

BITZER's Refrigerant Reference Tool



BITZER, a major manufacturer of screw, scroll, and semi-hermetic reciprocating compressors for commercial A/C and Refrigeration Applications, launched this free refrigerant pressure-temperature application designed for iPhone™ and Android™ devices several years ago. The application is an intuitive saturated pressure temperature reference wheel that focuses on the most common refrigerants found in A/C and refrigeration systems. This app provides users with the ability to customize the app by selecting the refrigerants that they most commonly use and arranging them in any order so each refrigerant table is just a swipe away. This is the only P-T app with the ability to use imperial and metric units at the same time. It includes altitude adjustment for various elevations and bubble tables for refrigerants with glides.

BITZER US, Inc.

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iPhone App

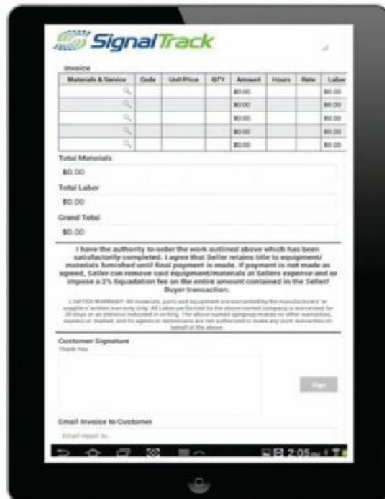


Android App

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eProduct #157

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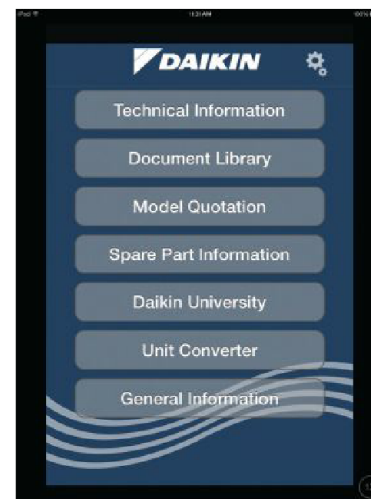


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MarleyMobile App Simplifies Tower Selection



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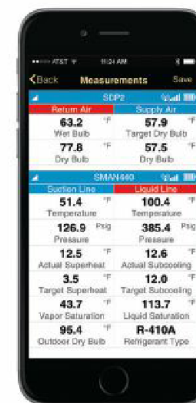


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eProduct #163

Fieldpiece Instruments App Brings Diagnostic Information to iOS Devices



Fieldpiece Instruments announces Job Link™, a new app for HVACR professionals, for wireless real time measurements on their iOS device. The Job Link™ app allows techs to view live measurements, get insightful diagnostics, create professional looking reports, email findings to the office and customer, and save the reports in the Cloud for future reference. Fieldpiece JL2 Transmitter is required to link the iOS device with any Fieldpiece wireless manifold (SMAN4, SMAN440, SMAN460), and the wireless dual in-duct psychrometer (SDP2). The JL2 Transmitter is available at local distributors and includes a one-year subscription to Job Link™ Pro. Coming soon to Android devices.

Available for download at the Apple App Store or <http://gettag.mobi>



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eProduct #161

app focus

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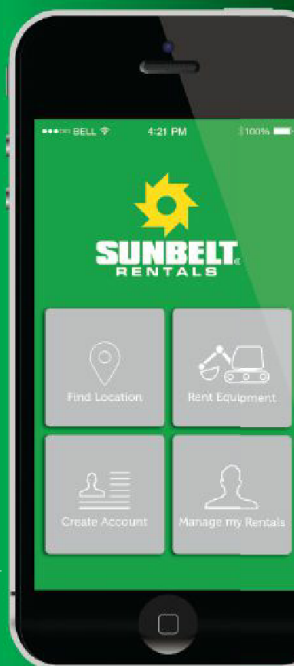
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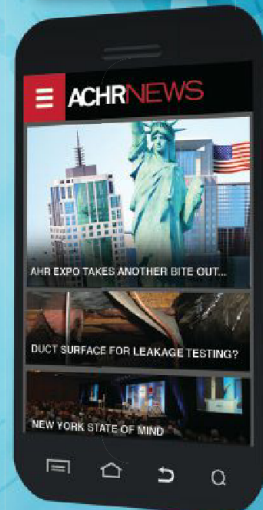
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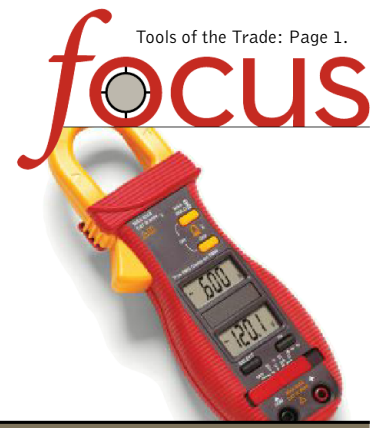
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Will Uber Model Threaten HVAC?

On-demand Labor Sites Offer Cheap, Quick Work but are Often Ill-equipped

By Joanna R. Turpin
Of *The NEWS* Staff

According to Uber's founder, Travis Kalanick, the inspiration for the on-demand car service came in 2008 when he tried unsuccessfully to find a cab in Paris. As a result, he developed an app that directly connects riders to drivers, thus bypassing the long waits — and higher costs — that are sometimes encountered with traditional taxi or car-hire services.

This on-demand model has spread quickly into others markets, as well, and apps are now available that connect consumers with local freelance labor that can provide everything from same-day grocery delivery to dog walking to handyman services. It's this last category that may be of concern to the HVAC industry as numerous on-demand labor sites such as Pro, Porch, and Amazon Home Services give homeowners the opportunity to instantly purchase and/or schedule just about any home services-related task, including HVAC maintenance, repair, and installation.

How They Work

There are a variety of on-demand labor sites, and each one works a little differently. Accord-

• See **UBER MODEL** | page 14



Many contractors, such as Jerry Grendahl, CEO, Grendahl Mechanical Inc., Edina, Minnesota, believe that, one day, on-demand service companies may be a threat to professional HVAC contractors.

fyi hvac briefs

Commercial Contractor

- **Action Duct Cleaning's** (Altadena, California) CEO **Dan Stradford** was re-elected to the **National Air Duct Cleaners Association's** (NADCA) board of directors.

Manufacturers

- **Trane** (Davidson, North Carolina), an **Ingersoll Rand** (Swords, Ireland) brand, was recognized by *Green Builder Media* for offering the 'Greenest HVAC Products' in its 2015 Readers' Choice Survey of building professionals.
- **Hypertherm Inc.'s** (Hanover, New Hampshire) AWS SENSE-approved curriculum is now available for teachers to download for free.
- **Koch Filter Corp.** (Louisville, Kentucky) is adopting white fiberglass media in its commercial and industrial disposable panels in an effort to remove unnecessary dyes.
- **Envirotrol LLC** (Greensboro, North Carolina) announced a National Partnership Alliance with **Schneider Electric** (Rueil-Malmaison, Île-de-France).

Continued on page 4

Wireless, Connected Tools Surging in Popularity

By Nicole Krawcke
Of *The NEWS* Staff

Everywhere you look nowadays, you see a smartphone. According to a Gartner Inc. report, sales of smartphones in 2014 totaled \$1.2 billion, up 28.4 percent from 2013. Tablets are also gaining in popularity and are expected to outsell personal computers this year. There's no doubt the connectivity of mobile devices has made our personal lives more convenient,

but now they're also helping make technicians more efficient, thanks to tool manufacturers developing wireless-enabled devices and test and measurement apps for download.

Wireless Connectivity and Compatibility

Two of the biggest trends in instrument design for the HVACR industry are wireless connectivity and mobile device compatibility, according to John Javetski, product specialist, instruments, General Tools & Instruments.

"Wireless connectivity enables components of an instrument to be separated, but still communicate," Javetski said.

"In a video inspection system, for example, it allows the probe to be located at a distance from the display unit so one technician can be up on a ladder operating the probe while another can be on the ground observing the video. And, wireless applications that allow an instrument to remotely transmit data to an entirely different location are likely to become more common.

"Mobile device-compatible instruments that generate an ad hoc Wi-Fi signal — in combination with a free app — enable contractors and plumbers to instantly and wirelessly view and save collected data, such as measurements, video, or photos on their smartphones or tablets. This eliminates the need for an integral display or a wired connection to an external monitor," he continued.

According to Troy Buswell, sales manager, Automatic Airflow Balancing LLC, by

• See **TRENDING** | page 12



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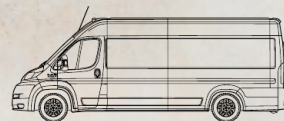
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focus Tools of the Trade

Wireless, Connected Tools Surging in Popularity

1 Technicians are becoming more efficient thanks to wireless-enabled devices and mobile HVAC applications.

Contractors Rank Their Go-to HVAC Tools

8 The NEWS' Advisory Board selects their most effective tools for HVAC technicians.

Tools: To Supply or Not to Supply?

10 While some contractors feel it's their responsibility to supply technicians with every tool necessary to complete the job, others feel techs should equip their own tool bags.



outlook hvacr perspective

HVAC Instrumentation

As the HVAC market evolves and changes, so must the tools used to service, repair, and install the equipment. Tools are becoming smarter with wireless and Bluetooth capabilities. They are also increasingly becoming lighter, more ergonomic, and feature multiple functions.



And, because of the large number of tools available to technicians in the HVAC market, *The NEWS* asked the contractors on our Advisory Board to select the most useful and effective tools they use in the field. See what they picked on Page 8.

Finally, we explore the issue of whether contractors or the technicians they employ should be responsible for supplying the tools used in the field to complete a job. Read more on Page 10.

Finally, this issue of *The NEWS* explores the current trends mentioned above and more starting on Page 1.

Nicole Krawcke
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refrigeration zone



Refrigerants

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The Professor

Symptoms of Air in a Refrigeration System. Page 22.

Ice Breaker

Inside a Soft-serve Ice Cream Machine. Page 23.

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The Air Conditioning, Heating & Refrigeration NEWS Vol. 255, No. 5, Serial No. 4491 (ISSN: Print 0002-2276 and Digital 2328-1111) is published weekly, 52 times a year, by BNP Media, Inc., 2401 W. Big Beaver Rd., Suite 700, Troy, MI 48064-3333. Telephone: 248-362-3700, Fax: 248-362-0317. Annual rate for subscriptions in the U.S.A.: \$87.00 USD. Annual rate for subscriptions in Canada: \$117.00 USD (includes GST & postage); all other countries: \$169.00 (int'l mail) payable in U.S. funds. Printed in the U.S.A. Copyright 2015, by BNP Media. All rights reserved. The contents of this publication may not be reproduced in whole or in part without the consent of the publisher. The publisher is not responsible for product claims and representations. Periodicals Postage Paid at Troy, MI and at additional mailing offices. **POSTMASTER:** Send address changes to: *Air Conditioning, Heating & Refrigeration NEWS*, P.O. Box 15668, North Hollywood, CA 91615-9230. **Canada Post:** Publications Mail Agreement #40612608. GST account: 131263923. Send returns (Canada) to IMEX Global Solutions, P.O. Box 25542, London, ON, N6C 6B2. **Change of Address:** Send old address label along with new address to *Air Conditioning, Heating & Refrigeration NEWS*, P.O. Box 15668, North Hollywood, CA 91615-9230. **For single copies or back issues:** Contact Ann Kalb at 248-244-6499 or kalbR@bnpmedia.com.

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MCAA, QCA Push Industry Agenda

WASHINGTON — More than 175 members of Mechanical Contractors Association of America (MCAA) and allied organizations convened April 27-29 at the Newseum in Washington, District of Columbia, to push for phase 2 of multiemployer pension reform, government tax incentives for energy-efficient commercial and industrial facilities, direct federal construction project procurement policy reforms, and sustaining valuable prevailing wage and project labor agreement project delivery options for federal construction programs.

MCAA and Quality Construction Alliance (QCA) program participants also engaged in more than 140 lobbying visits to House and Senate members. The conference pension panel discussion was moderated by former Minnesota Sen. Norm Coleman, a consultant for MCAA and the UA on the pension reform measure, and included Rep. Phil Roe, R-Tennessee, chairman of the House Education and Workforce Committee; Randy De Frehn, executive director of the National Coordinating Committee for Multi-employer Plans; and Presto Rutledge, staff member, Senate Finance Committee.

Other conference panels covered legislative proposals to advance energy-efficiency gains through tax incentives for energy retrofits to commercial and industrial facilities, highway and infrastructure measures, direct federal procurement reforms — including a ban on reverse auctions and individual surety reforms to help improve the federal contracting environment for small businesses — and workforce and economic policy issues.

