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2023 AHR Expo Wrap-Up

BY KELLY BARRAZA, MANAGING EDITOR, AND KAITLYN BAICH, ASSISTANT EDITOR

AHR Expo returned in 2023 with strong numbers across the board. The Expo, held from February 6-8, 2023, saw more than 40,000 visitors across three days, 1,779 total exhibitors and 425 international exhibitors spread out over 486,805 ft² (45 226 m²) at the Georgia World Congress Center in Atlanta.

Decarbonization strategies remain at the forefront of the minds of those who work and innovate in the buildings industry, with several manufacturers moving toward carbon-free or carbon-neutral technologies and processes. Other key industry trends for HVAC&R on display were sustainable and energy-efficient building technologies, cooling solutions and resource conservation concerns for the data centers sector and the rise of artificial intelligence (AI) in the built environment.

Legislation Leads the Way for Sustainability

The recently passed Inflation Reduction Act (IRA) has injected the U.S. buildings industry with billions of dollars in funding earmarked for energy efficiency and infrastructure development. The bill is already impacting the products seen at the Expo this year as several industry stakeholders touted innovations in energy efficient technologies.

Joe Parsons, Senior Sustainability Product Manager at Climate Control Group, spoke on the historic act, “The Inflation Reduction Act of 2022 included landmark initiatives supporting geothermal heating and cooling technology to level the playing field for front-end cost vs. total cost of ownership. It is critical to provide resources

to educate the industry on the geothermal incentives provided by the IRA, which provides substantial tax credits of up to 30% to 50% through 2032.”

Data Centers Boom Calls for Innovative Cooling Solutions

Data centers are as hot as ever, with several manufacturers innovating in the sector to meet the cooling and energy needs of this rapidly evolving market. Ben Wulf, President and CEO of Portacool, a Texas-based company that specializes in evaporative cooling technologies, provided insight on the changes seen in the data center industry in recent years. “Most notably, in evaporative cooling technology, we have seen a lot of attention on power utilization and efficiency. How do we lower the power utilization in a given data center? That’s been kind of the big migration. And then also water utilization. That’s where we are really focused—how do we take care of water? Because water takes care of us.”

Danfoss offered insight into HVAC&R industry trends during their 27th annual press breakfast where Jakob Jul Jensen, head of business development for data centers at Danfoss, spoke about the growth of data centers and the increase in cooling needs.

“Data centers can’t be built fast enough to keep up with

the demands of our digital age,” said Jensen, noting that the growth, coupled with the desire for sustainable cooling solutions, is creating opportunities for innovation.

Jakob Carnemark, founder of Endeavour Energy, a Danfoss customer that partners with global cloud companies to build data centers with waterless, energy-saving cooling solutions, shared his company’s story of using Danfoss technologies as part of its comprehensive waterless cooling system. The result was a cooling system, using no water or outside air, that met cooling needs for data centers in high-temperature climates, reducing both water and energy use.

AI is King at the Show

Digitization continues its reign in the built environment, with the rise of smart buildings and automation seen at the 2023 AHR Expo.

2022–2023 ASHRAE President Farooq Mehboob shared his thoughts on the rise of AI during a live *ASHRAE Journal* Podcast recording, “If you look at everything that has been developed in the last 2000 years, you’ll find that 90% of it has been developed in the last 10 years. So that tells you how fast change is happening, how dramatically change is happening and that change is being driven by the digital age. I think in some way, the age of computers is going to evolve into the age of artificial intelligence.”

Mehboob endorsed the evolution of artificial intelligence by sharing a poem about ASHRAE, written by ChatGPT in about 15 seconds with just minimal information about the Society that he input. Mehboob views AI as a benefit

to the industry. “We’re going to enter an age where the equipment will be interfaced with artificial intelligence, and you would just have to walk up to a piece of machinery and say, ‘Hey, how are you feeling today? What’s wrong?’

And maybe the diagnostics will come to you. So I say this, if we don’t get the bots, the bots are going to get us.” ■

To view “Farooq Mehboob’s AI-Generated Poem,” go to page 12.

Advertisement formerly in this space.

Inexorable Technologies and Trends

BY JOHN G. FALCIONI, EDITOR

Peter Leyden's keynote address at ASHRAE's Winter Conference last month laid the groundwork to examine dozens of new technologies and massive trends that are coming and will be almost impossible to slow down, let alone stop, in the next 25 years. These include those impacting high performance buildings, decarbonization and artificial intelligence in the HVAC&R industry.

