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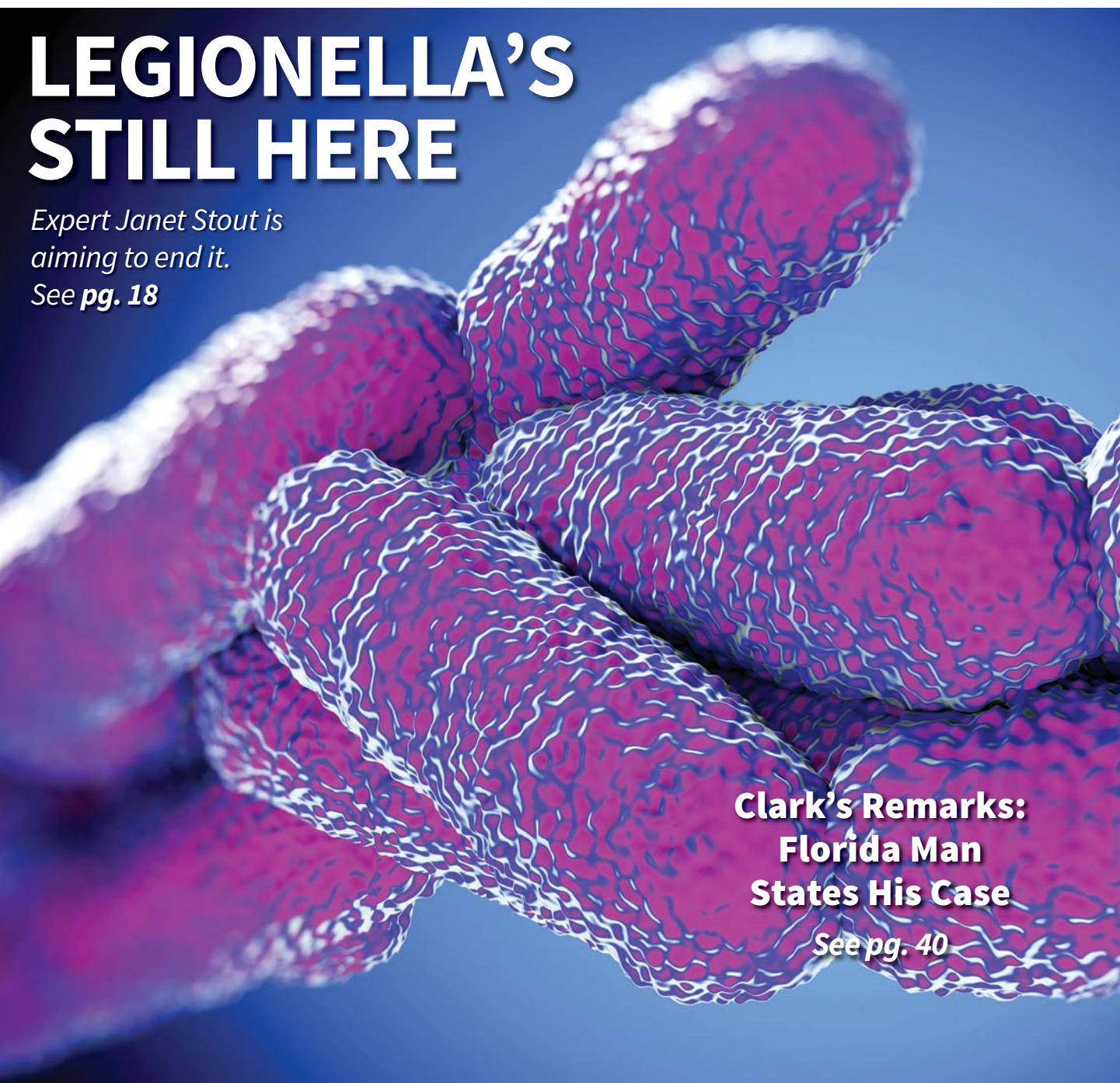
LEGIONELLA'S STILL HERE

Expert Janet Stout is aiming to end it.
See ***pg. 18***



Clark's Remarks: Florida Man States His Case

See pg. 40

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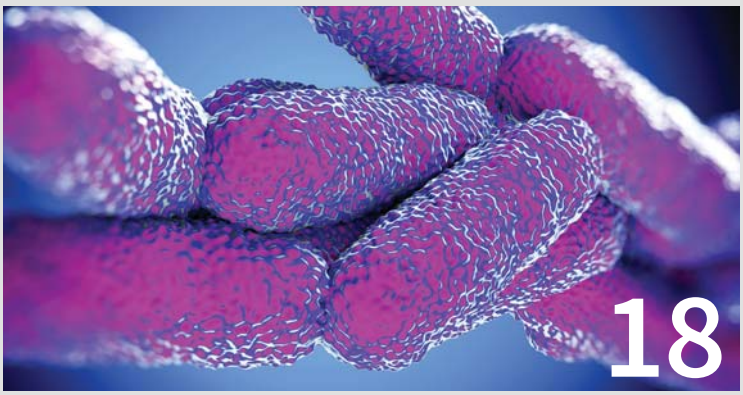

COVER STORY:

Update on Legionella, with Dr. Janet Stout

It may not be in the news every day, but Legionnaires' Disease is still out there. One leading expert updates us on our industry's continuing battle to end it.