At lunch, Sen. Debbie Stabenow, D-Michigan, addressed the group on a number of issues, including the pension reform measure that passed last year and phase 2 pending this year in Congress. Labor Department Wage and Hour Administrator David Weil addressed the group on federal prevailing wage policy, efforts to stem worker misclassification as independent contrac-

tors, and the MCAA/QCA support for administrative reforms to make the Obama administration's Fair Pay and Safe Workplaces Executive Order for direct federal prime contractors and subcontractors more equitable and workable.

On April 29, Rep. Donald Norcross, D-New Jersey, and North American Building Trades Unions secretary/treasurer Brent Booker addressed the group in advance of the congressional hearing on phase 2 of the multiemployer pension reform. Visit www.qualityconstructionalliance.org/position-papers for the conference position papers.

ASE Launches Global Initiative

WASHINGTON — The Alliance to Save Energy announced the launch of the Global Alliance for Energy Productivity at the Energy Efficiency Global Forum (EE Global) May 12-13 in Washington, District of Columbia.

The Global Alliance is modeled after Energy 2030, an Alliance to Save Energy initiative announced in February 2013 that is focused on doubling U.S. energy productivity by 2030. The Global Alliance will take the conversation about energy productivity to a global audience, securing commitments from policymakers and corporate leaders to encourage productivity and enlisting them to encourage similar commitments from others.

The ultimate goal of the Global Alliance is to double the energy productivity of businesses, cities, and countries by 2030. Using energy as productively as possible benefits a wide range of sectors by improving economic performance and growth, facilitating energy access around the world, reducing greenhouse gas emissions, driving technological innovation, and increasing the reliability and security of energy infrastructure.

"The goal of the Global Alliance for Energy Productivity is audacious, but imminently doable: Let's double the energy productivity of businesses, cities, and countries around the world by 2030,"

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Organizations

- The **U.S. Department of Energy (DOE)** extended the comment period for its national 92 percent AFUE minimum energy-efficiency standard to July 10.
- The **Building Performance Institute Inc. (BPI)** announced revised portions of ANSI/BPI-2400-S-2012: "Standard Practice for the Standardized Qualification of Whole-House Energy Savings Predictions by Calibration to Energy Use History," also known as the Delta Standard, are now available for public comment.
- **ACCA's** (Arlington, Virginia) Educational Institute (ACCA-EI) Standards Task Team (STT) announced an **American National Standards Institute (ANSI)** public review period for its BSR/ACCA 14 QMref-201x "Quality Maintenance of Commercial Refrigeration Systems" standard.
- **Mechanical Contractors Association of America (MCAA)** and the **Mechanical Service Contractors of America (MSCA)** revised Model NFPA 70E, "Electrical Safety Program for Service," to make it consistent with recent revisions to the **National Fire Protection Association's (NFPA's)** "Standard for Electrical Safety in the Workplace," NFPA 70E-2015.
- The **ESCO Group** (Washington) named **Tom Meyer** vice president.

School

- **Southeast Technical Institute's** (Sioux Falls, South Dakota) HVACR program was granted accreditation by **HVAC Excellence** (Washington).

— compiled by Nicole Krawcke

Project Files: Air Handlers for the Artistic

Company

GEM Energy, of the Rudolph Libbe Group

Customer

Toledo School for the Arts

Installation

Five Trane air-handling units, an Aeon rooftop unit, two Hurst 60-HP boilers, and a Trane 100-ton chiller — all controlled by GEM Energy FlexSet building automation system controls.

Completion

2015

Objective

To improve a century-old building, increase energy efficiency, and reduce operating costs.

Work Completed

Outdated 1950s HVAC equipment was replaced throughout the building with five new air-handling units, a rooftop unit, two boilers, and a chiller. The design-build project also included a second-floor renovation that added new classrooms, set-building and retail shops, ceramics, computer labs, and a state-of-the-art recording studio.



"We have a century-old building that now operates with 21st century energy efficiency. We take pride in giving our students a state-of-the-art environment for developing their talents. It all contributes to a stronger education for the young people who attend our school."

— Martin Porter, director of the Toledo School for the Arts.

said Kateri Callahan, president, Alliance to Save Energy. "The Global Alliance will support policymakers and corporate leaders in their work to share and implement proven policy solutions that will contribute to greater economic prosperity and a more secure energy future across all regions. We don't need to wait to take action; the technologies, processes, and policies exist today to get twice as much GDP from each unit of energy we consume. We are at the dawn of an important new energy era — one where the international community can come together to grow economies and create jobs while, at the same time, reduce energy waste and pollution. I couldn't be more excited to help usher in this new era with the launch of the Global Alliance."

Testo Announces Contest Winner

SPARTA, N.J. — Testo Inc. recently presented a \$10,000 check to Emidio Monteiro, owner of Eurotech Climate Systems LLC, Pawtucket, Rhode Island, as the winner of Testo's Fall 2014 Race Car Trip Sweepstakes. Monteiro had the choice of a cash prize or a race car trip weekend and opted for the cash prize.



Emidio Monteiro (second to left), owner of Eurotech Climate Systems LLC, Pawtucket, Rhode Island, accepts his Testo Fall 2014 Race Car Trip Sweepstakes winning check with his family.

Monteiro was selected in a random drawing from among more than a thousand participants. Roger Mavrides, Testo HVACR product manager, was on hand for the presentation of the check. "It was my pleasure to be able to see the delight of Mr. Monteiro when he received the check," said Mavrides. "It gives me great joy to know that an active user of Testo instruments, who has more than 40 years of experience in the heating, air conditioning, installation, and repair service will benefit from this sweepstakes."

Monteiro came to the U.S. in the 1980s from Portugal, where he learned refrigeration. He then got his master electrician's license and set up his own HVACR business.

"I bought my first Testo 523 refrigeration manifold 15 years ago, and it still works," Monteiro said. "After all these years of buying Testo instruments, winning the sweepstakes was a bonus for me and will allow me to grow my business further."

NEMA Index Trends Downward

ROSSLYN, Va. — The National Electrical Manufacturers Association's (NEMA) Electroindustry Business Conditions Index (EBCI) for current conditions in North America declined in April after holding largely steady during the first quarter of 2015. The index fell to 54.8 after ranging 57.5-58.3 between January and March.

Meanwhile, the EBCI for future North American conditions declined for a second month in a row. The index retreated to 66.7 in April from 75 in March and 78.9 in February.

The EBCI is based on the results of a monthly survey of senior managers at NEMA member companies and are designed to provide a measure of changes in the business environment facing electrical equipment manufacturers. Visit www.nema.org for the complete April 2015 report.

AGL, AGA Refute 92% Standard

WASHINGTON — John Somerhalder, chairman, president, and CEO of AGL Resources and past chairman of the American Gas Association (AGA), recently testified before the U.S. House of Representatives Energy and Commerce Committee's Subcommittee on Energy and Power commending four specific legislative provisions included in the committee's energy-efficiency and accountability discussion draft designed to remove barriers to the use of clean, energy-efficient, cost-effective natural gas.

In March, the U.S. Department of Energy (DOE) proposed a rule mandating natural gas furnaces must be manufactured to meet a 92 percent or higher energy-efficiency specification. At first glance, the rule appears to be a positive step forward for energy efficiency, but Somerhalder argued the DOE's proposal may create a number of counterproductive and unintended consequences that could increase energy use and impose an undue burden on consumers. Section 4124 of the discussion draft addresses the development of fair, effective, and nonregressive energy-efficiency standards for residential natural gas furnaces.

"AGA is concerned that DOE's current proposal for a new energy-efficiency standard for residential natural gas furnaces significantly overestimates the associated energy savings and greenhouse gas emission reductions the new standard would achieve while also unfairly imposing significant economic burdens on many American consumers — especially low-income households," Somerhalder said in his testimony. "We are deeply concerned that, if

Sen. Shaheen Visits Bosch Facility



Shortly after attending a bill-signing ceremony at the White House with President Barack Obama, New Hampshire's senior senator, Jeanne Shaheen, paid a visit to Bosch Thermotechnology on May 1 in recognition of the company's commitment to producing energy-efficient heating and cooling systems.

The democrat's bipartisan, cosponsored bill, the Energy Efficiency Improvement Act of 2015, aims to increase energy efficiency by building owners and tenants and calls for energy monitoring of federally leased buildings, among other provisions. During her time at Bosch Thermotechnology, Sen. Shaheen toured the facility, met with Bosch-accredited contractors who were training on-site, and helped to plant a white birch, the official tree of the Granite State, on the Bosch grounds.

"We were excited to welcome Sen. Shaheen to our facility to commemorate enactment of the Energy Efficiency Improvement Act," said Vitor Gregorio, incoming president of Bosch Thermotechnology Corp. "As this was my first official day as president of Bosch Thermotechnology Corp., I was especially pleased to welcome the senator, and, at the same time, bid farewell to outgoing president Richard Soper. We expect this is just the beginning in enacting meaningful legislation to encourage energy efficiency in the homes and businesses across the U.S."

not appropriately structured, this rule could prove to be the first energy-efficiency standard issued in the history of the DOE that has the real-world impact of increasing our nation's overall energy consumption and carbon footprint. If finalized, AGA believes the rule would impose burdensome costs and renovations on many homeowners when replacing their natural gas furnaces."

Section 4115 of the discussion draft will restore the ability of federal installations to benefit from the use of efficient and cost-effective end-use applications of natural gas in the long term. A part of Section 433 of the Energy Independence and Security Act of 2007 was intended to reduce fossil fuel-generated energy use in new and renovated federal buildings with a 100 percent reduction required by the year 2030. Due to the complexities of interpreting the law, however, the DOE has yet to issue a final rule implementing this requirement.

"The Section 433 fossil fuel ban is deeply flawed," Somerhalder said. "Its implementation will severely limit — and ultimately prohibit — adoption of highly efficient technologies using natural gas at federal facilities, such as combined heat and power, fuel cells, and waste heat recovery systems. The U.S. is now the world's leading producer of natural gas. The federal government should serve as an example to homes and businesses across the country by demonstrating how this clean, abundant, and domestic resource can increase energy efficiency, decrease

overall emissions, improve our energy security, and save money."

The DOE's analysis of the fossil fuel ban indicates the provision will impose unacceptably high costs on the federal government, which will ultimately be borne by tax payers. The DOE estimates federal construction costs will jump from today's level of \$30 million annually to \$536 million in 2019, when fossil fuel-generated energy must be reduced by 80 percent. Construction costs for federal buildings are estimated to jump again to \$1.135 billion annually by 2030, when fossil fuel-generated energy must be eliminated. This projected surge in federal construction costs amounts to an increase of 3,783 percent.

Distributor Revenue Up in March

COLUMBUS, Ohio — Heating, Air-conditioning, and Refrigeration Distributors International (HARDI) released its monthly TRENDS report showing average sales for HARDI distributor members increased 14.4 percent in March 2015.

The annualized growth through March 2015 was 5.9 percent. This is the third consecutive month with annual growth less than 6 percent. The average annual growth for the 12 months prior to this recent sub-6 percent period was 6.5 percent.

"The results suggest the strength of the U.S. consumer, as evidenced in

accelerating U.S. retail sales growth, is benefitting HARDI members," said Danielle Marceau, senior economist, HARDI. "The quickening rate of rise in retail sales at building material and supply stores (up 5.3 percent) is indicating consumers are spending more on improving their homes, and internal trends suggest additional growth is likely through the remainder of 2015."

March was a welcome surprise after the subdued results in January and February, said Brian Loftus, market research and benchmarking analyst, HARDI. "The results are particularly impressive when you see the good growth that was shared among all seven reporting regions and versus 11.4 percent growth in March of 2014."

The Days Sales Outstanding (DSO), a measure of how quickly customers pay their bills, has begun its normal seasonal ascent and is now more than 50 days. "It generally increases during the first half of the year. It is now near 51 after being closer to 50 the prior couple years at this time, and 52.5 in March of 2012," said Loftus.

HARDI members do not receive financial compensation in exchange for their monthly sales data and can discontinue their participation without prior notice or penalty. Participation is voluntary, and the depth of market coverage varies from region to region. An independent entity collects and compiles the data that can include products not directly associated with the HVACR industry.

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Flood Buzz™ Pro-02 is a water leak alarm that was created specifically for use in condensate pans. The alarm is designed to allow moisture to collect in the pan up to a depth of 1/8-inch. Once water reaches 1/8 inch, a 110-dB alarm alerts a user that the water in the pan is not exiting and that a possible flood condition exists.



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Archetype Ltd.
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Butterfly Valve

This series of grooved-end butterfly valves is for use in commercial and light industrial applications. The valves are built with an ISO mounting pad and stem for simple automation with electric or pneumatic actuators. Standard features of the L700E Series include an epoxy-coated ductile iron body, ethylene propylene diene monomer (EDPM)-coated ductile iron disc, and a 410 stainless steel ISO square stem. An ISO 5211 mounting pad is integral and makes it easy to add any ISO 5211 standard actuator or manual operator. Available in 2- to 12-inch sizes, typical applications include hot and cold water, HVAC, chilled water, and fire-protection systems.