Leyden is founder and CEO of Reinvent, an organization of top innovators focused on ways to reinvent the world. Previously, he was managing editor of WIRED magazine.

The trends he discussed encompass three fundamental technological transitions of world-historical import:

First, the next stage of infotech, which will bring the spread of ubiquitous artificial intelligence and an unexpected acceleration of innovation. Second, biotech, which will revolutionize human health through genetic

understanding but also bring biological engineering that will fundamentally rework our built world. Third, energy tech, which will fully scale up clean energy and electric transportation that will reshape cities in profound ways. Leyden calls these, The Inexorables.

In front of a crowded ballroom at the conference's keynote event—where ASHRAE President Farooq Mehboob and ASHRAE's Executive Vice President Jeff Littleton also announced the Society's Honors and Awards recipients—Leyden, a leading expert on new technologies and future trends, gave the big picture story of our times and the next 30 years focusing on a dozen new technologies and massive trends that will inexorably occur under almost any future scenarios.

The three tech booms will help drive an overarching economic boom throughout the world, he said. But there also are demographic trends that will inexorably roll out and impact culture and politics, as well as a global version of The Inexorables that will shape the

future in profound and potentially positive ways.

"The time has come for a positive reframe of what's really going on in America and the world right now, and what's actually going to happen in the near future," Leyden said. "For far too long we've been looking at our current situation and the coming decades through the

lens of the past."

He added, "Most people are stuck in the familiar default frame that sees many of our old systems breaking down in the face of myriad challenges like climate change, polarized politics, economic and social



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Peter Leyden, keynote address at ASHRAE's 2023 Winter Conference

inequities, the paralysis of liberal democracies and the rise of authoritarian states. That's as far as they can see."

In the next 25 years, the world arguably will deal with climate change and transition the bulk of our core energy sources from carbon to clean, Leyden added. "We will transition our transportation systems from the internal-combustion engine to electric mobility as part of an even larger process of reinventing cities. We will scale up brand new industries and build a much more environmentally and socially sustainable society. We very likely will reform capitalism around new economic priorities that counter the current imbalances and inequities. And we can be expected to revitalize our democracies and push back on authoritarianism around the world. People in 50, 100 or even 500 years from now may well look back on our era and marvel at the transformation that we're about to go through." ■

Cielo WiGle Wins Product of the Year

ATLANTA—Cielo WiGle’s Cielo Breez Max was named the 2023 AHR Expo Product of the Year, edging out nine other Innovation Awards category winners.

Cielo Breez Max is touted as the industry’s first true smart thermostat for mini-split, window and portable air conditioners.

It is loaded with an AI-based engine to auto-detect AC type and model number. Backed with AWS cloud, it is universally compatible with any brand or type of ductless air conditioner. It works with a 5 V adapter, or it can be hard-wired through 12/18/24 volts ac. It can also be powered with 12/18/24 volt dc.

All Cielo Breez Max devices are secured with TLS1.2 to authenticate and encrypt data securely when transferred over a network. Max is compatible with Amazon



ASHRAE President Farooq Mehboob (far left) posing with Cielo WiGle executives and AHR Expo Show Manager Mark Stevens (center), and AHRI Board of Directors Chairman Kevin Wheeler (far right).

Alexa, Google Home, SmartThings, IFFTT and Siri shortcuts. ■

2023 AHR EXPO INNOVATION AWARDS WINNERS

BUILDING AUTOMATION | CIELO WIGLE INC.—*Cielo Breez Max*

COOLING | CHEMOURS—*Opteon™ XL41 Refrigerant*

HEATING | COPELAND™ HVAC COMPRESSORS—*ZPSK7 Scroll Compressor*

INDOOR AIR QUALITY | BELIMO AMERICAS—*Room Sensor*

PLUMBING | CALEFFI HYDRONIC SOLUTIONS—
Caleffi 536 Series PresCal HP Piston-type Pressure Reducing Valve

REFRIGERATION | COPELAND™ REFRIGERATION COMPRESSORS—
ZFW Variable Speed Scroll Solution for Low-Temperature Refrigeration Applications

SOFTWARE | COVE.TOOL—*loadmodeling.tool*

SUSTAINABLE SOLUTIONS | TACO COMFORT SOLUTIONS—*System M*

TOOLS & INSTRUMENTS | NAVAC INC.—*BreakFree® Power Flaring Tool*

VENTILATION | SMARTD TECHNOLOGIES—*SmartD Clean Power VFD*

NEW AT THE SHOW

New room sensors from **Belimo**, which were awarded the AHR Expo IAQ Innovation Award and the Red Dot Design Award, can accurately measure temperature, humidity, dew point and CO₂ for healthier IAQ and can be individually configured via an app.

