



The Buzz at AHR Expo

Embracing Innovation

BY MARY KATE MCGOWAN, ASSOCIATE EDITOR, NEWS

ORLANDO, FLA.—The HVAC&R industry is hopeful for 2020. Three-fourths of those who responded to the AHR Expo's 2020 Economic Survey and Trend Report said they expect business to increase this year, and 79% reported they are expecting business prospects to be "good" or "excellent."

These expected gains will not happen without facing industry demands. From integration to decarbonization, the industry is working to create solutions for a wide range of inexhaustible market demands. As the industry strives to address wide-ranging challenges with innovative solutions, the study's respondents—both attendees and exhibitors—voted

reliability as the most important consideration.

"The industry overall will continue to be strong as we move forward into 2020," said Mike Smith, a senior marketing manager in marketing communications for Mitsubishi Electric Trane HVAC US.

The industry's challenges and solutions converged at the AHR Expo in Orlando, Fla., from Feb. 3–5. Driven by market demand to develop cleaner technology, nearly 1,900 exhibitors filled the 506,090 ft² (47 017 m²) Show floor with solutions that address various challenges and transitions such as integration and decarbonization.

"Everybody's asking about the new ideas and new manufacturing and new technologies and new ways of doing things," said Rami Al Suleiman, Americas sales manager at PETRA Engineering Industries Co., at the Show.

From the phaseout of R-22 refrigerants to evolving efficiency and energy regulations to increasing security of buildings and their occupants, the HVAC&R industry used the AHR Expo to showcase how the industry is designing products that solve these challenges and more.

Shifting to BACnet SC

One industry shift will affect various players. BACnet Secure

Connect can increase cybersecurity of products that use the protocol. The purpose of BACnet SC is to provide encrypted secure data between nodes, which is rapidly becoming of significant value to building owners, said Andy McMillan, Associate Member ASHRAE, president and managing director of BACnet International.

“So what we want to do is ensure the rapid availability of BACnet SC across a broad range of products. Because you need to implement it across your system,” he said.

BACnet SC is an additional data link option in BACnet, said McMillan, adding “it’s the same BACnet.” BACnet users can pick between IP and MS/TP as two different ways to transport data. Secure Connect is another option to transport data, he said. The implementation is not extreme, and people who



Visitors explored thousands of products in more than 770 categories.

already have BACnet products can move to BACnet SC by working on that one layer.

“Everything else stays the same, and everything else is interoperable and all that good stuff you want,” he said.

BACnet International is speeding up the adoption and implementation by helping suppliers learn what they need to know for implementation, said McMillan. Like other software, it can be designed differently, so having experts implement BACnet SC in a reference implementation that all the participants can see and comment on the source code is beneficial. Experts will explain why the protocol was designed certain ways to help suppliers, McMillan said, which will help increase understanding and reduce backtracking when the suppliers implement the protocol.

Evolving Expectations

Technologies in the residential and commercial sectors are informing each other. More commercial spaces are adopting home automation techniques such as smart thermostats

and voice control integrations, said Tom Rule, business line manager for building automation software at Siemens.

Another example of the residential sector influencing the commercial sector could be what happens as several U.S. states and other countries move away from using fossil fuels.

“At the state level, across the country, we are seeing a snowball effect in the move away from fossil fuels. Talk around the concern on fossil fuels has been replaced with action and innovation,” said Kevin McNamara, senior vice president and general manager for LG Air Conditioning Technologies.

Berkeley, Calif., is a prime example of this movement. Starting in January 2020, the city requires all new buildings to be all-electric with no natural gas hook-ups, said Kyle DelPiano, Associate Member ASHRAE, who is a business development manager for commercial building systems at Xylem.

Over 50 cities and counties across California have or are considering policies to support all-electric new construction. While the trend to

90 Years of Innovation and Counting

Ninety years have passed since the first incarnation of the AHR Expo. And the Show and its ever-changing innovations are showing no signs of stopping. The first International Heating and Ventilating Exposition opened in Philadelphia during the last week of January in 1930, a few months after the Wall Street Crash of 1929. This year, the 72nd edition of AHR Expo showcased the newest technologies and kept the tradition of bridging the gap between industry needs and innovative solutions.



Sanford Blumenfeld, Jin Choi and Modesto Lora—all technicians with Gotham Air—examine Samsung HVAC of America's DVM Maxheat heat recovery system.

move to all-electric is growing, it is still in its infancy and natural gas remains a prevailing option.

"That creates an immediate challenge in HVAC system design: How am I going to get heat into a building without a gas boiler?" he said.

The decarbonization trend challenges manufacturers and system designers to rethink HVAC components. High-efficiency heat pump technology, water-source heat pumps, heat pump chillers and combined heat and power systems are viable options to reduce reliance on fossil fuels, said DelPiano.

