY STAR qualified water heaters. Currently, whole home gas tankless and high-performance gas storage are the most widely available in the U.S. market.

Some ENERGY STAR qualified water heaters may be eligible for a federal income tax credit. For details on the availability of tax credits for ENERGY STAR water heaters and other energy efficiency measures, including which ENERGY STAR water heaters qualify for a U.S. federal tax credit, please visit www.energystar.gov/taxcredits.

After the launch of the ENERGY STAR program for water heaters, the Consortium for Energy Efficiency (CEE) has established the Coalition for ENERGY STAR Water Heaters. This campaign is dedicated to providing contractors and end users with the resources and education they need to select the most energy-efficient water heater to meet their individual needs. Coalition sponsors include energy efficiency program administrators and water heater manufacturers, in partnership with the U.S. Department of Energy and Natural Resources Canada.

To learn more about energy efficiency in water heaters, visit www.eswaterheaters.org. ■

Kara Rodgers is senior program manager for the Consortium for Energy Efficiency.



Stops Basement Flooding!

Flood-Guard™

The Flood-Guard operates like a check valve to seal off water back-up caused by overloaded sewers. Water flows normally through the drain until the sewer begins to back up. Then the Flood-Guard float rises to seal off the drain opening until the water recedes.

A screwdriver and a couple of minutes are all you need to install a Flood-Guard. Once in place, it can prevent property damage and a very messy clean-up job.



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- IAPMO PS94 2008
- US Army Corps of Engineers-Military Facility Specification-ASTM E84



Promotion Rules

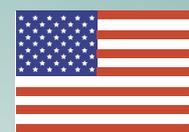
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- Promotion Dates: September 1 thru November 30, 2009.
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Gas Ox Box™

Used to provide quick and convenient access to a gas shut-off valve for many household appliances. Gas Ox Box™ valves work with a number of gases including: natural, manufactured, mixed propane, and liquefied petroleum gases (including LP gas-air mixtures). The Gas Ox Box™ offers a recessed box to keep pipe & valves out of the way, plus a quarter-turn valve for positive, easy shut-off. Gas Ox Box™ is for indoor use only. **Sioux Chief Mfg. Co.**

Circle 101 on Reader Reply Card

Forged brass PEX fittings & valves

Fittings and valves are NSF and UPC approved and manufactured to ASTM Standard F1807; use with cross-linked polyethylene PEX tubing manufactured to ASTM Standard F876/877. Family



consists of brass PEX elbows, tees, couplings, adapters (male and female adapters plus male and female sweat adapters), plugs, compression couplings, copper and stainless crimp rings, frost-free sillcocks (with and without vacuum breakers), chrome-plated brass stop valves and forged brass ball valves. **Matco-Norca.**

Circle 102 on Reader Reply Card

High efficiency toilets

Six new models of push-button-operated Conserver Dual Flush high efficiency toilets add style, shapes and functionality to the product line, pending EPA WaterSense certification. The Maelstrom series now includes HET versions that use only 1.28 gpf come



in round, elongated and ComfortFit ADA models. **Briggs Industries.**

Circle 103 on Reader Reply Card

★ Phc News product of the month ★



Twist & Lock: The real deal

The original Twist & Lock fitting is often imitated, but never duplicated. Speedfit® Twist & Lock fittings require no tools — no sweating or crimping devices — to make leak-free, reliable pipe connections. They provide faster installation time, even in confined spaces, and are reusable many times over without compromising connection integrity. Speedfit® Twist & Lock fittings can be used with copper, CPVC and PEX pipe. Speedfit® Twist & Lock fittings comply with ASTM F876, ASTM F877, CSA B137.5, ASSE 1061, ESR #1931 and NSF 14 and 61. Plastic fittings are lead-free. **John Guest.**

Circle 100 on Reader Reply Card



Greywater products

The Brac Systems family of greywater re-use products consists of seven residential units with 39 gallon to 119-gallon liquid capacity. The seven commercial units with both above-ground and in-ground applications range from 515 to 4,590 liquid capacity. Brac Systems products filter, chlorinate, store and pump virtually any applicable greywater for toilet and urinal flushing with added lawn irrigation usage. **Brac Systems.**

