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Phc News

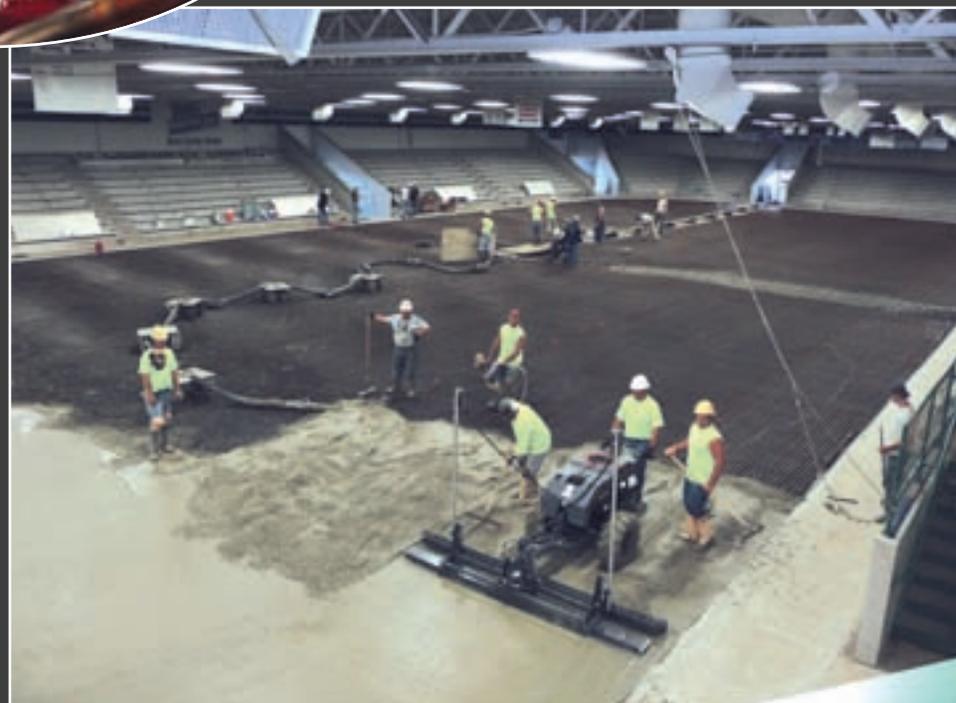
plumbing & hydronic contractor news



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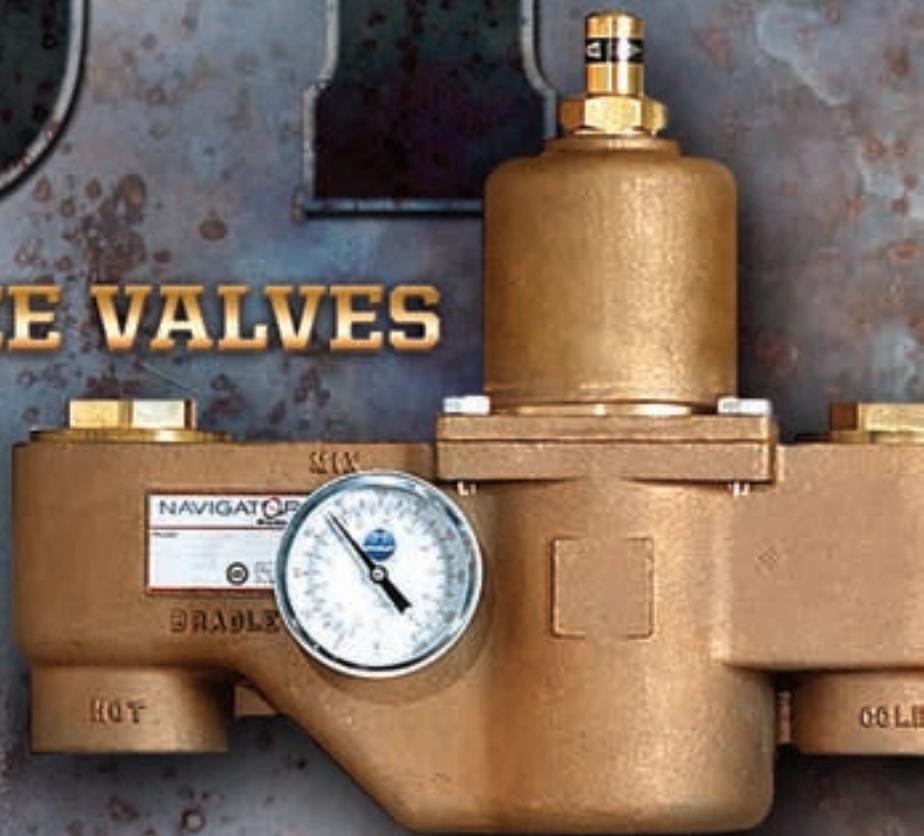
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On the Cover

Ground-source heat pumps have long delivered optimum efficiency and environmental benefits. When the St. Cloud, Minnesota Municipal Athletic Center needed a new ice arena, the planners deemed that a chiller system utilizing ground-source technology could reduce energy usage drastically and eliminate 300,000 lbs. of greenhouse gasses a year to freeze the ice. Story on page 44.

Features

50 Radiant cooling goes to the mat

When Wal-Mart planned its fifth-generation high-efficiency store for Las Vegas, it needed a means of cooling that met its goal of 45% energy savings. Radiant cooling via Climate Mat filled the bill.

64 Laars marks 60+ years

A better means of heat exchange grew from a concept in 1948 to a thriving industry for Laars Engineering, developing copper-tube boilers that astounded old-timers with their small size and high efficiency.



Phc News

plumbing & hydronic contractor news

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Tapping the Earth — pg. 44

Columns

HOYT CORBETT: Developing American

solar thermal products18

DAN HOLOHAN: Notes from AHR22

PAUL ROHRS: Using electrical relays . .26

BRISTOL STICKNEY: Primary loop solution

for solar system dilemma30

ELLEN ROHR: Read any good books? . .34

RICHARD DITOMA: "Free" estimates aren't

free for you36

MORRIS BESCHLOSS: PVF sector takes on

manic-depressive aspect39

Field Reports

St. Paul athletic center goes green

with geothermal energy44

Radiant cooling for Wal-Mart store . .50

Contractor finds "gold" in solvent

cement that glows in ultraviolet . .68

Posh hotel restores old pipes in place

via coating system70

In the News

Drainline Transport first PERC job . . .6

The Pulse: Solar training; cutting PEX;

diesel fuel prices down8

IRWIN Tools awards Navy surgeon custom

chopper for Vise-Grip surgery story .10

Sioux Chief buys REHAU fitting biz . .12

Movers & Shakers20

NKBA clears confusion54

Track your trucks62

Tool Crib; Product News56-60

The Wall: Crazy instructions for

Japanese public toilets69

Code Update

National Green Standard ICC-700

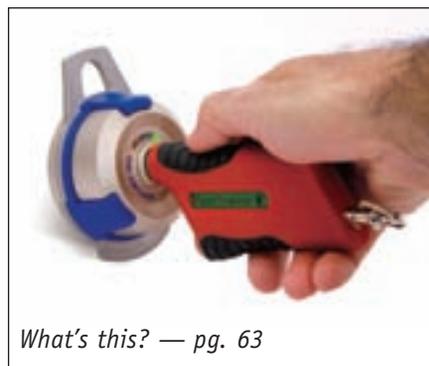
approved as ANS11

NSF certifies low-lead products16

From the Editors

New lead regulations; boon

or boondoggle?74



What's this? — pg. 63

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PERC identifies Drainline Transport as first project

CHICAGO — The newly-named Plumbing Efficiency Research Coalition, (PERC) formed through a Memorandum of Understanding (MoU), has identified Drainline Transport as its first research project. The Coalition is comprised of five industry organizations seeking to conduct much-needed research in a number of areas. Representing the Coalition on the initial conference call to establish the first project were: Mary Ann Dickinson, Alliance for Water Efficiency (AWE); Pete De Marco, International Association of Plumbing & Mechanical Officials (IAPMO); Jay Peters, International Code Council (ICC); Ike Casey, Plumbing-Heating-Cooling Contractors Association (PHCC); and Barbara Higgins, Plumbing Manufacturers Institute (PMI).

IAPMO's Pete DeMarco will serve as project coordinator for this inaugural research study and will also chair the Technical Committee assigned to the project. Each of the five member associations of PERC has named a representative to this committee. The first order of business is to define the parameters of the project.

With the enactment of the Energy Policy Act of 1992, all water closets (toilets) manufactured in or imported

into the United States were required to flush no more than a maximum average of 1.6 US gallons, effective January 1, 1994 for residential models and January 1, 1997 for all models. At that time, concern for drainline transport efficacy was voiced by many in the plumbing trade and those in various professional associations. However, early reporting and research on 1.6 gallon per flush (gpf) water closet models focused primarily on the flush efficacy of the various water closet models on the market in response to significant consumer complaints about poor flush performance. Intermittent and anecdotal complaints of drainline transport problems were not thoroughly researched and largely attributed to older or faulty sanitary drain lines. Since then, water closet manufacturers have made great strides in improving flushing performance.

Recently, the need to find additional efficiencies on water consuming plumbing fixtures has resulted in the creation of voluntary specifications that eliminate another 20% from the flush discharge volume of water closets, bringing consumption down to a maximum average of 1.28 gpf. These toilets are known as High Efficiency Toilets (HETS). Some water closet manufactur-

ers are now voluntarily offering models that flush at 1.0 gpf. This activity has rightfully raised the debate of drainline carry efficacy anew. Many plumbing experts are concerned that we are at or approaching a "tipping point" where a significant number of sanitary waste systems will be affected by drainline transport problems, especially in larger commercial systems that have long horizontal runs to the sewer. Recently, drainline transport problems in Europe and Australia have been reported, further raising concerns.

Looking forward, newer technologies, such as non-water consuming and High Efficiency urinals (HEUS), lower flow rate faucets and increasingly efficient water consuming appliances will further reduce the amount of water discharged into sanitary waste systems. Grey water reuse systems, a system that collects discharged water from lavatory basins, clothes washers, bathtubs and shower fixtures for reuse, usually for irrigation purposes, is another emerging technology that significantly reduces waste water in residential sanitary drainage systems. Yet, to date, an extensive research project of sufficient scope to be able to determine if significant problems could arise regarding drain line transport has yet to be conducted.

Bradley sparks sustainability dialogue at Green Manufacturing Summit

MENOMONEE FALLS, WIS. — In a quest to "green" and enhance their company's manufacturing processes, nearly 200 Milwaukee-area executives attended the 2nd Annual Green Manufacturing

Milwaukee Journal-Sentinel. The Summit gathered architects, engineers, and business and community leaders who shared sustainable strategies proven to make their processes more efficient and productive, while reducing utility costs.

"For 88 years, Bradley has designed and manufactured water- and energy-conserving plumbing technologies and fixtures that have helped green our customer's facilities," said Mike Sipek, COO, Bradley Corp. "Our long-standing green philosophy continues to drive us to further explore innovative sustainable strategies with fellow industry leaders — especially at a time when companies are looking for new ways to adapt to — and prosper in — a leaner and greener economy."

A common theme of the Summit, which was held in Milwaukee, was how operational savings from reduc-

ing use of energy, water and other natural resources offsets the initial investment of becoming green. "Green is not just environmental sustainability," said Jon Domnisse, director of new product development and marketing, Bradley Corp. "Green is business sustainability too."

Keynote speaker, Kim Marotta, vice president, Corporate Social Responsibility, MillerCoors, presented a variety of sustainable strategies implemented by the prominent brewing company. Marotta examined MillerCoors' water, energy and carbon footprint reductions throughout its supply chain, along with other environmental sustainability efforts.

Next, a dynamic panel discussion focused on ways companies can reduce their corporate water footprint and employ other water usage and efficiency strategies. The distinguished panelists included: Ann Beier, director, The City of Milwaukee's Office of Environmental Sustainability; William Holahan, professor and chair of the economics department, University of Wisconsin-Milwaukee; Kim Marotta, MillerCoors; Richard Meeusen, chairman and CEO, Badger Meter, Inc.; and Mike Sipek, Bradley Corp.



Panelists (l-r) Bill Holahan, University of Wisconsin-Milwaukee; Kim Marotta, MillerCoors; Mike Sipek, Bradley Corp.; Richard Meeusen, Badger Meter, and Ann Beier, The City of Milwaukee, discuss water efficiency strategies during a panel discussion at the Green Manufacturing Summit.

Summit, presented by Bradley Corp., manufacturer of efficient plumbing solutions, in partnership with Wisconsin's Focus on Energy and the

In brief

Mestek Inc. announces sales partnership

WESTFIELD, MASS. — Mestek Inc., a manufacturer of over 30 specialty heating, ventilating and air conditioning products, announced a new sales partnership with the Sweeney-Rogers Corporation, headquartered in Raynham, Mass. This partnership is designed to further strengthen Mestek's product distribution and customer support throughout the entire Northeast region.

Watts announces online 3D CAD program

NORTH ANDOVER, MASS. — Watts has released an online 3D CAD drawing program, available in their Engineer Resource Center at



www.watts.com/engineerCenter or on applicable product detail pages.

The architectural, engineering and contracting communities will be able to preview and download the new 3D, as well as 2D CAD files, in a variety of industry formats, including Revit, ACIS, DWF, STP, DWG, JPEG, and PDF.

Watts' new 3D files are designed for use in most popular building information modeling (B.I.M) applications.

Arrow Industries acquires Duratrac

BREA, CALIF. — Arrow Industries announced the acquisition of Duratrac Inc., a leading manufacturer of gas connectors for the residential and commercial markets, in an all cash purchase of Duratrac Inc.'s assets from its parent company Dura Global. Duratrac Inc. headquarters are in Henderson, Nevada, with additional warehouses in southern California and Atlanta.

For more details go to www.duratracinc.com.

Energy Saving Products back in business

EDMONTON, ALBERTA — On January 27, Energy Saving Products' manufacturing facilities and offices were destroyed by fire. Luckily, the fire occurred after hours when no one was in the building. By February 4, the company had moved into a temporary facility in Edmonton and was expected to have its product line available for shipping.

More photos and information on the fire at www.hi-velocity.com.

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Simple or as elaborate as you want

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Circle 5 on Reader Reply Card

Inside the trade

What we're hearing



Solar training partnership key to solar business

BOULDER, COLO. — There's a light at the end of the job-loss tunnel. Contractors feeling the pain of this economy's 'construction obstruction' can learn how to successfully realize the promise of the Obama Administration's Clean Energy Economy at the Conergy-American Solar Energy Society's (ASES') SOLAR SUCCESS! training event, May 11-14, 2009. It is co-located at the 38th annual SOLAR 2009 conference in Buffalo, N.Y. Register at www.solar2009.org.

President Barack Obama committed to investing \$15 billion a year to create conditions that will double the amount of renewable energy produced in America in the next three years. The investments create fertile ground for thousands of businesses and entrepreneurs to engage in renewable energy innovations that make solar affordable.

"The SOLAR SUCCESS! workshop is designed to provide essen-

tial industry insight to those interested in breaking into the business and contributing to the momentum of our new Clean Energy Economy," said Donald Chung, managing director of Distribution for Conergy Americas, a full-service wholesale distributor serving a network of over 1,000 solar energy dealers and installers across the U.S. "The solar industry has been growing at a clip of over 30% per year and is projected to maintain that growth over the next few years.

"While the construction industry has been heavily affected by the current economic downturn, the solar industry has been growing at a clip of over 30% per year and is projected to maintain that growth over the next few years. Never has this industry held more promise for those looking to diversify and build their businesses — or parlay their expertise into rewarding career opportunities."

Tool Tips

with Hackman



Cutting PEX and plastic tubing

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.

PEX plastic tubing now accounts for more than 30% of all potable water piping in North America, and that number is only growing. With the increase usage of PEX and plastic tubing, more tradesmen are finding the need to purchase plastic tube cutters. There are several manufacturers and styles of tube cutters with a significant range in quality.

As with most tools, it is important to use the right tool for the job. One of the most important things to consider when picking up a cutter is that it needs to be the right size for the job. Using a cutter that is too

small or large can lead to jagged edges and connections that are not flush.

A high quality cutter is designed with stainless steel blades that require less force to make a cut, leaving a straight flush end. Cutters with stainless steel blades stay sharp longer and provide an excellent value. Rubberized handles allow for a comfortable grip and confident cutting even in wet and dirty environments. Another design feature to look for in a cutter is a conveniently located locking latch that allows for true one-handed operation of the spring loaded cutter.

A large diameter plastic pipe cutter usually has a ratcheting design. The easiest-to-use models are designed for one handed operation to allow for easy opening by pulling both handles apart to quickly start the next cut.

I have always been an advocate for the best quality products; they provide long life, easy to use, and they



surely give you the best value for your money. If you have any questions or comments for HACKMAN, email him at hackman@lenoxtools.com or visit www.lenoxtools.com. ■

Current prices



Fuels

Gasoline			Diesel		
Area	¢/gal.	Change	Area	¢/gal.	Change
U.S. average	190.9	↑	U.S. average	213.0	↓
East Coast	191.2	↑	East Coast	219.9	↓
New England	191.0	↑	New England	251.4	↓
Central Atlantic	195.3	↑	Central Atlantic	236.8	↓
Lower Atlantic	188.2	↑	Lower Atlantic	209.8	↓
Midwest	180.8	↓	Midwest	207.1	↓
Gulf Coast	178.5	↑	Gulf Coast	207.4	↓
Rocky Mountain	180.1	↑	Rocky Mountain	215.8	↓
West Coast	222.1	↑	West Coast	223.8	↓
California	226.1	↑	California	221.9	↓

Metals

*Copper \$1.54/lb. ↑ | **Aluminum \$0.58/lb. ↓

Prices valid as of 2/23/09. 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.

Training Center

FBC Building Solutions offers on-site, plumbing training programs

CLEVELAND — Even the most experienced plumbing contractor can benefit from training that provides detailed installation tips, guidelines and updated code information for the installation of FlowGuard Gold and Corzan CPVC pipe and fittings.

FBC Building Solutions provides free, customized training to both novice and experienced plumbing installers — on-site and on-demand. Sessions are held at the contractor's own facility and combine in-depth presentations and open discussion with hands-on installation practice. This customized training is scheduled

at the contractor's convenience and requires no travel, keeping training budgets low.

Training also includes details on the latest products from FBC Building Solutions and shares best practices for residential and commercial plumbing installations. Installers who successfully complete the free training program will receive an updated training certificate, which may be required in some jurisdictions.

To learn about this program and to schedule a session at your facility email fbcbuilding_solutions@lubrizol.com.

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April 17, 2009 - Sarasota, FL

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U.S. Navy surgeon awarded custom-built chopper

LAS VEGAS — IRWIN Industrial Tools, a Newell Rubbermaid company and maker of the IRWIN VISE-GRIP, announced that Dr. Bryan Fox of Chesapeake, Va., was selected as the winner of the “Tell Us Your IRWIN VISE-GRIP Story” promotion. Dr. Fox, an orthopedic surgeon for the United States Navy, was honored for using an IRWIN VISE-GRIP to perform spinal surgery during Operation Iraqi Freedom.

A member of the U.S. Navy for more than 25 years, Dr. Fox found a unique use for his VISE-GRIP as a spine surgeon on the battlefield in

the Middle East. In the heat of battle, Dr. Fox needed to perform emergency spinal surgery on a soldier who had a combination of screws and rods that had been implanted into his infected spine. Complicating the medical challenges at hand, Dr. Fox did not have access to the specialized tools necessary to deal with the soldier's different spine implants. Dr. Fox did, however, have access to a pair of VISE-GRIP locking pliers. He sterilized his VISE-GRIP tools and used them to remove the rods and screws from the soldier's infected spine, effectively saving his life.



judges made up of industry experts in education, training, retail, motorsports and manufacturing.

The other finalists for the “Tell Us Your Vise-Grip Story” promotion were Paul Schraps of San Rafael, Calif., and Paul Smith of Valley Center, Calif., who won second and third place, respectively. Schraps shared how he held his truck's exhaust system together while driving his mother to receive cancer treatments in Mexico. Those same VISE-GRIP locking pliers are still holding Schraps' exhaust system together 28 years later. Smith lost a brake line during the grueling Baja 500, and he used his VISE-GRIP locking pliers to maintain power on his remaining brakes to finish the difficult race.

For more info, www.irwin.com.

As the winner of the “Tell Us Your Vise-Grip Story” promotion, Dr. Fox was awarded an IRWIN VISE-GRIP custom-branded chopper valued at \$25,000 built by East Coast Custom Cycles.

IRWIN received more than 850 stories describing how consumers used VISE-GRIP tools in different situations ranging from spine surgery to car repair during the “Tell Us Your VISE-GRIP Story” promotion. Fifty submissions were selected as finalists and consumers voted to select the best three entries. The winner was selected from the top three finalists by a panel of

Don't miss regional PHCC conventions

HARRISBURG, PA. — The Plumbing-Heating-Cooling Contractors Associations (PHCC) of Pennsylvania and New Jersey will hold their 2009 Annual Trade Show & Convention on May 14th through May 16th at the Split Rock Resort and Expo Center in the Pocono's, on Lake Harmony.

The central event to the three-day convention is the one-day trade show

scheduled for Friday, May 15. Attendees also can observe the competitive statewide Apprentice Contest. Free and timely seminars are available to all area contractors and guests. Seminars will include code, business and educational seminars, and will feature the new GreenPlumbers seminar. For more info, paphcc.com.

Palm Beach Assoc. gears for its trade show

WEST PALM BEACH, FLA. — The Palm Beach Association of the PHCC will hold their 21st Annual Plumbing Trade Show on Wednesday, April 22, 2009 at the South Florida Fairgrounds Expo, West Palm Beach, Fla.

The show features hundred of vendors with industry related wares. Over a thousand participants attend the show geared toward the plumbing and HVAC contractors. The show highlights are the plumbing apprentice competition and hundreds of door prizes given out throughout the

evening. Attendees have a chance to network with PHC contractors who work in their like trade, as well as learn from hands on demonstrations with hundreds of exhibitors from around the country.

This show is regarded as “The Largest Plumbing Trade Show in the State.” Due to the economic times, officials are expecting a record turnout in attendance, and an even larger turnout of exhibitors.

Admission is free. For more details go to www.pbphcc.org.

ALERT: Credit card scam prevalent in distribution channels

Manufacturers would like to advise all distribution partners to increase awareness in fraudulent credit card order scam. Over the past few months, manufacturers have seen increased instances of credit card fraud and they encourage distributors to take proactive steps to verify any credit cards as the payment method in order to minimize the cost and exposure to distributors.

Be aware of these conditions when a customer looking for request for quote via e-mail or fax with SQE, SQ, and SQ Flex product. The most common requests come in asking for all of

these product types on one request. Each case has been very similar as an order comes into a partner using a credit card for purchase. The initial run of the credit card comes back approved. However, once the customer's credit card is ran for the full amount (after shipment) the card is declined because it has been stolen. If someone you don't know is purchasing a large amount of product using a credit card, make sure you validate the credit card by calling the credit card company and/or running the credit card for the full amount before the product ships.

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Circle 7 on Reader Reply Card

National Green Building Standard approved

WASHINGTON — The National Green Building Standard, known as ICC-700, was approved as an American National Standard. The new Standard provides guidance for safe and sustainable building practices for residential construction, including both new and renovated single-family to high-rise residential buildings. This is the first and only green standard that is consistent and coordinated with the Code Council's family of I-Codes and standards.

Code Council Board president Adolf Zubia said, "ICC-700 provides a benchmark for green building in the residential market, serving as a new and needed starting point for comprehensive approaches to green residential construction."

Code Council CEO Richard P. Weiland said, "In concert with energy codes such as the International Energy Conservation Code, and rating systems such as the LEED Green Building Rating System, Energy Star, the CHPS Criteria, Green Globes or similar programs, application of ICC-700 can contribute to greater energy, water and resource efficiency along with reduced long-term costs to consumers and to our planet."

The International Code Council and National Association of Home Builders developed the Standard with broad input from several thousand stakeholders, ranging from code officials and other building professionals to the entire spectrum of the green building community. This new standard provides a practical route to green, sustainable and high-performance construction, especially in communities with little if any green/sustainable

WELD-ON solvent cements and primers to meet emission limits

COMPTON, CALIF. — IPS Corporation is one of the first in the solvent cement manufacturing industry to offer all of its WELD-ON products in environmentally-responsible, low VOC (volatile organic compound) formulations. By the end of March 2009, all WELD-ON solvent cements, primers and cleaners will meet the most stringent

VOC emission limits in the United States — Rule 1168/316A, established by California's South Coast Air Quality Management District (SCAQMD).

For more info, www.ipscorp.com.

buildings or guidelines to build green.

Key provisions include:

- Land conservation
- Rainwater collection
- Construction of smaller homes to

conserve resources

- Energy performance starting at 15% above the baseline requirements of the 2006 *International Energy Conservation Code*

• The use of low VOC (Volatile Organic Compound) materials and detached garages or carports to improve indoor environmental quality

- Homeowner education on proper maintenance and operation to maintain its green status throughout its life cycle.

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Sioux Chief to purchase fittings business from REHAU

LEESBURG, VA. — REHAU announced the purchase of its North American fittings business for PEX plumbing systems by Sioux Chief Mfg. Co. Inc. This will include transition of REHAU's existing fittings inventory and associated certifications, as well as the licensing of the technology, to Sioux Chief.

"With a solid three-generation footing in the plumbing industry, we're excited to be expanding into the manufacture and supply of complete fitting systems by assuming REHAU's proven, high-quality line of compression sleeve fittings," said Ed Ismert, vice president of sales and marketing at Sioux Chief. "Building on REHAU's established rep-

utation for quality and service in the industry, we anticipate a seamless transition into providing the complete range and support of plumbing fittings formerly available from REHAU."

Sioux Chief's manufacture and supply of REHAU's former fitting systems line also promotes REHAU's continued development of cross-linked polyethylene (PEXA) pipe for North American plumbing applications. Production and distribution of the PEXA pipe will be managed out of REHAU's plant in Cullman, Ala., where development is also underway for both current and longer-range innovations.

Grundfos earns 'Green Dot' award

LOS ANGELES — Grundfos Pumps was awarded "Honorable Mention" in services products for the entry titled, "MAGNA Circulator Pump." The jury selected winners from thousands of entries from over 25 countries.

The Green Dot Awards strive to reward and promote forward-thinking businesses that create environmentally friendly products or services, and to reward revolutionary green proposals.