Heat pump technology can offer low-ambient heating capability and high equipment efficiency, said Chester Biggs, a product manager for LG Air Conditioning Technologies.

"With the introduction of heat pump technology taking a foothold in the arena, this technology is positioned to meet the needs of the decarbonization and electrification movement and anticipated to grow even more," he said.

McNamara said inverter technology has moved from niche to mainstream to now the primary source of cooling and heating in American homes.

"The move from gas is unprecedented, with utilities and local leaders deciding to embrace the potential of inverter technology and what it can do 365 days-a-year. Homebuilders are helping to drive the change and savvy contractors are giving homeowners the best option, instead of simply defaulting to a traditional unitary application," he said.

Suleiman, with PETRA Engineering Industries Co., said PETRA has been monitoring the industry shift.

"That's a little bit of a challenge to make an air-cooled unit to provide the heating," he said. "We are working on new designs and technologies to see how we can comply."

Suleiman said manufacturers must be able to adapt as the industry shifts and cities want to be as clean as possible.

Another regulation change affects refrigerants. As the industry

transitions to low-global warming potential (GWP), alternative refrigerants to follow the Montreal Protocol and other regulations are driving the change.

The industry is asking how these refrigerant changes from different entities will affect their solutions as the market pushes the industry, said Biggs.

Some exhibitors showcased solutions that work with these alternative refrigerants. Daikin displayed new ultra-high-efficiency chillers that use the ultra-low GWP, ASHRAE class A1, R-1233zd refrigerant, which offers low toxicity and non-flammability.

"We're continuing the push to maximize comfort, performance and efficiency while lowering climate impact," said Kirk Thorne, executive vice president at Daikin Applied.

The chillers closely follow Daikin's move to R-32, another low-GWP refrigerant for rooftop units and other HVAC equipment, he said.

Integration

Technology will inform and adapt the future of buildings and cities.

Joseph Oberle, vice president of corporate development for Delta Electronics, said the company is thinking about the buildings, communities and cities of the future and how technology will move these ideas going forward.

"And I don't think it's a clear path for anyone yet because the industry continues to grow in different directions. But I think the idea of integration of products is going to be really important," he said.

Delta's booth was "live" as it integrated multiple technologies into

one booth. From occupant sensing technologies to smart city technologies, the booth tracked how many people walked through it. Oberle said Delta Electronics is trying to tackle how to integrate technologies across the building and make them easy to install, commission and operate.

His colleague, John Nicholls, president of Delta Controls Inc., added another facet. Previously, the focus was all about energy, especially with data. But now people want to use the data to improve their environments. Nicholls said the company is now focusing on people and creating technologies that sense and customize environments to individuals.

"It feels more tangible (than energy) to people. It becomes personalized," he said.

He said occupants are now talking with building owners and operators to improve their indoor

environments. He said companies are also using technologies to boost recruitment and retention of talent.

System integration and personalized comfort control were two trends Mike Smith, who is with Mitsubishi Electric Trane HVAC US, said he noticed at the Expo. He said he saw a greater focus on integrating occupancy-sensing features into unit controls for better operational efficiency.

"We also noticed increased attention on water-sourced HVAC products and tighter climate control, especially for critical applications like indoor agriculture," he said.

The industry has improved controls, which has affected variable refrigerant flow (VRF) and those systems' integrations, said McNamara.

McNamara said owners are now comfortable looking at larger, different designs with three-phase and single-phase VRF systems, and

LG is seeing more specifications and design-build projects than ever before.

"VRF is a technology—one you have to live with every day. It is built on software and knowledge, as customers are demanding more information around what they are buying and around who stands behind it. Our involvement in controls today is 100 times what it was just a few years ago," he said.

Hydronic technology has also improved, said DelPiano. Many U.S. cities are requiring and incentivizing building owners to meet energy standards with rebate programs. This is driving retrofits, he said.

"These external forces are motivating building owners to assess systems and make improvements to put less strain on the energy grid," said DelPiano. As the industry retrofits existing buildings, he suggested

HVAC Industry Expects Strong Economy in 2020

ORLANDO, FLA.—2020 is looking bright, according to this year's AHR Expo Annual Economic Outlook Survey. The report says 79% of respondents forecast "good" or "excellent" predicted sales for 2020.

Of the 1,148 total respondents, 25% said they expect business to increase by more than 10% this year.

Distributed to attendees and industry manufacturers, the 2020 report gauges the market and includes input on trends, issues

and opportunities. According to the report, respondents said:

The top three market sectors with good or excellent outlooks are light commercial, hospital and health industry and residential.

The market segments that have the best prospects for 2020 are maintenance/replacement, retrofit/renovation and new construction.