Bonomi North America Inc.
704-412-9031
www.bonominorthamerica.com

eProduct 182

Facility-wide Control System

The Command and Control Suite turns complex facility data into manageable information. The system provides a holistic view of a connected building's video feeds, access controls, and fire alarms and can pull in relevant information from human resource applications. The Honeywell Command Wall, the core of the suite, features map-based visualization and navigation along with integrated workflows and system-wide integration from a single, intuitive touchscreen interface.

Honeywell Intl. Inc.
877-841-2840
www.command.honeywell.com

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notable publisher's pick

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CPS Products
800-277-3808
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14-SEER Packaged Unit

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sor, coil, heat exchanger, and filters. Additionally, a standardized design ensures performance, simplifies repairs, and reduces the number of replacement parts contractors must carry in inventory and on service trucks.

Johnson Controls Inc.
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eProduct 185

Service Roundtable Driving Results

Contractors, Presenters Share the Secrets to Their Success

By Mike Murphy
Of *The NEWS* Staff

PHOENIX — HVAC contractors, plumbers, and electricians representing the Service Nation Alliance and Service Roundtable discovered how true winners measure their worth at the annual International Roundtable event, April 14-16 at the Palomar Hotel in Phoenix.

The gathering, which welcomed 100 Alliance and 200 Roundtable members from the U.S., Canada, and Australia, featured nationally acclaimed speakers, industry experts, and highly successful contractors.

Numerous Networking Events

Alliance members arrived early for an Alliance-only meeting featuring a keynote address from former Dallas Cowboys quarterback Danny White and renowned author and speaker, Tony Jeary. Additionally, Vicki LaPlant of VLE Enterprises and Bob Viering of Service Nation spoke to the audience. Alliance members spent Monday night enjoying a western cookout in the Tonto National Forest.

Service Roundtable members joined up with the Alliance group for an evening reception at the hotel's rooftop garden and pool, which overlooked the Phoenix valley and nearby Chase Field, home of the Arizona Diamondbacks, and U.S. Airways Center, home of the Phoenix Suns, on Tuesday. The next day, all members listened attentively to Doug Hanson, a former Tony Robbins associate and former college football player at Sam Houston State. Hanson mixed good humor, life lessons, and business applications to impress upon the audience the importance of creative problem solving and branding strategies.

Several attendees opted to stay a few extra days to participate in an optional tour of Goettl Good Guys Air Conditioning Repairmen's facilities in nearby Tempe, Arizona.

Amongst all the activities designed to keep Alliance/Roundtable members occupied in the desert sun, the general meeting flow had two main parts.

The Results Guy

Alliance members heard Tony Jeary, author of 44 business books, share his strategic vision and communication steps designed to help "grow our businesses and grow ourselves." Jeary's presentation was more



Tony Jeary (standing), author of 44 books on business and self-improvement, spoke to 200 Service Roundtable and Service Nation Alliance members during an annual International Roundtable meeting in Phoenix. Known as The Results Guy™, he conveyed strategic business planning development processes to aid contractors during a keynote presentation.

like a workshop — very methodical, easy to understand, and laden with workbook forms that could be easily replicated back at the office. He also provided a large number of free books, online links, and lists to help attendees recall what they learned

during their half day in the chairs.

Jeary, known as "The Results Guy," stressed several times there is a big difference between doers and squatters — those who act upon newfound knowledge and those who simply squat on it

until all remembrance fades away. "Results can take time," said Jeary. "Some of your goals may produce relatively immediate results. But, if one of your personal goals is to help your daughter find the right person to marry, the result may be

five, 10, or 20 years away. The doer understands the setting of such an important goal early in a daughter's life can yield great results — but great results can take time."

Jeary provided time for group learning using the workbooks that were structured as a practical tool for execution. One discussion centered on the creation of tools, so all of a contractor's team members could be "presentation-ready all the time."

A few highlights from Jeary's presentation list include:

- **Performance Standards:** Have a list for your employees;
- **Competitive Comparison Index:** Top people and companies know their competition;
- **Meeting Protocol:** Don't conduct boring meetings;
- **High-leverage Activities:** Be clear on what you should be spending most of your time doing;
- **Scan the World for Great Ideas:** You should be constantly mining other business segments; and
- **Secure Mentors in Your Life:** The right mentors help you see life better.

"You want to have a clear plan and a way to communicate it to your employees and your customers," said Jeary. "And, therefore, you want


• See SERVICE INTL. | page 19

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Contractors Rank Their Go-to HVAC Tools

The NEWS' Advisory Board Selects Their Most Effective Tools for HVAC Technicians

By Nicole Krawcke
Of The NEWS Staff

As the HVAC industry evolves and equipment becomes smarter and more efficient, so must the tools technicians use to service, repair, and install that equipment. And, with the large quantity of tools in the market, we asked our contractor advisory panel to weigh in on their most useful and effective tools used in the field. Here's what they had to say.

Amprobe ACD-14 Clamp Meter

Chosen by: Keith Springstead, field supervisor, Pleune Service Co.,



Lansing, Michigan

About the product: The ACD-14 clamp meter works as both an HVAC multimeter and an electrical multimeter with a versatile set of features, including microamps,

capacitance, frequency, and temperature with included thermocouple. The dual displays show amps and volts simultaneously.

Springstead's take: I use an Amprobe model ACD-14 for amp readings and as a backup for my other (Fluke) meter. A volt meter for a service person is a must to find out what is going on with any problem. Meters are heavily relied upon daily for both preventive maintenance and troubleshooting. Having dependable and versatile meters is critical. The Amprobe ACD-14 is a clamp meter that calculates microamps, capacitance, frequency, and temperature; the dual displays show amps and volts simultaneously, which is useful for measuring voltage drop under load.

Apple iPad, iPad Mini



Chosen by: Rich Morgan, president, Magic Touch Mechanical Inc., Mesa, Arizona

About the product: Engineered for unmatched portability and ease of use, iPad Air 2 offers a beautiful, precision unibody enclosure of anodized aluminum for durability and a solid feel. The improved Retina display features a fully laminated design that brings images and content closer to the user's fingertips, resulting in an even more personal and intimate experience. A custom-designed anti-reflective coating reduces glare by 56 percent for a clearer display in the office, the classroom, or outdoors. iPad Air 2 also delivers faster connectivity with 802.11ac Wi-Fi with Multiple-In-Multiple-Out (MIMO) technology for 2.8 times the Wi-Fi performance of iPad Air at data rates up to 866 Mbps.

Morgan's take: I would say our go-to tool is not what most would classify a traditional tool, but most would agree is now a great tool in our industry — the tablet computer. In our case, it's iPads and iPad Minis. As tablets are being used by all of our field workers, management, and administrative staff alike, it is easily our most-used tool. It is specifically useful, as it allows for real-time collaboration of our entire staff and is used in so many aspects of our day-to-day operations and departments.

and iPhone 6 Plus feature 4.7- and 5.5-inch Retina® HD displays and are packed with innovative technologies in an all-new dramatically thin and seamless design that is still comfortable to hold and easy to use. Both models are better in every way and include: the Apple-designed A8 chip with second generation 64-bit desktop-class architecture for fast performance and power efficiency, advanced iSight® and FaceTime® HD cameras, and ultrafast wireless technologies.

Bloom's take: You can do everything from work orders to service reports to GPS to submittals and more. These devices tie into all our software and operating systems.

DeWalt 18V XRP Cordless Drill



Chosen by: Bob Keingstein, president, HVAC and plumbing division, Boss Facility Services, Ronkonkoma, New York

About the product: DeWalt's 18V Cordless XRP™ Drill features extended run-time batteries and a high-power, high-efficiency motor that delivers 450 unit watts out of max power for superior performance in all drilling and fastening applications.

Keingstein's take: It is very versatile and useful for the obvious reasons — drilling holes and removing screws and nuts for removing panels, covers, controls, etc. It's fairly lightweight and easy to carry to each job site. In many cases, it's replaced the use of regular and Philips screwdrivers and nut drivers.

Apple iPhone



Chosen by: Hank Bloom, owner, Environmental Conditioning Systems, Mentor, Ohio

About the product: iPhone 6

Fluke 376 AC/DC Clamp Meter + Amprobe TMD-53

Chosen by: Greg Crumpton, president and founder of AirTight Facility-Tech, Charlotte, North Carolina

About the product: The Fluke 376 Clamp Meter features true-RMS ac voltage and current measurements, and can read up to 1,000 V and 1,000 A in both ac and dc modes. The Amprobe TMD-53 thermometer's dual inputs allow easy superheat

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Fluke Multimeter + Clamp Meter Kit

Chosen by: Dustin Upmore, service manager, Capstone Mechanical, Waco, Texas

About the product: The HVAC Multimeter and Clamp Meter



and subcool temperature measurements as well as cut-out and in-temperature measurements.

Crumpton's take: To truly have the professional approach to service, startup, maintenance, and repair requires multiple tools: A high-quality RMS multimeter to read voltage, current draw, resistance, etc., and a multi-probe, multi-read digital thermometer. This allows for accurate readings of air temperatures, line temperatures, compressor body/sump temps, and more. If you have the proper tool, you can analyze and repair any system.

Fluke 116 Digital Multimeter



Chosen by: Russ Donnici, president of Mechanical Air Service Inc., San Jose, California

About the product: Specifically designed for HVAC professionals, the Fluke 116 digital multimeter includes temperature and micro-amp measurements.

Donnici's take: From a technical perspective, my most useful tool is my Fluke digital multimeter. Since 80 percent of air conditioning issues have some electrical component to them, the digital meter provides a great deal of useful diagnostic information. Refrigerant gauges are extremely important also, but, if a unit isn't running, you need the multimeter to determine why.

Combo Kit provides the ability to troubleshoot and solve problems more efficiently by providing all the needed accessories an HVAC professional would need in a compact carrying case.

Upmore's take: As a technician, my most widely used and helpful tool would be my digital multimeter. Not only is it a necessity for troubleshooting, it's also needed to keep you safe. We work with electricity and advanced control circuits daily. The multimeter provides us with the ability to diagnose several issues safely.

Testo 510 Digital Manometer



Chosen by: Rob Minnick, president and CEO, Minnick's Inc., Laurel, Maryland

About the product: The Testo 510 Digital Manometer is an all-in-one, low-pressure measurement solution. The 510 can measure total external static pressure, differential pressure, duct velocities, manifold pressures, and airflow with a pitot tube.

Minnick's take: It is useful for static pressure testing and zone pressure differential testing.

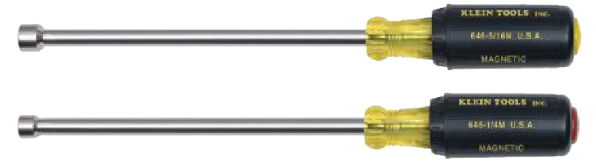
UEi RMS Digital Clamp Meter + Klein Magnetic Tip Nut Driver Set

Chosen by: Drew Barnum, field supervisor, Thornton & Grooms,

Farmington Hills, Michigan,

About the product: The Digital Clamp Meter features a soft-button interface to safely and quickly select any measurement function for full HVAC diagnostics. Dual temperature inputs are useful for measuring T₁, T₂, or differential temperature drops. The DL429 also features built-in wireless capability.

Barnum's take: Two things come to mind when I think of my go-to tools. The first: My multimeter, a UEI Phoenix. This meter is specifically made for HVAC technicians, which means it takes all the necessary measurements in one device. Before I had this meter, I had to carry two multi-



multimeters in my tool bag. The second tool is actually two tools that come in one pack. It is the Klein 6-inch, 1/4-inch, and 5/16-inch Magnetic Nut driver set. The extended shaft and magnetic tips allow for the removal and reinstallation

of the most common sizes of hex head screws with ease. These nut drivers are a must have in every technician's tool bag. It is very difficult, if not impossible, to replace a screw in the back of a furnace without a magnetic tip. **N**



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Tools: To Supply or Not to Supply?

Should Contractors Equip Technicians with the Equipment They Need on the Job?

By Nicole Krawcke
Of *The NEWS* Staff

As experienced workers age and retire, finding quality technicians is becoming extremely difficult. Industry leaders are struggling to promote careers in HVAC and draw new people into trade school programs; however, footing the bill for more than \$1,000 worth of tools on top of education costs may very well be a deterrent. While some contractors are willing to equip technicians with the necessary tools, others require workers to purchase their own, which can be yet another burden for someone just starting out in the field.

Come Equipped

According to Jim Hughes, manager of technical training, Service Experts Heating and Air Conditioning, Richardson, Texas, it really depends on the contractor's policies and the tool as to whether the equipment is supplied to technicians or not. Most often, technicians are required to supply their own hand tools, at the very least, Hughes noted.