Businesses and organizations have become especially aware of the impact that their practices have on the well-being of the planet and many are acting to adopt more sustainable

attitudes. The purpose of Green Dot is to reward those who practice excellence in environmental responsibility.

Although the Green Dot Awards are worthy onto themselves, they are also a consumer guide to excellence in environmentally-sustainable practices. A business with a Green Dot Award is a business that can be trusted by consumers with stewardship of the environment. Recognition from the Green Dot Awards allows businesses to promote their products and services as items that are manufactured and delivered in an environmentally friendly manner.



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Circle 9 on Reader Reply Card

NATE launches HVACRAvice.com

ARLINGTON, VA. — North American Technician Excellence (NATE) has launched its new consumer Web site, www.hvacrAdvice.com, reaffirming the organization's commitment to both consumers and contractors that employ NATE-certified technicians.

The new site is part of an extensive online marketing program designed to attract consumers through helpful and informative content, while raising awareness of NATE and the value of certification. Dedicated sections address frequently asked questions about heating and cooling needs and provide homeowners with resources related to installation and maintenance.

The site also features NATE's Consumer Contractor Connection (C3), a locator directing consumers to the nearest residential and/or light

commercial heating, ventilation, air-conditioning and refrigeration (HVAC/R) contractor that employs a high percentage of NATE-certified technicians. A local map pinpoints Quality Circle Contractors (those



with 80 percent or more certified technicians) and Recommended Contractors (those with at least 50 percent certified technicians), connecting consumers to NATE-certified contractors with a simple click.

InSinkEerator honors Dave Weiner for 50 years of service

CHICAGO — Dave Weiner, CEO of Marketing Support, Inc. (MSI), an integrated marketing agency, recently was honored by InSinkEerator for 50 years of service to the company.

Weiner has worked with InSinkEerator and its various busi-

ness groups on advertising and public relations programs since 1958 and InSinkEerator president Jerry Ryder recently hosted a surprise reception to honor Weiner, inviting many of his former and current industry associates.

"InSinkEerator was a wonderful company to work with, from the beginning of my career," Weiner said. "The culture and attitude were unequalled. Back in the 1950s and 1960s when the disposer was trying to gain traction as a kitchen convenience, we focused on the plumbing contractor. It was challenging work because there were at least 10 other brands competing in the marketplace at the time, and InSinkEerator was not the industry leader it is today."



InSinkEerator president Jerry Ryder congratulates Dave Weiner (l).



ETERNAL CALLS THE SHOTS.

Dom De Luise wanted hot water, so he came to the experts. One Eternal Hybrid with a demand pump recirculation system was able to replace three old 50 gallon tanks. Dom is now doing his part as a concerned Californian to conserve energy and water without losing heat. With PVC venting and easy recirculation, Eternal can land the starring role in your next job.

See more stories like this at www.hybridstories.com



WaterSense to label first commercial product

WASHINGTON — The U.S. Environmental Protection Agency's (EPA's) WaterSense announced its first product labeling effort for commercial building products with the release of a draft specification for

high-efficiency flushing urinals.

Urinals are the first commercial product slated for WaterSense labeling. The EPA estimates that about 80% of the estimated 12 million urinals in use in the United States are old and inefficient.

WaterSense has developed a draft specification for labeling those urinals that are 50% more efficient than the current federal standard of 1.0 gallons per flush (gpf).

To ensure adequate performance, urinals must comply with existing standards for flushing urinals and need to be tested for trap seal restoration and flush effectiveness before they can earn the WaterSense label.

Under lav protectors meet ADA/IBC requirements

PALM SPRINGS, CALIF. — The new Handy-Shield MAXX from Plumberex Specialty Products Inc. eliminates potential liability. Superior PVC insulation material is properly marked with an easy-to-read identification label that verifies ASTM E-84 test results required for compliance under IBC code testing standards. The product will include the same great system with a longer tail piece design and a "universal fit" limiting the number of SKUs your inventory. This product is designed to fit 1 1/2" sch. 40 traps and braided stainless steel water supply connectors. The soft PVC insulation material has a flame of 25 and a smoke of 450 meeting today's International Building Codes.

For more information, visit www.plumberex.com.

Ferguson showrooms honor plumbers

NEWPORT, NEWS, VA. — Ferguson, a wholesale distributor of plumbing supplies, honored plumbers during the month of February, hosting National Plumber's Appreciation Month in all Ferguson showrooms.

Ferguson showrooms across the country hosted a variety of specialty events to educate plumbers on products and thank them for their business. For those not previously affiliated with Ferguson this is an excellent opportunity to meet the showroom staff and learn about product offerings and how Ferguson Showrooms can help their businesses.

For more information, visit www.ferguson.com.

Is Maryland looking lead-free?

ANNAPOLIS — Legislation is being presented in Maryland that would dramatically reduce the allowable lead content in piping and fittings that deliver water for human consumption. Hot on the heels of the State of California's low lead legislation (AB1953), Maryland's House of Representatives has drafted House Bill 357, a lead-free facsimile of the California statute.

Entitled "Business Occupations and Professions — Plumbers — Lead-

Free Material," the draft legislation requires piping and fittings for portable water delivery to be "Lead-Free," which is defined as containing no more than 0.25% lead, as calculated by a weighted average of those surfaces that come in contact with water. The Bill will go into law January 1, 2011 if enacted.

For updates on the Maryland lead-free initiative as well as other pertinent lead-related initiatives, visit www.weareleadfree.com.

Visit lenoxhero.com to vote for 'Hero' finalists

EAST LONGMEADOW, MASS. — LENOX announced the top 10 finalists in the LENOX Extra Mile Hero Contest.

In 2008, LENOX officially kicked off the LENOX Extra Mile Hero Program with NASCAR driver Jeff Burton, driver of the No. 31 LENOX Industrial Tools RCR Chevrolet, by asking customers to submit stories of people they considered heroes; users and suppliers of industrial tools who go the extra mile for their community. A professional and VIP judging panel read through more than 600 nominations before selecting the 10 finalists. Each of the 10 finalists won \$3,100 with a matching gift going to their charity of choice.

The next phase of the contest, "America Votes," is now live. America can vote on which of the finalists they

think will make the best LENOX Extra Mile Hero by going to www.lenoxhero.com to cast their vote. The finalist who receives the most votes will not only carry the honor of being the LENOX Extra Mile Hero, but they also win the Grand Prize of \$31,000 as well as an additional \$31,000 to be donated to their charity of choice. Voting runs through April 30, 2009.

But that's not all! If Burton wins the LENOX Industrial Tools 301 NASCAR Sprint Cup Series race scheduled for June 28, 2009, LENOX will increase the grand prize to \$1 million for the winner to split equally with their charity of choice. The Grand Prize winner will be announced at the 2009 LENOX Industrial Tools 301 at New Hampshire Motor Speedway.

Rotobrush wins 'Patriotic Employer Award'

GRAPEVINE, TEXAS — Rotobrush International LLC, an indoor air quality manufacturer, was awarded the Patriotic Employer Award by the National Committee of Employer Support of the Guard and Reserve

tative, nominated his company for the award. "They are very understanding about me having to leave for my weekend drills, and more. They make sure to support the troops, and even those that are with the company that are no



(ESGR). The award is given to employers with policies and practices supportive of their employees' participation in the National Guard and Reserve.

Robert Yates, a specialist in the Texas Army National Guard, and Rotobrush technical support represen-

longer in the service," said Yates, describing his Rotobrush family. Yates is in Echo Company 2-149th AVN in support of Operation Iraqi Freedom and is currently serving his second tour of duty in Iraq with plans to return to Rotobrush.

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NSF offers certification for low lead plumbing products

ANN ARBOR, MICH. — NSF International announced that Kohler, Moen and Price Pfister have become the first faucet companies to have certain plumbing products comply with the new low lead requirements. Certification allows manufacturers to demonstrate compliance with new state laws, established to help protect the public from exposure to lead, well ahead of the January 1, 2010, deadline.

The new section of NSF/ANSI Standard 61, Annex G: *Weighted Average Lead Content Evaluation Procedure to a 0.25 Percent Lead Requirement* includes the recently enacted legislation in California and Vermont that mandates a maximum weighted average lead content requirement of ≤ 0.25 percent. Other states are also considering low lead

content legislation. The new lead requirements apply to manufacturers of faucets, valves, water fittings and other products that come in contact with drinking water. Compliance with NSF/ANSI Standard 61, the American National standard for drinking water products, is also required.

NSF/ANSI Standard 61: *Drinking Water System Components — Health Effects* was updated in December to incorporate requirements for use when the ≤ 0.25 percent lead content requirement must be met, in addition to current chemical extraction requirements of the standard. Compliance is determined by a weighted average calculation involving the maximum percent lead content of material specifications and wetted surface areas.

Cooper B-Line announces '2008 Rep of the Year'

HIGHLAND, ILL. — Cooper B-Line, a division of Cooper Industries, recently honored PMI Sales and Marketing with its 2008 "Rep of the Year" award. The award honors the manufacturer's choice of "Best in Class" for a regional sales agency.

Based in Houston, PMI has been a top performer for Cooper B-Line for



several years, and a major factor in many recent successes. Most notably, PMI has functioned as an essential

partner in the competitive Houston market, where Cooper B-Line achieved significant market penetration this past year.

"This award is about more than just sales growth," said Tammy Antonille, vice president of sales/mechanical-alternate channels at Cooper B-Line. "It rewards an agency that drives us to become a better manufacturer. We have developed a partnership where market dynamics, market intelligence and new opportunities are openly shared and explored. We are thankful to have PMI as part of the team."

PMI was a top performing agency for Cooper B-Line in 2008, converting several new STAFDA accounts, which generated significant incremental volume. Additionally, as a Cooper B-Line consignment partner, PMI provides operational and logistical support for the company.

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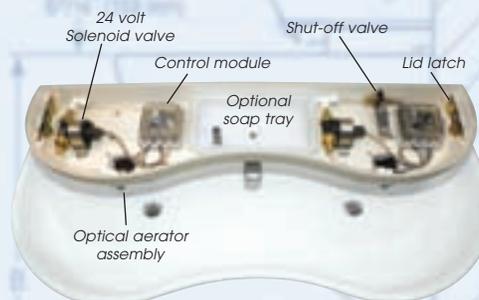
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RIDGID announces 2nd annual video contest

ELYRIA, OHIO — RIDGID announced its second annual RIDGID video contest that challenges contestants to creatively show the RIDGID logo in their videos. The winners will be announced on September 11, 2009 at



the RIDGID Roundup Customer Event at the company headquarters in Elyria, Ohio.

The RIDGID "Luck of the Draw" contest runs from February 16, 2009 to July 31, 2009. RIDGID tool users are invited to record and post an original one- to four-minute video that features the RIDGID logo and two of three mystery elements that will be given to contestants upon registering through the website at www.RIDGIDvideo.com.

RIDGID will choose five finalist videos, which will be posted on the RIDGID Web site for voting. Videos will be judged based on persuasiveness, creativity and entertainment value. Five finalists will receive an all-expense paid trip to attend the RIDGID Roundup Customer Event, where the winner will be announced. The grand prize winner will receive \$2,500 in RIDGID tools of their choosing.

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Circle 14 on Reader Reply Card

‘Americanizing’ solar thermal: Settling on products and practices for ‘the big push’

Solar thermal, with a likely big push from the new Obama administration, has a huge opportunity ahead. Now that energy dependence is an obvious national security issue, many of us believe that this is the time for the big push for solar thermal and, along with it, integrated hydronics. The challenge is to “do it right” or to suffer the consequences of squandering this epic opportunity. As solar thermal products go through an inevitable evolution to the North American market, products, practices and price points will change. Products are evolving very rapidly. This has happened before;

radiant floor heating went through a similar evolution.

I have been in the hydronic heating industry since the mid-1980s, first as a hydronic contractor, later as president of a national distributor of hydronic radiant heating and now as a product designer and inventor. I have shared in the excitement as waves of new products and methods were introduced into the North American market. Typically, high quality, expensive products from Europe that are introduced into North America are based on the methods and practices that work in the European market. When American contractors get

these products they need to be adapted to our practices, methods and pricing.

The first wave of hydronic radiant floor heating from Europe included: European threads on the ends of manifolds, brass manifolds with adjustable flow meters, manifold mounted actuators on every loop, and Euro-style fittings with an insert, split ring and nut. These products are still used and are very high quality, but this way of doing things can be expensive. Many American contractors and suppliers looked around for other ways to do things, using materials they were familiar with. Soon, copper manifolds, standard-



BY HOYT CORBETT,
contributing writer

ized American fittings, zoning by manifold rather than by loop and balancing by using digital thermometers instead of flow meters became common. All of these changes reduced costs and made radiant heating systems available in a variety of price ranges.

Sometimes these changes from European practices went too far and,

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combined with the lack of specific product training, could and did produce some really bad systems. Many of us recognized this as a threat to the growth of radiant floor heating. Those of us who were early members of the Radiant Panel Association stepped in and produced "Standard Guidelines for the Design and Installation of Radiant Heating Systems." I was the chairman of the Radiant Panel Association (RPA) Standards Committee that produced this document.

It is logical that solar thermal will go through a similar evolution here in North America. I am an inventor and product designer for a company that builds modular hydronic products, primarily for the residential market. I try to strike a workable balance between adapting to, and influencing, American practices with the products I design. Here are some thoughts on the near future of this evolution:

1. There will be many more solar pump stations to choose from, many of them made in North America. They will have North American threads, fittings, piping and components.

2. In the use of evacuated tubes, a complex competition is developing between U-tube and heat pipe-based designs. U-tubes are simple and inexpensive to produce, but they are difficult to drain back. This means that they should be designed to closely match the load and should have a mechanism to "dump" extra heat, since they can't be easily drained back to turn off the production of hot fluids. Typical strategies involve running some fin tube in a crawl space or under the collectors, with a changeover valve that is temperature activated. Future U-tubes will likely have heat dump capabilities built into them or will have self-regulating adaptive coatings. These will make them extremely easy to use.

Evacuated tubes using heat pipes are more complex than the U-tube design. The top of each heat pipe is usually fitted into a copper "well," which serves as a receptacle that is built into the manifold. The fit between the heat pipe and the well must be maintained over time or efficiency declines. Some products do this better than others do. Many good and proven products exist. Most heat pipe designs allow for the use of drain-back systems.

Think about how practices should and will settle out between these two evacuated tube technologies if we get the "big push." Think about thousands of new installers. These will not be the knowledgeable, "artisanal" installers we have today for high-end custom homes. They will be volume

installers. They will want predictable, repeatable, get-in-get-out fast and profitable products. Is it more fool-proof to rely on installers doing a heat pipe drainback system with the correct slope and installation components or a U-tube system with a correctly operating heat dump? Which

way will result in the fewest failures? Will economics drive one over the other? Will it be driven by region or by who has the most convincing training? Those of us who really care about the future of this industry will have to speak up.

3. For hydronic heating to take

advantage of this will require components that easily assemble into a system that integrates with solar thermal. This means that pump stations will work as solar pump stations, while also serving as the connection point for backup heat, for injecting (Turn to Americanizing... page 20.)

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Circle 16 on Reader Reply Card

Noritz America names new president

FOUNTAIN VALLEY, CALIF. — Hisashi Uryu, the former president of Noritz's highly successful Hong Kong division, has been named president of Noritz America Corporation.



Uryu

Webstone appoints regional sales manager

WORCESTER, MASS. — Webstone Company Inc. appointed Grant Dow to Western regional sales manager, and will hold responsibilities for all Western United States and Western Provinces of Canada. Dow's duties will include sales enhancement, training, new product launches and rep management. Dow brings experience in sales management and is a licensed plumbing contractor, as well as an IAPMO member.

PRIER Products names president

GRANDVIEW, MO. — PRIER Products has promoted Nicholas P. Manning to president. Manning becomes the active president, providing the direction for PRIER in the day-to-day business activities while continuing to direct the sales and marketing department. Joseph E. Poskin, CEO, is turning over the reigns to Manning, as he turns to focus on business development.

Harvel appoints national sales manager — plumbing products

EASTON, PA. — Harvel Plastics, Inc., appointed Gary Boushell as national sales manager for its PVC and CPVC plumbing products division. He will be responsible for building relationships with customers, suppliers and reps throughout Harvel's U.S./Canadian markets.



Boushell

Kevin Schwab joins PHCC as Government Relations director

FALLS CHURCH, VA. — The Plumbing-Heating-Cooling Contractors — National Association (PHCC) announced that Kevin Schwab has joined its staff as director of Government Relations. Kevin brings to the position a strong background in the federal government and construction-related trade associations.

Egan Co. appoints board member

MINNEAPOLIS — The Egan Company board of directors has appointed Jack Galvin as a new board member. "We are excited about the added dimension Jack will bring to the company as a member of the Board," said Jim Malecha, president.

Galvin joined Egan Company in 2003 as vice president of electrical pre-construction and business development. He will continue to serve in that capacity at the company.

Americanizing solar

(Continued from page 19.)

solar heated fluids directly into the heating system, for distributing heat to heating zones and for distributing to or drawing from solar storage, as necessary. These forms of combined hydronic heating and solar thermal systems have been variously called SDI, solar direct injection or, in recent excellent articles, Bristol Stickney referred to them as direct active solar heating. (See Bristol's column on page 30.)

As an inventor, I have been happily working on centralized products to solve this problem. I am sure that others are also. In order to optimize efficiency, we are going to need inexpensive but sophisticated controls that can direct the thermal traffic of all these many choices. So, for example, we need a control that can predict which use is best at which time of day and that prioritizes the different components to achieve this. If the control can predict that foregoing backup heat might only result in a small temperature drop, many people might choose to save this energy. A number of controls currently do a lot of these things. The good news is that a lot of smart people are working on it and that programmable devices have come down in cost. Each of us needs to think through the choices such a control should be able to make and to demand controls that make those choices from the manufacturers.

If manufacturers don't respond, contractors may resort to open source programmable IP-based controls and switches with widely varying results that may not be good for the industry.

4. Finally, for this "big push" to be successful, we need to eradicate the certification delays that are barriers to adopting the best products and practices. The long backlogs for testing and certifying solar thermal products need to be rectified. Solar thermal manufacturers are innovating at a faster rate than can be certified. ■

Hoyt Corbett is an inventor and consultant. He has designed new solar pump stations for Precision Hydronic Products of Portland, Ore. He may be contacted at inventivedevelopment@yahoo.com.

* Editor's note: We would encourage installers and designers to review all the products available and base their decision on what is best for their client and application.

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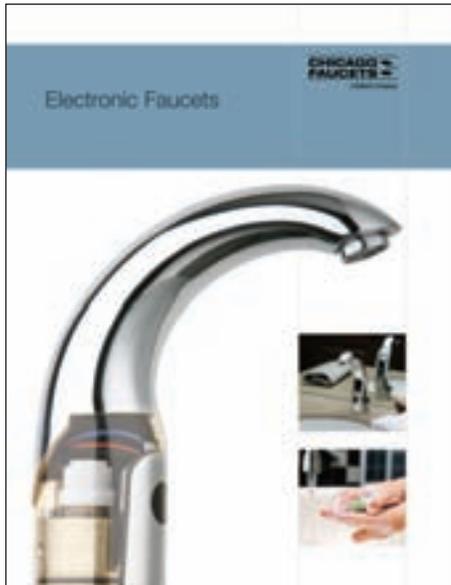


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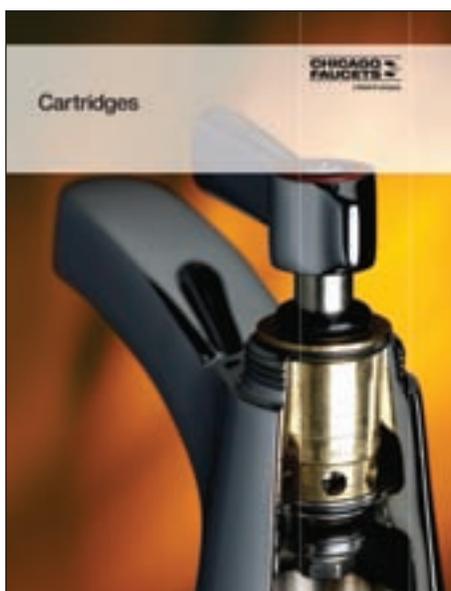


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Electronic Products

From the unparalleled HyTronic™, to the affordable E-Tronic™, Chicago Faucets has set a new reliability standard for electronic faucets. Chicago Faucets' complete electronic faucet line is featured in a new brochure that shows how intelligent design, durability and reliable performance are indeed possible with an electronic sensor-operated faucet. Chicago Faucets Electronic Products... advanced technology you can count on.



Cartridge Brochure Tells the Inside Story

Chicago Faucets has developed a cartridge brochure designed to tell the story of the heart of our faucets. An overview of cartridge categories, complemented by a listing of Chicago Faucets most popular cartridges, is included. While there are imitations, there is no substitute for the quality of a genuine Chicago Faucets Cartridge.



Conservation & Sustainability

Chicago Faucets commitment to water conservation and sustainability is highlighted. The brochure focuses on Chicago Faucets' extensive product offering of components and fixtures designed to assist in maximizing water conservation. Selecting low-consumption, energy saving Chicago Faucet products as new or replacement fittings can help earn green building rating points toward a facility's **LEED certification.**

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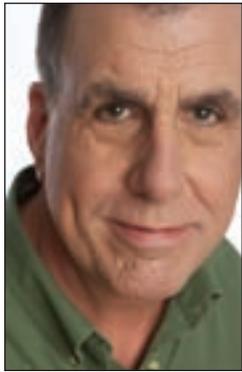
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BY DAN HOLOHAN,
contributing writer

Those companies
that make big,
heavy, cast-iron
boilers still make
them, and better
than ever, but
there's so much
more to them now!

It's great to be here

Sixteen impressions

I went to the big AHR show in Chicago in January as sort of a roving TV guy, thanks to the good folks at this magazine. They came up with this idea of doing an Internet event called, "Holopalooza '09" (and, gosh, I wish I had thought of that name!). I was to do 15 booth interviews with manufacturers who had paid for the time; these would run on HVACTV.com in February over the course of three days. You can now watch the programs at your leisure by going to the HVACTV.com archives. It's free and (trust me), it's fun.

I came away from that show with 16 strong impressions that I want to share with you, but first, I have to tell you about why this particular event was so good for me.

First, it was happening on my 59th birthday, and The Lovely Marianne got to join me on the trip. TLM chose to sleep in like a hamster at our fancy hotel and shop all day on Michigan Avenue rather than go to the show, which was fine because this made her very happy. When TLM is happy, all around her are happy. Vice versa also applies, so thanks to the folks at TMB.

The other reason why this show was so good for me was that I got to learn. I love people and I like to chat, and when I'm in the first aisle of any tradeshow, I get yakking with the people in that aisle, many of whom have been to my seminars over the years, or just know me from my magazine columns. I start talking and listening and the hours fly by. I never get to the last aisle of any show, and I never get to spend much time with the manufacturers to see what they're showing this year. And even if I had the time, I wouldn't want to use too much of theirs. I'm always sensitive to how much of their face time I'm taking away from the time they could be spending with potential customers. After all, that's why the manufacturers are at that show, and they're paying big bucks for the privilege. I understand and respect that.

But this Holopalooza '09 thing put me face to face with 15 wonderful manufacturers over the course of two days, and I had the luxury of time to ask them anything I wanted. And since we were filming each interview three times (for the sake of the film editors), I got to ask the same things, with follow-up questions, three times. I was in heaven.

So in order, here are the good people I got to spend time with at this year's AHR, and the impressions with which they left me.

- **ECR International:** Maggie Reed Lutz, who is the great-granddaughter of Earle C. Reed, one of the grandpas of the hydronics industry, told me about freewatt®, ECR's micro-CHP. I've watched freewatt grow from its infancy over the past few years and I love what it has become. The idea of getting much of your heat efficiently while generating the electricity you'll ever need in your own home for free, intrigues me. I think all the political, economic and environmental forces are pointing straight in freewatt's direction right now. My impression is that freewatt is going to be huge in our market. Look into it.

- **Taco:** Taco recently acquired all the assets of Innovex Systems, a controls company that will make your jaw go slack with its capabilities. Johnny White, Taco's owner, commented that this takes Taco out of the business of selling cast iron by the pound. I loved the way he said that and I love the way he looks at the world and this business. My impression was that Taco is no longer the company

that we've always known. It's much, much more now.

- **Bradford White:** Jason Fifer showed me what Bradford White is doing with solar and ultra-high efficiency. The D.O.E. just released their final requirements for Energy Star® ratings on water heaters, and Bradford White was ready for them. The water heater, which for so many years has sat unnoticed in so many American homes, is finally getting the attention it deserves because of what companies like Bradford White are developing. I was so impressed with how well Bradford White has prepared for this new market. Smart people.

- **Weil-McLain:** I first saw W-M's Ultra boiler when it was brand new. I was touring their place in Michigan City, Ind., with a bunch of contractor friends, many of whom were seeing an aluminum, modulating-condensing boiler for the first time. Most of us were still thinking of W-M as a grand old American company that makes big, heavy, cast-iron boilers. Yet there was the Ultra in its pretty package. We had to start changing our thinking about this company. At the show, John Resso, showed me the Ultra 3, and what W-M is doing with their CG line. To me, they're still a grand old American company, but my impression from the show was that they've got both feet firmly in the future.

- **Anvil International:** These folks are one of the largest manufacturer of piping connections and support systems, including Gruvlok® couplings, fittings and valves, pipe hangers and hardware, strut and fittings and engineered hangers; there's a lot more to those things than meets the eye.

I love people who are passionate about what they do, and Anvil's Scott Laird spent nearly an hour educating me in a most delightful way. This guy burns white-hot with enthusiasm. And when we were done looking at the piping products, Scott showed me their design services software, which can animate an entire boiler room from two-dimensional drawings. It was like watching a video game. We could turn the room this way and that, and see what was serviceable and what might not be serviceable. What a great service for mechanical contractors to have, and what a boon for the service people who will follow. Great stuff!

- **Viega:** Our friends at Viega have been around for many years, and I've enjoyed watching what they've done every step of the way. Wal-Mart is now going green and Viega just did the radiant heating-and-cooling system for the enormous store Wal-Mart is opening in Las Vegas. Robert Hall, who is from Georgia (our accents met somewhere in Maryland), showed me photos and samples of the equipment that Viega provided for that job. They came up with a new way of delivering the tubing. Working from CAD drawings, Viega designed what I can only describe as a radiant rug. Picture long lines of tubing already affixed to the perpendicular tie-down strips and rolled up like a huge, six-foot-wide carpet. The tubing is charged with air pressure and sealed at the factory, and you can test its integrity all the while the job is going on. I think this is brilliant. It saves an enormous amount of installation time, and let's face it, that's where the money is with radiant. This is going to change the radiant industry.