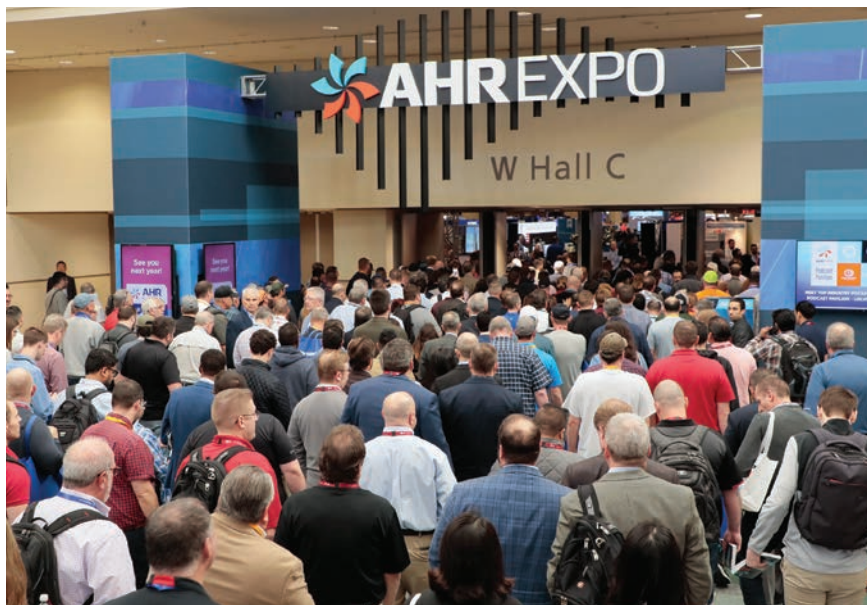
How do customers allocate importance when choosing products?

The top seven considerations, according to attendees:

1. Reliability
2. First Costs
3. Comfort
4. Energy Efficiency
5. Maintenance
6. Indoor Air Quality
7. Sustainability

The top seven considerations, according to exhibitors:

1. Reliability
2. Energy Efficiency
3. Indoor Air Quality
4. First Costs
5. Maintenance
6. Comfort
7. Sustainability



Thousands of people swarmed the entrance to the Show. Once inside, the 50,000+ visitors could explore products in about 1,900 booths.

reviewing mechanical systems through a retrocommissioning process.

“Retrofitting pumps in a hydronic system with variable frequency drives, for example, is a proven method of improving efficiency and reducing energy use. With the new federal standards for pump efficiency taking effect earlier this year, there is an opportunity to retrofit pumps with higher efficiencies in a hydronic HVAC or plumbing system,” he said.

Recruiting Skilled Labor

The HVAC&R industry is no stranger to talking about how to recruit and keep a talented workforce.

This year, LG is planning to expand its educational resources and knowledge access for HVAC professionals about how building ecosystems work together as they relate to HVAC systems, ventilation and controls, according to Biggs.

“With the continued economic growth, especially here in the United States, the industry will continue driving forward across North America. With growth expected to continue, the question will be how the industry plans to keep up, due to the lack of available skilled labor,” said Biggs. “Our multifaceted training commitment also includes plans to open over 20 new partner training academies by the end of 2020, in addition to its four corporate

academies in California, Georgia, New Jersey and Texas.”

Other industry associations are also paying attention to the skilled labor shortage.

“We really need to advertise that this is a great industry to be in. We have a shortage in our trades and in our offices,” said Angie Simon, P.E., Member ASHRAE, president of SMACNA—the Sheet Metal and Air Conditioning Contractors’ National Association. SMACNA is planning to launch an online promotion and recruitment tool in the coming weeks hoping to attract talent to the industry.

“Besides trying to get more people in the trades, we’re trying to diversify,” she said, addressing the need to make trades, particularly sheet metal contracting businesses, more inclusive.

Looking Ahead

The AHR Expo will return to Chicago in 2021. The last Show held in the Windy City was a record breaker.

The 2018 Show at Chicago’s McCormick Place was the largest Show to date. The Expo spanned 530,010 ft² (49 240 m²), which was 29,851 ft² (2773 m²) more than the previous record holder—the 2017 Show in Las Vegas.

The 2021 Show is scheduled from January 25–27.

2020 AHR Expo by the Numbers

Total Verified
Attendance

50,000+

Net Exhibition
Space

506,090 ft²

Total Number of
Exhibitors

1,900

First-Time
Exhibitors

295

International
Exhibitors

577

Danfoss' Refrigerant Solution Selected Product of the Year

ORLANDO, FLA.—Danfoss' CO₂ Adaptive Liquid Management (CALM) solution will reign as Product of the Year in 2020. Danfoss' solution was designed to help the HVAC&R industry transition to more environmentally friendly, efficient refrigerants.