Circle 104 on Reader Reply Card

Individual coverall wall shower

The streamlined, pre-assembled design of Model WS-1WCA wall shower greatly reduces installation time with no extra work required to mount the unit onto the wall as is typical of other showers. The valve bodies and components of the shower are easily accessible from the front or by simply unscrewing the unit from the wall. The sleek design of the unit incorporates type 304 stainless steel for the shower panel, while all other exposed parts

are comprised of stainless steel or chrome-plated brass. The shower has flexible stainless steel supply hoses to accommodate many different rough in locations, and includes a standard soap tray. **Bradley Corp.**

Circle 105 on Reader Reply Card



CPVC non-potable piping system

ReUze™ CPVC water piping system gives those in the green/sustainability industry a practical, easy-to-install system for non-potable water in commercial and residential buildings. Manufactured using the highest quality CPVC compound along with a purple pigment (the universally accepted color for non-potable water systems). It is marked with two lines of type clearly identifying the contents as non-potable water. **Charlotte Pipe and Foundry Company.**

Circle 106 on Reader Reply Card

Tankless water heater kits

All-in-one tankless water heater installation kits are a complete, self-contained, quick-install package:



One-piece forged brass valves, Pro-Coat® gas connectors for corrosion resistance and flexibility; comfortable, color-coded valve handles for quick identification and ease of installation; and built-in, integrated drain valves and pressure-relief ports for convenience. **BrassCraft.**

Circle 107 on Reader Reply Card

Condensing boiler

XFyre modulating, condensing boiler, available in sizes 300 to 850 mbtu. Efficiency 94% thermal at full fire, up to 99% part load. Indoor/outdoor construction standard. Certified for PVC, CPVC, and SS venting. SS heat exchanger w/ASME H stamp. Indoor combustible clearance is zero, except access. Top water connections and 9.5-sq.-ft. footprint saves space. Includes DSI ignition, fuel air synchronization, soft start and 5:1 modulation. Digital operating controls, 0-10 VDC input from BMS, easily read LCD status display, full diagnostics and fault memory, and Calif. LoNO_x certification. **Raypak.**



Circle 108 on Reader Reply Card

5 Reasons Why

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EMISSIONS



Your Customers Will Love a 125BE

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- Boiler Limited Lifetime Warranty / Burner 5 year Parts Warranty

The Buderus 125BE oil boiler systems are based on the high quality and superior reliability of the Buderus G115. Available in a conventional and condensing models the 125BE boilers feature the innovative BE burner. This LowNOx burner burns cleaner, resulting in ultra-high efficiencies and less impact on the environment. All 125BE models include the Buderus Logamatic control and Tigerloop filter system. The AFUEs are 89%+ for the G125BE and 91%+ for the condensing GB125BE. The 125BE not only looks good, but offers higher efficiencies and lower pollution output, making it the best choice for an efficient and ecological oil boiler.



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Comfortable. Efficient. Intelligent Heating.

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Circle 51 on Reader Reply Card



Hose bibb lock

Designed to protect any standard 3/4" outdoor faucet or hose spigot. Includes a padlock. Prevent both crimes and prevent water from flowing, even if the handle is turned to the full open position. This is because they create a watertight seal when secured in place. ConservCo.

Circle 110 on Reader Reply Card

Electric hydrostatic test pumps

Pumps pressure test water meters, plumbing lines, pressure vessels,



solar systems, sprinkler systems, etc. in residential and commercial buildings. Adjust output pressure simply by turning a knob and watching the attached gauge. Built-in bypass allows automatic water recirculation at set pressure. Hose has quick disconnect with built-in check valve for convenient setup and portability. Smooth running, quiet motor. Available with or without protective cage. Reed Manufacturing Co.

Circle 111 on Reader Reply Card

Tubing cutter

The 2-in-1 Close Quarters Cutter combines the RIDGID® Model 118 Close Quarters AUTOFEED Cutter with a light,

ergonomic, accessory ratchet handle that allows easier cutting in restricted spaces. Can be used alone



or with the handle, which operates in ratchet steps as small as 10°. Tighten the knob only once and the spring-loaded cutter wheel automatically cuts. Adjustable from 1/4" to 1 1/8" OD. Use on hard and soft copper, aluminum, brass and plastic tubing. RIDGID.