- **Bosch Thermotechnology/Buderus:** Bosch is the parent company of Buderus, and Ed Sullivan had a lot to show me. I was especially taken with their solar equipment because I had seen (and fallen in love with) much of it at the Frankfurt (Turn to Holopalooza '09, page 24.)

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Holopalooza '09

(Continued from page 22.)

ISH show in 2007. It's so good to see all this smart stuff coming to America. Ed also showed me an oil-fired, modulating-condensing boiler that uses a special burner to literally vaporize the oil, making it burn blue. Bosch is a world-class, innovative company, and they continue to impress me.

• **Heat Transfer Products:** Dave Davis is the company's CEO and I have always loved his intensity. It was great to be able to spend that much time with him. He showed me their new high-efficiency boilers, some of which can vent up to 250 feet away. Imagine that. And he showed me how they've combining super-high-efficiency, domestic-water heating with solar, and all within the same tank. This was so impressive, and it shows how HTP continues to think inside the tank and outside

the box. And such intensity!

• **Burnham Hydronics:** Another of those old, grand American companies that many think of as makers of things cast iron. Dan Kelbaugh, who practically explodes into flame with his enthusiasm, took me on a tour of what Burnham is offering, not only with cast iron, but also with aluminum and stainless steel. They have small but powerful boilers that you can hang on the wall, and others that you can stack one on top of the other to create enormous outputs in tiny spaces. And yet, they still have those glorious, cast-iron beauties, all of which are running at superb efficiencies these days. My impression? These folks have it all.

• **Webstone:** Delightful because they look at contractors' problems and then design solutions to those problems. They manage to integrate so much convenience, and so much solidity, into each product. Fernando Mireles showed me their offering and I

kept thinking to myself, "I wish I had thought of that product, and that one, and that one." I smacked myself in the forehead so many times when I was in their booth that I was getting silly. I love what these guys bring to the hydronics industry. It's all so smart, and so very well made. I can't wait to see what they come up with next.

• **Caleffi North America:** Mark Olson and Hot Rod showed me around the Caleffi booth and the thing that impressed me most was how they've listened to their customers. In the center of their booth was a skid filled with stuff. It looked like something the setup crew from McCormick Place had forgotten to unload, but it wasn't. What was on that skid was a complete solar package, ready to install. It even included the glycol. Mark and H.R. explained how they had picked contractor's brains, and then came up with the idea of delivering everything needed for the job on one carefully packaged

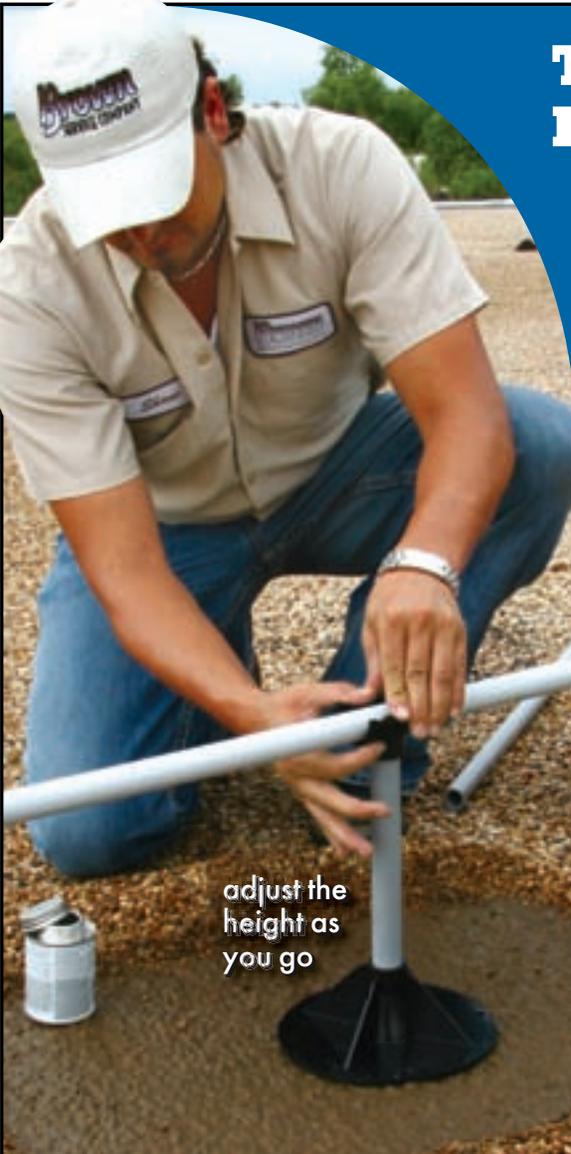
skid. They're doing for solar what the container people have done for shipping. And (are you ready for this?) they base what's on that skid not on some complicated BTU formula, but on the number of people that will be living in the house. My impression? These people are brilliant.

• **Laing Thermotech:** I've long known Laing for their DHW recirculation pumps, and I've always appreciated how much water these tiny units can save. That's especially important in this ever-greening world of ours. There's more to this company, though, and Bob Hutslar showed me their new ECM pumps, which have a lot of neat features for the contractors when it comes to service. He also showed me a tiny electric boiler that I think would be perfect for any retrofit job, especially those radiant retrofits. The quality of everything in that booth impressed me.

• **Uponor:** I can't think of any radiant tubing company that just wants to just sell PEX by the foot these days. Like it or not, PEX has become a commodity and I think that Uponor, a company that has cranked out more PEX than most over the years, knows this. They are now solidly into the radiant cooling market and I love to see that because it just makes sense. It's a business with such huge potential, and it calls for smart controls. What Ingrid, Julius and Jeff showed me was so impressive. They have a new line of wireless-remote thermostats and brilliant controls that do amazing things. They're branching out into a whole new business and their stuff is not only smart, but also physically beautiful. Uponor is not just about PEX these days. Not by a long shot.

• **Lochinvar:** They have always knocked me out with their burner technology, along with the efficiencies and enormous loads they manage to get out of relatively small boilers and water heaters — that fit through standard doorways. But more and more, what has impressed me about Lochinvar is what they do with controls. Stirling Boston showed me some touch-screen panels that are so intuitive, so easy to use, so well thought-out, and so, well, verbal! (They all speak to me in plain English). I think that what Apple is to computers, Lochinvar is to boiler-and water-heater controls. I left their booth shaking my head and smiling. Absolutely delighted.

• **Legend Hydronics:** Walter Jann showed me some radiant cooling panels that replace the standard panels in a drop ceiling. Each easily connects with PEX to the next, and the next, and they make no noise at all. And (Turn to Holohan, page 28.)



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PAUL ROHRS,
contributing writer

Incorporate relays into your job

An Olympic caliber relay for heating

Have you ever run into a situation where voltages were “butting heads” against each other, causing circuit breakers to trip or “letting the smoke out” of a transformer? You are saying to yourself, “Self, I am a mechanical contractor, not an electrician.”

I agree with that statement, but there may come a time in your hydronic career when you will need to troubleshoot or incorporate relays to isolate power or to send existing power where you want it, when you want it. A relay might be the answer to the questions you have about switching power.

A relay is an electrical switch that opens and closes under the control of another electrical circuit. In the original form, the switch is operated by an electromagnet to open or close one or many sets of contacts. These contacts, whether normally open (NO) or normally closed (NC), can switch power or just close a circuit, providing continuity.

This article will talk about relays, explain why they are useful and give examples of how you can incorporate relays into your jobs to achieve specific results. For our discussion, we are going to talk about double-pole double-throw (DPDT) relays, mostly because I have the Visio stencils from Tekmar that make it easy for me to illustrate relay operation.

Figure 1 illustrates what a DPDT may look like. The type of relay you need may vary. There are several types, such as solid-state and ice-cube relays. Relays come in a wide variety of “poles and throws” as with a single-pole single throw (SPST), triple-pole triple-throw (TPTT) or the DPDT, which I already mentioned. To order the correct relay, you must specify the coil voltage. When the proper voltage is present at the coil, it becomes an electromagnet and pulls in the contactor arms. These arms should be viewed as connecting bridges that allow electrical current to the desired flow path.

Figure 2 is a mechanical representation of a DPDT relay. As this is a 24V coil relay, the coil needs to be energized with 24V (ac) on terminals 7 and 2. Terminals 1 and 8 allow us to switch power through the relay when normally closed (NC). Terminal 1 illustrates a 120V (ac) source, allowing power through the relay and exiting on terminal 4. Additionally, with the coil still closed, we can switch 24V (ac) power from terminal 8 on through to terminal 5. Again, this is while the coil is not energized. Upon energizing the coil, the normally open (NO) contacts now close and the 24V (ac) power that was exiting the NC terminal 5 opens; terminal 6 closes and allows the 24V (ac) on through. Conversely, the 120V (ac) power that was exiting terminal 4 now opens and can only exit via terminal 3, which is now closed. So, with the closing of a coil,

we can switch voltages through a relay and make normally open contacts close.

Maybe you want to turn on a light, start a timer, actuate

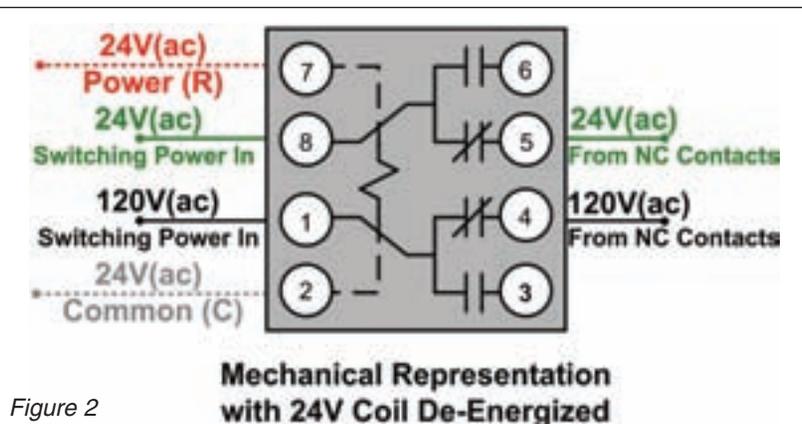


Figure 2

A mechanical representation of a DPDT relay; examples of switching different voltages from NO to NC.

Handing off a baton in any competitive relay requires teamwork, and the general-purpose relays discussed can pull a team of hydronic components together so that proper operation and switching can occur.



Figure 1

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a solenoid or switch heat sources when your thermostat calls for heat. You can accomplish this with a simple and inexpensive relay. For instance, we just finished updating a system for a gentleman with a multi-zone system of radiant floor heat. This system was being heated by a residential water heater and hadn’t worked properly from its inception.

A standard residential water heater has two 4.5kw elements that fire non-simultaneously, as an upper and lower thermostat controls power to each element. This homeowner was not getting enough heat when the temperature

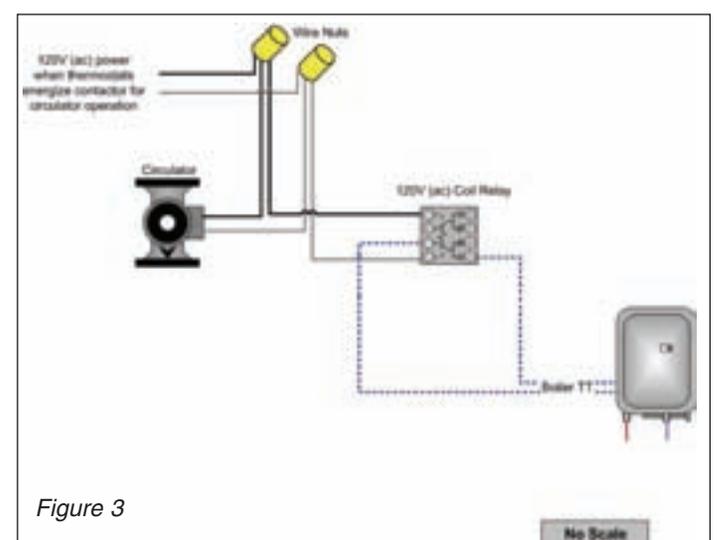


Figure 3

How to use a DPDT relay to actuate a boiler TT call for heat.

was below 32 F, as the 15,358.50 Btu fell short of the load. 1kw = 3,413 Btu, so one 4.5kw element = 15,358.50 Btu. The homeowner called an electrician, who wired the elements for simultaneous firing, but there was still not enough heat at 30,717 Btu.

Now it was our turn. After a simple heat loss and budget meeting, the homeowner contracted us to install an electric boiler. The water heater did not have contacts to receive a call for heat, so I needed to provide them to the boiler. What to do? The answer is a simple DPDT (ice-
(Don't overlook... Page 28.)

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Don't overlook relay systems in your next job

(Continued from page 26.)

cube) relay to send a call for heat to the boiler TT. Thermostats in the residence were feeding a signal to contactors that would then energize 120V (ac) to a space-heating pump. Why not use that to our advantage?

I bought a simple relay with a 120V (ac) coil. Anytime the thermostats called for heat and sent power to the space heating circulator, that same power would close the 120V coil on my relay and make the normally open contacts close, providing the necessary switch I needed to signal my new electric boiler. See Figure 3.

The boiler's internal controls would tell the boiler whether it needed to send power to its elements and could run continually, until the water temperature reached its set-

point or satisfied the call for heat. As long as a thermostat was calling for heat and as long as the circulator was energized, the boiler had its call for heat. You will note that I am not switching power in this scenario. I am only using terminals 1 and 3 to complete a boiler TT circuit. When the coil closes and the normally open terminal 3 closes, it allows me to have continuity and to complete the call for heat to my boiler.

Be sure to observe the coil voltages and contact ratings. Whether you are using 24V, 120V or even 240V to energize the coil, check and see the maximum amp rating for the power you want to switch. Improper or insufficient power can damage the coil. If the voltage to the coil fluctuates, it can make the relay "chatter" or arc, mak-

ing it susceptible to damage.

Handing off a baton in any competitive relay requires teamwork, and the general-purpose relays discussed today can pull a team of hydronic components together so that proper operation and switching can occur. In any successful relay, however, cooperation is essential and every member or, in this case, every component, must work together in unison to achieve their goal.

I hope these illustrations have been helpful in navigating the current as the coils open and close. Next month, I plan to pass off the baton to heating professionals across the country and illustrate how to navigate hydronic systems with the help of relays. ■

Paul Rohrs welcomes your comments. Contact Paul at paul@bigger-staffradiantsolutions.com.

Holohan

(Continued from page 24.)

since they do away with the need for large ductwork in a building, a builder can add an additional floor of space to a 10-story building (smart thinking about benefits, and not just features). Walter also showed me a couple of very unique and clever flooring systems that will make any radiant contactor smile. Save time, save money and laugh at the recession. I love positive people!

So that's 15 impressions. I promised you 16. Here's the last one:

- I've been writing for HVAC trade magazines since 1988, and at one time or another, I've been in most of them. Last September, I moved over to this fine magazine with its big, bold, colorful pages. At the same time, I also began writing for this magazine's sister publication, *The Wholesaler*. I moved because I liked what I saw, and I never looked back.

I have had so much fun during the past six months. The people at TMB came up with this concept of Holopalooza '09, laughing all the way. It was inventive, fun, and it worked. They gave me two of the most educational days I have ever had in my career. They put me with enthusiastic and creative people who know their products inside and out, and who love to tell about them.

They brought it all together remarkably fast, and with such great spirit. They dreamed it up, coordinated it, sold it and put together an outstanding film crew. It was all so wonderfully professional. They kept us all moving through a very crowded AHR show floor, on time, and on target, and not once did we stop laughing. I had a ball.

These are, without a doubt, the best magazine people I have ever worked with in my career as a freelance writer. They make things happen, and they make it fun.

It is so very good to be here! ■

Correction

Last month in Dan Holohan's column "Imagine," Dan was describing the radiator system in the Dakota, a building in New York City. "Each radiator has two pipes. The supply pipe is 1 1/2" in diameter and the return pipe measures 1 1/2". The measurement should have stated, "Each radiator has two pipes. The supply pipe is 1 1/2" in diameter and the return pipe measures 1 1/4".

The measurement was inadvertently changed during the editing process. *Phc News* regrets the error.

Stimulus package strengthens position for geothermal, efficient HVAC systems

LEESBURG, VA. — REHAU announced that its RAUGEO ground loop heat exchange system qualifies for use under the American Recovery and Reinvestment Act. The \$787 billion plan, which aims to create 3.5 million American jobs while also improving the nation's infrastructure and services, includes the use of \$288 billion for tax relief, \$144 billion for state and locality support, and approximately \$111 billion for infrastructure and scientific development.

The Act contains long-term tax incentives to encourage the use of high-efficiency HVAC and renewable energy technologies, including systems like RAUGEO, in both residential and commercial applications. It follows last October's Emergency Economic Stabilization Act of 2008, H.R. 1424, which also includes both commercial and residential incentives for high-efficiency HVAC and renewable energy technology use. Along with the Emergency Economic

Stabilization Act of 2008, it provides an uncapped credit through 2016 for residential investments in geothermal heat pumps, as well as an uncapped 10-percent investment tax credit for commercial installations through 2016. By including geothermal heat pump systems within the definition of "energy property," the Economic Stabilization Act also allows for a five-year depreciation period for commercial systems placed in service after October 3, 2008.

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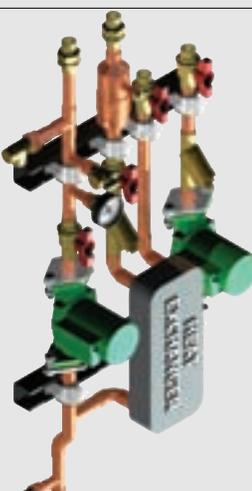


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BRISTOL STICKNEY,
contributing writer

Bristol's six principles of good solar hydronic design

Part 9: The primary check-loop flow center

Any time a homeowner or builder starts thinking about adding solar heat collectors the thought process invariably proceeds along the same lines. First, they think about a solar water heater with one or two collectors. Then they wonder whether some of that heat could be used to heat their floors. If so, then maybe a few more collectors would be worthwhile. Then they wonder how hard it would be to hook up some baseboards to the solar heat. Then, how about the spa or pool or an ice-melt zone? What if we do some of it now and some of it in the future? Every new question requires a change of design, different piping connections, different components, different temperatures and different controls.

In 1997, after going through this same process with dozens of different projects, I decided to try to standardize what I was doing to make it easier to add, delete and change components. The key to doing this is to make things modular so that they can be plugged in or unplugged as the clients change their minds, without requiring any serious re-engineering. I began building all my designs around a “flow center,” where all of the circulation pumps plug into a modified primary loop with two pipe connections and could just as easily be unplugged. These days, I have been making the transition to the European-style “flow separator” systems, but my original concept (and the modular controls that go with it) is still valid after more than a decade and well over a hundred installations later. Let’s take a closer look at this time-tested primary check-loop solar heating system concept.

The “solar combi-system” dilemma

Multiple heat sources and multiple heating loads can be connected in a bewildering variety of different ways. In our region, the most typical solar-hydronic combi-system includes (1) a solar heat collector array, (2) a gas boiler backup, (3) a domestic water heater and (4) a radiant heated floor. I think of this application as combi-system 101, since I have duplicated these features so many times. There are only four items — two heat sources and two heat loads. Yet, if you present these requirements to three different solar heating suppliers, you will get three very different



Figure 1. A spaghetti piping diagram manifested.

spaghetti diagrams with tees, motorized valves and pumps in all different locations and some often cryptic control strategies (or none at all) to complete the confusion. This will lead to the solar nightmare scenario as seen in Figure 1, where three different independent installers with three different piping diagrams tried one after the other to assemble this four-collector solar heating system in a small house near

removed most of this piping and reconnected it to a flow center, as we always do, and added our control system that goes with the flow center piping.

Primary loop “flow center” solution

In past years, the primary loop, using closely spaced tees, has been more popular in commercial buildings than in residential. But I found that it has consistent advantages in solar combi-systems as well, and most of our installations

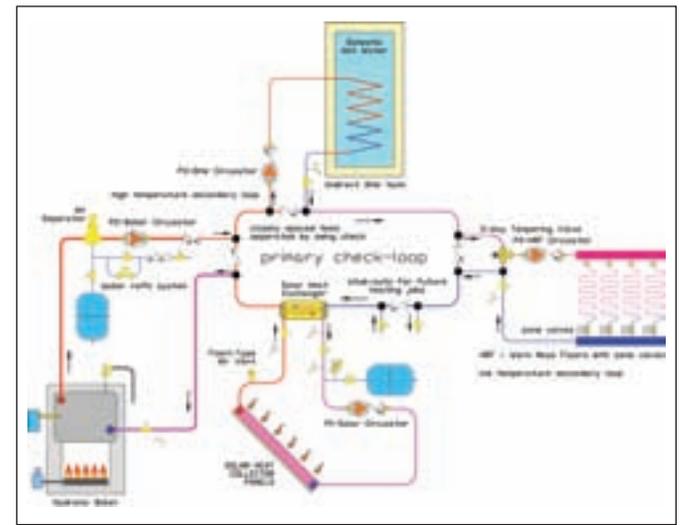


Figure 2. Primary/secondary piping for two heat sources and two heating loads.

are residential. The primary loop offers a plug-in capability where any secondary loop can be connected with only two pipes to any heat sources and other heat loads. The residential solar combi-system is not unlike the multiple boilers and multiple loads found in small commercial applications.

A solar heat array is like an individual boiler that is out of our control but somewhat predictable. It can be put to good use when it is behaving well during the sunny hours and bypassed with another boiler when it is behaving badly. When regarded in this way, a solar array can be plugged into the primary loop just like any other multiple boiler but with extra controls to accommodate its independent nature. Why do we put up with a boiler that acts this way? Because the fuel it “burns” is free.

The diagram in Figure 2 shows the configuration that has become my basic standard piping configuration for more than a decade for combi-system 101. There are a number of additional benefits when using this system in real-world installations. It provides the ability to extend the primary loop through attic or crawl spaces to remote areas of a building to pick up or deliver heat from other mechanical rooms. This is especially useful in many remodel situations. It allows expansion from the 101 system to additional heating sources and more heating jobs with just the addition of another double-tee connection point. When using the same piping layout on every job, the installers require less training and, with the repeated practice, achieve better consistency.

Primary loop modifications: heat exchanger and check valve

Step back for a moment and review our real objectives for solar heat. We want to deliver solar heat to any job that needs heat, giving solar heat priority whenever it is available. If we intercept it and use it immediately as it arrives, (Turn to Six principles, Page 32.)

In this series of articles, I have been making the case that the key ingredients for solar/hydronic design and installation can be divided into six categories, listed below, roughly in order of their importance.

1. RELIABILITY
2. EFFECTIVENESS
3. COMPATIBILITY
4. ELEGANCE
5. SERVICEABILITY
6. EFFICIENCY

The success of any solar hydronic home heating installation depends on the often-conflicting balance between any of these six principles. Finding the balance between them defines the art of solar heating design.

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Six principles

(Continued from page 30.)

the energy loss associated with heat storage, extra pumping and multiple heat exchangers is eliminated. If solar heat is used directly (instead of stored) as soon as it arrives, the delivered solar thermal efficiency is maximized.

Figure 2 shows how I have modified the common primary loop with a heat exchanger and some swing check valves in order to more fully meet these objectives. The location of the heat exchanger allows all the cool return fluid to absorb solar heat before reaching the backup boiler. If the solar circulator is not running, primary fluid passes through the heat exchanger with no temperature change. The control system then allows the boiler to do the required heating. Solar preheating of the boiler is also easily achieved.

The swing check valves are straight-through flow types and offer little resistance to the flow in the primary loop. They allow each sec-

ondary pump, independently or in concert with the others, to induce one-way flow around the primary loop without the need for a dedicated primary pump. When allowed to do so by the thermostatic controls, any secondary pump may be used to circulate through the solar heat exchanger to deliver solar heat directly to its heating job. Spring check valves in every secondary loop prevent unwanted creeping flow, unless that secondary pump is running.

Solar heat can be delivered directly for storage in the DHW tank or directly for storage in the mass of the radiant warm floors. As I mentioned in an earlier article, two-stage room thermostats can be used to distribute solar heat to the coolest rooms and control the heat storage temperature of the mass floors within a comfort range.

Figure 3 shows a Cedar Mountain Solar installation in Taos, N.M. that is similar in size and scope to the unfortunate project seen in Figure 1. Notice the comparative simplicity offered by the check-loop flow center.

The solar collectors feeding heat to the system in Figure 3 can be seen mounted vertically on the exterior wall of the building shown in Figure 4. The photo in Figure 3 includes a view of the solar heat exchanger (lower left), the boiler connection (upper left), the HRF mass floor secondary loop (bottom) and an air separator at the top. You can also make out our control system in a gray box with three Tekmar digital temperature controls on it and some Taco relay boxes to control the pumps and zone valves.

Temperature sequencing

Heat sources are sequenced along the primary loop in order of increasing temperature production, and heat loads are placed in order of declining temperature requirements. This is important in any simple primary loop system, because the cool return fluid mixes with the hot supply fluid at every secondary connection. So, the DHW gets its heat before continuing around the loop to the HRF mass floor. A baseboard secondary would



Figure 3. A non-spaghetti primary/secondary installation.

be placed before the HRF tap, and swimming pool heat can be taken after the HRF connection.

Piping variations

Stub-outs may be placed anywhere (Turn to *Solar Design*, page 38.)



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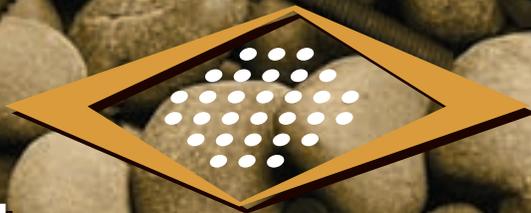
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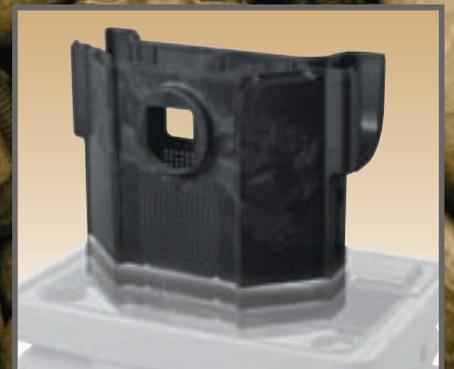
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ELLEN ROHR,
contributing writer

Encourage reading at your company. You have a wonderful opportunity, responsibility, to develop the skills of the people who work with you.