Every year, 10 Innovation Awards winners compete to be Product of the Year. Danfoss beat out the competition with its refrigeration solution that combines Danfoss' liquid ejector and adaptive liquid control case controller algorithm to fully use the evaporator surface in display cases and cold rooms. This provides up to 10% greater energy efficiency in addition to the energy savings inherent in CO₂ refrigeration. The product, which won the 2020 AHR Expo Innovation Awards' refrigeration category, can be applied to small and large CO₂ systems in all climates.

Peter Dee, sales director food retail for North America for Danfoss, said this product fits in with the industry's transition to low-global warming potential (GWP) refrigerants. He said the industry and customer base are looking to adapt using natural refrigerants and are also looking at first costs.

"Cost is very important to customers, and when you develop new techniques like this, the scalability is not there. So by this particular product line combining all our products including our liquid injector means we can drive the cost down, not just only in the products but by creating the efficiency in the application of the system itself," he said.

More Than One Product

This year's Product of the Year is more than one product.

"It was really nice to hear how innovative it is because it's innovation for not just one product. It's a combination of our innovative products that have been developed over a couple years," said Dee.

The system incorporates two "ground-breaking" Danfoss innovations: the ALC case controller algorithm and the liquid ejector, according to Jim Knudsen, a North America food retail segment leader for Danfoss.



From left, John Galyen, chairman of AHRI; Darryl Boyce, ASHRAE president; Peter Dee, sales director food retail, North America, Danfoss; Mark Stevens, show manager, AHR Expo, celebrate Danfoss winning Product of the Year at the 2020 AHR Expo Innovation Awards ceremony in Orlando.

"The ALC case controller algorithm causes the injection of an excess of refrigerant into the evaporators, increasing evaporation temperature and decreasing superheat to close to zero. This proprietary ALC algorithm ensures maximum effective use of the evaporators while minimizing excess liquid passing through the evaporators to a small suction accumulator," he said.

The ALC algorithm builds on more than 80 years of experience of Danfoss' efficient evaporator control, said Knudsen. This in-depth knowledge allowed Danfoss to create a control that injects just enough refrigerant to achieve optimal efficiency while not allowing massive amounts of liquid refrigerant to accumulate at any point in the system.

The liquid ejector uses transcritical expansion energy to efficiently remove liquid for the suction accumulator and then return it to the liquid receiver to be used again.

"This allows the suction accumulator to protect the compressors and requires no additional energy use.

Together, these components optimize evaporator performance, increase suction pressure and decrease compressor energy consumption,” Knudsen said.

Knudsen said the liquid multi-ejector is a solid-state device that utilizes work that would otherwise be lost in the system to pump the excess liquid back through the system—thus protecting compressors against flow-back without adding to the energy used in the system.

The CALM solution increases the evaporating temperature to increase suction pressure, he said. This reduces both the load on the compressor and energy consumption.

“The ALC algorithm can typically achieve energy savings 5% better than minimum competitive active superheat management systems and 10% better than fixed superheat solutions,” he said.

Innovation Awards Winners

The AHR Expo annually attracts innovative solutions to industry problems. A panel of third-party ASHRAE member judges deem 10 products to be the most ingenious



Bottom row, left to right: Karsten Nielsen, global vice president head of HX Supply Chain for Danfoss; Peter Dee, sales director food retail for North America for Danfoss; Robert Hemmerdinger, chief sales and marketing officer for Delta Controls; Ben Schuler, CEO of Infinitum Electric; Steven Tice, vice president and general manager for residential products ducted systems for Johnson Controls, YORK® For Your Home; Doug Donovan, CEO of Interplay Learning; Kevin McNamara, senior vice president and business leader for LG Air Conditioning Technologies USA; Dr. Jin Yan, senior aerodynamics and thermal engineering manager for Danfoss, celebrate being named this year's winners of the AHR Expo Innovation Awards.

for the AHR Expo Innovation Awards.

Winners are named in 10 categories: building automation, cooling, green building, heating, indoor air quality, plumbing, refrigeration, software, tools and instruments and ventilation. This year's companies with winning products were:

- Delta Controls (Building Automation)

- Danfoss (Cooling)
- Danfoss (Green Building)
- York for Your Home (Heating)
- Fresh-Aire UV (Indoor Air Quality)
- LG Electronics USA (Plumbing)
- Danfoss (Refrigeration)
- Interplay Learning (Software)
- Matelex (Tools and Instruments)
- Infinitum Electric (Ventilation)

Donation Benefits Police Athletic League

ORLANDO, FLA.—AHR Expo is giving back to the Orlando community with a donation of \$26,300 from its Innovation Awards program. The Central Florida Police Athletic League (P.A.L.) has been selected as the recipient for 2020. This year's donation marks the largest donation to date, a result of the Innovation Awards program receiving its most ever entries.

Each year, 100% of the entry

fees collected from the Innovation Awards competition are donated by the AHR Expo to a charitable organization within the region where the Show is being held.