"When you get into tools like electric meters, clamp ons, multimeters, and things like that, usually the technician provides those," he said. "When you get into higher diagnostic tools like combustion analyzers, a lot of times, that goes half and half. Some companies provide them, and some ask the technician to provide them. The really expensive things like recovery machines, and things of that nature, typically are provided by the company. It's really kind of a mix."

Some contractors prefer technicians provide their own tools because they "tend to take care of things they pay for themselves a little bit better than things that are given to them," Hughes added.

However, contractors will also run the risk of having technicians buy the most inexpensive tool they can to lower the cost.

"Sometimes that tool is not designed to perform the same task that the company needs it to perform, or it doesn't do it as quickly," Hughes said. "An example would be a vacuum pump. If the technician is really cost-conscious, he or she will buy a vacuum pump that works just fine but has a low capacity, so it won't evacuate a system as quickly. And the company, which is concerned with the amount of time on the job, will get a vacuum pump that



has greater capacity and will pump a system much more quickly."

Additionally, some contractors like to ensure all technicians have the same equipment, so they provide a standard list of tools.

Green Bay, Wisconsin-based Tweet/Garot Mechanical Inc. is a union contractor and thereby provides all tools — hand, power, and specialty — for its service technicians, according to Greg Wierzba, service department manager.

"Tweet/Garot currently has 28 service techs," he explained. "We spend more than \$20,000, on average, for all the tools, equipment, and technology, including iPads/iPhones on their vans [not including parts]. We are constantly improving and upgrading our tools to keep a competitive edge with the newest technology — iPads, iManifolds, Laser aligners, etc."

Wierzba uses Viewpoint Construction software to account for tools and equipment through its Equipment Manger tracking system. "This, in combination with MSI mobile solutions for work tickets and invoicing, allows us to select

and capture tools and specialty tools and track them for inventory and use charge."

Tool Policies

Tim Kraus, service operations manager, Crockett Facilities Services Inc., said the Bowie, Maryland-based commercial contractor is also under a union agreement to supply tools for its technicians. Crockett Facilities Services has a standardized list of tools all technicians receive.

According to Kraus, it costs \$3,500-\$4,000 on average per truck for tools just to get a new technician on the road. Additionally, the contractor supplies Milwaukee Tool-brand equipment, though some prefer other tool brands.

"Quite frankly, certain people like their own tools," he said. "It becomes a very personal thing for some technicians. They like their own tools, or they want to only use a particular name-brand tool they favor."

Crockett's technicians are allowed to use their own tools, if they prefer, but they must still sign off on the tool list that they received from the contractor. "If they're

as recovery machines.

Goodrich also has a policy in place to help technicians with the initial cost of tools. "When a technician is in need of an upgrade or wants to purchase a new tool, we allow them to pay us back over time, usually through three to five paychecks, to help them out with cost," Goodrich said.

Additionally, Goodrich's companies are constantly giving away free tools during weekly meetings, offering them through drawings, and awarding them as contest prizes. "We're constantly gifting tools because we know if they have good tools, they're going to be more effective and efficient in the field and create a better customer experience."

Goodrich is also taking initiative and installing tracking chips into larger tools that connect to a GPS system so he can track them.

"If you're not controlling the larger tools, they seem to find themselves new homes," he explained. "With the technology today, that's much easier. We've been tracking our tools this way for the last six months. It's been very effective. We have routinely found some of our larger, more expensive cameras and things — especially from our plumbing businesses — in pawn shops."

Tool Costs Decreasing

According to Hughes, while tools are not cheap, the overall cost seems to be on the decline.

"Tools are an interesting thing," he said. "There are so many out there — so many different choices — and, despite what people may think, the cost is actually dropping. You have an opportunity now to get tools with a lot more capacity, boasting many more capabilities, than you ever had in the past."

Hughes said his first electric meter cost him \$138. However, meters now run about \$75.

"That was a big chunk of my pay back then. The new meter was digital instead of analog and had much more capability. It wasn't the best meter I could get, but it had much more functionality at a much lower cost, and it was a 30-year difference. So, inflation doesn't play as much of a role in the cost of tools as people think. They're not cheap, by any means, but, in comparison to what they were, the cost is really starting to drop off. There's no reason nowadays a technician shouldn't have quality tools to do their jobs. Most technicians are tool nuts, anyways; we tend to want to buy the next coolest thing. My wife can

Above: Crockett Facilities Services Inc. of Bowie, Maryland, supplies tools to all of its technicians per its union agreement. Left: Tim Kraus, service operations manager at Crockett Facilities Services Inc., said tools become very personal, and some technicians prefer other brands over the Milwaukee Tools the contractor provides.

going to use their own tools, they understand they are responsible for those tools. It becomes their choice."

Kraus said the majority of his technicians have an assortment of their own tools on their vehicles.

"A really popular one is the digital multimeter. Everyone has their own brand that they like. Some people like Fluke, and some like something else. For whatever reason, with multimeters, everyone seems to have a personal preference."

Crockett will also replace all tools, unless there are signs of obvious neglect. "If it's just normal wear and tear or if it breaks, we will give them a new tool," Kraus said. "I've got to tell you, even though we pay for the tools, and the technicians know we pay for the tools, these tools are their instruments, so they treat them very well because they know that's what they need to get their job done. I haven't really had any cases of abuse with the tools."

Ken Goodrich, owner and CEO of Goettl Air Conditioning, Tempe, Arizona; Sonoran Air Conditioning, Phoenix; and Honeybee Air Conditioning Experts, Las Vegas, said he requires technicians provide their own hand tools and basic diagnostic equipment, such as gauges and meters, but his companies provide the larger, more expensive tools, such



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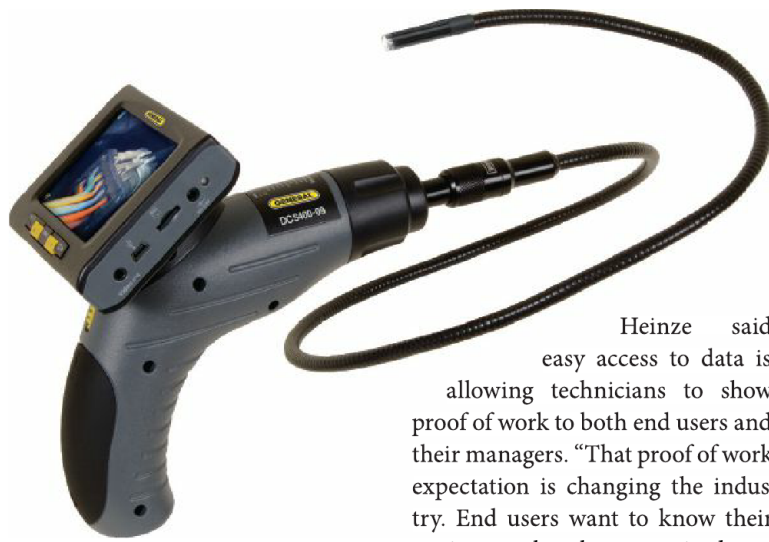
Trending

Continued from page 1.

nessing the power of a smartphone, technicians are taking the power of a \$1,000 computer and applying that technology toward making a better, more accurate tool.

“From the smartphone perspective, it’s easy to use,” he said. “People are comfortable with their smartphones. By using new technology, they can do their jobs a lot quicker and be more mobile. They’re able to communicate back to the office by sharing information for validation on reports and things such as that. We’re using resources compatible with phones to help make their jobs more intuitive and enhance their professionalism.”

Automatic Airflow Balancing has only been in business 10 months. Buswell said they consider themselves as more of a technology company rather than a tool company. The company’s Smartphone Anemometer was the first in a series of tools to connect to smart devices. The tool, thus far, has been well received, said Buswell. The airflow balancing meter converts air speed into air volume, and then records the data to a history log that can be emailed for professional-looking reports. The Airflow and Environmental Meter, released in May, additionally measures temperature,



General Tools’ Wireless Recording Video Inspection System features interchangeable probes, remote viewing, and Internet streaming functionality. Users can also record images or video on the included SD card or on a computer.

humidity, and pressure.

“Smartphones and tablets are starting to become a standard part of the modern technician’s tool belt,” said Andy Heinze, distribution channel development manager, Sporlan division, Parker Hannifin Corp. “One great example of that is using Bluetooth wireless technology on individual pressure and temperature sensors to measure the condition of a refrigeration system, feed that data into a smartphone or tablet app to run various calculations, and then record the information. The recording, and, more importantly, exporting of that data is where the industry really sees the advantage. And the availability of that data after the fact is another big trend we’re seeing.”

Heinze said easy access to data is allowing technicians to show proof of work to both end users and their managers. “That proof of work expectation is changing the industry. End users want to know their equipment has been serviced correctly. Before we had the ability to record and export information like subcooling and superheat from a system, there really was no expectation from the end user for proof of work. Now that we have that ability, it’s starting to become a standard practice. They ask for that information and archive it, so, when there’s service that needs to be done on a particular piece of equipment, they have the history right there, kind of like a medical record.”

Technicians want to use smartphones and mobile devices because they increase efficiency and make it easier to communicate, according to Eric Huber, senior marketing manager, Ridgid

Ridgid’s LM-400 Advanced Laser Distance Meter allows technicians to quickly take distance measurements and perform advanced calculations. By connecting to a smartphone or tablet, installers can overlay measurements on a photo or sketch and then share the infor-



Milwaukee Tool’s M18 Cordless Metal Shears feature a 360-degree tool-free rotating head, ergonomic body design, a variable-speed trigger, and a belt clip.



The hilmor Orbital Flare is designed to produce quality flares frequently and conveniently and can be used on mini splits. It’s equipped with a spring-loaded block to firmly grip the tube, a tube-stop arrow for precise height and positioning, and ball detents for easy flaring yoke alignment.

mation. “It connects via Bluetooth to a tablet or smartphone,” Huber said. “You can create floor plans or overlay measurements onto a photo. You can then quickly text or email it, which allows technicians to make decisions faster by sharing data and communicating more efficiently.”

Chris Carroll, HVACR national sales manager, Mastercool Inc., said wireless and Bluetooth-enabled devices are definitely the biggest trends in the market right now. Companies are at different stages with components and products. Technology is progressing quickly, and many products are becoming obsolete in their current formats.

“The digital manifold category is one area that’s starting to gain a lot of focus right now,” Carroll said. “It’s evolving as we speak. Mastercool is involved and engaging, but we’re kind of in a wait-and-see mode to see what’s going to be the more commonplace format.”

Apps + Cloud-based Software

Workers who are mobile are able to, more tools at their fingertips than they used to, according to Glenn Gardner, business development manager, Fluke Corp.

“It’s not just wireless communication between hand-held test-and-measurement equipment like Fluke devices, but it’s also the fact that work-order systems that govern the work that they do can be with them in the field on a mobile device,” Gardner said.

“Before smartphones became pervasive, it was difficult to access work-order management software system in the field. In addition, most of the test-and-measurement equipment didn’t have wireless capabilities, so you couldn’t get rich data from the equipment into the

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work-order system without going all the way back to your home office, connecting with a USB cable, and getting it into the computer. It was pretty cumbersome. So, the combination of pervasive smartphones/tablets and wirelessly enabled test-and-measurement tools is what will really drive change in the industry.”

Fluke’s software-as-a-service offering, Fluke Connect, is cloud-hosted and communicates with 26 different Fluke products. “It makes technicians much more efficient,” Gardner said. “Fluke Connect resides on your smartphone and allows you to take a technical measurement like a thermal image or digital multimeter reading, communicate that back into the smartphone, and store it in a back-end database. You can also do basic reporting. The fact that you can do all that makes you more efficient in the work you’re trying to do, and it gives you much more context. Our long-term intention is to get the entire product line communicating on the platform.”

According to Russell Harju, product manager, Fieldpiece Instruments Inc., everybody is coming out with apps.

Fieldpiece’s Job Link app allows technicians to view live measurements, gather in-depth diagnostics, and adjust systems to live data. All reports can be emailed to customers and the office as well as saved in the cloud.

“A lot of the apps out there are kind of cool; you can see your measurements on your phone,” Harju said. “We’re trying to connect the technician to his tools, customers, and home office — all in one spot. I’m not sure apps are truly changing the industry until they’re fully running the entire job. Right now, they still have a very trendy, cool factor to them.”

Currently, the Job Link app communicates with Fieldpiece’s SMAN Digital Manifold and SDP2 Dual In-Duct Psychrometer. “Both transmit to the JL2 transmitter via radio frequency and connect to the phone through Bluetooth. That way, you get a nice stable connection between the tools, and you need the Bluetooth connection in order to actually see the measurements on the phone. You need both because phones don’t receive radio frequency, and Bluetooth doesn’t have the kind of range radio does. You need both to do it right.”