A great book beckons

A genuine and passionate love

When our son Max was just a baby, I started reading to him. Kids, generally, love to be read to and Max certainly did. Of course, he memorized his favorites and heaven forbid I would skip one word of *Donald and the Magic Mailbox*.

Isn't it a miracle when a kid learns to read? For the most part, all you have to do is read to them and they will pick it up. School helps, too. What a thrill as he sounded out *One Fish, Two Fish, Red Fish, Blue Fish*. I love to read and so hoped that Max would love it, too.

We started to take turns on more challenging books. He would read one page, I would read the next. We plowed through every Berenstain Bears book and laughed out loud at Captain Underpants. Then, we read the C.S. Lewis books about Narnia. We swapped pages and read all seven. I remember how sad we were when we turned the last page, and the adventure came to an end.

When Max was a teenager, he read, all by himself *The Perfect Storm* by Sebastian Junger. He developed a taste for a well-written non-fiction adventure story. For a long time, Max wouldn't choose reading as an activity until all other activities had been explored — TV, basketball, music, video games...then, he would curl up with a good story. Now, as a young adult, he is rarely without a book.

What a gift it is, to be able to read. Unfortunately, not everyone who can read, does read. I kept after it with Max, always looking for a book that might ignite the flame. It's a nice thing to do...share a good book when you come across one. My sister Gail is a voracious reader. She "screens" books for me, passing on her very favorites. Books I read have to pass this test: The writing is great or the message is worthwhile. I am fine with one or the other.

A great book beckons. If I walk past a book I am in the middle of, sitting on my nightstand, and I long for it — if I wish I could stop everything and read it straight through to the end — then it is a winner. I no longer feel compelled to finish every book I start. If I am not sold by page 50, the audition is over.

Are you behind on your reading? Why not exercise your gift? Reading leads to thinking leads to learning...and opens every door. If you are not a great reader, find something really interesting to read. You'll get better. Keep a dictionary handy, or Google loaded up on your browser. Clean up misunderstood words and...

"Read something every day that no one else is reading. Think something no one else is thinking. It is bad for the mind to always be a part of unanimity." ~ Christopher Morley

Magazines count. Some of my favorite writers write, wrote, for magazines. P.J. Rourke, Steven King, Tom Wolfe, Dan Holohan. *Phc News* absolutely counts. Newspapers don't count. They are full of too much bad news and too little good writing. I will make an exception for the *New York Times* if you skip the front page.

Encourage reading at your company. You have a wonderful opportunity, responsibility, to develop the skills of the people who work with you. Recently Max joined an online book club. They read the book-of-the-month and then post comments about it on their Facebook pages. You could make reading cool. You could help team members learn valuable life-enhancing strategies. At the very least, you could practice reading skills and have some fun.

Here are some ideas for getting the book club started:

- Make it optional...make it worthwhile! This is not mandatory training. This is a chance to learn and share and help each other be more successful. Meet for 45 min-

utes...at lunch time or right before or after work.

- Start on time. Set the timer so you know when times up. Pick up where you left off last time.

- What to read? Start with non-fiction. So many people didn't learn basic life skills from their parents. You can make a powerful difference in your employees' lives. Ask team members for book club book suggestions. If you need some ideas, here are a few of my picks...

Financial Freedom:

- Maybe they don't want a lecture on debt reduction from bossy old you. However, it is hard to resist the parable of *The Richest Man in Babylon* by George Clason. This book was written during the depression and the strategy works as well today as it did then, and thousands of years ago...the setting for the story.

- Rich people teach their kids strategies that help them be successful. *Rich Dad Poor Dad* author Robert Kiyosaki shares empowering financial advice...particularly about real estate investing. One of his better, lesser known books: *CashFlow Quadrant: Rich Dad's Guide to Financial Freedom*.

Better Living:

- Every couple of months, I go to the Davis Correctional Facility in Holdenville, Oklahoma and spend time with Randy Mackenzie and his Commercial Cleaning class. His students learn how to buff floors and use a power washer. Even better, they learn business and life skills. One of the inmates recommended a rockin' good book to me. *Mentor: The Kid & The CEO* by Tom Pace. No one gets ahead without some help. This is a lovely story about a troubled kid finding and becoming a mentor.

- Stephanie Culp has a great 5-Point Plan for making things less complicated. *Streamlining Your Life* is a thin book, but overflowing with really simple, fun ways to reduce the mess and stress.

Communicating with family, friends and customers:

- Jeffrey Gitomer is fun, likes to swear and has a sharp wit. Beyond the packaging, his advice is timeless and sound. Check out his *Little Teal Book of Trust*...how to earn it, grow it and keep it to become a trusted advisor in sales, business and life.

- You can't go wrong with the classic by Dale Carnegie, *How to Win Friends and Influence People*.

- Buy copies of the Book Club selection books for your team. When they are finished, they can pass the books on to friends and family members.

- Break the book up into bit-sized pieces. Read chapter one. Read the first three pages. And welcome folks to the book club even if they get behind. Don't make it one more thing to do and lose. Make it a safe place to explore and win. You keep up on the reading. Share with those who have read the homework and encourage everyone to just keep after it. Read one page. Read one paragraph. Bring thoughts to class.

- Have three compelling discussion points ready. Write them on the dry erase board in the lunch room or training area the day before book club. Have some fun with this. For instance...

"Robert Kiyosaki loves real estate investing. If you could buy a piece of property anywhere on earth, where would it be?"

- Let the books lead the exploration. The best part about book club is that the author isn't there. You all get to speculate and share ideas. No boss required...this is a meeting of equals.

- Check out supporting resources. Is the author doing a
(Turn to Bare Bones Biz, Page 42.)

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Circle 32 on Reader Reply Card



RICHARD DiTOMA L.M.P.,
contributing writer

Then there are those ignoramuses who claim they have no overhead cost. That's because they don't know the definition of overhead cost. Like the proverbial ostrich who plants his head in the sand, they leave their butts in the air to be kicked by passersby.

Calculate your operating costs

Should contractors charge for estimates?

As a contractor, you hold an advantageous position in the consumer/contractor relationship. You have knowledge of your trade, as well as the experience of a consumer since you also buy the products and services of other vendors, both in your business and private life. This gives you the ability to envision the consumer/contractor relationship from both sides of the counter. But having ability, and utilizing it properly, are two different things.

As a person in business, you should be aware that you incur costs to be in business because you know you have bills to pay. Unfortunately, most contractors aren't quite sure of the amount of those costs and relative proportion to the services they perform because they do not know how to correctly identify and calculate their true cost of operation. Then there are those ignoramuses who claim they have no overhead cost. That's because they don't know the definition of overhead cost. Like the proverbial ostrich who plants his head in the sand, they leave their butts in the air to be kicked by passersby.

As a consumer, I recently needed the services of three other types of contractors to spruce up a rental property that had been vacated by my long-term tenants. I started looking for these contractors from my own contacts, as well as the advertising media. My intent, like most consumers, was to get the best quality job at the lowest price for the best quality. After 39 years in the construction industry, and more as a consumer, I know how to determine top quality, its related cost, and how to use my knowledge as both a contractor and consumer.

Free estimates are expensive

In my investigation I found some peculiarities. Of the many available painting services, I called two that I had used in the past and three from ads. For flooring contractors, I called four from ads. The third type was more of a specialty contractor and I only found two businesses performing that specialty in my area. The oddity begins with all offering free estimates, including the two with no competition other than each other.

I understand (but, don't agree with) the painting and flooring contractors thinking they have to give free estimates because they have much competition. In my opinion, they're dead wrong. But I am dumbfounded that both specialty contractors with no competition other than each other also chose to offer free estimates.

Before calling any of the contractors, I made a list of questions to ask each contractor on the phone and at the building in question (should they decide to visit the site) regarding my needs and the services they could provide. I then put myself in the mode of acting like an ignorant consumer who knew nothing about the construction industry. Armed with my persona of innocence and not taking advantage of any of those contractors (after all, they're the ones who offered free estimates) I called each of them.

I called five painters. One said he would call back, but never did. This makes me wonder why he spends money on advertising. Three painting contractors gave me minimum price phone estimates sight unseen. The last one told me he had to see the job before quoting a price.

In my mind, due to my phone interview of each, I concluded, with the exception of the one who didn't call back, that they were all comparable. And since my time is valuable, I only made appointments with the painting contractor with the lowest estimate and the one who said he had to see the job. I could call the others after meeting these two if I felt that the situation warranted it.

Since painting must be done often in the life of a building rental, price is a major concern to landlords. It's not like plumbing, heating, cooling and electric systems which may have some maintenance expense but when done correctly last for much longer periods of time. As for the flooring and specialty contractors their work should also last longer than the painting contractor's.

The four flooring contractors all said they had to see the building before quoting prices. They made appointments with me.

The two specialty contractors both gave me comparable minimum phone estimates. After taking into consideration their phone styles and answers to my questions, I made an appointment with the contractor who addressed my phone inquiries in a better manner.

Before making any appointments, I asked each contractor if there was any charge for the visit. They all proudly and quickly said "no." Fear, low self-esteem and stupidity are powerful negative traits. They are the only reasons anyone would quickly give away his/her (hopefully) educated professional opinion at no charge. After all, it cost them time and money to learn the complexities of their respective fields of expertise, to be in business and to give their opinion.

Pride should never come into play if they don't recover the costs of their estimates. Any fool can give his/her services away for no compensation while paying the costs associated with those estimates. So while they proudly put forth the image of confidence when answering the question, the word "proudly" should be replaced with "cowardly, timidly and stupidly."

My conversations with each contractor led me to believe that the quality of service I would receive from each of them would be comparable and sufficient to satisfy my needs.

Ten contractors gave me free estimates for three potential jobs — four painting contractors, four flooring contractors and two specialty contractors. At best, 70% of the contractors would incur tangible and intangible costs they did not have a chance of recovering because I only needed three contractors.

The cost of free estimates

Tangible costs are those for which you see a definite expense, which you pay directly. A gallon of gas costs \$2.00 to \$4.00 in recent past. By multiplying the gallons used by the cost per gallon, you can arrive at one of the tangible costs contractors incur to visit a site and give a not-so-free (to them) estimate.

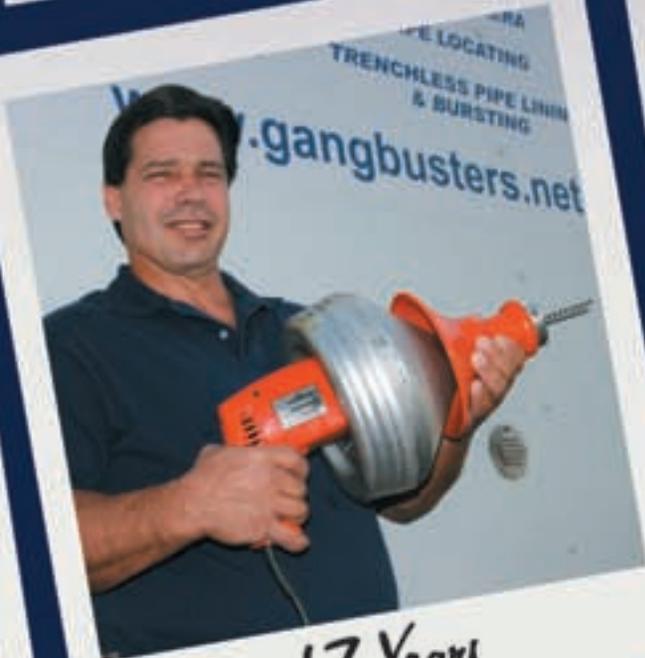
An intangible cost is one which costs money in a less obvious way. With regards to the contractor giving free estimates, every estimate that he spends time and doesn't get the job keeps him from performing another estimate or service that could bring money into his business.

If contractors signed up 100% of the estimates they gave and brought revenue into their businesses, they could recoup the estimate costs by including them in the prices quoted for the proposed tasks. But no contractor who quotes properly profitable selling prices gets every job. That's due to two facts. First, there are many moronic contractors out there charging lower prices that are often below their real costs. Second, the pool of consumers not only consists of value buyers, but also price buyers, and window shoppers who may purchase nothing.

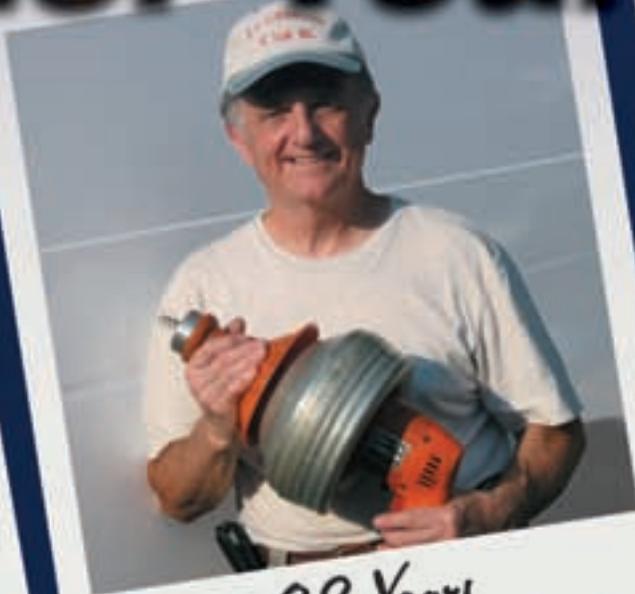
The average travel time in my county, inclusive of plotting the route and driving, is 30 minutes. When you add to

(Turn to Estimates:, Page 71.)

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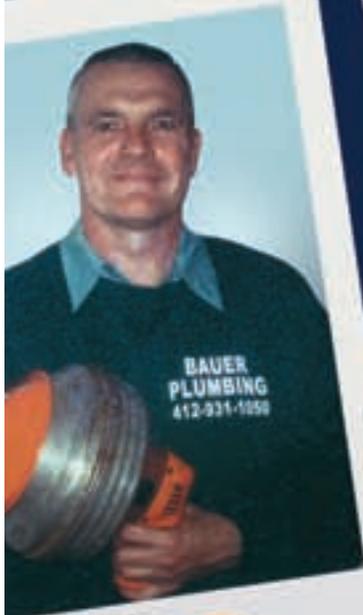
17 Years



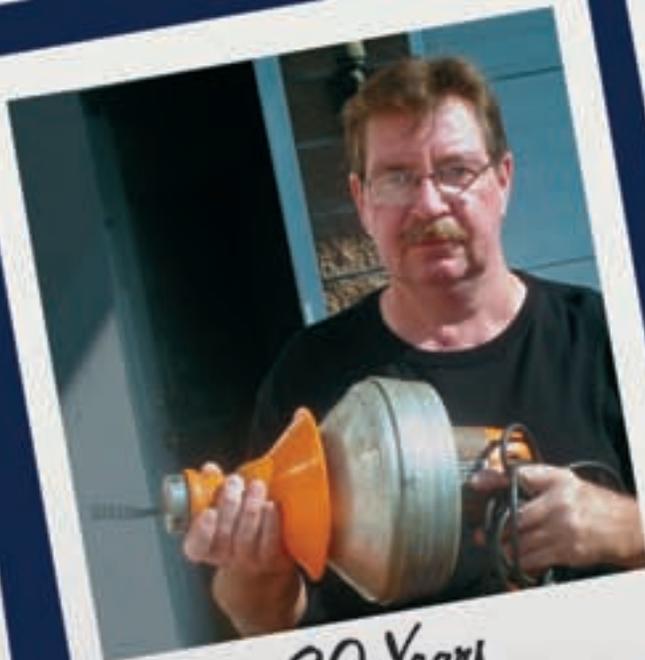
28 Years



2



23 Years



30 Years



18 Years



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Solar design

(Continued from page 32.)

along the primary loop to accommodate additional heating sources or heating loads. (e.g., hot tubs, heated pools, wood boilers, ground source heat pumps, hot water fan convectors, etc.) Typical bypass valves, isolation valves and boiler drain locations for easy maintenance are not all shown in Figure 2, but some of these can be seen in Figure 3. Air vents in actual installations may need to be located at high points in the piping, especially where flow is diverted downward. Loops may be mounted on vertical walls or suspended horizontally below the ceiling. Swing checks must never be mounted in the flow-downward position. Three-way thermo-mechanical mixing is provided at any secondary

where plastic pipe is employed. No plastic pipe is ever used anywhere near the solar loop or the solar heat exchanger.

Control variations

The example control system seen in Figure 3 uses Tekmar controllers (Models 152 and 155) to send solar heat to the DHW tank, turn off the boiler when the solar is hot enough, control two-stage heat banking in the warm mass floors and control overheating in the solar collectors during periods of low heat demand.

Without changing the piping, different functions can be accomplished simply by adding different controls. For example, if the DHW tank was oversized, solar heat can be removed from it for floor heating at night. This is an optional control that we often install, especially where baseboard convectors are

involved. Also, I have mentioned night sky radiant cooling (NSRC) in my previous articles; this can be used to cool the tank or the mass floors by adding a cooling control that runs the appropriate pumps at night. I hope to discuss controls in more detail in the future.

Flow center systems are evolving

The check-loop flow center is something that any experienced mechanical installer can build from scratch with easily accessible components from local suppliers. Lately, more European companies such as Caleffi, PAW, Oventrop and others have been offering pre-assembled pump stations, manifolds and flow separators that can be configured to do the same job as my old check-loop system. The time savings in labor can be remarkable when using this new modular equipment and so, I have



Figure 4. Wall-mounted solar collectors heat the primary loop shown in Figure 3.

been gradually changing over, as project budgets allow. ■

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.

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Extremes forming in construction's PVF sub-sector



MORRIS BESCHLOSS,
PVF & economic analyst

With President Barack Obama having been in office well into the first 100 days as this is written, I'm already confused as to where this newly minted administration is heading.

As the general economy continues to deleverage, with consumer demand deflating at a record pace, I have stepped up my PVF sector contacts to determine what cracks, if any, are forming in the façade of the prime sub-sector of the plumbing, heating, cooling, piping industry that is proudly keeping its head above water.

What I'm finding is the emergence of two extremes. Power is red hot, while commercial development has literally ground to a standstill.

Power generation construction and maintenance has reached levels never before experienced in that sector. Although industrial as well as residential demand for power availability has been impacted by the growing recessionary shrinkage, increasing lack of availability could create record blackouts and brownouts as the demand factor returns to normal levels in the next year.

The gap between potential supply and demand is almost certain to reach record levels before remedial action is able to close the gap of future productive capability versus the potential upshot in demand.

In the meantime, a major shutdown of drilling rigs in the Gulf of Mexico, oil sands conversion in Canada and the Bakken Belt development are in severe remission.

Although the breakeven point in oil production may be debatable, it is certainly well above the mid-40s level, where it seems stuck as the first quarter of 2009 winds down.

The Obama Administration seems so captivated by renewable energy, climate control, environmental extremism and tighter cafe standards that domestic drilling for offshore oil, shale conversion and natural gas exploration is all but forgotten. This sub sector of

oil production, refining and transmission is in a virtual holding pattern.

Also in a state of suspended animation is the commercial sector of hotels, motels, high-rise apartment buildings, shopping malls and condominium construction. Since this important segment of the construction industry is dependent on developers who take out huge loans to make these developments happen, they're caught in the credit squeeze of banks and other financial institutions who are calling such loans, even if the loan interest has been paid up to date. This is a problem of a moribund banking system, attempting to protect its balance sheets, choked with mortgage-backed securities and its derivatives.

This puts much of the pipe, valve, fitting sector's rejuvenation on the back of "power." It's no exaggeration to exclaim "How goes the electric

power industry this year, so goes the pipe valve fitting business."

Also questionable is the continued dynamics of exports, of which two-thirds are industrial products. Although the slowdown in world trade undermining this huge \$2-trillion sector (one-seventh of America's total gross domestic product 2007) is inevitable, an even greater danger could be the resurgence of Protectionism.

Will "Buy American" recreate visions of Smoot Hawley?

For the first time in decades, the patriotic slogan, "Buy American," is cropping up in the prospective Super Stimulus Bill. The \$75-billion committed to infrastructural projects carries with it the provision that would exclude foreign-made component materials or finished products in any project funded by the U.S. govern-

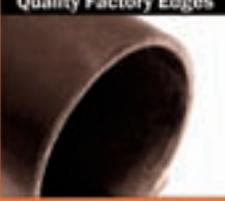
ment. This dictum opens up the specter of Smoot Hawley by one side of the debate, and the reaction of "It's about time" by those who have seen increasing manufacturing jobs fleeing American shores.

Free traders argue that lower-cost products that meet domestic quality standards should not be prohibited. This point of view prevailed during the Bush administration, which led to a major acceleration of imported producer and consumer goods by America's business sector, as well as by individual consumers. On the other hand, it is being vehemently opposed by American-based manufacturers and labor unions, who see America's industrial base frittering away.

Opponents of "Buy America" restrictions point to Smoot-Hawley legislation of the early 1930s, which ignited trade wars and accelerated the downward spiral of the Depression in its early years. It's up to the American people
(Turn to PVF Pulse, page 42.)

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PVF Pulse

(Continued from page 39.)

and their representatives to make the final judgment as to which way to go.

Asia's leading industrial powers headed for major economic contraction

China, Japan and South Korea, the three-pronged Southeast Asian growth triumvirate of the past 20

years, are headed for a major letdown.

The Japanese finance ministry is forecasting a 1.8% contraction for the year ending March 31 and a 2% downturn for the following fiscal year. The Bank of Japan doesn't even begin to see a return to growth until well into 2010.

South Korea's outlook is equally pessimistic. It has just experienced its first year-on-year quarterly growth decline since the Asian financial crisis of 1997 — 98. A gross domestic product decline of 3.4% in the fourth quarter followed an even more precipitous decline of 5.6% in the previous quarter. This is South Korea's first half-year sequential decline since 2003. Exports from Asia's fourth biggest economy slumped 11.9% in the final quarter, with semi-conductor shipments being the most hard-hit.

China remains solidly in the black but is facing a possible one-third downturn from its estimated 10% economic growth in all of 2008, which cooled off dramatically in the last quarter. China is desperately attempting to make up for its loss in exports by converting its hundreds of millions of agricultural tenants into more urbanized consumers. On the success of this metamorphosis may rest the Asian titan's driving force behind a worldwide second half 2009 economic recovery.

U.S. leads world productivity

Despite a slowdown in world productivity in 2008, output per hour worked in the U.S. increased slightly, by 1.7%, up from 1.5% in 2007, according to the latest annual productivity report issued by The Conference Board, the global business membership and research organization. The most recent productivity advances have been realized, however, through rapid layoffs, suggesting that the productivity of remaining workers and firms is actually strengthening.

U.S. productivity growth is expected to slow to 0.5% in 2009 but may improve during the second half of the year. "This will provide an opportunity for improved competitiveness of U.S. firms when the recovery starts," said Bart van Ark, vice president and chief economist of The Conference Board. The Conference Board quarterly gross domestic product forecast suggests that the U.S. may reach the trough of the recession by mid-2009. Innovation remains a crucial trigger for growth and recovery, the report noted. "But it requires continued investment in capital and labor — not just job cuts — which is a big challenge in the current economic climate," van Ark added.

The Conference Board's productivity report shows that world productivity growth slowed sharply in 2008 and is set to decelerate further this year as the global recession deepens. Global output per hour worked rose by 2.3% in 2008, down from 3.7% in 2007. It is expected to slow further to 1.8% in 2009 — the weakest productivity growth since 2001. This dramatic deterioration in the production efficiency of goods and services reduces the potential to raise wages, reduce prices and support an increase in living standards, the report warns.

Europe suffered a dramatic slowdown in productivity growth, with many European firms slow to reduce headcount in response to falling output. Productivity growth across the 27-member European Union fell from 1.3% in 2007 to just 0.2% in 2008 and is expected to come to a complete halt in 2009. The gloomy prediction comes a week before The Conference Board launches a new, monthly Euro Area Leading Economic Index, which will signal forthcoming peaks and troughs in the business cycle of the 16-nation bloc.

The effects of the deteriorating world economy on productivity across emerging economies differed widely, depending on each country's exposure to international trade and global finance, dependence on natural resources and the fiscal resources at the government's disposal. Brazil, for example, benefited from the commodity boom and improved export performance early in the year and saw productivity growth increase from 2.3% to 3.7%. In contrast, China's productivity growth fell from 12.1% to 7.7% as a result of a drop in exports and investment.

Developing nations face cash scarcity

If the world is to have a chance to snap out of its recessionary lethargy this year, much of the push has to come from companies in the developing nations that have been the globe's fastest-growing economies in the past decade.

The world's financial investment centers have scrupulously avoided risk for the past year, choosing instead to seek the safe haven of U.S. Treasury debt. This has literally denuded the once well-heeled investor; who previously provided companies in developing nations with a backbone of investment capital needed for a comeback and growth.

J.P. Morgan Chase & Company estimates that such companies need to refinance more than \$200 billion in external debt in 2009. The largest borrowing needs emanate from companies in financially embattled Russia, Turkey, Mexico, South Korea and the United Arab Emirates.

As the global credit crunch put a headlock on the world in general, the aforementioned countries have sunk to the bottom of the list of potential borrowers, with international capital sources closed to them. This means that these companies must turn to indigenous providers to meet their growing obligations. Barring that, they may try to renegotiate with their creditors, seek government's aid or face default.

In its report, J.P. Morgan listed 17 companies in emerging markets that could go into default this year. Those at risk of technical default include Russian steel giant OAO Severstal.

In a further sign of borrowers' degenerating financial health, Fitch ratings downgraded the credit ratings of 88 emerging market companies in the fourth quarter of 2008; the most in at least seven years. ■

Morris R. Beschloss, a 52-year veteran of the pipe, valves and fittings industry, serves as PVF and economic analyst for Phc News.

Bare Bones Biz

(Continued from page 34.)