The Central Florida Police Athletic League serves the Orlando/Apopka area and is a registered non-profit 501(c)(3) organization dedicated to providing affordable after school, summer and athletic opportunities to more than 500

central Florida youth. P.A.L. partners with organizations to provide a safe, healthy environment for its community children and teens. P.A.L.'s partnership with the police department provides mentorship as well as safety and crime prevention programs. In addition, P.A.L. partners with a number of community organizations to provide athletic, educational and recreational development.



What's New From AHR Expo

ORLANDO, FLA.—Here's a sampling of new products shown at the 2020 AHR Expo.

Johnson Controls announced that it has added fully integrated, factory-built and installed wrap-around heat exchangers (WAHX) to its YORK Solution Indoor and Outdoor air-handling units, meeting a growing need for energy-efficient dehumidification methods in a compact footprint. Integrated WAHX offer dehumidification benefits for many HVAC air-handling system applications including schools, hospitals, laboratories and gymnasiums.

Daikin Applied presented the Rebel Applied rooftop heating and cooling system, the only packaged system to meet ASHRAE's latest standard for performance in airflow design. Ideal for building retrofits due to its compact and customizable design, Rebel Applied delivers superior comfort, indoor air quality and energy savings.

Friedrich unveiled built-in Wi-Fi capabilities for its Floating Air Series ductless split systems. Users can control their system from anywhere anytime using the FriedrichGo app to easily adjust settings or

power their units off and on using their smartphone or other connected device. FriedrichGo also is compatible with Amazon Alexa or Google Home for voice-controlled convenience.

A.O. Smith's Cyclone LV offers the latest advancement for the Cyclone family of condensing gas water heaters. The unit offers increased energy efficiency and lower operating costs. Contractors are able to spec two Cyclone LV units for every four Cyclone Mxi for increased footprint. Its lightweight design offers easy installation and the PermaGlas glass-lining provides superior tank protection against corrosion.

Mitsubishi Electric Trane HVAC US introduces Building Connect+, a new cloud-based controls software package. Building Connect+ is a simple and secure controls platform for managing CITY MULTI VRF systems, third-party BACnet devices and hardwired equipment from one convenient interface. Well-suited for light commercial and multi-family applications, the software reduces initial installation and pairing costs, while reducing commissioning time through the use of a web-based portal.

Mitsubishi Electric Automation displayed the FR-E800 permanent magnet (PM) controller, built upon Mitsubishi Electric's variable speed control technology through years of operation across various HVAC applications, including pumps, fans and compressors. It is designed to save energy, reduce footprint and minimize cost with advances in quality, performance and maintenance capabilities.

The **Grundfos** LCSE end-suction, split-coupled pump with integrated motor, drive and control will be the first end-suction pump to have proportional pressure control. Together with various sensors, these products allow for dynamic and intelligent solutions to many industrial and commercial building applications. With a selection of 21 sizes available, the LCSE provides all the benefits of an LCS pump, enhanced by an integrated motor and variable frequency drive, all made by one supplier.

LG Electronics recently released its R1 Variable Speed compressor. The R1 compressor is engineered for smooth, energy-efficient operation in residential and light commercial applications such as single-family homes, apartments and multifamily



Vincent Lorde (back) and Calixtus Lord (front), both of Lord & Associates Services in Saint Lucia, explore the features of Napoleon Heating and Cooling's NERV2400T energy recovery ventilator.



Byongik Lim with KCA International virtually explores A.O. Smith's X3 tankless water heater technology. The virtual reality goggles allow visitors to see the inside of a pump and how the water heater does not require cleaning.

residential units. It has evolved from LG's traditional scroll compressor and rotary compressor, providing efficiency improvements including a hybrid scroll wrap, a lower-sound-generating structure, and a mid-bearing scroll assembly that reduces tilting movement, lowering wasted energy use.

Cambridge Air Solutions, previously Cambridge Engineering, announced their new name, logo, tagline ("Enriching Lives") and website address (www.CambridgeAir.com) at AHR Expo. The company has manufactured HVAC equipment and technology for warehousing, manufacturing and industrial applications for nearly 60 years.

The new SWOOSH Drain Gun cartridges from **DiversiTech** have a higher capacity at 20 grams (0.7 ounces), providing 25% more capacity. The new cartridge will allow technicians to clear most lines using just one cartridge. Packaged in boxes of 20, the cartridges contain oil-free CO₂ and are 100% recyclable.

Infinitum Electric announced the launch of its IEx Series motor, an IoT-enabled electric motor that's a third of the size and weight of conventional motors while delivering class-leading efficiency and IoT

capabilities. The first shipment of motors is scheduled for June. The company's first product is a 15 hp (11 kW) motor designed for the HVAC plenum fan market, with two smaller horsepower models being released by the end of 2020.