According to Harju, more tools will be added to communicate wirelessly with the app. “That’s another thing that’s really nice about apps — it’s really easy to improve and add new features. It’s easy to change an app, whereas changing hardware takes much longer.”

Making the Job Easier

In addition to wireless and mobile capability, Brian Morrison, brand marketing manager, hilmor, said he’s seeing a rising demand for hand tools that are used for servicing and installing mini splits.

“We’re seeing a lot of market growth in that category,” he said. “We’re receiving a lot of calls from HVACR technicians because mini splits are still relatively new in

North America, and there’s still a lot of confusion, specifically about what tools are needed to service mini splits.”

Morrison said hilmor’s Orbital Flare is one of the tools many are asking about. The Orbital Flare can be used for creating 45-degree flares on mini-split units, which are commonly used to connect the refrigerant lines to both the evaporator and condenser. The tool is

equipped with a spring-loaded block to firmly grip the tube, a tube-stop arrow for precise height and positioning, and ball detents for easy flaring yoke alignment. The off-center mounted cone spins on an axis, making sure it uniformly shapes the tube evenly. Finally, a clutch mechanism stops the flaring when the job is complete, ensuring the tube does not crack, saving technician’s time

and material.

“Technicians are always looking for ways to make their jobs easier,” Morrison said. “They’re starting to realize wireless technology and Bluetooth devices are allowing them to multitask, allowing them to do more. They can reduce their time on a call, make quicker calls, and earn more money.”

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easier, according to Karl Johnson, director of engineering, Ritchie Engineering Co. Inc. “Technicians have always wanted that [multi-function] and it’s something we’ve strived for here,” he said.

“Of course, contractors want their jobs to be done as easily as possible, so we’re trying to make the weight in their toolbags less cumbersome by offering fewer big, bulky pieces of equipment they have to carry up to a rooftop,” added Mike Lanners, vice

president, domestic sales and marketing, Ritchie Engineering Co. Inc.

“Manufacturers, like us, are always looking for ways to make things smaller and lighter, but still have them perform at a high level. That’s the challenge we see on a regular basis.”

Mark Klein, president, Klein Tools Inc., said portability is important because “we find our end users in crawl spaces or up in attics, and they only want to carry a minimal

amount of products with them.”

He also noted that safety is a big issue in the market. “A lot of people are focused on gloves and tethers, which hold your tool in place if you’re climbing things like ladders, or you’re up on rooftops. The tethers will catch it from falling down on somebody. Insulated tools are becoming very big. We test all of ours individually for 1,000 volts.

“Durability is also a big trend because contractors are looking for value,” Klein continued. “We just launched what we call Tough meters — they’re dustproof, waterproof, drop-proof, and IP-rated, which makes them able to survive job sites better.”

Another trend making technicians’ lives easier is cordless tools. Corey Dickert, director of product management, Milwaukee Tool, said the cordless trend is extending beyond drills and impacts.

“Now, tools like Deep Cut Band Saws and Rotary Hammers that were once only imaginable as corded tools are not only viable cordless solutions, but, in some cases, are outperforming their corded predecessors, such as in Milwaukee’s new FUEL products,” he noted.

What’s Next

One design trend on the rise is energy-efficiency, or ‘green’ measurement capability, noted Javetski. “In both residential and commercial settings, there is a rising demand to meet more stringent energy-efficiency standards as well as a challenge to simultaneously maintain healthy IAQ. Consequently, HVACR professionals are being called upon to perform more test-and-measurement tasks with parameters such as heating and cooling loss, airflow integrity, and equipment and systems performance. They need tools that support these tasks and ideally want instruments that have the ability to measure multiple efficiency parameters in one unit.”

Harju believes the industry will eventually progress beyond straight measurement tools.

“There will be a more holistic connection and view of information in an HVAC system over time. Technicians will be able to run a report on how the system has been performing over the last six months rather than only taking a snapshot in time, which is done now. A technician relies on the customer to describe the problem in

order for him to diagnose it. And, he may not be able to find the problem right then, because the conditions differ from when the issue was occurring. As technology gets cheaper, that’s the kind of thing we will see.”

Additionally, there’s a need for tools to become smarter and easier to use as more and more new technicians enter the field.

“Deskilling is happening in many industries, including HVAC,” Gardner said. “Experienced folks who have decades of knowledge in their heads are retiring and being replaced by a younger generation that doesn’t have that same experience base. When you have less experience, the tools need to get smarter to do some of the diagnosing an experienced technician could do in his or her head. So, increasingly inexpensive and simple devices are incorporating automatic diagnostics to help newer technicians understand what’s happening with their machinery.

“It’s also worthwhile for experienced technicians to have that information,” he continued. “Even experienced people can benefit from the extra analysis and information. It makes their jobs easier.”

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Uber Model

Continued from page 1.

According to Amazon, its Home Services department allows customers to “purchase and schedule hundreds of professional services from wall mounting a new TV to installing a new garbage disposal to house cleaning, directly on Amazon.com.” Consumers should feel comfortable ordering these services, states Amazon, because the program hand-picks pros who are background-checked and required to maintain insurance. In addition, Amazon offers a happiness guarantee that “ensures the job gets done right.”

Amazon Home Services also offers upfront pricing, which means service professionals compete for a customer’s business based on price, quality, and availability. If customers find a lower price, Amazon will match it. And, with just a few clicks, customers can add pre-packaged services (such as a furnace or air conditioner tuneup) to their cart and then pay for them upon completion of service.

Porch operates in a similar fashion in that it states it can connect homeowners and renters with local home-service professionals, but it is more of a referral service, and its recommendations are based on “whom neighbors have used, project and cost history, and friends’ and



Geary Pacific does not sell products to anyone who is not a licensed HVAC contractor and/or OEM customer.

neighbors’ endorsements.” According to Porch, one of the most popular search terms on its website is “HVAC contractor,” and the company states it “offers licensing verification services to all of our HVAC technicians around the country to ensure the best level of craftsmanship and customer satisfaction.”

Pro’s goal is to provide a “seamless experience to homeowners who are looking for a better way to accomplish their home improvement projects.” Through this app, it’s possible for consumers to get instant price estimates, find professionals, and schedule appointments online for anything from fixing a plumbing leak to installing a furnace. The company matches customers to service professionals through an

algorithm that is based on expertise, ratings, and proximity to the customer. According to the company, “certified pros are deeply qualified home-services professionals who meet Pro.com’s high bar for quality and service. We interview every certified pro and verify their licenses, bonding, and insurance according to local laws. We also scrutinize public records and online reviews.”

These are just a few of the many on-demand labor sites now available, and, although they are still in their infancy, there are already concerns as to how they could affect the HVAC industry.

Friend or Foe?

Most contractors do not expect these on-demand labor sites to

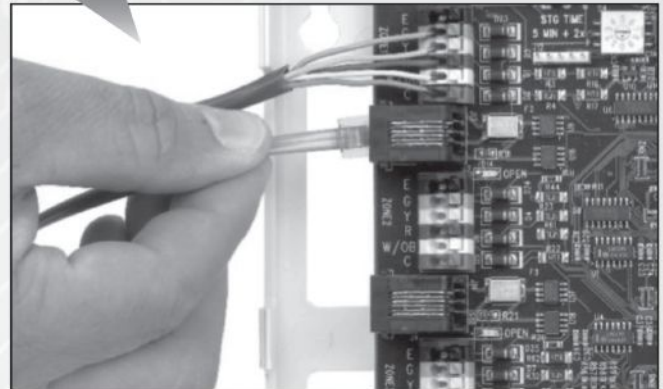
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To minimize the threat from on-demand service companies, professional contractors should be proactive, said Jerry Grendahl CEO, Grendahl Mechanical Inc. in Edina, Minnesota.



The proliferation of on-demand labor sites may encourage individuals to start up one-man operations, notes Grendahl, which would increase competition.

become serious competition for their companies — yet.

“Professional HVACR contractors who rely on loyal customers and referrals for the majority of their business are customer-focused, bonded in a personal relationship, and are not an immediate threat,” said Jerry Grendahl, CEO, Grendahl Mechanical Inc., Edina, Minnesota. “However, believing in the old adage, ‘if it’s not broken, don’t fix it,’ will not carry the day against highly motivated and capitalized players wanting to claim our flag. One can anticipate that, someday, on-demand service companies will be a threat to the traditional professional contractor, to some degree.”

Matt Bergstrom, president, Thornton & Grooms, Farmington Hills, Michigan, also believes it would be a mistake to think these sites could not have a significant impact on the industry. “Look at what Uber has done in a short period of time to taxi and metro car businesses. Having the Internet in the palm of our hands all the time changes the way we look at things. With the younger generations — especially Generation Z (those born after the millennials) — this is all they’ve known. It’s definitely something we, as contractors, need to pay close attention to and figure out how

to harness the benefits.”

Benefits may be difficult to discern right now as most contractors are concerned with the threats these sites may pose to their companies.

“What this does is make our service more of a commodity,” said Travis Smith, owner, Sky Heating & Air Conditioning, Portland, Oregon. “As soon as heating and cooling equipment becomes an appliance and not a professional installation, every contractor will hurt because of lower prices. Sites like these will allow customers to bid on the cheapest person and not the best service.”

Grendahl added the proliferation of on-demand labor sites will also encourage individuals to start up one-man operations as they will be able to use these sites in order to jump start their businesses and get the phone ringing. “This fact alone will encourage some to buy a truck and tools and start a non-official business. In time, a non-official one-man business could evolve into an official business. With more one-man HVAC companies in a neighborhood, there will be more competition, and service will become even more commoditized.”

These one-man operations will need to buy their parts and equipment from somewhere, resulting in distributors feeling the effects of on-

demand sites, as well. “Like many distributors, we adhere to the code of not selling to anyone who is not a licensed HVAC contractor and/or OEM customer,” said Russ Geary, regional vice president, Geary Pacific Supply, Orange, California. “We are proud to maintain a level of professionalism in the industry by only selling to licensed contractors, and our customers respect that.”

This could lead some one-man companies to order their parts and equipment online, but Geary is not too concerned about that, either. “Our customer base needs support, including tech support, design assistance, the ability to return products, etc., and that does not happen with online suppliers. Online folks may claim they can do all that, but I say, let’s see them credit back an entire pickup load of ductwork. That’s why I think brick and mortar distributors will always have their place.”

While these online sites may encourage some customers to choose contractors based on the lowest price, Doug Young, president, Behler-Young, Grand Rapids, Michigan, believes if traditional contractors continue to offer quality products and services, they’ll still win out in the end. “As a distributor, we pride ourselves on standing behind our products and training our contractors on installation and service techniques. Contractors who are interested in educating their employees, having the right tools, and getting certifications from NATE [North American Technician Excellence] or NCI [National Comfort Institute] will always be successful, and homeowners will look for them. It’s difficult to have a long-term success strategy if your method of selling is based only on price and not the value of your services.”

Frank Besednjak, president and CEO, Training Source Inc., agrees, noting contractors who know how to target their marketing by focusing on customers, offering great warranties, being on time, and hiring and training employees who know how to be professional will not be affected by these online sites.

“Most customers would rather do business from a great referral from a friend or neighbor or maybe a series of great reviews before they rely on a new app or unproven online service. Today’s clients ignore the terms used in ads, like ‘great service, quality, integrity, and certified.’ Those words don’t mean anything; they’ve been over-used and abused. Most consumers base buying decisions on referrals, reviews, and your unique selling proposition — what you do and commit to. That’s what makes you better than everyone else.”