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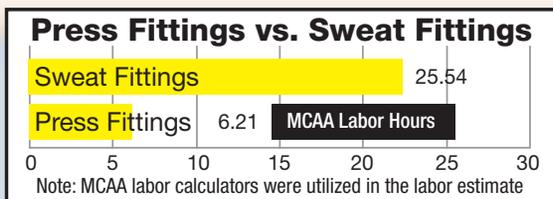
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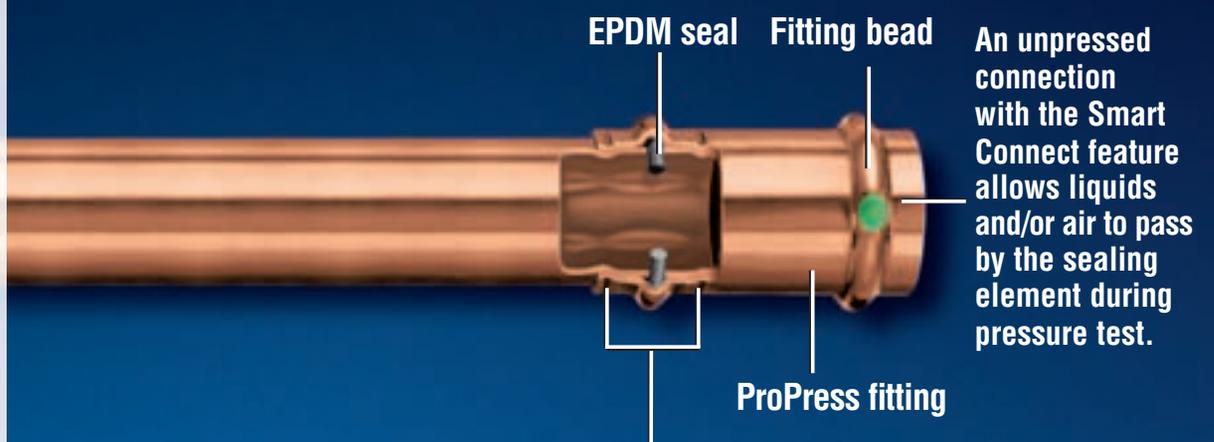


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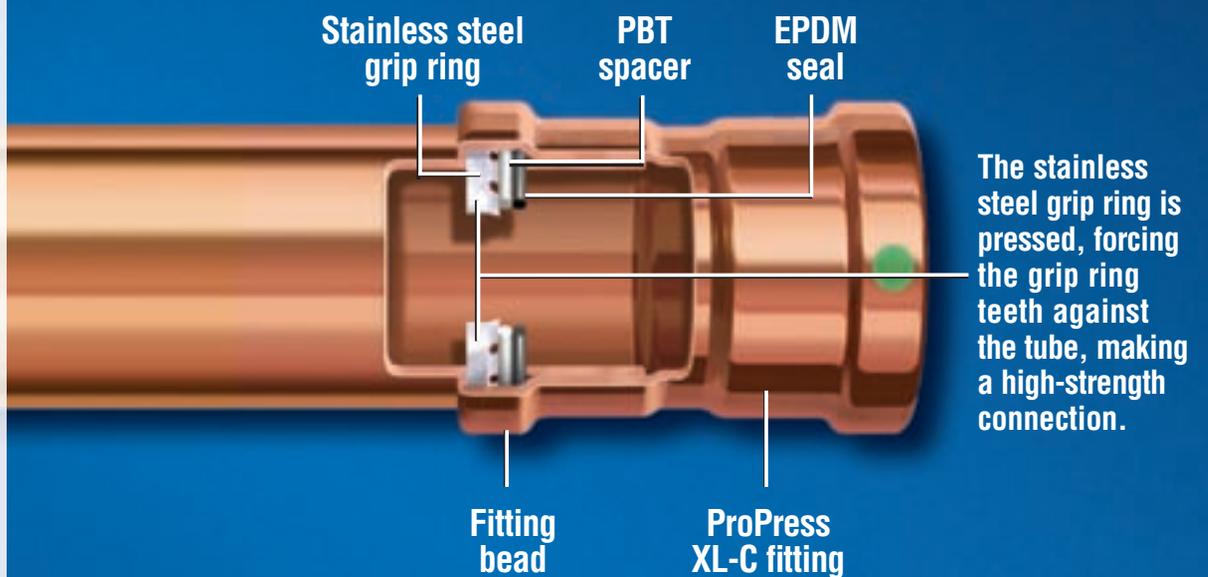
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GeoExchange system Harris Companies' Rx in down economy

The overwhelming topic of discussion in this year's Top 100 was the economy. Of the respondents to the Top 100 survey, similar stories were of reduced backlog, decreased profit margins, increased competition for bids, and for some, layoffs were inevitable.

In the midst of this seemingly bottomless recession, plummeting stock

original to the facility and was installed in 1972 (Torrey Arena), the other was part of the 1997 addition (Ritsche Arena). The 1972 arena was in poor condition, needed repair and was not operating efficiently. In addition, the original arena floor was built using galvanized piping that circulated brine through the floor causing severe degradation in heat transfer



Contractors prepare for the GeoExchange well-field installation, adjacent to the MAC.

markets, stimulus packages and consumer confidence likened to the fat kid at the high school dance, some residential/commercial contractors were transformed into service and repair. In spite of all the negativity, *Phc News* highlights a geothermal success story of St. Paul, Minn.-based Harris Companies — No. 17 on the 2009 Top 100 Listing. (See listing on page 46.)

In a time of tight budgets and soaring energy costs, the St. Cloud Municipal Athletic Center (MAC) has found a way to go "green" and save taxpayer dollars in the process. With the installation of a new GeoExchange system, the MAC uses the earth to maintain the arena ice and heat their facility. By installing this sustainable technology, the MAC will save enough electricity to power over 30 homes, enough gas to heat over 80 homes and reduce greenhouse gas emissions by an amount equal to the removal of more than 100 cars from the road each year.

This project originated after the 2007 Fall Minnesota Ice Arena Manager's Association (MIAMA) meeting where Harris Companies presented information on improving energy efficiency in ice arenas. Following that presentation, Todd Bissett — St. Cloud Municipal Athletic Complex (MAC) arena manager, asked for a follow-up visit.

The MAC has two arenas, one was

and effectiveness. The MAC staff felt that they could justify a chiller replacement with energy savings but did not think the floor could be replaced due to budget constraints.

Harris Companies met with the arena staff and conducted a preliminary review of the facility and found that the project, including the new floor, would be feasible. The final contract was approved by the City Council and signed in early June 2008. The new floor was installed and skating resumed in late September 2008, while the remainder of the project was completed in November 2008.

The MAC staff has a new arena floor in the Torrey Arena, a high efficiency TRAK International GeoExchange (ground source heat pump — GSHP) "chiller plant," a new Web-enabled and integrated building automation system (BAS) installed by Harris Controls, and improved system operation. The MAC team, the City of St. Cloud, and the citizens of St. Cloud now have a high-performance "green" arena that will reduce gas usage by 95% and electric usage by 30%. Nearly 4,000,000 gallons of water usage will be eliminated along with the yearly elimination of 300,000 pounds of greenhouse gases.

The first phase of the project involved the demolition of the Torrey arena floor, the chiller room, pumps and evaporative condenser.

New rink floor

The new rink was designed using a state-of-the-art floor design that maximizes heat transfer to create a high quality skating surface, while using substantially less energy. The new floor utilizes a below-grade thermal storage buffer to create thermal storage capacity, sustain consistent glycol temperatures, and minimize the risk of ice loss related to a loss of cooling. The floor contains three circuits to provide only the amount of flow needed to maintain ice quality, saving cooling capacity and pump energy. The floor is constructed using high-density polyethylene pipe (HDPE) piping that was installed using fusion welding to create a seamless piping assembly that is resistant to leaks and friction loss. The floor contains more than 19 miles of 1" HDPE and more than 600' of 6" HDPE pipe. Added insulation under the thermal storage buffer, around the header and along the side boards prevent loss of capacity to the surrounding areas.

GeoExchange ground source heat pump system

The heart of the new installation is the TRAK International GeoExchange Ground Source Heat Pump System.

heat pumps dedicated to the load loop, which provides 145°F hot water that is integrated into the existing hot water and domestic hot water systems.

The system was custom designed by TRAK to meet the needs of both ice rinks. The Ritsche Arena (1997) Vilter flooded chiller system was left in place, but tied into the new TRAK system so that it could remain as a back-up system and provide additional capacity if needed during peak load conditions. During construction of the project, the new Torrey Arena floor was initially cooled using the Ritsche Arena Vilter Chiller System.

The TRAK heat pumps were custom built by Midwest Fabrication and Supply of Zumbrota, Minn., for this application. The heat pumps are high efficiency industrial grade heat pumps that are designed for the specific facility where they will be installed. They include on-board direct digital controls and electronic expansion valves.

The well-field was installed under the existing parking lot and consists of more than 6500' of vertical boreholes.

The circulating pumps were installed with variable frequency drives to allow reduced flow through the circulating loops. A fluid cooler was added to the system to allow for additional heat



Piping connects to the heart of the GeoExchange system.

The system has four 60-ton heat pumps dedicated to the Source Loop providing 12-15 degree chilled glycol for the arena floors and two 60-ton

rejection and free cooling during cold winter months when it is possible to circulate chilled glycol through the (Turn to GeoExchange, page 71.)

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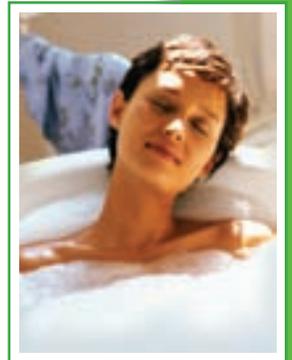
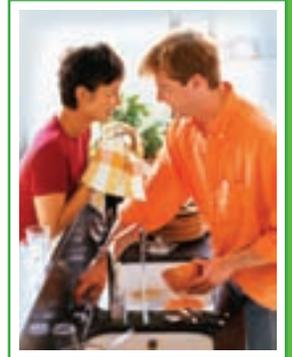


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	COMPANY	City, State
\$1b+	1. EMCOR Group, Inc.	Norwalk, CT
	2. Comfort Systems, USA	Houston, TX
\$400 million+	3. ARS/Rescue Rooter	Memphis, TN
	4. ACCO Engineered Systems Inc.*	Glendale, CA
	5. Southland Industries	Irvine, CA
	6. McKinstry	Seattle, WA
	7. Kinetics*	Union City, CA
\$200 million to \$399.9 million	8. Roto-Rooter	Cincinnati, Ohio
	9. TDIndustries	Dallas, TX
	10. Limbach Facility Services	Pittsburgh, PA
	11. Hill Mechanical Group	Franklin Park, IL
	12. BMW Constructors Inc.	Indianapolis, IN
	13. J.H. Kelly LLC	Longview, WA
	14. John E. Green Co.	Highland Park, MI
	15. Mr. Rooter*	Waco, TX
	16. Murphy Company	St. Louis, MO
	17. Harris Companies	Saint Paul, MN
	18. Midwest Mechanical Group	Overland Park, MO
	19. J.F. Ahern Co.	Fond Du Lac, WI
	20. ColonialWebb Contractors	Richmond, VA
	21. Ivey Mechanical	Kosciusko, MS
	22. Metropolitan Mechanical Contractors*	Eden Prairie, MN
	23. U.S. Engineering Co.	Kansas City, MO
	24. Coastal Mechanical Svc.	Melbourne, FL
	25. AZCO Inc.*	Appleton, WI
	26. Fresh Meadow Mechanical Corp.*	Fresh Meadows, NY
	27. Harder Mechanical Contractors*	Portland, OR
28. W.E. Bowers*	Beltsville, MD	
29. McKenny's Inc. Mech. Contractors*	Atlanta, GA	
30. Environmental Air Systems	Greensboro, NC	
31. MacDonald-Miller Facility Solutions	Seattle, WA	
32. RK Mechanical Inc.	Denver, CO	
33. Fire & Life Safety American	Richmond, VA	
34. Titan Contracting/The Horn Cos.*	Owensboro, KY	
35. Sauer Inc.*	Pittsburgh, PA	
36. Egan Companies	Brooklyn Park, MN	
37. VSC Corp.	Ashland, VA	
38. Mechanical Inc.	Freeport, IL	
39. Snelson Companies Inc.*	Sedro-Woolley, WA	
40. NewMech Companies*	St. Paul, MN	
41. Brandt Engineering*	Dallas, TX	
42. P1 Group*	Lenexa, KS	
43. Joule' Industrial Contractors	Gibbstown, NJ	
44. Critchfield Mechanical Inc.*	Menlo Park, CA	
45. John W. Danforth Co.	Tonawanda, NY	
46. A.O. Reed & Co.*	San Diego, CA	
47. Pierce Associates Inc.*	Alexandria, VA	
48. Dorvin D. Leis Co. Inc.*	Kahului, HI	
49. RCR Plumbing and Mechanical, Inc.*	Riverside, CA	
50. Murray Company	Rancho Dominguez, CA	

	COMPANY	City, State
\$60 million to \$99.9 million	51. W.G. Tomko Inc.	Finleyville, PA
	52. Monterey Mechanical Co.	Oakland, CA
	53. Great Lakes Plumbing & Heating	Chicago, IL
	54. Grunau Co. Inc.*	Oak Creek, WI
	55. Nashville Machine Co.Inc.	Nashville, TN
	56. Letsos Company	Houston, TX
	57. NewMech Cos.*	St. Paul, MN
	58. Jarrell Contracting Co. Inc.	Earth City, MO
	59. University Mechanical Contractors Inc.	Mukilteo, WA
	60. Herman Goldner Co. Inc.	Philadelphia, PA
	61. Hill York Corp.	Fort Lauderdale, FL
	62. Wayne Automatic Fire Sprinklers Inc.	Ocoee, FL
	63. BCH Mechanical Inc.	Largo, FL
	64. Beutler Corporation*	McClellan, CA
	65. Lee Company	Franklin, TN
	66. Baker Group	Des Moines, IA
	67. McDaniel Fire Systems Inc.*	Porter, IN
	68. CCI Mechanical Inc.	Salt Lake City, UT
	69. East Coast Fire Protection Inc.*	Richmond, VA
	70. Advance Mechanical Systems Inc.*	Mt. Prospect, IL
71. Martin Peterson Co. Inc.*	Kenosha, WI	
72. Freitag-Weinhardt Inc.*	Terre Haute, IN	
73. W.A. Botting Co.*	Woodinville, WA	
\$40M to \$59.9M	74. Rock Hill Mechanical Corp.	St. Louis, MO
	75. Scheck Industries*	Countryside, IL
	76. Ewing-Doherty Mechanical Inc.	Bensenville, IL
	77. J&A Mechanical Inc.*	Cordova, TN
	78. Residential Services Group Inc.*	Dayton, OH
	79. Upchurch Plumbing Inc.	Greenwood, MS
	80. Johnson & Jordan	Scarborough, ME
	81. Postler & Jaekle Corp.*	Rochester, NY
	82. Delcard Assoc. Inc./Mechanical Contractors	New Castle, DE
	83. Sagamore Plumbing & Heating Inc.	Weymouth, MA
	84. DECCO	Brookline, NH
	85. Gem Plumbing & Heating	Lincoln, RI
	86. R M Mechanical Inc.	Boise, ID
	87. Goyette Mechanical Co.	Flint, MI
	88. Nash Inc.	Coleman, FL
	89. Dual Temp Co.	Allentown, PA
	\$20 million to \$39.9 million	90. Cullum Constructors Inc.
91. Durr Mechanical Construction, Inc.		New York, NY
92. Peterson Mechanical Inc.		Sonoma, CA
93. Comfort Engineers Inc.		Durham, NC
94. James Craft & Son Inc.		York Haven, PA
95. CJ Erickson Plumbing Co.		Alsip, IL
96. DiGesare Mechanical Inc.		Schenectady, NY
97. H&H Industries Inc.		Madison, WI
98. Cecchin Plumbing & Heating		Bloomington, IL
99. R.T. Moore Company Inc.		Indianapolis, IN
100. Campito Plumbing & Heating inc.		Latham, NY

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Top contractors by region

West	
COMPANY	CITY/STATE
1. ACCO Engineered Systems Inc.	Glendale, CA (4)
2. Southland Industries	Irvine, CA (5)
3. McKinstry	Seattle, WA (6)
4. Kinetics	Union City, CA (7)
5. J.H. Kelly LLC	Longview, WA (13)
6. Harder Mechanical Contractors ..	Portland, OR (27)
7. MacDonald-Miller Facility Solutions ..	Seattle, WA (31)
8. RK Mechanical Inc.	Denver, CO (32)
9. Snelson Cos.	Sedro-Woolley, WA (39)
10. Critchfield Mechanical Inc.	Menlo Park, CA (44)

South	
COMPANY	CITY/STATE
1. Comfort Systems, USA	Houston, TX (2)
2. ARS/Rescue Rooter	Memphis, TN (3)
3. TDIndustries	Dallas, TX (9)
4. Mr. Rooter	Waco, TX (15)
5. Ivey Mechanical	Kosciusko, MS (21)
6. Coastal Mechanical Svc.	Melbourne, FL (24)
7. McKenny's Inc. Mech. Contractors ..	Atlanta, GA (29)
8. Environmental Air Systems	Greensboro, NC (30)
9. Titan Contracting/The Horn Co. .	Owensboro, KY (34)
10. Brandt Engineering	Dallas, TX (41)

Biggest Gainers

Company	%/change
1. Environmental Air ...	110%
2. Fire & Life Safety ...	82.4%
3. Rock Hill Mech. ...	60.7%
4. Upchurch Plg.	55.4%
5. Mechanical Inc.	52.6%
6. BCH Mechanical	40.5%
7. W.G. Tomko	34.6%
8. RK Mechanical	30.0%
9. ARS/Rescue Rooter ...	29.6%
10. BMW Constructors ..	29.5%
11. Great Lakes Plg.	25.0%
12. McKinstry	22.7%
13. Comfort Eng. Inc. ..	20.0%
14. Comfort Systems ...	19.73%
15. Murphy Co.	19.72%
16. Monterey Mech.	18.9%
17. Jarrell Cont.	17.2%
18. Sagamore Plg.	16.2%
19. Harris Cos.	15.3%
20. John W. Danforth ..	13.6%

Midwest	
COMPANY	CITY/STATE
1. Roto-Rooter	Cincinnati, OH (8)
2. Hill Mechanical Group	Franklin Park, IL (11)
3. BMW Constructors Inc.	Indianapolis, IN (12)
4. John E. Green Co.	Highland Park, MI (14)
5. Murphy Company	St. Louis, MO (16)
6. Harris Companies	Saint Paul, MN (17)
7. Midwest Mechanical Group ..	Overland Park, MO (18)
8. J.F. Ahern Co.	Fond Du Lac, WI (19)
9. Metropolitan Mechanical	Eden Prairie, MN (22)
10. U.S. Engineering Co.	Kansas City, MO (23)

East	
COMPANY	CITY/STATE
1. EMCOR Group, Inc.	Norwalk, CT (1)
2. Limbach Facility Services	Pittsburgh, PA (10)
3. ColonialWebb Contractors	Richmond, VA (20)
4. Fresh Meadows Mech.	Fresh Meadows, NY (26)
5. W.E. Bowers	Beltsville, MD (28)
6. Fire & Life Safety American	Richmond, VA (33)
7. Sauer Inc.	Pittsburgh, PA (35)
8. VSC Corp.	Ashland, VA (37)
9. Joule Industrial Contractors ...	Gibbstown, NJ (43)
10. John W. Danforth Co.	Tonawanda, NY (45)

(Numbers in parentheses denote overall ranking in Top 100 Contractor listings)

Revenue spent by category

Based on voluntary responses

Rank	Plumbing	Company
1.	Roto-Rooter	\$350,000,000
2.	Comfort Systems, USA	\$216,388,000
3.	Southland Industries	\$119,000,000
4.	ColonialWebb Contractors	\$77,000,000
5.	W.G. Tomko Inc.	\$65,000,000
6.	Ewing-Doherty Mechanical Inc.	\$57,829,000
7.	John E. Green Co.	\$55,000,000
8.	Midwest Mechanical Group	\$54,700,000
9.	U.S. Engineering Co.	\$53,531,355
10.	Environmental Air Systems	\$50,000,000

Rank	Piping	Company
1.	Southland Industries	\$186,000,000
2.	BMW Constructors Inc.	\$172,000,000
3.	John E. Green Co.	\$155,000,000
4.	Murphy Company	\$92,787,682
5.	U.S. Engineering Co.	\$53,531,355
6.	Hill York Corp.	\$85,000,000
7.	J.H. Kelly LLC	\$72,400,000
8.	NewMech Cos.	\$67,305,000
9.	Midwest Mechanical Group	\$65,000,000
10.	Hill Mechanical Group	\$64,000,000

Rank	Hydronics	Company
1.	Hill Mechanical Group	\$76,000,000
2.	Mechanical Inc.	\$61,020,000
3.	Midwest Mech. Group	\$56,700,000
4.	Harris Companies	\$50,000,000
5.	RK Mechanical Inc.	\$44,979,871
6.	John W. Danforth Co.	\$40,000,000
7.	Johnson & Jordan	\$29,816,500
8.	Murray Company	\$24,000,000
9.	John E. Green Co.	\$20,000,000
10.	Campito Plumbing & Heating	\$19,400,000

Rank	Waste/Wastewater Treatment	Company
1.	Monterey Mechanical Co.	\$74,550,000
2.	J.F. Ahern Co.	\$35,040,000
3.	John W. Danforth Co.	\$31,000,000
4.	University Mechanical Contractors Inc.	\$13,000,000
5.	Murray Company	\$12,000,000
6.	Durr Mechanical Construction Inc.	\$10,739,914
7.	John E. Green Co.	\$10,000,000
8.	Baker Group	\$5,088,488
9.	Ivey Mechanical	\$5,000,000
10.	Harris Companies	\$5,000,000

Introducing the Latest Generation of Regulators from Watts



The X65B Cartridge Style Regulator

Our legacy of quality and innovation continues with our new X65B cartridge style high-performance water pressure reducing valve.

The X65B is available as a complete, ready-to-install regulator, or as a separate cartridge assembly and Rough-in Kit consisting of a bronze body with integral strainer.

Save time and money by installing the X65B Rough-in Kit during the construction phase. Then, simply add a cartridge assembly after system startup to completely eliminate the need for jumper kits while protecting the downstream plumbing system.

The X65B also delivers superior flow performance with lower fall off pressure than the competition while reducing flow noise with its engineered seat design.



For additional information, visit our web site at watts.com

Circle 40 on Reader Reply Card

WATTS®

Is radiant cooling right for your next project?

Have you considered exploring radiant cooling for benefits such as increased comfort, increased efficiency, LEED credits, improved acoustics and reduced maintenance but been stymied by high first costs? Climate Mat by Viega provides radiant tubing in pre-configured and scalable modules — significantly reducing the labor and first costs associated with radiant heating and cooling projects. Climate Mat was recently chosen for installation in several Wal-Mart stores, and may be an option for your next project.

The Wal-Mart solution

As part of its commitment to environmental sustainability, Wal-Mart has developed a line of high efficiency (HE) stores. The fifth generation prototype of this effort, an “HE.5” store, was opened in Las Vegas in March of 2008. Las Vegas’ hot, dry climate (IECC climate zone 3B) means moderate heating loads, large sensible cooling loads, low latent loads, and excellent potential for radiant cooling.

Wal-Mart set an aggressive goal of achieving 45% energy savings with the HE.5. Though many technologies and systems were employed to achieve this goal in areas such as lighting, refrigeration, and the building envelope, the radiant cooling system is the project’s cornerstone energy efficiency technology.

Wal-Mart’s HE.5 is a rectangular configuration divided into six discrete space conditioning zones. The refrigerated grocery zone has no cooling load, while the 81,500 ft.² merchandising zone has a cooling load of 13 Btu/h-ft.², and the 29,500 ft.² of

considered but did not offer the performance of radiant cooling.

Radiant cooling innovation

Though radiant cooling was a perfect fit for energy performance, first costs were a concern. Value-engi-



Installers using Climate Mat were able to lay roughly six times the feet of tubing on a per person basis versus using traditional installation methods.

checkout area requires 30 Btu/h-ft.². Variable loads and infiltration requirements posed a challenge to engineers in their design and specification of a comfortable, affordable, and energy efficient system. Traditional, air-only systems were

neering the radiant system was a top priority, and radiant tubing circuits were seen as a savings opportunity. A typical labor crew can lay and tie 1,000-1,250 linear feet of tubing per person in an 8-hour day. With approximately 200,000 linear feet of

tubing, the man hours required for a traditional installation were cost prohibitive.

To provide an answer to budget challenges, the project team turned to Climate Mat, a scalable, pre-configured tubing module developed by Viega that could be installed quickly. Instead of manually laying, tying, and suspending individual lengths of tubing, Climate Mat enabled the installation contractor to simply roll out the tubing on the compacted gravel base and pour the 4" slab directly on top. Because the sections are delivered to the job site pressurized and with pressure taps, the installation contractor could easily confirm that there were no tubing leaks.

Climate Mat was installed in sections composed of six circuits. Each section contained 2,600 linear feet of ½" diameter tubing. Spacer strips were used to maintain a fixed spacing of the tubing per design. To hold the mat in place during the concrete pour, stakes were used in the spacer strips at two foot intervals. Section terminations were heat-fused into floor-recessed manifolds. (Since completion of the HE.5, Climate Mat is now provided as a design-build solution with wall-mounted manifolds. Sections are available in 6' widths, up to 190 feet in length, with tubing in 6" or 9" on-center spacing.)

Labor savings in using the Climate Mat versus traditional methods were on the order of 118 man hours per (Turn to Radiant Cooling, page 52.)

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Radiant Cooling Benefits

- Pre-cooling to minimize operation during peak power periods;

- 50% annual savings in cooling energy; and

- Reduced maintenance (minimized use of VAVs).

Climate Mat Benefits

- Minimized balancing;

- 80% reduction in installation time;

- Pressurized sections remove concerns about installing punctured tubing;

- Can be installed in 4" slabs;

- Can be used to provide space heating and/or cooling;

- Sizing customized to project: length to 190', width, 6" or 9" tubing spacing, 6' width;

- Free design support from Viega for specification of spacing, sizing, flow rates, and supply temperatures based on zone loads; and

- Contributed to 60-75% reduction in radiant first-costs.

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Radiant cooling

(Continued from page 50.)

10,000 ft² of floor area. Further time and labor savings were experienced in the commissioning of the system, because balancing requirements were



The Climate Mat is standardized at a width of 6 feet. The length will be determined by design. For 1/2-inch diameter tubing, the length shall not exceed 190 feet; and for 5/8-inch diameter tubing the length shall not exceed 240 feet.

minimized due to Climate Mat's fixed spacing and uniform section lengths. Overall, the radiant cooling system with Climate Mat saved approximately 60-75% in first costs versus a traditional radiant system.

Radiant cooling system operation

Building energy simulations concluded that pre-cooling the slab during off-peak hours would maximize energy savings, resulting in 50% less electricity than an air-only system, while maintaining comfort and avoiding slab condensation. These electricity savings do not include savings from using pumps versus fans. Because transferring heat with water is a much more efficient process than moving heat with air, the energy savings with the radiant cooling system are expected to be even greater once pump and fan energy are considered.