NAVAC's NRDD Recovery Unit features a brushless dc motor that allows it to provide substantial power in a compact size and weight of just 25 lb (11 kg). This dc technology also provides better starting performance under low voltage conditions. Another benefit of NAVAC's NRDD Recovery Unit is its ease of use. Its large, LCD display is backlit for clearly visible, highly intuitive operation.

Bell & Gossett debuted its newest line of in-line centrifugal pumps designed for commercial building HVAC and plumbing—the e-82 Twin. Engineered with a space-saving design, the e-82 Twin is ideal for a wide range of applications. The twin in-line pump is available in 22 models (11 split-coupled and close-coupled models each) and features a changeover valve for the option to operate pumps separately or in parallel.

Big Ass Fans' SpecLab software is a cloud-based, comprehensive

configurator that allows users to build and specify airflow solutions in a level of detail never before possible. Using computational fluid dynamics (CFD) and proprietary airflow data, SpecLab gives customers the ability to model complex facilities, add interior walls and other building elements, and run precise simulations of its fans in a 3D space.

The interlaced microchannel heat exchanger (iMCHE) from **Danfoss** integrates a chiller or rooftop unit's multiple circuits into a single coil with a shared air heat transfer area, controlling each circuit independently. Using the whole airside heat transfer area when operating under part-load conditions, iMCHE is able to maximize system efficiency.

Weil-McLain has added four larger sizes to its advanced, energy-efficient Stainless Vertical Firetube (SVF) boiler portfolio to accommodate large commercial applications.

Marley Engineered Products introduces the UL-listed In-Floor Perimeter Convectector-THX Series heater, which delivers comfort, aesthetics and safety for a supplemental heat system for both new and existing buildings. Offered by QMark and Berko brands, the THX Series

directly addresses the building's need for supplemental heat against the curtainwalls and glazing, while fully integrating with the architects' designed interior spaces.

NIBCO introduces its 585HP (High Performance) Bronze Ball Valves, representing a leap in innovation in the ball valve market. Designed for commercial and industrial applications, the lead-free 585HP full port ball valve line allows for easier installation, adjustability and long service life. The patented laser-welded construction eliminates the threaded body to body-end connection allowing for a higher operating pressure up to 1,000 psi (6.9 MPa) cold working pressure and 150 psi (1 MPa) steam working pressure, and operating temperature up to 250°F (121°C).

Belimo Americas announced the integration of BACnet MS/TP communication capability for the ZIP Economizer. The new BACnet data objects will provide building owners and facility managers the ability to gain valuable insight into the equipment's operation. In addition, the ZIP with BACnet provides Building Management System (BMS) operators flexibility with economizer logic and control parameters now available over the buildings' communication bus.

The **Ruskin** ADC105 addressable damper controller meets NFPA 80 and 105 life safety remote damper testing requirements. The ADC105 is an addressable module that works with SIMPLEX ES fire alarm panels. With the ADC105 connected to a SIMPLEX fire alarm system, it allows continuous monitoring and alarm capability if something should go wrong. The ADC105 allows for the



Julie Birchfield, a mainstream launch manager, and Brad Birchfield, a consultant, discuss the benefits of the two-page scroll and electronically commutated motors for unitary options from LG Electronics USA.

periodic testing that is required in NFPA 80 and NFPA 105.

SPX Cooling Technologies introduces its new Marley MH Element Fluid Cooler, an induced-draft, crossflow closed-circuit cooling tower suitable for heating, ventilation and air conditioning, industrial, and process cooling applications. Because of its hybrid operation and high-efficiency components, the cooling tower delivers more thermal capacity with a smaller footprint and lower fan power.

New Climatix rooftop unit performance optimization solutions from **Siemens** feature Climatix controllers as well as a mobile commissioning application and remote management software. The Climatix solutions provide HVAC contractors a new service program for building owners that simplifies maintenance and management of RTUs for more predictable maintenance and costs and better comfort.

Panasonic displayed the ClimaPure XE ductless mini-split system. With patented nanoe X technology, the

new solution provides a comfortable environment for occupants by reducing common pollutants and odors to help maintain healthy indoor air quality within residential, institutional and light commercial spaces.

Victaulic has launched the industry's first grooved piping system designed exclusively for chlorinated polyvinyl chloride/polyvinyl chloride (CPVC/PVC) pipe. Created for use on Schedules 40 and 80 CPVC and PVC pipe, the system includes a full line of installation-ready couplings, fittings and pipe preparation tools. Victaulic's new solution offers the fastest, cleanest installation method for CPVC/PVC pipe and eliminates several drawbacks associated with traditional joining methods.

The Versatec packaged water source rooftop unit from **WaterFurnace** is not only designed to meet the highest demands in efficiency and features but also exceeds ASHRAE/IES Standard 90.1-2013 requirements for rooftops with economizers. The Versatec Rooftop is

a “clean sheet” design and combines the latest in plenum fan technology, Aurora controls and economizer integration to form a powerful platform of efficiency, flexibility and integrated technology.