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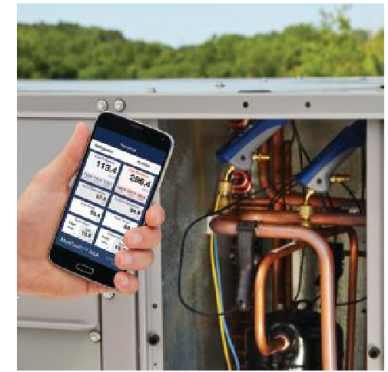


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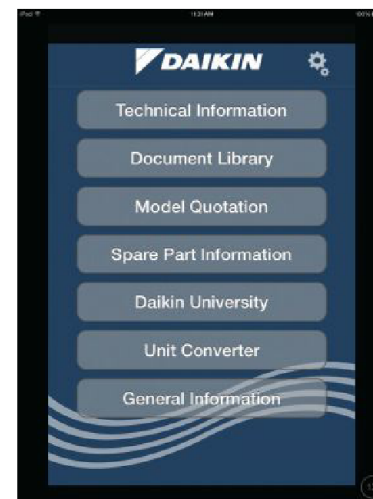


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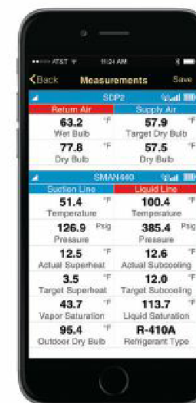


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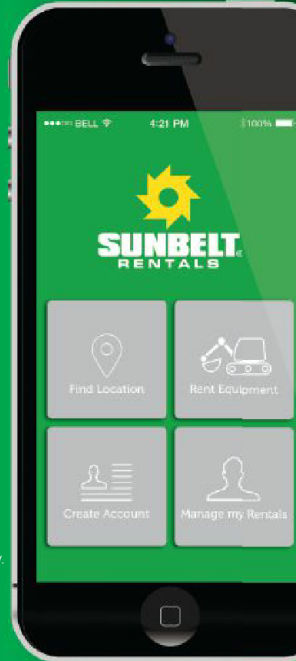
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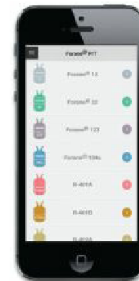
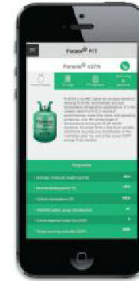
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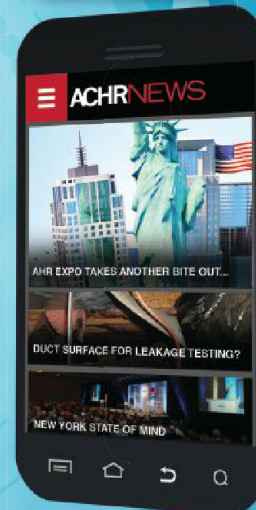
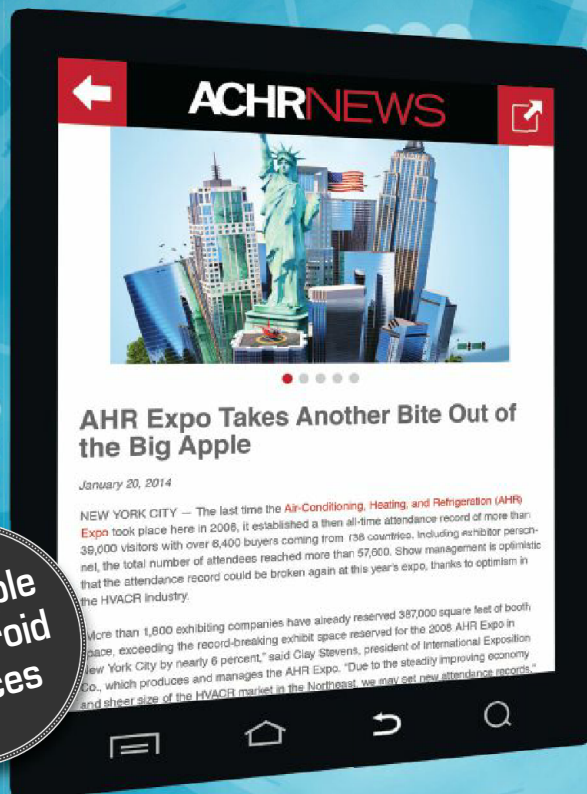
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Service Intl.

Continued from page 7.

to be intentional about every action you take, every day.”

Be a Godiva

“A compliment can change your life,” said Doug Hanson, owner, Doug Hanson Performance Group.

Hanson referenced a pair of compliments that changed his life — the first, as an 8-year-old church rabble-rouser, and the second, very similar in nature, 30 years later.

While in church, a preacher pulled a young Hanson aside, which led him to believe he had crossed the line. Though, to his surprise, the preacher said, “You’ve got something special in you.”

Many years later, while stumbling through his first public presentation, those same words came back to him from another mentor, and his career took a permanent turn for the better.

Hanson used this story to illustrate how positive reinforcement and encouragement can influence a contractor’s employees, friends, and family, while capturing the audience’s imagination.

On the subject of problem solving, Hanson said: “Think about changing how you solve problems. The traditional method is to approach issues by thinking, ‘How can I solve the problem,’ which usually renders one or two solutions. Instead, ask yourself, ‘How can I make it easier?’ or ‘How can I solve it and have fun?’ The results are amazing; you will usually find multiple options by simply changing your approach.”

Hanson used chocolate props — Hershey’s Kisses and a box of elegantly wrapped Godiva chocolates — to illustrate a point about branding. “It’s Valentine’s Day. Are you going to hand your spouse or significant other a big bag of \$5 chocolates or are you going to present a box of Godiva chocolates? You might eat the bag of Hershey’s in the car, but you give away the \$50 box of Godiva’s on Valentine’s Day. Why? Because of the packaging, the presentation — it says something more than a bag of Kisses. Don’t get me wrong, they taste good, but it’s not the top of the line, is it?”

“In your personal life and in your business, you want your brand to be positioned as the top of the line. Your packaging and presentation say a lot about who you are, doesn’t it? Your people say a lot about your company every day,” added Hanson.

When considering branding, every visual encounter, phone call, and footstep inside a home

says something about that respective brand. Hanson had the crowd spend a few minutes discussing how each was becoming a Godiva in their respective markets.

Hanson used a fast-food analogy while teaching the concepts of brand awareness, preference, and loyalty. “If I am driving down the highway and the kids are hungry for burgers, I might stop at the first place I notice a familiar sign that is close to a gas station. I am aware of the burger brand options, but none is particularly important to me. That being said, I happen to be a Burger King fan. It matters to me what kind of hamburger I eat, so I look for a Burger King sign. I have a brand preference. But, if there is no Burger King in sight, and the kids are impatient, we will stop somewhere else.

“If I am such a fan that I would drive away from one burger option in search of a Burger King restaurant, then I am representing what is called brand loyalty. Those are the customers you want to develop for your own businesses,” Hanson said.

Simple Secrets to Sales

Joe Cunningham, founder, SuccessTrack Network, stressed the importance of cashing in on every call. He shared numerous methods that could easily be replicated by the attendees once they returned home — if they wrote everything down. His discussion ranged from performance-based pay systems to thermal imaging instruments to radius marketing techniques. Nearly all the items on Cunningham’s list were simple, repeatable, and results-oriented.

Perhaps his best advice to attendees revolved around how to effectively network during a meeting, such as the one they were attending. He said: “Talk to people here to learn how they knock it out of the park. Don’t talk to the people you came with, or the same people you always talk with. You already know what they know. Find out what everybody else knows.”

Throughout the meeting, members did network with each other. One session was set aside for advisory board (AB) group meetings. An AB is comprised of a diverse mixture of contractors from any one of the three market segments served by the Service Nation Alliance. During the normal course of business, each AB is facilitated by a coach on a weekly conference call, and many of those groups huddled in Phoenix to embrace the face-to-face opportunity.

David Heimer, COO of Service Nation talked with *The NEWS* about the success of the Service Roundtable and the Service Nation Alliance. “I remember when we first started working on these concepts. Matt [Michel] and I might start working



Matt Michel (left), CEO and president, Service Roundtable and Service Nation, shared a casual moment with Mark Matteson (center), and Tony Jeary (right). Matteson, a renowned industry speaker and best-selling author who was in town for business, dropped in for a cameo appearance. While there, he met Jeary for the first time.

at nine o’clock at night and stay up until two o’clock in the morning. After a few years of hard work, the company started growing. There is a glaring need in the construction



(Pictured, from left to right) Ian Schotanus, human relations and safety manager, Comprehensive Employment Solution, Heraldsburg, California, and Roger Custer and Ted Puzio, Southern State Electric, Plumbing, Heating and Air, Hardy, Virginia, discuss Tony Jeary’s presentation.

trade markets for information like this. It’s nice to see what the Roundtable and the Alliance have become for contractors, and we still have a lot to do.”

For more information on Service Roundtable or Service Nation Alliance, visit www.serviceroundtable.com.

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Reduce Basement Humidity to Raise Revenue

By Randy Lenz
For *The NEWS*

In homes that have a basement, it's almost always the location of the HVAC equipment, so contractors spend plenty of time below grade. However, the basement is naturally prone to humidity problems, and while homeowners are often aware that a problem exists, they don't realize their HVACR contractors can provide the best solution.

In fact, not all contractors realize this either, despite the time they spend in the basement. HVACR companies looking to raise their bottom lines should just follow their nose to an easy upsell opportunity.



While homeowners are often aware that humidification problems exist, they don't realize their HVACR contractor can provide the best solution.



Above, left: Dave Krejchi, president of Dalton Plumbing, Heating & Cooling Inc. in Cedar Falls, Iowa, equips each of his techs with hygrometers, which allows them to demonstrate the exact air moisture level to homeowners.



Above, right: Dan Kuepper, vice president, Horsch and Miller Plumbing and Heating in Slinger, Wisconsin, said once customers have a whole-house dehumidifier in the home, they absolutely love it.

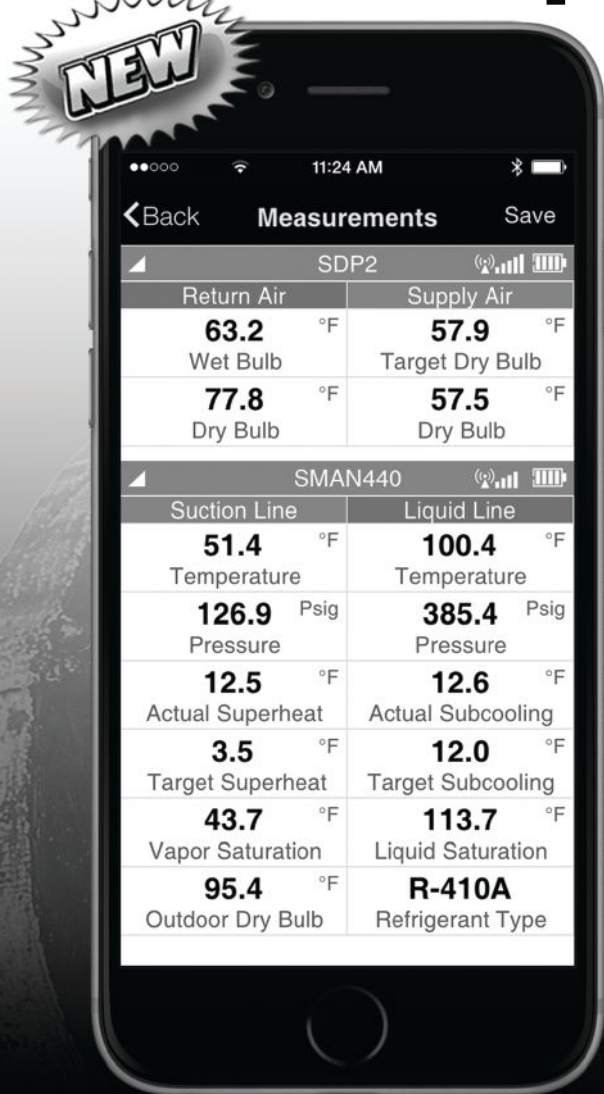
Author Notes



As humidification product specialist at Madison, Wisconsin-based Aprilaire, Randy Lenz provides technical support and training expertise for the company's indoor air quality products. Contact him at Randy.Lenz@aprilair.com. For more information, visit www.aprilairpartners.com

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The Smell of a Sale

Basements rarely smell great to begin with, and just a little bit of moisture and humidity buildup can create a pungent, musty, unenjoyable smell. If contractors get a whiff of mold and mildew, the homeowner can smell it, too. It's the perfect starting point for a conversation about humidity control. Many contractors have seen or smelled this IAQ opportunity and are taking advantage.

Dave Krejchi, president of Dalton Plumbing, Heating & Cooling Inc. in Cedar Falls, Iowa, decided to push high-capacity dehumidifiers last spring. Krejchi mailed a flyer to consumers and ensured his technicians knew what to look for and what to say. The company also armed its techs with hygrometers so they could show homeowners how high the relative humidity was in the basement.

"We were able to say, 'Your humidity is this and it should be that if you want to feel more comfortable.' Or, 'it smells a little damp in your basement. Have you ever thought about whole-house dehumidification?'"

Even an existing portable dehumidifier was seen as an opportunity — not an obstacle — for the sale of a high-capacity dehumidifier. "We would say: 'We see you have a portable down there. We have a unit that's more efficient. It's built more commercially and will work during the cooler, damper days of the year.'"

And, grabbing a piece of the portable pie is a huge part of the equation.

Offer Solutions that Work

Contactors looking for proof that homeowners are concerned about indoor relative humidity can just review the figures for portable dehumidifier sales. "Based on historical figures, the market for portable dehumidifiers is around \$300 million a year when you combine retail and Internet

sales," said Janis Rozenbergs, product marketing manager, Aprilaire. These units are primarily used in basements or crawlspaces, and it's not rare to see one when out on a job.