Operational data collected by NREL show that "the radiant floor is performing better than expected." Monitored slab surface and supply and return temperatures have indicated that there is further potential for radiant system energy savings through reduced flow rates and/or increased supply temperatures.

With intelligent design, radiant cooling can be specified across many climate zones. However, radiant cooling excels in hot dry climates, especially for applications that have large cooling loads and hard flooring surfaces. Areas that have high electricity/TOU rates and peak power pricing provide favorable economics for faster paybacks and operational savings. If looking for extra LEED points, or specifying a radiant cooling or heating system, ask for Climate Mat to deliver an on-time solution at reduced first costs. ■

Inside the job

- Location: Las Vegas
- Function: "Big box" retail
- Conditioned area: 102,000 ft²
- Cooling Load: 13-30 Btu/h · ft²
- Base cooling system: Air-only
- Base cooling system peak power: 35 kW
- Base cooling system COP: 7
- Base cooling system annual energy use: 84 MWh
- Specified cooling system: Climate Mat slab radiant cooling with indirect evaporative cooling; overhead VAVs as needed to provide ventilation and supplemental cooling
- Radiant cooling system peak power: 41 kW
- Radiant cooling system effective COP: 14
- Radiant cooling system annual energy use: 43 MWh

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A NEW GENERATION OF WARMTH





NEOTHERM FEATURES

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- 4 Residential sizes (80,000 to 210,000 BTU)
- 3 Commercial sizes (285,000 to 500,000 BTU)
- Natural or propane gas, factory-mounted options
- Connections on top of unit
- Stainless steel heat exchanger
- Rated for alcove and closet installations
- Large user interface and display
- Perfect for radiant and baseboard heating
- Qualifies for energy rebates
- 12 year limited warranty

The NeoTherm residential condensing boiler is the latest technological advancement in home heating from Laars Heating Systems. Respected the world over, Laars represents 60 plus years of design and engineering innovation for residential, commercial and industrial space and water heating applications.

You can be sure that no company stands behind its products as well as Laars or offers the extensive support staff, the field technicians and network of service personnel that you'll find with Laars Heating Systems. From giant boilers for hotels, stadiums, schools and casinos to the reliable heating system in your home, Laars is the name to trust.

The compact NeoTherm can vent up to 100' in PVC piping (using outside air for combustion), which keeps installation costs low. The competitive price and ultra-high efficiency make NeoTherm perfect for baseboard and radiant floor heating.

NeoTherm is everything a modern boiler should be... easy-to-use, easy on the environment, powerful and compact. It's the perfect choice for today's demanding homeowner.




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Circle 44 on Reader Reply Card

NKBA dispels misconceptions about K/B show

HACKETTSTOWN, N.J. — In response to a growing number of misconceptions concerning the upcoming 2009 Kitchen/Bath Industry Show & Conference (K/BIS), the National Kitchen & Bath Association (NKBA) and Nielsen Business Media have decided to clear any confusion regarding attendance and exhibitors at the show. As nearly all other industry shows have experienced a decline in exhibitors and attendees in recent years, false impressions have begun to spread about an equally steep reduction in numbers for K/BIS 2009. This is simply untrue.

“Are there some exhibitors that have pulled out of K/BIS 2009? Yes,” said NKBA CEO Don Sciolaro, “but contrary to recent misconceptions, the vast majority of the large exhibitors

will be exhibiting at K/BIS again this year.” To name just a few, this list includes Whirlpool, Kohler, LG, Moen, TOTO, MasterBrand, Armstrong, GE, Delta, Gerber, TurboChef, Merillat, Viking, Panasonic, Vent-a-Hood, Sears, Dacor, and Rohl, in addition to many, many others.

“This year, K/BIS will once again be the premier event for the entire kitchen and bath industry,” said Brian Pagel, vice president of the Kitchen and Bath Group for Nielsen Business Media, producer of K/BIS. “With 700 exhibitors and co-exhibitors showing their products across 400,000 square feet of exhibit space in the Georgia World Congress Center in Atlanta, K/BIS 2009 is a must-attend event for any serious kitchen and bath professional.”

Challenging economy can't slow AHR '09

WESTPORT, CONN. — Despite the turbulent economy, the 61st AHR Expo, held at Chicago's McCormick Place from January 26-28, was among its biggest and best events of all-time. More than 54,000 registered HVAC/R professionals (including nearly 35,000 attendees and over 19,000 exhibitor personnel) filled the aisles looking for the latest products and technologies on display from more than 1,900 exhibiting companies during the industry's largest HVAC/R event.

The 2009 Show was larger than last year's show and ranks second largest behind the 2006 Chicago show, in terms of number of exhibiting companies (1,911). Other figures included:

- 34,973 attendees
- 19,095 exhibitor personnel
- 5,383 international attendees
- 383 exhibiting companies from outside the United States.

Industry Calendar

sponsored by



MARCH

- 18-20 — WQA, Chicago
- 19-21 — QSC Power Meeting XXX, Daytona Beach, Fla.

MAY

- 1-3 — K/BIS, Atlanta
- 16 — PHCC-GLA, Long Beach, Calif.
- 17-21 — NAOHSM, Hershey, Pa.
- 29-30 — RPA Conference, Utica, N.Y.

JULY

- 16-18 — QSC Power Meeting XXXI, Colorado Springs, Colo.

OCTOBER

- 21-24 — PHCC Show, New Orleans

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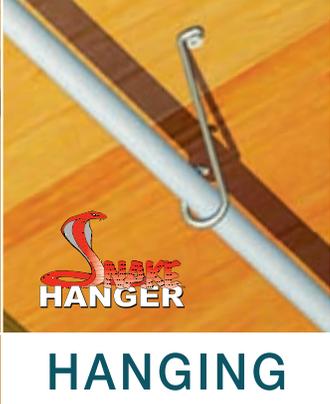
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Dear Plumbing Contractor:

We're looking for your preferences! Fill out and FAX this page to **877-358-8089**, and we'll send you either a \$5.00 Starbucks Card, or \$5.00 cash. **You MUST be a licensed plumbing contractor to participate**, and you can only fill out a sheet once. Accountability Information Management, Inc. is a market research company based in Palatine, Illinois. **Thanks in advance for your help!** (If you prefer, you can go to www.a-i-m.com/phcnews to fill out this survey).



PLUMBING CONTRACTOR PREFERENCE

PART 1. For the following **Plumbing Products**, please read the category, and then fill in the blanks by **writing in the name of the brand that first comes to your mind**, in the order that they come to you. If only one comes to your mind as a preference, just fill in that one. If you are not involved with the type of product, check the "Not Involved" box. If you have no single BRAND preference, check the appropriate box.

Kitchen Faucets

COMMERCIAL	RESIDENTIAL
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
<input type="checkbox"/> Not involved <input type="checkbox"/> No preference	<input type="checkbox"/> Not involved <input type="checkbox"/> No preference

Kitchen Sinks

COMMERCIAL	RESIDENTIAL
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
<input type="checkbox"/> Not involved <input type="checkbox"/> No preference	<input type="checkbox"/> Not involved <input type="checkbox"/> No preference

Bathroom Faucets

COMMERCIAL	RESIDENTIAL
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
<input type="checkbox"/> Not involved <input type="checkbox"/> No preference	<input type="checkbox"/> Not involved <input type="checkbox"/> No preference

Bathroom Sinks

COMMERCIAL	RESIDENTIAL
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
<input type="checkbox"/> Not involved <input type="checkbox"/> No preference	<input type="checkbox"/> Not involved <input type="checkbox"/> No preference

Toilets

COMMERCIAL	RESIDENTIAL
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
<input type="checkbox"/> Not involved <input type="checkbox"/> No preference	<input type="checkbox"/> Not involved <input type="checkbox"/> No preference

Showerheads (Showers)

COMMERCIAL	RESIDENTIAL
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
<input type="checkbox"/> Not involved <input type="checkbox"/> No preference	<input type="checkbox"/> Not involved <input type="checkbox"/> No preference

Bathroom Accessories

COMMERCIAL	RESIDENTIAL
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
<input type="checkbox"/> Not involved <input type="checkbox"/> No preference	<input type="checkbox"/> Not involved <input type="checkbox"/> No preference

PART 2. For the following **questions**, please answer each one by checking the appropriate boxes, or filling in the required information. If you want the \$5, be sure to fill in your information, and check the appropriate box. THANK YOU!

- What best describes the type of company you work for?
 Plumbing Contractor Mechanical Contractor General Contractor
 Other _____
- How many contractors work in your company? _____
- What is the estimated constructed value of projects your company is involved with annually? \$ _____ per year
- Please assign a percentage for the type of projects your company handles (total should be 100%).
 Residential (single family) _____% Commercial _____%
 Residential (multi-family) _____% Industrial _____%
- How much is new construction versus MRO (maintenance)?
 New Construction/rehab _____% MRO _____%
- What is your level of involvement in the selection/specification of the products in this survey? (check all the boxes that apply to you)
 Estimate Recommend Purchase
 Specify Install None Other _____

7. Please tell us specifically why you prefer your TOP brand of products?

8. Please list the TOP three sources you use to gather product information. Please be specific (e.g., if you say "magazines" tell us which one(s), or if you say Internet, tell us which websites)

TOP SOURCE _____

#2 _____

#3 _____

Send me my \$5 in cash, or a Starbucks Card.

I am a licensed plumber in the state of _____, and my license number is: _____

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

e-mail _____

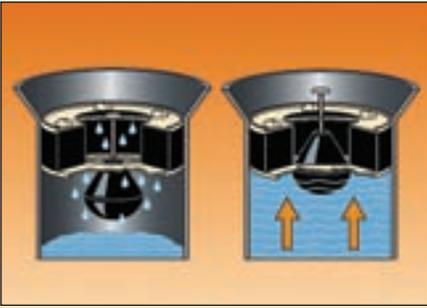
Phone _____ FAX _____

Fill out and FAX this page to **877-358-8089**

Circle 46 on Reader Reply Card

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Stop flooding with Flood-Guard

Prevent basement flooding and messy floors with Flood-Guard®. Available for 2", 3" and 4" floor drains, 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. **General Pipe Cleaners, a div. of General Wire Spring.**

Circle 101 on Reader Reply Card

Tool management software

Basic Tool Manager, a low-cost tool manager based on bar code technology,



helps contractors reduce tool loss and save time tracking down tools for their jobs. Overhead savings is dramatic; pay your people to be on the job, not to search for tools. **Dynamic Systems (DSI).**

Circle 102 on Reader Reply Card

Dye injection kit

Two new BigEZ™ dye injection kits allow technicians to add the precise amount of fluorescent dye into AC&R



systems without wasting any dye. Each kit features the BEZ-50 dye injector assembly, an A/C hose/coupler with check valve and 1/4" flare low-loss fitting, one BigEZ dye cartridge and a purge fitting. **Spectronics Corp.**

Circle 103 on Reader Reply Card

★ Phc News tool of the month ★



CSST Cutter makes smooth cuts to CSST

The new Model 151-CSST cutter is now available for making clean, smooth cuts to CSST. The Model 151-CSST cutter is designed with floating nylon guide wheels so that it runs on the corrugations of the track while cutting the flexible gas tubing. Uses a quick-acting mechanism that allows the cutter to rapidly adjust from 3/8" to 1" dia. CSST. The tubing cutter also utilizes the proven X-CEL™ feature of a larger, ergonomic knob, which gives users a more firm grip that allows them to apply more force to cut through tubing faster and easier. **RIDGID.**

Circle 100 on Reader Reply Card



Counter-top drain cleaning machine

The new Model CT features unique variable speed motor control that gives the operator maximum cable control and exceptional cleaning power from 75 to 350 RPM with constant torque. Professionally engineered to clean 3/4" - 2 1/2" dia. drain lines up to 50 ft., the Model CT is the counter-top drain cleaner to count on for top performance. 1/5 HP, 90 volt DC motor provides quiet, powerful and dependable operation. Standard unit features a hand-tighten Jacobs chuck. Also available with a 2-way auto cable feed that keeps hands off rotating cable as it advances and retrieves cable with the push of a lever. **Electric Eel Mfg. Co., Inc.**

Circle 104 on Reader Reply Card

Electric tongue jack for trailers

Hooking trailers to tow vehicles just got easier thanks to the new Electric Tongue Jack. Designed to reduce the physical exertion associated with manual jacks, the Electric Tongue is available in two models. The Base Model, which fits couplers with a 2" opening, comes with a non-telescoping foot that works with a motor to lift the trailer.

The deluxe model is for use on trailers with a 2 1/2" coupler opening and includes a manual telescoping foot, which saves on battery life and consumption and extends the life of the motor. Simply pull a pin, let the foot collapse down, re-insert the pin and lift the trailer off the ball using the electric motor. **Valley, a division of Thule Towing Systems North America.**

Circle 105 on Reader Reply Card



Gas-actuated fastening system

The new GX 120-ME system frees installation professionals from the constraints of batteries or cords. Completely gas driven for high mobility, the tool is ideal for fast, productive fastening on concrete, plastered masonry, sand-lime block, concrete block and steel. Combines direct fastening technology with the latest electronically controlled gas injection technique. Speeds up jobs by eliminating drilling and delivering consistent, reliable fastening. A keyless, adjustable and removable nosepiece speeds the job and the slim, streamlined design allows fastening even in tight corners. **Hilti.**

Circle 106 on Reader Reply Card

Corded PEX expander tool

The PROPEX® 201 corded expander tool is a good solution for efficient, cost-effective, commercial-sized 2" PEX applications. With its 6' power cord, the

convenient, 110-volt unit makes fast, easy PROPEX connections to AquaPEX and hePEX™ tubing for plumbing and radiant applications. With a self-contained, pistol-grip for easy handling, kit includes the tool, 2" H-series expander head, lubricant and operation manual, all in a heavy-duty carrying case. **Uponor Corp.**

Circle 107 on Reader Reply Card

Chiseling hammer

The SDS-max MHE 56 chiseling hammer is used for precision removal and



chipping of concrete and stone. The tool's D support handle and compact design — only 18" long and less than 17 lb — gives users more control over the tool, while the 14 amp motor provides powerful operation. **Metabo.**

Circle 108 on Reader Reply Card

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360° HEAD ROTATION



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

The Stanley® VIRAX® P20+ cordless pressing tool has 360° head rotation and a narrow profile to get into tight spots. It also features a four-second cycle time, jaw stabilization technology, a seriously attractive retail price and an ironclad, full lifetime warranty. Take one for a spin. Call +1 800-827-7558 or visit www.stanleyvirax.com for a free on-site demo and complete warranty details.

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Circle 55 on Reader Reply Card



Undermount stainless steel sinks

Specifically designed for trade applications of countertop fabrication. The new Eston Series line of versatile and functional stainless steel sinks specifically addresses the need for aggressive value engineering. The line is available in five models of the most popular sink designs, including rectangular single bowl, D-bowl, 50/50, 60/40, and 70/30 double bowl. Sink models are available individually boxed or on bulk nested pallets for high volume production shops or job sites. **Houzer, Inc.**

Circle 110 on Reader Reply Card

InFlow in cast iron

The proven InFlow™ inline testing system now comes in cast iron as well as PVC and ABS. Reduces costs and saves labor; no need for inflatable test devices. Stays in the pipe after the test, no additional materials or labor are needed; can be used as a cleanout opening like any other tee. Controls drain-down after the test is complete. Holds a water test to 20 PSI; an air test to 5 PSI. A safe, clean alternative to traditional testing methods for testing DWV systems. Ideal for testing in commercial applications. **Sioux Chief.**

Circle 111 on Reader Reply Card

Zero clearance grease duct

New 3G Series space-saving grease duct is UL Listed for zero clearance to combustibles. Features 3" of ceramic fiber insulation between the stainless steel flue and the outer casing. This reduces shaft size requirement, yet carries the UL2221 and UL1978 listings. While made with the same quality and materials as the 4G Series introduced several years ago, 3G has an outer diameter 2" smaller. **Metal-Fab, Inc.**

Circle 112 on Reader Reply Card



★ Phc News product of the month ★



Electric snowmelting

HeatWave is introducing its electric snowmelting line of both mats and cables called ProMelt. All mats and cables have a single-point connection and the mats are available in 2 ft. and 3 ft. widths. Many control options are available, and the manufacturer offers free design assistance. Reduces the chances of slip-and-fall incidences on customers' property, and eliminates damage to driveways, sidewalks, landscaping or vehicle paint from salt and snow removal equipment. No mechanical room is necessary with the all-electric ProMelt system. Simple to install; no annual maintenance as there would be in a hydronic system. Many control options feature automatic operation. **HeatWave, a div. of Watts Radiant.**

Circle 109 on Reader Reply Card



Ceramic cartridges

Four improved versions of the company's ceramic cartridge have been added. Lines affected include short stem models with an exposed cap design and long stem models with a concealed cap design. Improvements are a tighter-fitting stem retainer clip to help reduce stem displacement and shear, plus a redesigned internal stem stop to further insure precise 90° open/close operation and reduce potential breakage from applied forces. The seal washer retainer was redesigned with color-coded identification to improve its retention to the brass sleeve. **Chicago Faucets.**

Circle 113 on Reader Reply Card

Vitorond oil/gas commercial boiler

The new VD2A series of the Vitorond 200 commercial oil-/gas-fired sectional cast iron boiler offers proven technology with enhanced performance



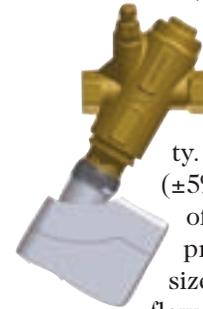
and a competitive price. Therm-Control low-temperature protection is now integrated, eliminating the need to add this component during installation. Return water distribution is redesigned for increased reliability and long-life operation. Utilizes a triple-pass heat exchanger surface for operation with modulating water temperatures. The rated input is 144 to 1285 kW. Approved for Category I and III Venting Systems. **Viessmann.**

Circle 114 on Reader Reply Card

Pressure independent control valve

The OPTIFLO valve combines an externally adjustable automatic balance valve and a full modulating control valve to provide full modulating control with 100% valve authority. Provides a desired flow ($\pm 5\%$ of setting) regardless of fluctuations in system pressure. Available in sizes from 1/2" to 1 1/4" at flow rates from .3 GPM through 13.2 GPM; provides great flexibility if the system is changed after initial installation. No need to calculate valve authority, as the valve/actuator combination ensure 100% authority at all times. **Bell & Gossett.**

Circle 115 on Reader Reply Card



SureConnect dishwasher kit

The SureConnect's® unique lockable housing allows installers to see, feel and hear the connection; simply push and lock the mechanism by hand. Allows the installer

to walk away with confidence and avoid those annoying repeat efforts that must often be

done in cramped and poorly lit conditions. Features double O-ring protection made from Viton® and nitrile that assures a leak-free connection. The Speedi Plumb® PLUS dishwasher hose features tough polymer-coated fibers tightly braided around a strong PVC inner hose. The combination is a corrosion resistant, highly flexible water connector. **BrassCraft.**

Circle 116 on Reader Reply Card

Commercial electric water heaters

New Gold Series, Gold Xi and Custom Xi models include innovative features



for enhanced performance and reliability. Gold Series DRE incorporates several new features, including the addition of Goldenrod® elements as a standard feature on all DRE models. This element resists scale build-up of up to five times that of a standard element. **A.O. Smith.**

Circle 117 on Reader Reply Card

DON'T LET WINTER WEATHER BURST YOUR BUBBLE

Freezeless AND Anti-Rupture? What's the difference? A freezeless faucet has the shut off mechanism well within the heated portion of the home – but what if a garden hose or other device is inadvertently left connected to a faucet during freezing temperatures? Water in the tube fails to drain, this water then begins to freeze and pressure in the tube is increased as ice forms and tries to compress the water trapped in the tube. The tube ruptures and the next time the faucet is used the wall will fill with water. Woodford Model 19 Freezeless Faucets have a patented pressure relief valve which allows for expansion during freezing temperatures, saving the faucet and preventing a costly repair or call back. With Woodford's Model 19, you're protected – even from other people's mistakes!

WOODFORD'S MODEL 19

- Anti-Rupture
- Anti-Siphon ASSE 1019 Freezeless Wall Faucets



Anti-Rupture



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Grooved copper system

Grooved copper system requires only a wrench for assembly on grooved end pipe, eliminating conventional soldering and brazing. Gruvlok® CTS Copper System fittings mate directly to copper tube, providing a rigid and durable locked-in connection for tube size ranging from 2" to 8" dia., and because there's a union at every joint, fast assembly is assured. **Anvil® Intl.**

Circle 119 on Reader Reply Card

Tankless water heater

The 920 ES series, at 225,000 BtuH, offers the highest flow rate of all the manufacturer's tankless water heaters, delivering 9.2 gallons of hot water every minute, at a 45° rise, for as long as needed. Both models in the 920 ES series can also be linked, or cascaded together, to deliver even more hot water, up to 36.8 GPM in a four-unit cascade.



Because the 920 ES series has both modulating and condensing technology, the heaters deliver all that water at an ultra-high thermal efficiency of 94%. **Bosch Thermotechnology.**

Circle 120 on Reader Reply Card

Automatic air vents

The modern high-efficiency equipment used in today's hydronic systems requires highly reliable air venting technology to ensure peak operating efficiency and provide years of trouble-free service. A broad line of products ranges from simple manual air vents commonly installed at the top of heat emitters to float-type air vents that provide fully automatic air release.

Compact designs can be mounted within heat emitter enclosures, and larger "high-capacity" vents mount where high-volume air venting is needed. **Caleffi.**

Circle 121 on Reader Reply Card



★ Phc News product of the month ★

Support speeds installing fixtures

The Labor Saver® Fixture Support, figure number 0710, has been designed to speed up the installation process by using a one-piece rigid frame, pre-assembled steel construction. The new oxbow symmetrically designed fixture support allows room for waste piping and features horizontal and vertical adjustability for different installation conditions. The design also allows for narrow wall and metal stud configurations. **Jay R. Smith Mfg. Co.**

Circle 118 on Reader Reply Card



Thermal insulation

Thermal compressible polyolefin foam insulation is stable and has a durable skin that's moisture proof; resists microorganisms. Can be die-cut to specification and supplied with an adhesive backing. In 7 thicknesses: 1/8" to 2"; densities from 1.8 to 24 lb./cu.ft. and exhibit <5% change in thermal stability in 24 hrs. @158°F. **Interstate Specialty Products, Inc.**

Circle 122 on Reader Reply Card

Pressure reducing valve

New X65B cartridge style high-performance water pressure reducing valve is designed to reduce incoming water pressure to a sensible level to protect



plumbing system components and reduce water consumption. The X65B features a rough-in kit consisting of a bronze body with integral strainer designed to save time and money by eliminating the use of expensive jumper kits. The unique strainer assembly is utilized during the construction phase and is easily replaced at a later time with a permanent spring cartridge assembly. **Watts.**

Circle 123 on Reader Reply Card



Solar collector coating

Thurmalox® 250 solar collector coating, a selective black silicone-based heat resistant coating, is easy to apply to flat solar panels and withstands weather and repeated thermal cycling. Selectively absorbs more than 90% of the sun's visible and infrared wavelengths, which contain the most heat energy. Easy to apply, dries for handling in 30 mins., won't peel or flake.

Dampney Company, Inc.

Circle 124 on Reader Reply Card

Water & sewage control panels

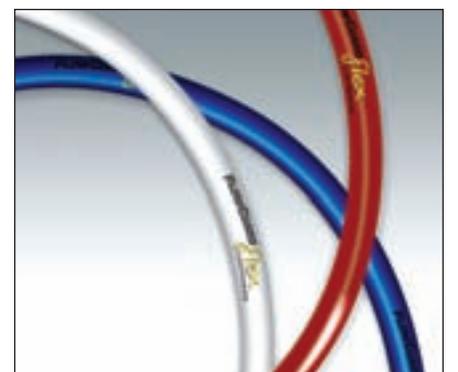
The EZ Series™ Simplex Demand/TD panel is designed to control one single phase pump in water/wastewater installations. It features a digital display on the inside of the front cover for programming and system monitoring, including; float status, elapsed time pump run, cycle counter, alarm counts (high water and power fail), float error count and auxiliary alarm counter. TD models also display; timer override count, on time, and off time. In addition, duplex models are available for alternating pump control. **SJE-Rhombus.**

Circle 125 on Reader Reply Card



Flex piping

Featuring advanced cross-linked polyethylene technology, FlowGuard



Flex PEX piping provides unprecedented protection against chlorine and UV light degradation with its innovative 3-layer design. Outperforms other PEX plumbing alternatives for hot and cold potable water systems; extra layers of protection resist chlorine degradation. Provides up to six months of UV protection, depending on storage conditions. **Lubrizon.**

Circle 126 on Reader Reply Card



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Vehicle tracking key to business success

GPS tracking is no longer a luxury, it's a necessity. With a flailing economy, many companies find it difficult to think about making an investment in a fleet management system. However, the return on investment companies see after installing the system ensures it is the smartest business decision to make right now. By simply adding an extra service call each day, saving a couple gallons of gas a week, and reducing the amount of overtime being paid, companies can see thousands of dollars in savings a month.

Karl's Plumbing & Heating in Forest Hills, N.Y. understands the benefits of fleet tracking. They have been a customer of Vehicle Tracking Solutions (VTS) for five years, during which they was able to recover a stolen vehicle carrying thousands of dollars worth of

equipment. In addition, over the past six months, owner Brian Karl figures he has saved about \$3,000 because of his GPS tracking system. More efficient routing and lower payroll costs are large contributors to this savings.

"A system from Vehicle Tracking Solutions is definitely worth the investment," said Brian Karl. "It will prove to be a money saving tool, because you will always know where your employees are and where they are stopping."

Over the past few years, the GPS tracking technology has dramatically evolved. GPS systems are no longer used to simply locate a vehicle- they are used as a management tool to help a company operate more effectively and efficiently. With the advancement of the technology comes reduced pricing, as well. Most companies will find it completely affordable

to implement a GPS tracking system, especially when the return on investment is so high. The majority of companies will see that the system has paid for itself within a few months.

Vehicle Tracking Solutions now offers a service to accurately track whenever a vehicle exceeds posted speed limits, which is a first in the industry. Normally, a company can set up "high speed thresholds" which will alert users when a vehicle exceeds that threshold. This is helpful when a vehicle is speeding on a highway, but it does not help when a vehicle is barreling down a residential street at 40 mph. With the new true speed notification system from VTS, customers are alerted whenever a vehicle exceeds posted speed limits, accurately monitoring the most egregious of speeding violations: those

which occur in residential areas.