The Whalen Company announces the launch of its new Closetline CAS Packaged Heat Pump. Its capacities range from 0.5-ton to 5.0-ton (1.8 kW to 17.6 kW) with 13.5 or 17.0 EER at WLHP conditions in a compact cabinet designed for ease of service. Horizontal units can be serviced through the unit bottom to virtually eliminate removing ceiling units. Units feature optional hot gas reheat for temperature and humidity control, as well as hybrid heating and cooling.

SMARTPACK fan packs from **E Flow Technologies** are engineered to meet stringent low-noise and high-efficiency requirements in industrial and commercial HVAC and heat exchange applications. SMARTPACK’s construction includes a custom-configured Multi-Wing fan, ac or EC motor, fan guard and shroud made from a strong metal frame with a plastic skin. It’s a robust design to meet harsh environment requirements.

ABB’s new Baldor-Reliance EC Titanium integrated motor drive product line utilizes Ferrite Assisted Synchronous Reluctance (FASR) technology with non-rare earth magnet materials to meet and exceed IE5 efficiency. Suitable for constant and variable torque applications, the EC Titanium offers excellent performance across a wide speed load range and above base speed conditions.

Interplay Learning has expanded its catalog to include the facility

management industry. The online courses for facility maintenance include training videos covering HVAC, plumbing and electrical. The 3D simulations can be customized for enterprise solutions allowing companies to deliver cost-effective and scalable training across their entire organization and distribution channel.

Desert Aire SelectAire Plus (SP Series) commercial dehumidification systems offer complete humidity control solutions for large indoor pool applications and water parks. The SP Series incorporates the original SelectAire System energy recovery technology and adds features for applications that require the superior cabinetry, state-of-the-art fan design and next-generation control features for enhanced setup and serviceability.

Nortek Air Solutions is launching the latest addition to its data center cooling line, a computer room air handler (CRAH). The CRAH delivers the performance, serviceability and quality that are required by end users and expected from a Nortek custom air-handling product.

The MGS-400 series gas detectors from **Bacharach** are for refrigerant safety applications inside mechanical rooms, freezers, cold rooms and warehouses. The entire portfolio of products, from the MGS-408 centralized controller and the MGS-550 dual gas detector, to the infrared sensing technologies of the Multi-Zone and MGS-250, offer complete solutions to comply with ASHRAE Standard 15 and EN 378.

ClimateMaster introduces its Trilogy45 (VE) series of packaged geothermal heat pump systems

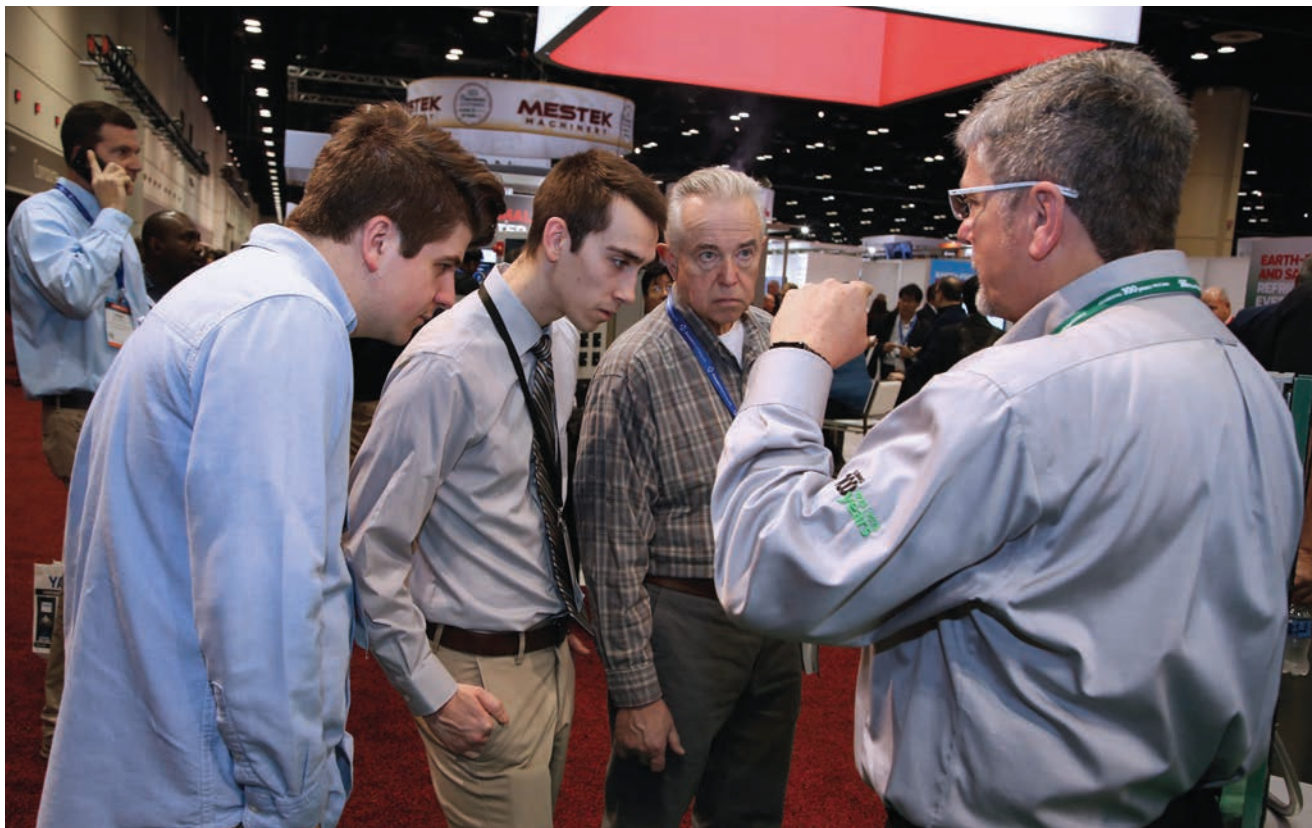
for residential applications. The systems uniquely feature leading-edge variable-speed components, including the compressor, indoor fan, and loop water circuit, designed to match system capacity to the heating and cooling load of the residence. The advanced design results in an energy efficiency rating (EER) greater than 45.