It's also not rare to see a portable dehumidifier on the curb. Smaller models can't even come close to removing the proper amount of moisture in a tight, modest-sized home. Because they can't keep up, they tend to cycle almost constantly, use a lot of energy, and tend to wear out very fast.

High-capacity units are longer-lasting and run more efficiently, which saves homeowners money on their utility bills. In testing, Aprilaire's high-capacity dehumidifier cost as little as \$27 cents a day to run. Operating costs were calculated by multiplying the average amount of actual daily run time and power consumption given the utility rate where the testing took place. In Madison, Wisconsin, this scenario led to \$177.60 in annual savings on a homeowner's electric bill.

Still, the contractor does have to ensure the consumer understands the value of a high-capacity dehumidifier, considering the difference in price. "Some homeowners will tell you they can buy one for \$300 at the store. At that point, we let them know the dehumidifier we are offering will last much longer," said Dan Kuepper, vice president, Horsch and Miller Plumbing and Heating in Slinger, Wisconsin. "We explain that it uses less energy, and they would have to use many of those portable units to do what this one does. Getting it in the house is the trick. Once customers have it, they love it."

In-home Selling is Key

Kuepper suggests the product more or less sells itself once it's installed or set up, but customers still need some nudging to understand the value. Contractors can accom-

plish this with literature, the correct in-home conversation, and even in-home trials. "We did a 14-day guarantee; we'd put it in and there would be no charge for 14 days. If they didn't want it, they could return it," said Kuepper. "None were returned."

However, Kuepper said they only sold a few units this way because most customers were already aware of the moisture problems in their basements and ready for a real solution. He said the majority of people told the tech to "just install it." It was something the customer already wanted and a product Horsch and Miller felt they could stand behind.

The secret behind selling isn't really a secret at all. It's a matter of showing the customer a problem and presenting a solution, just like any other product the contractor offers. That was the philosophy of Gary Shoemaker at Hardy Heating and Air Conditioning in Long Island, New York.

"A lot of customers trust the service man who's in their house. If he goes down and says there is a mold and mildew problem in the basement, and he can fix it, well, that leads to a sale," he said.

For contractors who already sell IAQ products or are just beginning to grow their businesses, high-capacity dehumidifiers offer a great opportunity to increase revenue. The problem is easy to spot, and the solution is easy to install. Most basement issues can be controlled without ducting, so simply rolling in a high-capacity freestanding unit is all that needs to be done.

"[A dehumidifier] is not something that we sold and promoted like we had a lot of the other Aprilaire products," said Krejchi. "It was a real eye-opener to see what we could do."



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Natural Refrigerants: 'Unmistakable Trend'

Optimism, Sunshine Pervasive as IIAR Meets in San Diego

By Ron Rajecki
Of *The NEWS* Staff

The world is moving toward natural refrigerants. That was the message from the leadership of the International Institute of Ammonia Refrigeration (IIAR) at the 2015 IIAR Industrial Refrigeration Conference and Exhibition in San Diego.

"It's an exciting time in our industry, a time of change," said Dave Rule, president, IIAR. "As regulations and technologies evolve at a breakneck pace, we're seeing new opportunities and applications like never before. We are truly an industry in transition."

According to Rule, three central trends are having an impact on the business environment in the natural refrigerants sector. They are:

Carbon-dioxide technologies — Long considered something of an outlier from a technology perspective, CO₂ is moving into the mainstream and opening the door in new commercial arenas, such as supermarkets;

Low-charge systems — These are expanding the natural refrigerants marketplace by introducing new industrial and commercial applications for ammonia; and

The phaseout of R-22 in the U.S. — This and the broader F-gas phaseout in the European Union are starting to influence decision processes in the commercial and industrial markets.

"Propelled by regulatory change and environmentalism, and fueled by our industry's relentless development of new, ever safer, and more efficient technologies, an unmistakable trend has emerged: The world is moving toward natural refrigerants," Rule said.

IIAR's primary mission is guiding the industry in standards development and code adoption. In the last year, the institute has made what Rule called incredible progress on the development of the comprehensive ammonia safety standard IIAR-2 and has begun working on two new standards: IIAR-4, which covers system installation, and IIAR-8, which covers system decommissioning.



IIAR outgoing chairman Marcos Braz addresses IIAR members during the organization's 2015 business meeting. (Photo courtesy of IIAR)

New Tools and Services

IIAR has created, or is in the process of creating, several new member tools and services, including a dedicated website portal to deliver access to customized IIAR information and resources to the end-user community; a regulatory website portal to provide easy access to essential industry standards, guidelines, and training materials; and a member app designed to facilitate easy access to technical publications and services.

Along with the new initiatives, the institute is continuing its strong commitment to advocacy and education. IIAR has recommitted to a five-year formal alliance with the Occupational Safety and Health Administration (OSHA), and IIAR's government relations committee, working with the Industrial Refrigeration Consortium (IRC), has released an OSHA training webinar to expand the knowledge base of the regulatory community.

In addition, the institute began work in partnership with the Refrigerating Engineers and Technicians Association (RETA) earlier this year to identify ways to grow the industry's pool of new talent.

"By developing a community college-level curriculum that can be delivered by schools across the nation, we hope to prepare the next generation for a career in our

industry with a core refrigeration program," Rule said.

He concluded that, much like natural refrigerants, IIAR is growing, too. The organization is approaching 2,400 members and tracking growth at a 5 percent annual rate.

International Initiatives

Marcos Braz, chairman, IIAR, said the organization's international initiatives are taking off.


Attendance at IIAR's international technical seminars continues to expand, and, in January, IIAR unveiled a new effort to develop a network of international chapters. The institute has formed its first international chapter in Costa Rica and is working with a number of IIAR members in Central America, China, and India that have expressed interest in forming an IIAR chapter.

"Through these international chapters, IIAR will be able to more effectively deliver the technical resources and publications the rest of the world is looking for and start to influence ammonia safety standards, code development, and legislative activity in new arenas outside the U.S.," Braz said.

Bob Port, chairman, IIAR's Ammonia Refrigeration Foundation (ARF), said the ARF endowment has increased to \$2.1 million, reach-

ing the 60 percent mark in its goal to achieve an endowment of \$3.5 million over the next three years.

"ARF funding levels are now capable of supporting a steady stream of important research projects," Port said. "We're well into the planning and development of these projects, and I expect ARF will start turning out new research at a level we haven't seen in past years. At the same time, we've identified our scholarship program as the main area of focus in the coming year and have formed a new scholarship subcommittee to identify and pursue partnerships with educational institutions."

Also at the 2015 IIAR Industrial Refrigeration Conference and Exhibition: Tim Facius, executive director, ARF, was honored with the IIAR Member of the Year Award; and five members were named to the institute's board of directors: Martin Timm of Praxair for second-term end user; Mike Chapman of Tyson Foods for first-term end user; Dave Malinauskas of Cimco Refrigeration for first-term contractor; Jeremy Klysen of Leo A. Daly for first-term engineer; and Mike Lynch of U.S. Cold Storage for executive committee treasurer. 

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Symptoms of Air in a Refrigeration System

Air doesn't belong in a refrigeration system, and if it gets in, it will cause problems. Air can enter a refrigeration system in many ways, including through tube, gasket, or flange leaks; poor charging procedures; poor recovery or recycling procedures; or by forgetting to purge hoses when accessing systems.

If air gets into a system, it will collect in the top of the condenser and be trapped. Air is a non-condensable and cannot be condensed like refrigerant vapors. The liquid seal (subcooled liquid) at the bottom of the condenser will prevent air from leaving the condenser. Air will cause a reduction of con-

densing surface area and cause high condensing (head) pressures.

Air can enter the system through a leak in the low side of the refrigeration system. Refrigerant leaks will eventually lead to an undercharged system. Severely undercharged systems will run vacuums in the low side. These vacuums will suck in air from the atmosphere because the system's low-side pressure is lower than the atmospheric pressure.

Know the Symptoms

The symptoms of air in a refrigeration system are:

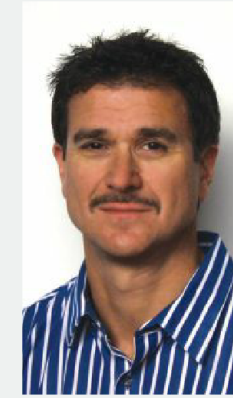
- High discharge temperature;
- High condensing (head) pressure;
- High condenser subcooling;

- High condenser split;
 - High compression ratios;
 - Normal to slightly higher evaporator (suction) pressures;
 - Normal superheats; and
 - High amp draws.
- Let's take a closer look at each of these.

High Discharge Temperatures — These are caused by high compression ratios. High heats of compression are associated with high compression ratios. High compression ratios are associated with high condensing (head) pressure. The compressor has to compress suction vapors through a greater pressure range; thus, more heat is generated.

High Condensing (Head) Pressures — High head or condensing

Author Notes



John Tomczyk is professor of HVACR at Ferris State University, Big Rapids, Michigan, and co-author of the seventh edition of "Refrigeration & Air Conditioning Technology," published by Cengage Learning. Contact him at tomczykj@ferris.edu.



Scan this QR code to purchase a copy of Tomczyk's book, "Refrigeration and Air Conditioning Technology."

pressures are generated from the air taking up condensing surface volume at the top of the condenser. Because the air stays at the top of the condenser and doesn't condense, it leaves a smaller condenser to desuperheat, condense, and subcool the refrigerant.

High Condenser Subcooling — The elevated condensing temperatures and pressures make the subcooled liquid in the bottom of the condenser hotter. Now there is more of a temperature difference between the subcooled liquid and the ambient to where heat is rejected. This will increase the rate of heat transfer from the subcooled liquid because the temperature difference is the driving potential for the heat transfer to take place.

The higher subcooling does not necessarily mean there is more liquid at the condenser's bottom, it just means there is more cooling of the same amount of liquid to make the temperature difference greater. Remember, condenser subcooling is a temperature difference between the liquid temperature at the condenser outlet and the condensing temperature.

High Condenser Splits — Because the air is sitting at the top of the condenser, causing elevated condensing pressures and temperatures, the temperature difference between the surrounding ambient and the condensing temperature will be high. This temperature is defined as the condenser split.

High Compression Ratios — The higher condensing (head) pressures will cause the compression ratio to increase, causing low volumetric efficiencies and loss of capacity.

Normal to Slightly Higher Evaporator (Suction) Pressures — A system's thermostatic expansion valve (TXV) will control superheat as long as the pressure ranges of the valve are not exceeded. It takes

Air in the System

MEASURED VALUES	
Compressor Discharge Temp:	235
Condenser Outlet Temp:	85
Evaporator Outlet Temp:	17
Compressor In Temp:	40
Ambient Temp:	75
Box Temp:	15
Compressor Volts:	230
Compressor Amps:	High
Low Side (Evaporating) Pressure (psig):	8.8 (50)
High Side (Condensing) Pressure (psig):	185.5 (1250)

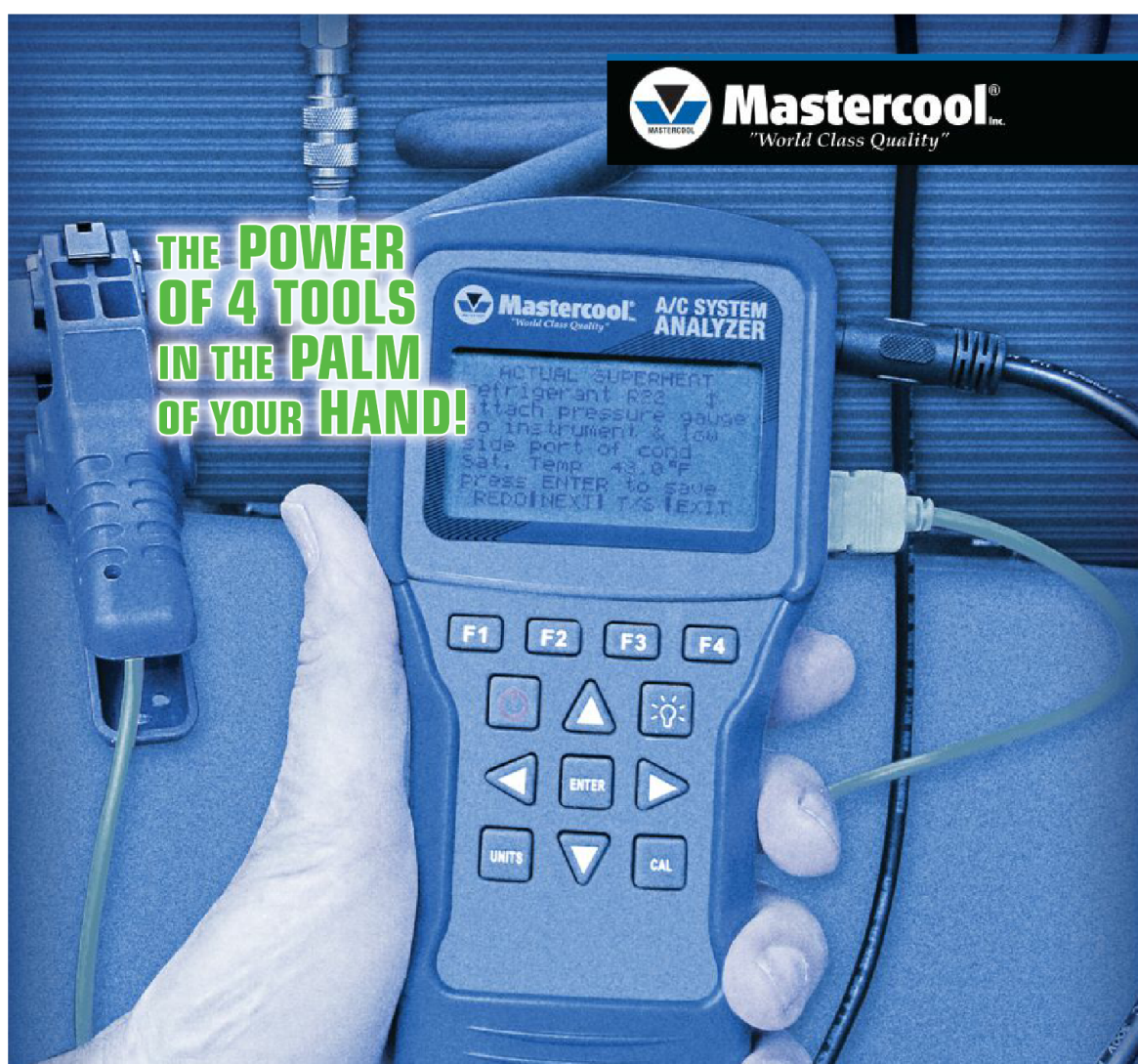
CALCULATED VALUES	
Condenser Split:	50
Condenser Subcooling:	40
Evaporator Superheat:	12