Belimo Americas announced the release of new FSKN remote inspection modules that allow code-required periodic testing of International Building Code Chapter 7 actuated life safety dampers without costly visual inspections.

Camus Hydronics featured four

products: the Dynaforce Series, the Avenger Series, Valiant-FT Series II and the VTech. Capable of firing either natural gas or propane, the Dynaforce is a stainless steel condensing boiler with a range of sizes. It was developed for hydronic

Continued on page 12

SECURING OUR FUTURE WITH FAROOQ MEHBOOB



Farooq Mehboob, Kelly Barraza and Kaitlyn Baich.

2022–2023 ASHRAE president, Farooq Mehboob, is spotlighted in this episode, which was recorded live at the 2023 AHR Expo in Atlanta. This interview covers Mehboob’s rich life experience as a building science engineer and consultant, which started in his native country of Pakistan in the 1970s, and also speaks to pressing industry trends like decarbonization and the important groundwork accomplished at COP27 in Egypt last year. Co-hosted by ASHRAE Journal Managing Editor Kelly Barraza and Assistant Editor Kaitlyn Baich. ■

Farooq Mehboob’s AI-Generated ASHRAE Poem

ASHRAE, a society so wise
 Dedicated to advancing the building’s lives
 With technology and knowledge, they strive
 To make the world a better place to thrive

From heating and cooling, to ventilation and light
 ASHRAE’s standards guide with insight
 To improve indoor air quality, comfort, and might
 And help buildings reach their full potential’s height

With members from across the world
 ASHRAE’s message is clear and bold
 To reduce energy use and improve the fold
 And make a difference that’s both sustainable and bold

Through research and development, ASHRAE leads the way
 With solutions for the present and the future, every day
 Their impact on the industry, in so many ways
 Is a testament to their commitment and dedication’s blaze

So here’s to ASHRAE, a society so true
 With a mission that’s making a difference, anew
 Their work is a testament, to what they can do
 And their impact will be felt, by many generations through

NEW AT THE SHOW

continued from page 10

heating and hot water supply. The Avenger is a two-pass, counter-flow fire tube boiler and water heater for hydronic heating and hot water supply applications available in a range of sizes. The Valiant-FT Series II is a gas-fired, stainless-steel condensing fire tube boiler. The VTech is a gas-fired water heater for hot water supply and is a dedicated hot water system designed to provide continuous water temperatures.

Cleaver-Brooks introduced the CBEX-3W fire tube boiler, which achieves an operating efficiency of 85% on natural gas and 88% on #2 oil. Its design combines proven EX technology with components including a large furnace, advanced heat transfer tubes and an integral burner. Cleaver-Brooks also launched its new SwitchFire® condensing boiler, developed for applications requiring dual-fuel capabilities such as health-care facilities and other critical operations.

Delta, a company that provides power and thermal management solutions, demonstrated an integrated ecosystem of IoT-based Smart Green Solutions capable of enhancing energy conservation, productivity, security and indoor air quality (IAQ) in buildings and cities.

Infinitum, creator of the air core motor, announced a next-generation sustainable motor designed specifically for data center cooling applications. The Aircore EC motor for data centers, available beginning in Q3 of 2023, features an integrated variable frequency drive to optimize motor control and efficiency, as well as smart features, such as IoT connectivity to monitor critical equipment and BACnet and Modbus controllers to optimize building operations.

Quantum, a digital twin standard for buildings developed between Salt Lake City-based start-up **PassiveLogic**, the U.S. Department of Energy and industry partners, uses a digital twin description language for autonomous systems in the built environment. The tech is applicable to automation, building control, equipment manufacturing, systems engineering and software service development.

RectorSeal, a subsidiary of CSW Industrials, announced the release of Fortress next-generation lineset covers offering increased durability and performance. ■

Additional reporting by Associate Editors Tani Palefski and Chadd Jones and Technical Editor Rebecca Matyasovski.