Marketair has added the DMB-34 adaptor fitting to its DrainMate line of condensate drain hose connection fittings for ductless mini-split (DMS) wall-mount evaporators. The DrainMate DMB-34 is a blue flexible plastic adaptor fitting for quickly and easily creating a tight, reliable connection from a DMS wall-mount evaporator’s 5/8-inch (16-mm) condensate drain hose to a 3/4-inch (20-mm) schedule 40 PVC drain pipe commonly used in many applications.

Cleaver-Brooks announces the launch of Prometha™ Connected Boiler Solutions, an Internet-of-Things (IoT) powered solution that delivers next-level boiler innovation and technology. Ideal for any industry, this advanced solution offers users the ability to remotely monitor boiler systems from anywhere, providing alerts and actionable insights that help increase reliability, efficiency, safety and sustainability in the boiler room.

FabricAir introduces the VarioDuct, a highly engineered solution for most commercial building applications that provides both uniform heating and cooling out of the same ceiling-hung fabric duct.

VarioDuct provides unprecedented air comfort and saves up to 25% in energy costs vs. traditional metal systems.



Right, Steve Thompson with Taco Comfort Solutions (2901) shares the benefits of a variable load pump to, from far left, William Fretwell and David Woolaver—both with Vermont Technical College—and Terrence Reilly with TR Consulting.

RectorSeal has expanded with six new additions that help revamp the Coil Cleaners product line. The expansion includes Coil-Cure, one of the HVAC&R industry's few Environmental Protection Agency-registered evaporator coil cleaners. Coil-Cure comes in a mild strength, alkaline, foaming formula in a 18 ounce (0.53 L) aerosol can for disinfecting viruses, bacteria, mold, mildew and other biological coil contaminants in environments requiring a sanitary indoor air quality.

RenewAire has added a dedicated outdoor air system (DOAS) with integrated refrigeration to its DN Series of outdoor air equipment. The DX-based DN Series DOAS with Integrated Refrigeration (IR) features a near-zero exhaust air transfer ratio (EATR) at balanced airflow that's an

ideal outdoor air solution for health care, retail, office, education and most commercial building markets.

Armstrong Fluid Technology has announced the launch of Design Envelope EVERCOOL, a new automation platform for rapid deployment in mission-critical cooling applications. EVERCOOL uses an innovative design with internal redundancy and a hot-standby controller for continuous uptime. This design approach ensures seamless transfer between controllers in the event of a failure.

Samsung unveils its enhanced residential mini-split line Wind-Free 2.0 and Quantum 2.0. The residential models, which are Wi-Fi enabled, allowing voice control with Bixby 2.0 and monitoring from anywhere with an internet connection through Samsung's SmartThings

app. Users can remotely regulate temperature, adjust settings, automate unit functions, receive real time updates and more.

Delta Controls showcased the O3 Sensor Hub 2.0, which features a compact design that bundles multiple sensors into one device. This new solution integrates a variety of sensors—temperature, humidity, occupancy and light—to revolutionize how buildings respond to tenant needs. The system acts as an IoT hub to turn on projectors and TVs, dim lighting and adjust air flow at the building and room level, installations and locations with a single sensor hub.

Future Show Dates

2021 Chicago, Jan. 25 – 27

2022 Las Vegas, Jan. 31 – Feb. 2

2023 Atlanta, Feb. 6 – 8