a very high head pressure to exceed the pressure range of most TXVs. The TXV may overfeed a bit on its opening strokes because of the greater pressure difference across its orifice, giving it a slightly higher capacity. This may give the evaporator a suction pressure that's a bit higher than normal.

If the amount of air in the condenser is extreme, the compression ratio will skyrocket and cause very low volumetric efficiencies. This will cause a low capacity, and the box temperature may rise. This added heat in the box may cause evaporator pressure to increase because of the added heat load.

Normal Superheats — As mentioned earlier, the TXV will try to maintain evaporator superheat as long as the valve's pressure range is not exceeded. The opening strokes of TXV may momentarily overfeed the evaporator, but it will start to gain control shortly afterwards.

High Amp Draws — The high compression ratio will cause a greater pressure range for the suction vapors to be compressed. This will require more work from the compressor and increase the amp draw.



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refrigeration zone:

ice breaker by Joe Marchese

Inside a Soft-serve Ice Cream Machine

Author Notes



Joe Marchese
Author, instructor, HVACR contractor, and former RSES international president
joe@koldcraft.com



To read more Ice Breaker columns by Joe Marchese, scan this QR code with your mobile device.

A specialty type of refrigeration system found in some food service businesses is the soft-serve ice cream freezer. These systems are designed to inject an ice cream mix with the correct amount of air, and freeze the mixture to its specific consistency or temperature.

The basic system consists of a hopper, mix feed system, beater, and freezing cylinder. The hopper is a refrigerated holding tank for the ice cream mix. It's designed to maintain the mix at a safe storage temperature. Connected to the hopper is the mix injector. As needed, the mix will be injected into the freezing cylinder. Air, called "overrun," must be added to the mix. This is essential to the consistency of the product. Most machines have an adjustment on the mix feed system to adjust the amount of overrun. Some machines have a fixed overrun, set at the factory, for the particular mix being handled.

As the mixture (ice cream mix and air) enters the freezing cylinder, it freezes the walls of the cylinder, and the beater (sometimes referred to as an auger) scrapes the frozen mixture off the walls. This process continues until all the ice cream mix in the cylinder is at the proper consistency.

The beater assembly has three functions: scrape the frozen product from the cylinder, whip the product, and eject the product.

The beater blades must be kept in good condition and not be damaged during cleaning. Some machines use a beater assembly with removable plastic blades. Care must be taken when removing and replacing these beater blades during cleaning. These blades "wear in" and should not be interchanged.

There are several different refrigeration designs a manufacturer can use for its soft-serve

machines. Some machines will use one refrigeration system to refrigerate both the hopper(s) and the freezing cylinder(s), while others will use a separate refrigeration system for the hopper(s) and the freezing cylinder(s).


The evaporator design slightly varies between the various machine manufacturers. Some manufacturers use a cylinder within a cylinder in which the refrigerant is fed from the metering device into the space between the two cylinders. Others use a cylinder wrapped with copper tubing. In this design, the refrigerant is fed from the metering device into the copper tubing wrapped around the cylinder.

There are several different methods a manufacturer can use to determine when the ice cream mix is at the proper consistency and ready to be dispensed. Some machines monitor the temperature of the ice cream mix. When the mix is at the correct temperature, the beater assembly and the refrigeration system are cycled off. Monitoring the low-side pressure of the refrigeration system also can be used to determine when the ice cream mix is at the right consistency; a pressure control is used to cycle the beater assembly and refrigeration system at a specific pressure.

Another method used by manufacturers is to directly monitor the consistency of the product. As a product begins to freeze, it requires greater force for the beater or auger to move through the ice cream mixture. This additional force, called torque, is measured by the control system so as the product begins to freeze and thicken, the refrigerant cycle can be terminated. This can be determined by either mechanical means, such as a split clutch assembly or by monitoring the amperage draw of the beater motor.

The draw rate, which is the

amount of ice cream that can be removed from the freeze cylinder over a specific time, is limited by the machine's individual capacities. If the designed draw rate is exceeded by the user, the product will be too soft to stand up and, therefore, be unsatisfactory.

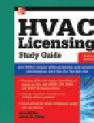
Maintaining and servicing these systems is not difficult, but it does require specific knowledge of the machine's design and operation. Most technicians servicing these systems will have attended one or more training sessions to become well-versed in their required service procedures. 

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Home Services Provider Launches Partnership with Mike Rowe

Partnership Aims to Grow Awareness in HVAC, Plumbing, and Electrical Skilled Trades

LAS VEGAS — In order to combat the growing labor shortage around the U.S. and to help promote awareness of skilled trades, One Hour Heating & Air Conditioning, Benjamin Franklin Plumbing, and Mister Sparky Electric, all part of the Direct Energy family of brands, recently announced a new partnership with television personality Mike Rowe, the creator and executive producer of CNN's "Somebody's Gotta Do It" and Discovery Channel's "Dirty Jobs." The

brands, which have committed to donating \$100,000 in scholarships to the mikeroweWORKS Foundation over the course of 12 months, will work alongside Rowe to promote the skilled trades industry and empower future and potential trade professionals.

"We all recognize there's a labor shortage in the U.S., and, particularly within our brands, our franchisees are finding it difficult to find qualified people," said Mark Baker, franchise president for the three brands. "With his [Rowe's] founda-



As a part of the partnership, real technicians from all three brands will appear in television commercials, radio ads, and in printed materials alongside Mike Rowe. Pictured from left to right: Chris Vincent, Benjamin Franklin Plumbing, Denver; Mike Baker, president of franchise for the three brands; Mike Rowe; and Leroy Steel Jr., Benjamin Franklin Plumbing, Denver.

tion and our national footprint, we thought it would be a good way to find people who could work in the trades and have a good job."

In January, the brands started a scholarship program at Suncoast Technical College in Sarasota, Florida, where the company is sponsoring a class of HVAC technicians and has guaranteed them a job offer when they graduate. In order to receive the scholarship, applicants had to meet requirements that included a background check, drug screening, motor vehicle records check, and pass an interview conducted by a staff member.

According to Baker, each student is being supplied with personal protective equipment, uniforms, and more than \$1,000 worth of tools so they can hit the ground running when they graduate.

As a part of the partnership, Rowe will appear in more than 50,000 television commercials, radio ads, and in printed material alongside real technicians from each of the three brands in the coming weeks. As a longtime advocate of equipping Americans with technical and critical thinking skills, Rowe will also work with the companies to highlight the benefits of careers in the plumbing, electrical, and HVAC industries.

"We're very fortunate Mike is



One Hour Heating & Air Conditioning, Benjamin Franklin Plumbing, and Mister Sparky Electric announced a new partnership with television personality Mike Rowe, the creator and executive producer of CNN's "Somebody's Gotta Do It" and Discovery Channel's "Dirty Jobs," to promote the skilled-trades industry.

going to be in our TV and radio commercials because he can bring this to the national stage, which certainly helps raise awareness," Baker said. "We have 630 franchise territories in the U.S. — hundreds of franchise owners who all need good, skilled labor. What we're trying to say with our partnership with Mike, and with our franchise owners, is we have a lot of jobs available."

This year alone, Direct Energy Services needs to hire more than 2,000 people, Baker noted. "And,

our franchisees can probably easily add another 1,000 on top of that. We're just trying to make sure people are aware there are good jobs out there that can help you take care of your family and have a good living if you're willing to be a skilled tradesman."

Rowe founded the mikeroweWORKS Foundation in 2008 to promote hard work and support the skilled trades.

"The goal of mikeroweWORKS is pretty simple — help close the skills gap by encouraging men and women to get the training they need to pursue good jobs that actually exist," Rowe said in a press release.

"One Hour Heating & Air Conditioning, Benjamin Franklin Plumbing, Benjamin Franklin Plumbing, and Mister Sparky are perfect partners because, collectively, they offer thousands of jobs waiting to be filled. And they know firsthand what a good job really is. I'm flattered for the chance to speak on their behalf and grateful for their generous donation to my foundation."

For more information about this partnership visit www.benjaminfranklinplumbing.com, www.onehourheatandair.com and www.mistersparky.com.

Information provided courtesy of Direct Energy Services. For more information, visit www.directenergy.com/home-services.

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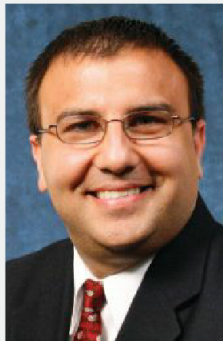
We All Need a Vacation

As you are reading this, I am probably coming back from a mini vacation while beginning to plan for a real week-long vacation later this summer. Like most everyone else, it's easy to get caught up in the day-to-day responsibilities of the job. Hours become days, days become weeks, and weeks become months fairly quickly.

It is easy to get into Memorial Day weekend and realize that you have yet to take any time off this year. While I have already been on more than a few planes this year, my wife does point out that covering HVAC meetings for work does not exactly qualify as a vacation ... regardless how fun all you guys are. And, she is right. If you don't step away from what you're doing and recharge your batteries, you'll never function at peak efficiency. Everybody needs a vacation.

And, I'm guessing, my job is not nearly as stressful as the jobs of most of our contractor readers. Some of you have hundreds of employees who provide for their families with the paychecks they get from your company. That is a lot of responsibility and stress. HVAC is a tough industry, and

Author Notes



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with the ever-changing regulations, technology, and marketing, it takes a lot more than 40 hours a week to stay on top of it all. It would not surprise me to learn that you go to bed thinking about your company and wake up doing the same, though, hopefully, you are sleeping through the night.

Don't you think you need a break from that? We are not just talking a day here or a day there. You need to get away for an extended period of time. Undoubtedly, for the first couple of days of vacation, you will still be thinking about the office. But, as the week continues to move

on ... so will you. When you return to the job, you will hopefully have a fresh outlook on all the problems/concerns/issues that you left behind a week prior.

What is the reason for not going? Will the organization come crashing down in the week or two you are gone? Is there nobody else who can handle the day-to-day issues that come up at work? If the answer to either of those questions is yes, then you have a big problem. You are not hiring the right people, or you are not training them properly.

But, let's be honest. That's probably not the case. It's simply

the fact that you have the most invested in the business, and it's hard to give up that kind of control. I'm assuming you have practices and policies in place for almost any situation. I'm sure your trusted employees will follow those procedures. They might not make every decision you would have made, but I'm pretty sure the building will still be standing upon your return.

Would you ever dream of having an employee who went an entire year without taking any vacation time?

NEWS Editor Kimberly Schwartz recently wrote a cover story on contractors who are reevaluating vacation and time-off policies to make their businesses more attractive places to work. A well-rested employee makes better decisions, connects more with customers, and is generally more enjoyable to be around. If that is true for your employees, it's probably the case for you, too. Also, like in my case, it can only help with the spouse and kids.

So, enjoy the summer. For all involved, I hope it's very hot all across the country. But, make sure to leave time for some relaxation so you can look at your business with fresh eyes.

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