GPS providers like Vehicle Tracking Solutions also allow customer to send messages and directions through their software to their drivers' Garmin personal navigation devices (PNDs). This direct communication through the fleet management software will allow companies to cut down on cell phone bills, and instead of being tied up on the phone with their driver trying to find out where he is, your dispatcher will be available to take calls from your customers.

These advancements in fleet tracking help add to the overall efficiency of a company, allowing them to dramatically reduce their operating expenses while improving their customer service.

When looking for a GPS tracking provider, understand that they are not all built the same. There are a few key questions you need to answer before you sign a contract.

1. Is the company a reseller of someone else's technology, or have they developed their own software?

Understand that resellers will not be able to complete any software customization, and typically cannot offer the support and service that a software developer can.

2. What type of mapping does the company use, and how often are the maps updated? Is there a cost for map updates?

Providers like Vehicle Tracking Solutions use top-of-the-line mapping from Microsoft Virtual Earth, which is updated annually at no charge to customers.

3. How often does the real time tracking update?

A GPS provider should offer an option of rapid update at no extra charge, which will allow you to see a vehicle's updated location every 10 seconds in the event of an emergency or vehicle theft.

4. Does the company offer automatic email reports and exception-based text notifications?

These features are essential when managing a fleet. Having access to real time and historical information will allow you to manage your fleet in the most effective way possible.

5. Are there any activation fees or overage fees you may incur on your cellular bill?

Make sure the GPS provider is up front with monthly costs, and that there won't be any hidden fees when you get your first bill. Carefully review your contract to make sure all billing policies are stated.

6. How much training and technical support does the company provide? Are there additional costs associated with training and support?

Understand that there is a learning

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Circle 57 on Reader Reply Card

curve involved when implementing a system like GPS tracking. You want to make sure that your provider is not charging you for every question you ask, and every refresher course your employees need. Find out up front if training and technical support is included in your contract.

Exaktime offers tracking system

LOS ANGELES — Exaktime Inc. announced FastTrakker, a new solution to the problem of tracking dozens or hundreds of work activities (cost codes) to every employee and work site. Using FastTrakker, businesses get accurate information on exactly how many hours workers spend on different tasks, resulting in better project estimating, compliance with government regulations and stronger business decision-making.

FastTrakker is a handheld device that each worker carries with them to quickly clock in for any of 1,000 activities (cost codes) at any number of work sites. The latest addition to The JobClock System, FastTrakker adds highly-detailed information to companies' time and attendance tracking.

FastTrakker is used with Exaktime's JobClock System, a time and attendance system designed specifically for



the field. A rugged, battery-powered JobClock stays at every job site all day, seven days a week. With FastTrakker, using a thumbwheel and LCD menu display that shows activities in either English or Spanish, workers easily select a cost code. Then they touch the FastTrakker to the JobClock to clock in for the selected activity. To begin another activity, workers simply choose a different cost code and touch the FastTrakker to the JobClock again. The JobClock System keeps track of every activity at every location for every worker, and workers can move freely between job sites.

The JobClock System takes the guesswork out of payroll by eliminating the use of handwritten timecards and tracking attendance as it happens with 100% accuracy, resulting in increased profits and faster payroll processing.

For more info, visit www.exaktime.com.

7. Does the system provide accurate speed notifications so residential speeding violations can be monitored?

Vehicle Tracking Solutions' true speed notification system will allow you to decrease fuel consumption, protect your safety record and com-

pany reputation, and reduce unnecessary wear and tear on your fleet.

8. Does the system contain a vehicle maintenance program to keep track of oil changes, inspections, and other maintenance issues?

A well-maintained fleet will last much longer than one which is over-

due on routine maintenance. Take advantage of a GPS system which keeps track of your vehicle maintenance issues automatically. ■

To find out more about Vehicle Tracking Solutions, visit www.vehicletrackingsolutions.com.

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Each Thursday morning at 6 AM, without fail, I email a brief newsletter to thousands of our subscribers. The email newsletter always contains links to technical articles that I think will interest you, news of things that are going on in the world of heating, special discounts on products in our online store, and seminar announcements. I invite you to join our list. It's free and it's definitely not spam. And should you ever decide you want to stop, all you have to do is click the link that's at the bottom of every newsletter I send you. I don't think you will, though. This is really good stuff. I spend my days digging it up. It's a labor of love, and I enjoy sharing it each week. Here is just a taste of what our subscribers enjoy each week. Visit www.heatinghelp.com to sign up today! — Dan Holohan

Lester does ISH

The big ISH show in Frankfurt, Germany happens again next March and this will be my tenth visit. I'm looking forward to it, as always, and my buddy, Lester, is talking about going along. I'm still trying to get over the last time we went together. There's something about his sweat shirt that just endears him to folks in foreign lands. Anyway, here's my story and I'm sticking to it. Enjoy. Click [here](#) to read more.



Gas, not wood

The airport in Bangor, Maine will be burning gas instead of oil soon, and all because of the price of oil. What's a bit surprising, though, is that they didn't go with wood. So many of the heating systems in Maine are converting from oil to wood right now, but you should click [here](#) to follow the reasoning on this one. Interesting stuff. Click [here](#) to read more.

A very playful radiator

I love the creativity that's going into the new radiators. Some of these units are pure art, and that's helping to change the way consumers see hydronics. This radiator brought me back to when my daughters were small. Trust me; the only thing worse than stepping on a Leggo block in the dark of night, is stepping on a Barbie high heel. Ouch! Click [here](#) to read more.



World's most expensive dog house

The next time The Lovely Marianne sends me to the dog house, I think I'd like to check out this one. Lucky dogs. And it's got geothermal heat. Some people have way too much money. Click [here](#) to read more.



An innovative ideal

How about this for being clever? The hospital's new heating system will collect the heat from the parking lot during the summer and store it 100 feet below the surface until they need it during the winter. It's sort of the reverse of that system I told you about at the Japanese airport, where they're saving the snow and using it to cool the building during the summer. Necessity is indeed the mother of invention. Click [here](#) to read more.

Portsmouth Abbey opens new solar house

Last winter, my friend, Rich Corcoran, of Viessmann fame took Marianne and me to visit the Portsmouth Abbey, a private Catholic boarding school in Rhode Island, to see what they were doing with green technology. This is quite a place. It was a cold, windy day and we all got to go inside their wind turbine, which was a hair-raising experience. Those things are huge! I was pleased to see this article and learn that the abbey is still at it. They are now home to one of the Solar Decathlon houses. This place is inspirational. Click [here](#) to read more.



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Laars celebrates more than 60 years of innovation

In 1942, and as the war raged overseas, Avy Lewis Miller was commissioned by the U.S. government to convert a civilian gas appliance company — Mission Appliance Corporation in Los Angeles — into a manufacturing plant producing generators to fire anti-aircraft guns and sheet metal shell casings for 105mm

In the early 50s, the swimming pool industry blossomed in Southern California. The Laars copper tube design was ideally suited to the task of heating a large volume of pool water quickly and economically. For the pool owner, a heated pool meant more comfortable swimming, a longer swimming season, and a better value on invest-

n't want to test it. But Avy stepped in reassuringly. The AGA guys still didn't want to activate the boiler in the room; we were told to start it in the hallway. All of them backed up to a distance of 25 feet or so when we started it up! It worked flawlessly."

Six or eight months later, AGA gave the Laars system their enthusiastic stamp of approval. In fact, one of AGA's sales supervisors, Guy Muto, soon joined Laars as their first sales professional. During an interview about 20 years ago, Muto recalled of a time shortly into his tenure there, that "I was finally making it. I hadn't made so many beans in all my life. At last, I was able to change my diet."

Three wheeled buggy & high-seas Shanghai

Muto recalled that, during the early 50s, there were five or six engineers working for Laars. "Miller had many offers to sell his copper fin tube concepts and design to large manufacturers, but he refused them all; he wanted to bring them to fruition. I was always amazed at what he and five or six engineers could accomplish in short order. The speed and quality of product development was amazing. Heck, if you wanted a buggy with three wheels and four horns, they'd develop it!"

Chuck Barbara recalled meeting several Laars national account distributors at a trade convention in Florida. They pleaded with him to join them for a bon voyage party aboard a luxury liner, bound for a cruise to the Bahamas. What Barbara didn't know was that they had an ulterior motive: to detain and "Shanghai" him, giving them the time to convince him to join the Laars sales team.

Aboard the docked ship, Barbara alerted at the ship's first whistle, but was assured that the ship would give several whistles before casting off. "When I got back on deck, the ship was already moving out to sea," he remembered. "I went to the ship's captain, an old and very indignant Dutchman who thought I was a jokester. He was about to confine me to a certain area of the ship, but eventually I was able to get them to lower a small, motorized boat that took me back to port. The weather was pretty ugly and the seas were real choppy . . . but that event changed the course of my life professionally."

Following his narrow escape from the Bahamian cruise, Barbara joined the Laars sales force in 1956. "Working with Avy Miller was one of the high points of my entire business life," he said. "Avy was one of the finest individuals and one of the most

fair men I've ever had the pleasure of working for.

Standards of industry developed; training

"In addition to the copper fin tube technology that was setting the standard for heat transfer, Laars was also the forerunner of new techniques such as the kilovolt system and other special fittings that protected the heater from overheating," added Barbara. "These advances became the accepted standard of quality in the industry."

It was during this time that Barbara, Freel, Rice and others began to hold training clinics that — like the technology that was being developed by Laars — put the company "on the map" nationally. Trainer Al Shaver said of those early years, "People from all over the country were invited to participate in the two-day swimming pool heater clinics; they became one of the truly unique aspects of our culture, defining who we were. The success of our outreach in the industry was amazing to see."

The acquisition of Laars Engineering by Teledyne in 1966 provided further growth through substantial investment in plant equipment and the adoption of automated and semi-automatic manufacturing techniques which allowed the company to respond rapidly to the demands of the marketplace. Although a number of other copper tube boilers were available at the time, Laars remained the dominant force, both in reputation and sales volume.

The company next expanded into residential hydronic heating with gas and oil boilers. Continued product innovation also resulted in the development of the new commercial water heaters; these products represented a breakthrough in state-of-the-art technology, with the highest energy efficiency and lowest environmental emissions available. Research and development contracts with various universities, the Gas Research Institute, Battelle, and Southern California's South Coast Air Quality Management District further advanced the company's growth and diversification efforts.

Growth & diversification

Teledyne eventually merged with Allegheny Ludlum Steel, and became Allegheny Teledyne Industries.

In 1996, Teledyne Laars acquired Jandy Industries, a company that dominates the valve, electronic controls and water features markets in the pool industry. The 1998 acquisition of Trianco-Heatmaker added high efficiency sealed combustion systems to their heating technology base of gas and oil-fired boilers and
(Turn to Boiler... page 66.)



Bill Root, vice president of sales and marketing for Laars, says with the backing of Bradford White, we developed a wave of new, cutting-edge technology.

artillery Howitzers to replace casings made of brass.

Shortly after the war ended, Avy Miller — a registered professional engineer — turned his attention to technology he was most interested in: thermodynamics.

It was in a southern California garage in 1948 that the quiet, unassuming scientist and inventor began to develop an idea he had to improve the transfer of heat between metals. Later that same year, and with \$25,000 — his entire savings — Avy Miller started Laars Engineering, a fledgling consulting firm that eventually focused its entire effort in developing his new concept for a commercial boiler.

Miller's crucible idea

Miller's revolutionary design was based on the principle that water could be heated rapidly through a finned copper tube heat exchanger exposed to gas flames. The technique he experimented with virtually eliminated the scaling and electrolytic corrosion that shortened the life of the cast iron and steel tube boilers used for commercial heating and hot water supply.

The post-war 'boom' economy was a time of eager growth and exploration for industrial firms large and small. It was during those crucible years that Avy Miller became a leading pioneer in the water heating and hydronics industry.

Laars grew and prospered as Avy Miller turned the attention of his firm to adapt the copper tube boiler to this water heating application.

The copper fin tube concept — quickly becoming dominant in the pool heater market — was applied to large, high volume water heating systems for industry. Miller knew that boilers using finned copper tube heat exchangers could also be adapted for multiple housing, restaurants, car washes and commercial laundries.

Anecdotes of post-war growth

"It was a time of robust growth," recalled Marlin Freel, and engineer who joined Laars during those years. He and another engineer, Leonard Rice, recall working tirelessly, refining Laars' heat transfer system.

Mike Pyle was a shop superintendent for the firm from '53 to '55. In a 1985 interview, he recalled a time when the handful of Laars employees invited the top 20 to 30 SoCal executives and salesmen of the American Gas Association to a luncheon to explain the workings of their new water heater technology.

"They were very suspicious of it," Pyle said. "We told them that the 102,000 Btu model we had with us could replace much larger cast iron or steel equipment. They couldn't believe that such a small heater could hold so many Btus. Initially, they did-

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Circle 62 on Reader Reply Card

Boiler innovation

(Continued from page 64.)

water heaters for residential and commercial use.

In late 1999, Allegheny Teledyne spun off the Teledyne Laars and Teledyne Waterpik. The new Waterpik Technologies, Inc. included the divisions for personal health care, and pool products and heating systems — formerly Teledyne Laars. This was the genesis of Laars Heating Systems Company.

Bradford White

In June of 2005, Laars (www.laars.com) was purchased by the Bradford White Corporation. The acquisition by Bradford White Corporation greatly expanded Laars' scope and marketplace. Recently, Laars completed full consolidation of

all manufacturing at its Rochester, N.H. plant; and with facilities in Canada, Laars is optimally poised for the future.

Laars' high-efficiency, high-performance and condensing boiler lines, and their commercial water heater systems, are today recognized industry-wide as leading technology. The range of coverage is amazing — from 50,000 to 5 million Btu.

In the last three years, with capital funding from Bradford White, its research and development efforts have expanded dramatically. Laars has introduced 20 new high-performance products into the marketplace since 2005, including the fan-assisted copper tube Pennant line, and the low-mass Rheos and Rheos+ systems.

One of the newest systems in the Laars lineup includes the NeoTherm, which now includes floor-standing models with 85, 105, 150, 210, 285, 400 & 500 MBH capacities. Laars will

follow these models with the release of the volume water heating models (199, 285, 400 & 500 MBH) and wall hung hydronic models with 85, 105, 150, and 210 MBtu input ranges.

Laars is also now working on an entirely new line of commercial condensing boilers in the 750 and 1,000 MBH sizes . . . and substantially beyond. "We'd like more than anything to share our excitement about this new technology," said Root. "But our audience will just have to wait for the surprise. We won't disappoint them!"

The hydronic industry's innovations leader

"With the backing of Bradford White, we developed a wave of new, cutting-edge technology that's stranded competitors. The tsunami of product development came as a welcome surprise to many of our customers,"

said Bill Root, vice president of sales and marketing for Laars.

"For years — although we had some fine products on the market — we watched as other firms took the lead on the 'innovations' front. In the past couple of years, we've introduced more 25 new commercial models, now seen by contractors and consulting engineers as among the most advanced boilers available today."

The crown jewels of the company's current product lineup are the Rheos+ boilers/volume water heaters, the largest Btu capacity condensing boiler built in the U.S. And yet it can slide through a standard, 36-inch doorway.

The high efficiency, fully-modulating Rheos+ commercial boiler/water heater provides industrial grade performance for hydronic and volume water applications with up to 98% combustion efficiency and infinite variability of modulation between



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100% and 25% of the input rate to precisely meet heating load needs between 1.2 to 2.4 million Btus. So, for example, their 2.4 million Btu boiler easily modulates down to 600 MBH.

The ultra-high efficiency of the Rheos+ cuts operating costs as much as 50 percent over conventional non-modulating systems — saving tens of thousands of dollars over the life of the equipment with payback on initial cost usually seen in just a few years.

Rheos+ accomplishes the extraordinary efficiency with advanced combustion design, combining two internal heat exchangers — one copper, one stainless steel — and a sophisticated mixing system that permits condensation on the stainless heat



A technician examines the inner workings of a Laars boiler.

exchanger, exclusively. It also has an internal water mixing system to allow minimum 60°F inlet temperatures and a built-in BAS interface. And, with its compact, through-the-door, fully-condensing, sealed combustion design and NOx emission levels of less than 10ppm, the boiler is truly an innovative breakthrough for commercial heating needs.

Another gem in the commercial boiler/water heater collection is the Pennant series. This equipment provides one of the most flexible modular designs in the industry. Pennant boilers, water heaters and pool heaters rank among the most versatile and environmentally friendly systems available on the market. The fan-assisted units are easy to use and easy to install and maintain in commercial hydronic and hot water applications from 500 to 2,000 MBTU/hour, and work effectively in altitudes up to 10,000 feet — even in harsh environments from — 40° to +140°F.

We can't ignore the firm's well-rooted commercial pool heater line

for capacities from 500 to 5,000 MBH. Rheos and Pennant pool heaters can be configured together or separately to deliver the precise response to water heating demand to optimize efficiency for any pool heating application.

Are you thoroughly satisfied with

the commercial hydronic or pool heating equipment you install? If not, you owe it to yourself and your customers to see what the innovations leader has to offer.

The Laars lineage is strong, with new strength, deeply rooted in 60 years of focused product innovation.

The heart of Avy Miller's early product designs still beats in the newest and most advanced hydronic and volume water heating products on the market today with firm commitment to what the market needs — tomorrow. Find them at www.laars.com.



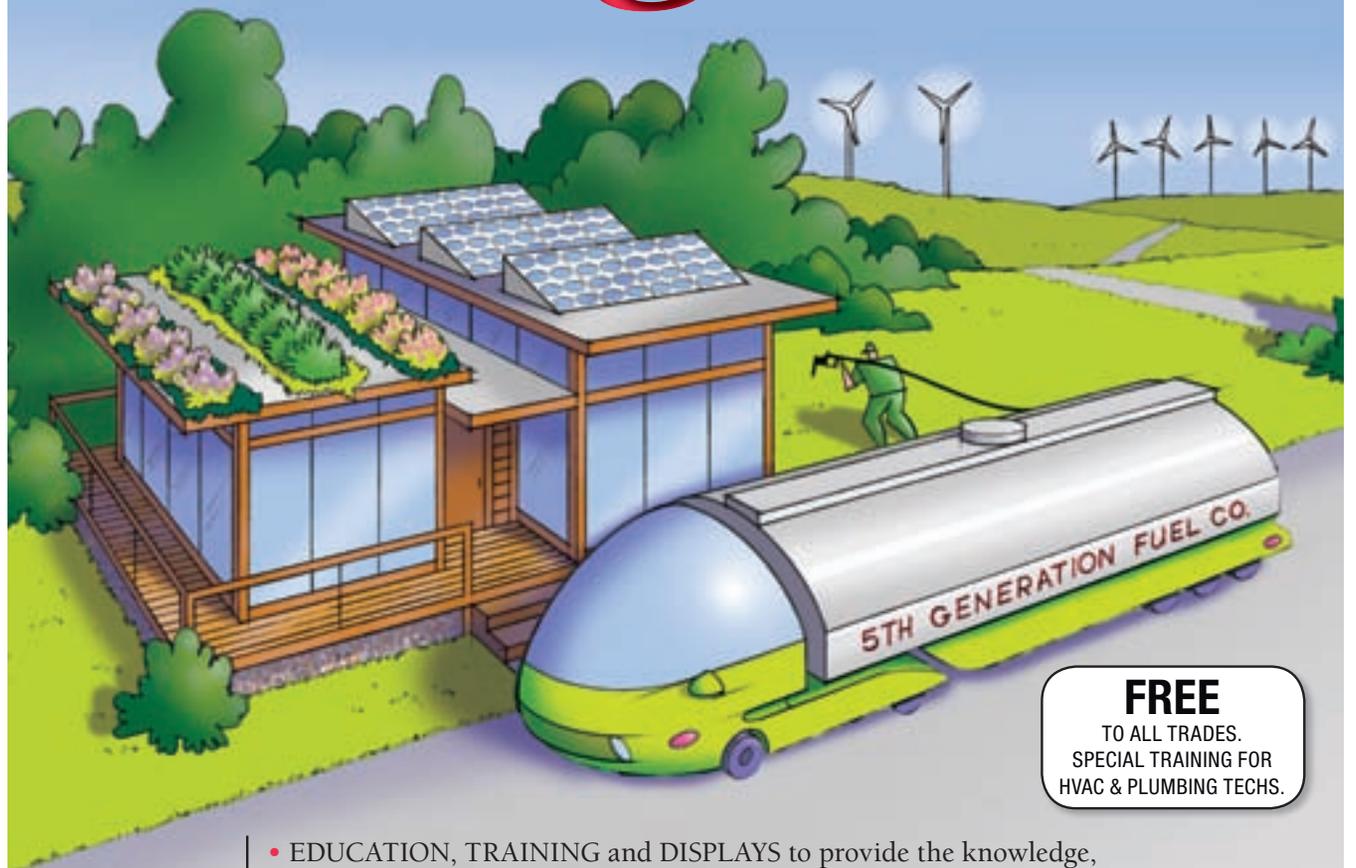
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Solvent cement helps contractor from costly plumbing leaks

“If a product can help us avoid even one leak, it is worth the investment,” said Rudy Camarillo, project manager for TDIndustries for his experience with innovative FlowGuard Glow fluorescent solvent cement. The product glows blue under ultraviolet light, easily facilitating solvent cement joint inspections on the job site.

As an employee-owned company, Dallas-based mechanical contractor

identify both dry fits and inadequately solvent cemented joints, and that definitely caught our attention.”

Dry fits or joints with insufficient solvent cement represent one of the leading challenges to a successful CPVC piping installation. Especially on large projects where there are hundreds of joints, it is more likely that a fitting could be overlooked and not properly fitted with solvent cement. The one-step FlowGuard Glow sol-

one entire floor, we went back with the black light and checked their work. At first the installers were confused and wondered what we were doing. But once we discovered the first dry fitting on that floor, they realized what was happening. On that same floor we also found two joints that were not completely solvent cemented. From that point on, there seemed to be a greater level of accountability. Everyone was more alert and focused on doing the job right the first time because they knew they were being double checked.”

“We found the product to be very easy to use,” said Camarillo. “As soon as you hit the fitting with the black light, you can immediately see the solvent cement, even if there are windows nearby or plenty of natural light. It really stood out easily to minimize the amount of time necessary to recheck the entire site.”

As a result of its success at 1900 McKinney, FlowGuard Glow solvent cement is now being written into all of TDIndustries’ submittals, and all team members have been directed to utilize the new technology in the future.

“This product performed to the same high standards that we have come to expect from all FlowGuard

associated with soldering.

The company has been a loyal FlowGuard Gold pipe and fittings supporter since the 1990s. Although other CPVC piping systems have since been introduced to the market, TDIndustries prefers FlowGuard Gold CPVC pipe and fittings because of the tremendous technical support they receive.

“When we find a product we like and trust, we run with it,” said Camarillo. “We have received tremendous technical support from the local FlowGuard representative in combination with a proven, high-quality product.”

As a result of the company’s satisfaction with FlowGuard Gold pipe and fittings, the company also started using larger-diameter Corzan pipe and fittings in recent years on its larger commercial projects. Corzan pipe and fittings are made utilizing the same patented CPVC technology as FlowGuard Gold systems.

“It was during a training session at FlowGuard Gold University in Cleveland when we first got our hands on the FlowGuard Glow product and had a chance to see how it worked,” said Camarillo. “We quickly gravitated to the product because it solved a



As a result of the TDIndustries’ satisfaction with FlowGuard Gold pipe and fittings, the company also started using larger-diameter Corzan pipe and fittings.

TDIndustries — No. 9 on the Top 100 Contractors listing — has successfully communicated to its employees the value of identifying cost-effective products, technologies and procedures. So when new FlowGuard Glow solvent cement came on the market, it wasn’t long before TDIndustries senior design coordinator Mark Gerstner decided to put it to the test in the field.

The timing was perfect. TDIndustries was just starting the plumbing work at 1900 McKinney, a 26-story, upscale apartment complex located in downtown Dallas. The all-concrete, 230-unit project with spectacular views of downtown Dallas and the affluent Victory area featured units with monthly rents upwards of \$3,000. That meant a significant potential liability in property damage should any type of water leak occur.

“Most of our work is very vertical in nature and is seldom a garden style design,” said Camarillo. “We do a lot of multi-family projects, apartments and hotels, all of which have numerous levels. So if there is a leak, the problem is magnified, because several floors could be damaged. We heard that FlowGuard Glow solvent cement was a valuable inspection tool to help

vent cement glows fluorescent blue under ultraviolet light, making it easier for installers to easily and quickly inspect joints with a UV-A light kit and confirm that a joint has sufficient solvent cement.

“We’ve been using FlowGuard Gold CPVC pipe and fittings since the mid 1990s and know the system is high-quality and reliable,” said Camarillo. “But even the best system can be subject to problems if it’s not installed properly. With FlowGuard Glow solvent cement, it’s easier to spot problems before they occur. We previously had situations where construction was nearly finished before we realized there was an improperly joined fitting. By that time, it’s a very expensive problem to fix, because you’re ripping out sheet rock and getting in the way of the other trades. With FlowGuard Glow solvent cement, it’s easy to see the issue immediately.”

“When we first tested the new solvent cement, we didn’t tell the installers that we were using the new product on the 1900 McKinney project,” said Camarillo. “It looks and works the same as traditional one-step CPVC solvent cement, so they didn’t know. After they had completed



Contractors check for dry fits or joints for insufficient solvent cement, which can be a challenge to a successful CPVC piping installation.

Gold products,” said Gerstner. “We were not disappointed.”

Gerstner noted that TDIndustries, which was founded in 1946 and has since grown to become one of America’s premier facilities service and specialty construction companies, had previously been a loyal supporter of copper until the 1990s when there was an increased incidence of copper pipe theft from the job site. In addition, Gerstner noted the fire risk

real problem.”

Gerstner added, “I no longer have to guess about the quality of our end product. As an employee-owned company, the money we save by identifying installation issues before they manifest themselves as water leaks translates into more working capital for the company and a greater return for me. So the advantages this product delivers are very personal.”

THE WALL

Dan Holohan's Web site, HeatingHelp.com, features a message board called "The Wall" where hydronic heating professionals post questions and offer answers of all kinds regarding hydronic heating systems. Dan has kindly allowed Phc News to reprint some of the more interesting postings here each month. This section will surely whet your curiosity, so log on to the web site and click on "The Wall" for a treasure trove of useful and just plain interesting information.