Circle 112 on Reader Reply Card

★ Phc News product of the month ★



Sump pump system

The Pro Pak 53 is a preassembled sump pump system complete with company's Model 53 primary pump and Model 507 backup pump. The Pro Pak offers extra protection when the primary pump fails due to power outages with 7 1/2 hours of continuous pumping on a fully charged battery. The Pro Pak 49 also available, featuring a Model 49 primary pump. A 3-year warranty is included on both systems. Zoeller Pump Co.

Circle 109 on Reader Reply Card



Pressure booster controller

The CSCPC4 microprocessor-based controller is designed for constant pressure applications using variable frequency drives (VFDS). Controls up to four VFDS; has P.I.D. control, automatic alternation, data logging, and communication capabilities. Backlit graphic display allows the operator to monitor pressure, pump speeds, and alarm status at a glance. Fast, simple menu driven set-up for navigation and configuration. Backed by a one-year limited warranty. CSI Controls.

Circle 113 on Reader Reply Card

Zoning control system

The Hi-Velocity Pulse Width Modulation (PWM) Control is unique in the SDHV industry be-



cause it is a true "energy saving zoning control system." Pressure reactive; changes the energy input to maintain constant flow of open outlets from 150cfm to 1250cfm; no need for by-pass dampers. Three independent settings: cooling, heating and recirc. fan to fine-tune with variable commands. Compatible with most forced air zoning packages, also integrates with inverter drive heat pump condensing units for superior comfort and energy efficiency. Energy Saving Products Ltd.

Circle 114 on Reader Reply Card



Spin-Drive™ drain cleaner

Spin-Drive features a stronger reinforced heavy-gauge tubular frame. With a capacity of 50, 75, or 100 feet of 1/2" Flexicore® wire rope center cable, this lightweight easy-to-operate manual drain cleaner easily clears 2" to 4" drain lines. Comfortable turning handle turns the cage smoothly on self-aligning oilite bearings at the front and rear of the frame. A convenient carrying handle is mounted on the cage for easier portability. General Pipe Cleaners, a division of General Wire Spring.

Circle 115 on Reader Reply Card

Solar system data logger

The DL2 data logger add-on module enables the acquisition and storage of large amounts of data (such as energy being generated, temperature in the collectors and storage-tank water temperature) over a long period of time from any iSolar™ differential temperature controller. Depending on data logging intervals, the



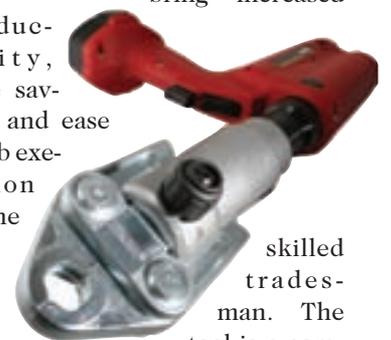
DL2 can store over 10 years of an iSolar™ controller data. Has a built-in Ethernet jack and SD card slot for accessing stored data. Can be configured and viewed with a standard internet browser via its integrated web interface when connected to a local area network (LAN) router. Caleffi.

Circle 116 on Reader Reply Card

Handheld pressing tool

The M20+ and the P20+ professional-grade pressing machines bring increased

productivity, time savings and ease of job execution to the



skilled tradesman. The tool is a compact pistol grip pressing machine the size of a cordless drill. See www.phc-news.com for a chance to win the M20+ pressing tool! Stanley VIRAX.

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ACROSS AMERICA.

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360° HEAD ROTATION



THE P20+ CORDLESS
PRESSING TOOL FOR
1" TO 4" TUBING

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- Easy to Learn
- Affordable
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- Takeoff with a mouse, ScaleMaster, or a digitizer
- PHCC, MCAA, & SMACNA labor rates available
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- Plumbing & Piping Assemblies included
- Price updates available