Q: Good morning fellow wetheads. I know this isn't REALLY the forum for this, but I figure a lot of you are plumbers in addition to heating men. We have a customer with a VERY old American Standard tub filler. It is worn pretty badly internally. Some-



one, prior to us, tried to cut new seats into it and there isn't much left for the faucet washer to seal against. The customer would like to keep the style of the bathroom. Is anyone aware of a faucet that would be some-

what similar, or adaptable? Or what can you think of creatively that we could offer to her? We've thought about taking the valve into a weld shop and having the seat area built up with brazing, then tapping it for a new faucet seat. That would probably mean that it would need to be re-plated. We've thought of trying to machine out the internals and somehow getting modern internals into it. We've looked at Strom, Sign of the Crab and Restoration Hardware to see if they have anything similar. No dice. Any input would be awesome.

— Luke Lefever

A: What a pretty old tub faucet, although probably non-code complying in regard to the placement of the spout. Does it have removable valve seats, which someone could adapt from some other model? Alternatively, a listing could be placed on e-bay with a very high reserve, and identified as "looking for this," instead of "for sale."

— Nicholas Bonham-Carter

A: Unless that tub filler has a PRV on supplies, those valves and filler are illegal by all plumbing codes.

— rjbphd

A: Seen that type before. As you know, they take really large washers. I would think a talented machinist could create another tapping inside for a more common seat without damaging the plating any farther, unless the integral portions have been cut away.

— Dave

A: "New York Replacement Parts" probably has them in stock. If not phone: 845/473-6700, toll free: 1-866/473-6711 or fax 845/473-6768 NYRP A Complete Plumbing and Heating Supply Company will make them for you.

— Bob Young

Just an observation: Instructions on operating a Japanese toilet: This is a photo that was taken of the user instruction guide for a public toilet in Japan.



Crazy!!!

— Michael Bourque

A: Those things are all over Japan. And they work. And the companies that make them are kind enough to print the instructions in English. What's not to like?

— Steamhead

A: Having used those toilets in Japan, and being in the process of remodeling the master bath I have purchased a Toto Washlet 300 toilet seat with pretty much all the bells and whistles. I don't know, maybe it will make me whistle. Utterly decadent, but we'll see how it goes...or we'll see how I go on it ;) I did hold the line and did not get the top of the line unit which automatically raises the toilet seat when you stand before it. I will only go so far, after all!

— Jack

A: I put one in for a customer last year. He had seen it in Japan while traveling. The wife reports that he uses it all the time & loves it. She doesn't care for the wash & dry feature, just the self closing part. Enjoy!

— C. Schenk

Q: Have you ever heard of a mixing valve on a water heater? I looked at a job today, and they had a mixing valve on their [gas] water heater. It's a brand new water heater, or domestic

hot water only. Does anyone know why you would do this? I'm going to put a water softener on the water heater. I'm in Park City, Utah. The house is at 6,500 ft. I've found that if you turn water heaters up too high without a high temp relief valve, they will drip or blow out the standard relief valve. Most water is really hard.

— Ted Keane

A: Ted, it may be for bacteria growth. What state are you in? In some states — not Mass. yet — the water heater is to be above 140°F to curb bacteria growth and the water to the faucet is to be 120°F so you use a mixing valve. What type of water heater are we talking about, electric, gas or indirect?

— Charlie

A: I see more and more manufacturers including mixing valves with the tank. Bradford white has shipped mixers with many models — the CombiCor, for example. Most, if not all, homes in Park City have water meters with backflow preventers built into the yoke. This was enacted many years ago so the city could qualify for federal grant money to make water distribution upgrades. The DHW thermal expansion tank needs to be properly sized to the tank(s) capacity. If it has one, be sure it hasn't water logged. If it doesn't have one, it needs to be installed. The relief may seep when increasing the temperature as is has more thermal expansion. PC water, in winter can drop into the 30s. Taking that to 140, 160 or higher — a large ØT — requires a properly sized expansion tank.

— Hot Rod

Q: Is it allowable to support electrical wiring from overhead gas supply piping? I have seen many instances where cable TV and telephone cables have been run along gas piping and fastened to it by tywraps or clamps, using the pipe for support. Doesn't seem quite right to me, but I am curious if it violates any codes?

— Mike Kusiak

A: Codes never allow you to attach your wires or pipes to mine. What if I have to remove or move my pipe or even work on it, what supports yours? Let alone, magnetic interference or heat transmission.

— Heat Kits Inc.

A: 2008 NEC, 725.24, for Class 1, 2 & 3 - "...shall be supported by the building structure..." — this doesn't mean indirectly. All other wiring installation typically falls under 110.12, which mandates "neat and

workman-like", which the 2008 NEC Handbook explicitly illustrates in the commentary that "improperly supported" would usually fall under this requirement (page 43). Special cases exist where short lengths of cables may be unsupported, such as wiring to a light fixture laid in a suspended ceiling grid, some fished retrofit work, etc. Overhead service conductors have their own specific installation requirements (Art. 225, 230, etc.) Personally, I wouldn't depend on the Fuel Gas Code, but rather use the NEC since it's more likely that the electrical trade guy used the gas pipe for (inappropriate) support, and not the fitter that used the wiring for support (but somebody has probably tried!). Bottom line; cut the cr*p, move the wire. It's taken longer to research it than to fix it.

— Bob D.

Q: Responded to a no-heat call on Friday and I didn't get all of the particulars but the people at this church heard a loud bang and later realized that they had no more heat. This is a Peerless 211A-04, and even with fairly modern controls and safeties, it seems the main gas valve opened and filled the chamber with gas and must have experienced a delayed or intermittent ignition because it eventually ignited and blew the insulation out and de-formed the boiler jacket. (No idea at this point what happened to the pilot flame throughout this sequence.) They want a price on a high-efficiency. We'll get them a price on a Knight XL today.

— Paul Rohrs

A: It might be worthwhile to have an asbestos air test performed. The gaskets between the sections might have been compromised. Fortunately for them, the combustion air penetrations probably relieved the concussion, otherwise the steeple might have been blown off. Proceed with caution. An air test will run around \$300.00.

— Mark Eatherton

A: They might still benefit from fixing this not-so-old 211. Probably no new sections would be needed-maybe only gaskets. My 211-a has electronic ignition which would be an easy retrofit, along with the Peerless "Mod-u-Pack" hi-lo burner system for better efficiency. Many code problems might be reduced by a repair, rather than a replacement. One thing is certain, if they cannot have simple maintenance performed, like having the pilot/burner cleaned every year, they should not have a more complicated hi-efficiency boiler.

— Nicholas Bonham-Carter

Seattle hotel relies on pipe restoration technology

At The Fairmont Olympic, Seattle's premier luxury hotel, everything is secondary to its exceptional levels of guest service. So when faced with the disruptive problem of recurrent pinhole leaks in their domestic water system, hotel opera-

of the problem, but the only certainty seemed to be that the problem was getting worse."

Gault was familiar with past ePIPE projects completed by ACE DuraFlo. "Based on our evaluation, ACE was the only company with the certifications,

solid references and past hotel experience to give Fairmont the confidence to move forward with the ePIPE project." Once the decision was made to go with ePIPE, the challenge became how to complete the work with a minimum impact on guest services, on a very tight time-line, and without a significant effect on revenue.

Project tailored to fit

The Fairmont, as Seattle's home-away-from-home to royalty, dignitaries and celebrities, only the very best will do. To tailor this project to a 5 Diamond level, ACE went to great lengths to disguise the evidence that a major renovation project was taking place in the midst of occupied guest areas. Outside, a

sound deflecting wall was built and painted to hide the compressor and to minimize noise for the street level boutiques. Inside, "decorative hose socks and hangers" were manufactured to match corridor wallpaper so that air hoses could be hung like a scalloped work of art.

Operationally, the restoration schedule was set for the winter low season and was developed on a Thursday to Tuesday cycle so that the Olympic could actually sell out 100% of their rooms on their two busiest (and most valuable) nights of the week. As well, the ePIPE project had to be scheduled around special holiday events, holiday street use restrictions and a bathroom renovation that was also taking place.

The best laid plans

Adding an element of difficulty to the project was some of the worst winter weather that Seattle had ever seen.

A December storm knocked out power for days to more than one million residents in Washington and the downtown core of Seattle was one of the few areas to remain operational. "Mid-December is typically a lower occupancy period and we had scheduled to restore a block of 60 rooms over that period," explained Gault. "But when the power went out, the city's hotels immediately sold out. The ACE crew instantly went into overtime mode and quickly returned 30 of those rooms to our inventory for an unexpected four night sell-out."

This would not be the last schedule adjustment for the project. With software giant Microsoft hosting their mammoth Comdex conference in Seattle, the city was once again oversold. With the certainty of a week-long sellout, every additional room-night sold makes a significant contribution to the bottom line. Fairmont contacted ACE management to discuss an adjustment to the schedule for the 30 rooms to be restored that week, without an option to extend the completion date! With some collaboration and a few creative adjustments the schedule was revised to return those rooms to inventory. Altogether, ACE DuraFlo was able to adjust and give back a total of some 250 room-nights during unscheduled sellouts over the course of the project.

A job well done

The flexibility of the ePIPE technolo-

gy allowed ACE to successfully complete the project with no extensions to the original schedule. As a token of appreciation, Fairmont management hosted an appreciation luncheon for the ACE crew and management at the end of the project. According to general manager Dennis Clark, "With a



...and it was ACE DuraFlo's ePIPE system to the rescue.



Seattle's Fairmont Olympic Hotel faced a disruptive problem of recurrent pinhole leaks in their domestic water system...

tions and management agreed that a problem so serious required the best possible solution. David Gault, director of engineering, was charged with the responsibility of finding a solution to the problem. That solution led him to ACE DuraFlo's technology, referred to as ePIPE®, which covers application to metallic and non-metallic pipes as small as 3/8" in diameter. The patented ePIPE method restores pipes "in-place" avoiding the typical destruction, interruption and a host of other inconveniences that are often associated with a traditional repipe. The types of pipes that can be restored include those carrying potable water, natural gas, heating and cooling systems and fire suppression systems.

Gault's research included the extraction of pipe samples, which were sent for metallurgical examination by a corrosion engineer. "We were trying to understand the nature

project of this magnitude, we try plan for every conceivable problem, and then prepare to handle the inevitable guest complaints — but the phone never rang! We truly appreciate the care and commitment which the ACE DuraFlo crew showed to complete this important project." ■

ePIPE for your toolbox

It has been 10 years since ACE DuraFlo introduced their method of epoxy lining small diameter pipes. Today, restoration of pressurized pipes is now recognized by the nation's major model code officials, International Association of Plumbing and Mechanical Officials (IAPMO) and the International Code Council, Evaluation Services (ICC-ES). Further afield, the ACE process is also approved in Canada, Europe, Mexico and Asia.

In addition to developing the technology, ACE has built a network of franchisees and affiliates in the U.S., Canada, Europe, Mexico and Asia.

ACE's, onsite, in-place restoration program features multiple market entry points starting with the miniE® program, a full residential package and a full commercial package.

By developing multi level marketing and application programs ACE has been able to team up with companies like Mr. Rooter® and American Leak Detection®, both of whom have added ePIPE to their field of service.

Estimates: should contractors charge for them?

(Continued from page 36.)

that time another 30 minutes for speaking with the consumer at the potential job location, minimally one hour of the contractor's time per estimate is spent by the contractor (including his/her associated costs) and gone forever.

If a contractor wants to put in a 40-hour workweek so that he/she can work to live rather than live to work, he/she will only have a maximum of 35 hours to perform free estimates and/or paying jobs. A one-person business will have less because that person also must perform administrative business duties.

In the contracting business, the overhead expense for a person in a vehicle for each of those hours is minimally \$75.00 without that person's salary. On that basis, 10, one-hour estimates minimally give a contractor \$750.00 in overhead cost. In a year, the contractor who only does estimates for his company could accrue over \$128,000.00 in overhead expenses.

With regard to the 10 contractors I called, seven didn't, and couldn't, get the job. If they had the intelligence, courage and confidence to tell me that they would charge me a \$75.00 fee for the estimate, they could have recovered the expenses they imposed upon themselves by offering free estimates. And they would have placed me in a position to make a decision. I could choose to pay for my window shopping and/or do less window shopping. Regarding my decision to buy, I could choose to "excrete or remove myself from the commode." Either choice would cost all 10 contractors less money.

When contractors charge a fee for their estimates, consumers would not be so willing to call every contractor under the sun. This would, in turn, lower the competition of every contractor for any project, while it

increased the contractor's opportunities to get each job. The point I am making is that there is no such thing as free estimates. If contractors don't charge consumers for the costs they incur to deliver their expert opinions and valuable ideas, consumers will keep window shopping at the contractors' expense.

The question

Should contractors charge for estimates? Many do. But many contractors see this as a dilemma. They are fearful that if they charge for estimates they will lose work. But that's not a certainty. However, if they don't charge, they surely will lose money. If they never try to charge, they'll never know if it's possible. And if they persist in giving (not-so-free) free estimates, they shoot themselves in the foot by placing themselves in a competitive arena of fools.

Giving prices over the phone is no less detrimental. If they don't give the lowest phone price, they probably won't get an opportunity to land the job. But giving prices for a service when they haven't seen the conditions of the potential job could be fraught with financial peril. If they do give the lowest phone price and try to increase it after they see the circumstances regarding the job, they may tick the consumer off and not get the job anyway. In which case, they would still minimally have the cost of traveling, inspecting and estimating.

Should contractors charge for estimates? That's not the question that can solve the quandary. How do you charge consumers for their window shopping? That's the question!

The answer

First, you must develop a higher testosterone level than the frightened dopes that really don't belong in the contracting business because they are the people who create and/or support

stupid business practices such as "free estimates." There is not one of them who wouldn't rather charge a fee for their estimating service. They are just too ignorant, fearful and stupid to do it.

Next: 1) correctly calculate your costs per hour; 2) determine your average travel time to the consumer to inspect potential jobs inclusive of the time you spend performing the inspection; 3) multiply your hourly cost by your average travel time to perform the estimate/inspection; and 4) minimally charge the consumer that amount so the consumer pays the cost you incur for their window shopping consumption.

I call this a service call charge. Done properly, you will discover that this is the smart way to handle estimates. It gives you the opportunity to recover the costs you incur through consumer window shopping. After trying it and realizing you can recover those costs associated with estimates, your testosterone level will rise. Then, you will have the opportunity to muster the courage and confidence to charge more than it cost you so you can make a profit above your cost of those estimates.

If the consumer gives you the job at that visit, you can apply the service call charge to the job. In calculating the price you quote for the task you must always include all travel times including the travel time for the estimate. After all, it's a cost that is only incurred because of that consumer's window shopping. Therefore, it should be charged to that consumer.

By applying the service call charge to the job, you have given the consumer an opportunistic financial benefit. They will envision the fact the service call charge will pay in part for the service you perform for them if they choose to use your business.

That's a win-win situation. If you don't get job, you minimally recover

your costs. If you do get the job, the consumer pays for the price of the job not the service call charge.

Before deciding whether or not to charge a fee for estimates, look in the mirror and pose the following question to yourself. "Would I like to charge consumers a fee to recover the cost of my resources that are spent on consumer window shopping?" Think about it before answering.

If your answer is no, then keep wallowing in your own self-inflicted misery. I believe all of you would rather get paid. It's the only thing that makes smart financial sense (and cents). And I know the only thing stopping you is fear. I can show you how to do it. That would take care of the factors associated with ignorance. But you have to have the courage to face your fears and suppress foolish tendencies. You hold your future in your own hands. You are the only person who can decide to keep doing the wrong thing and stop yourself from succeeding, or start yourself down the road to success, less stress and more financial security.

If you need help with any of my contracting business theories and methods, give me a call at 845/639-5050.

As always, I wish you good health and much prosperity. ■

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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GeoExchange

(Continued from page 44.)

fluid cooler and eliminate the need for mechanical cooling.

The existing dehumidification unit for Torrey Arena was retrofitted in the field to convert the existing refrigerant and hot water coils to chilled water and hot water coils. In addition, a new high efficiency motor and variable frequency drive were installed. The unit uses excess cooling from the rink floor supply and waste heat to efficiently maintain rink humidity levels.

The Ritsche Arena used a Fresh Air

Systems (FAS) dehumidification unit that contained a desiccant wheel that was recharged by heat generated from a 750,000 Btu natural gas hot water boiler in the unit. The hot loop piping was extended to this unit in order to use waste heat generated from maintaining the ice to recharge the desiccant wheel.

A heat recovery air handling unit for the Torrey Arena that had used hot refrigerant gas from the chiller was converted to use hot water that is heated with waste heat from the TRAK heat pump plant.

Building automation system

The Torrey Arena was built in 1972

with pneumatic controls for the temperature control system. Several years ago, the pneumatic control system was abandoned and replaced with stand-alone electric controls. Most of the valves and actuators were retrofitted in some way, but several were left without any control and remained that way until this project was completed. Ritsche Arena was built in 1997 and used electro-mechanical controls for the Vilter Chiller plant and KMC Controls Direct Digital Controls (DDC) for the arena temperature control.

This project replaces all of the stand-alone controls in the Torrey Arena, integrates both the existing

KMC Controls in the Ritsche Arena, and the new KMC Controls for the TRAK heat pump plant and Vilter Plant into one system. The project also included the addition of CO₂ sensors for the Torrey Arena make-up air units so that they only operate & ventilate when the building occupancy requires additional outdoor air.

The BAS uses a Web-enabled graphical user interface to allow the arena staff to monitor the system, adjust schedules and operate the building from anywhere internet access is available. The BAS includes energy management functions to monitor and control the arenas energy use in the facility. ■

Tax credit changes in stimulus package affect high efficiency water heaters

ASHLAND CITY, TENN. — New tax credit changes in The American Recovery and Reinvestment Act of 2009 affect A. O. Smith water heating products.

Under the revised law, the previous tax credit of \$300 has been converted to 30% of the total installed cost,

including labor, with a cap of \$1,500 through 2010. For water heaters installed from Jan. 1 through Feb. 16, 2009, the water heater must have at least a .80 Energy Factor (EF) rating or 90% thermal efficiency to qualify for the latest tax credit. Beginning Feb.

17, the water heater must have at least a .82 EF rating or 90% thermal efficiency to qualify. The credit is subject to a combined \$1500 maximum per homeowner for all improvements eligible under the new law. The \$1500 credit is a cap on the combined amount that can be taken in tax years 2009 and 2010.

“By encouraging the installation of high efficiency water heaters, the government is addressing a long-term

energy conservation challenge while consumers begin to save immediately on their utility bills,” said David Chisolm, A.O. Smith water heater brand manager.

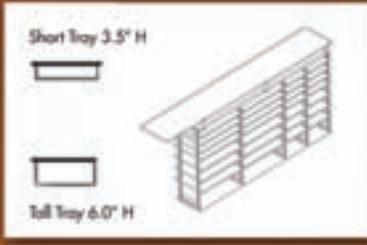
The A.O. Smith Vertex™ product line and the tankless product line both qualify for the \$1,500 tax credit. To qualify, units must be placed into service between Jan. 1, 2009, and Dec. 31, 2010. For additional information, visit www.hotwater.com.

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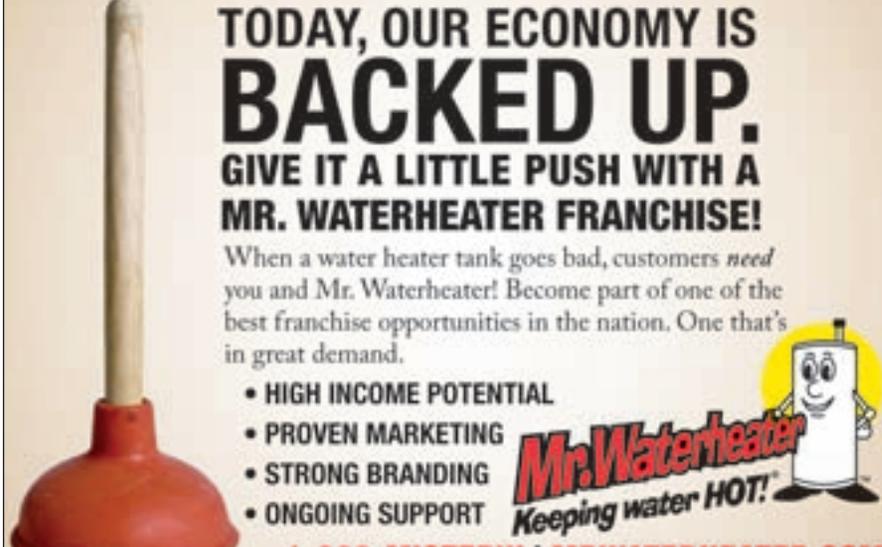
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Is it time to 'get the lead out'?

BY JOHN MEISENBRINK,
editor

Man, I remember when that term meant a string of classic Led Zepelin songs was about to be played

on the local radio station. In this industry, that term now has morphed into something a little more significant. It's time to go lead-free in plumbing fixtures.

According to NSF, the NSF/ANSI Standard 61 was revised in December 2008 to established requirements for use when a 0.25% lead content requirement needs to be met in addition to current chemical extraction requirements of the standard. The requirements were placed in Annex G — *Weighted Average Lead Content Evaluation Procedure to a 0.25% Lead Requirement*. Also, mandatory language placing restrictions on the use of lead as an intentional additive in water contact materials was added to Section 3.

A request was made to add these requirements to the standard to allow manufacturers the option of being certified to a lead content standard, such as California's Health & Safety Code (Section 116875) commonly known as AB1953. That law, which goes into effect January 1, 2010, applies to any pipe, pipe of plumbing fitting, or fixture intended to convey or dispense water for human consumption through drinking or cooking. A similar law has been enacted in Vermont and is also to take effect January 1, 2010.

Let's applaud the codes for trying to make the drinking water safer. But I've heard some grumblings in the industry as to whether this is fair legislation or, perhaps, over-legislation. Is this just more bureaucra-

cy? What are the testing methods? Are the testing procedures where they need to be? What happens when other chemicals are tested in the water — other than the testing of straight filtered water — such as chloramines? Does this become another avenue of "big business"? What constitutes trace levels of lead? Let's face it, I'm all for clean drinking water and the health of the populace; but I am interested to know what you honestly think about this.

Does this become an extraordinarily new challenge for manufacturers to go through proper compliance channels? I'd imagine that they have to change their entire manufacturing processes. Does this translate to more \$\$\$ for them when they do turn around these new fixtures?

And, can "lead-free" plumbing fixtures or devices leach lead? NSF states that any plumbing device or fixture that contains lead and is in contact with the water is a potential source of contamination. Brass fittings and plumbing fixtures, containing 8% or less lead, have been found to contribute high lead levels for a considerable period of time after their installation, even in cases where these devices are in contact with relatively non-corrosive waters. The amount of lead that may leach into the water from a brass faucet or fixture is not solely related to the amount of lead contained in the alloy. The amount of lead leaching from a brass alloy is greatly influenced by the manufacturing process.

Furthermore, what good does it to have all your bathroom's plumbing fixtures, for example, lead-free when the existing city/building/residence infrastructure still isn't? I realize that there are a lot questions here, but again, I am interested to know your thoughts on this. ■

Letter to the editor

Dear John:

I admit up front that we have a vested interest in the green movement, and that I 100% agree with your urging to visit the Mobile Green Classroom to see what's new. What I worry about is that thought leaders like you, with an excellent forum (*Phc News*), seem to overlook existing technologies that have always been green and have improved over the years. Chillers and boilers make up the heart of a hydronic HVAC system in commercial settings and these, now shrunken, approaches are readily available for large residential and light commercial applications. Along with that, the distribution elements (radiant of all sorts, fan coils, chilled beams, etc.) offer ever greater options to designers and builders alike to maximize comfort, IAQ and efficiency at the same time.

Open any "New Products" section and count how many forced air accessories are being introduced just to compensate for this inefficient HVAC approach.

I enjoy your "In Our Opinion" section and trust that this e-mail has been of some use to your green thoughts.

Sincerely,
Michael Scharing
Hydronika, Inc.

Next issue...

- *K/BIS Show Issue*
- *Greening the Kitchen & Bath*
- *Franchising*

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Bavco50 www.bavco.com	Dunkirk Boilers23 www.dunkirk.com	Lochinvar5 www.lochinvar.com	Smith Mfg. Co., Jay R.....10 www.jrsmith.com
Bell & Gossett.....76 www.bellgossett.com	Eternal Hybrid Water Heater13 www.eternalwaterheater.com	Murray Corp11 www.murraycorp.com	Stanley Virax57 www.stanleyvirax.com
Benjamin Franklin Plumbing.....9 www.benjaminfranklinplumbing.com	General Pipe Cleaners, a div. of General Wire Spring37 www.drainbrain.com	NAOHSM.....67 www.naohsm.org	Stiebel Eltron.....38 www.stiebel-eltron-usa.com
Bradley3 www.bradleycorp.com	Heat Flo32 www.heat-flo.com	Navien America65 www.navienamerica.com	Taco.....25 www.taco-hvac.com
Bradford White51 www.bradfordwhite.com	HeatingHelp.com63 HeatingHelp.com	New Age Casting.....39 www.newagecasting.com	Ultra Fin.....54 www.ultra-fin.com
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Buderus.....29 www.buderus.net	Insulation Solutions14 www.insulationsolutions.com	PHCC Show Long Beach.....61 www.phccweb.org	Watts49 www.watts.com
Burnham Hydronics2 www.burnham.com	Kolbi Pipe Markersinsert www.kolbipipemarkers.com	Pick Up Equipment20 www.pickupequipment.com	Webstone Co., Inc.4 www.webstonevalves.com
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Chicago Faucets21 www.chicagofaucets.com	LAARS Heating System Co.52 www.laars.com	Precision Hydronics28 www.phpinc.us	Weldbend.....40, 41 www.weldbend.com
Contractor Page.....55 www.contractorpage.com		Radiant Panel Association42 www.radiantpanelassociation.org	Whitlam, J.C.19 www.jcwhitlam.com
		Rheem.....45 www.rheem.com	Woodford Mfg. Co.59 www.watcomfg.com
		Ridgid Tool Co.15 www.ridgid.com	Zoeller53 www.zoeller.com
		Slant/Fin31 www.slantfin.com	

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Application to mail at Periodicals Postage Rates is pending at Northbrook, IL and additional mailing offices.

POSTMASTER: Send address changes to Plumbing & Hydronic Contractor News, Creative Data Services, 519 E. Briarcliff Road, Bolingbrook, IL 60440. clewis@cds1976.com

Publications mail agreement No. 41499518: Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill ON L4B 4R6

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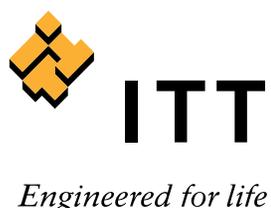


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