NEW! On-Screen Digitizer

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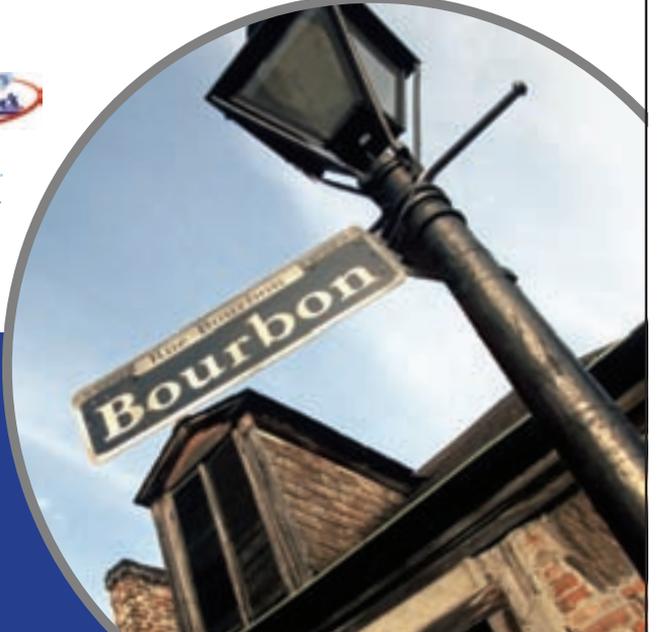
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Fiddling while Rome burns?

BY JIM SCHAIBLE,
managing editor

The debate over alternative energy rages on. It can't even be called a "debate." It's more like a schoolyard

brawl. Most of the arguments are politically motivated, and everyone has a political agenda.

Lost in all the squabbling is the fact that the oil companies are quietly devoting some small resources to alternative-energy research. It's not much, and some have suspended their efforts, but their very actions indicate that they see themselves playing a role in a future that includes sources of energy not based on fossil fuels.

The oil companies really are energy companies, and they aren't blind to the realities of the world's increasing energy needs and decreasing energy reserves. Oil geologists have known since drilling began that some day the oil wells will run dry. About 40 years ago the first serious warnings went out, not from ecology-minded "greenies" but hard-headed energy scientists, that the world's oil reserves would come under stress and all the cheap, low-hanging fruits soon would be picked.

That time hasn't arrived yet, but realistic assessments verify it looms on the near horizon. Renewable energy will be a necessary part of the mix. For now, most research comes from smaller independent firms devoted to solar, geothermal, wind and biomass alternatives.

These efforts are almost insignificant compared to the world's overall energy needs, but they have

begun to point out how we can enjoy a future that doesn't require fossil fuels.

Face it, most of the world's convenient oil reserves are in the hands of people who don't like us. In a bizarre need-hate relationship they must sell their oil because it's their prime source of income, to their biggest customer that they despise. On top of that, those nations teeter on the edge of political chaos. The world's energy situation is one black-market nuclear bomb away from disaster.

Do we simply wait for it, and see energy costs skyrocket to four and five times their current price? An already shaky economy couldn't withstand the shock.

Or will we move ahead and begin ensuring a future of secure energy sources, free from the whims of tin-pot dictators, religious zealots, ex-KGB agents and brutal sheiks?

All those little alternative-energy companies are showing the way. Solar energy tops the list. We're just 93 million miles from a nice-sized star that will pump out vast amounts of energy for a good 6 billion years. Gradually, we're learning more-efficient means of capturing it. Solar panels and photovoltaic technology have leapfrogged earlier low efficiencies, and soon will be highly viable alternatives to fossil energy.

It gets down to profits. As soon as the big energy companies see the kind of return they desire, they'll jump into renewable energy with both feet. They're barely keeping their hands in now, but will ramp up when they know they sense a big RIV.

On the ground, alternative energy is a huge potential market on the scale of the U.S. railroad system of the 19th century and the Interstate highway system of the 20th. Part of the infrastruc-

ture exists in the form of the electrical grid, but there are almost no rooftop solar collectors or PV panels installed, no backup batteries, no heat exchangers, no storage tanks... the list goes on and on. Any good contractor has the skills to install them. It's a staggering market, just waiting for the impetus to take off.

I lean toward the green side of the debate, but I'm realistic about it. Fossil fuels have a big part to play for the near future. However, as Big Energy understands, the world's energy future must include more renewable forms. Nuclear power, very "clean" except for the dangerous waste it produces, will play a part. Biomass hasn't yet proven that it's significantly viable. Wind farms suffer from the "not in my back yard" syndrome.

All the while, there sits the sun, flooding the Earth with unlimited energy. We're learning to harness that energy, and the learning curve is accelerating. Solar power in all its forms now is at the stage automotive technology was right after World War II; walking and learning to run. Huge forces are trying to hold it back, but reality will dictate that we move ahead and harness the sun's free, clean power. In the not-so-long run, it will be the world's best, and perhaps only, alternative. ■

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