By Rob McManamy

FEATURES

BOILER SYSTEMS ENGINEERING

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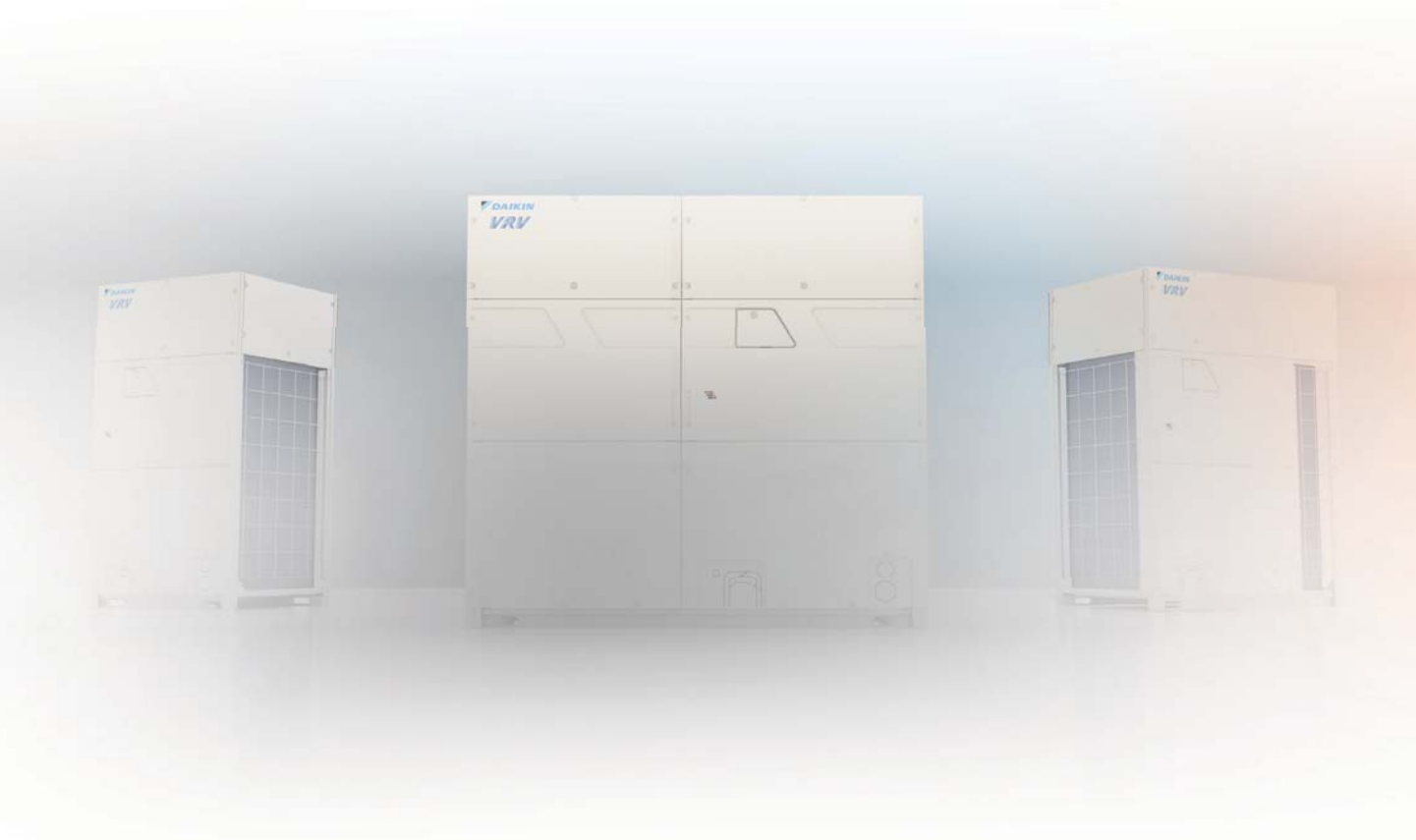

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Has the 'Climate Emergency' Got Your Attention Now?

As I write this summer editorial, I can't help but be struck by how truly hot our world is in 2023.

Truly extreme heat is setting new records everywhere. On July 19, for example, Phoenix, Arizona, logged its 19th consecutive day of temperatures exceeding 110 F. And many of those daily measures have been higher than 115 F. Similarly, on the other side of the globe, Iran's Persian Gulf International Airport reported a heat index of 152 F on July 17.

Think about that. Okay. Now think about it again.

Rob McManamy
Editor-in-Chief

"Even the most skeptical climate change denier knows that this summer has been abnormally hot," writes HPAC sustainability columnist **Larry Clark**. "Every day seems to break yet another record, and it's not just speculation, since global temperature data dating back to 1850 is available for comparison. Indeed, there is solid data indicating that the Earth has been rapidly warming since 1979, and is now warmer than at any time in recorded history."

New ASHRAE President **Ginger Scoggins** is certainly not in denial.

"We are living in a climate emergency," she said in her late June inaugural address in Tampa. "Our desire to be more comfortable has brought us to a place where we need to make uncomfortable decisions... We can accept the challenge of our day regarding the impact of our buildings on the climate crises by equipping our members with the knowledge they need to design and renovate buildings to address the greenhouse gas emissions of our industry."

Indeed, a century ago, comfort and convenience were the goal, as air conditioning, automobiles, airplanes and mass production of consumer goods all eased our existence and enhanced our lives. But they also took our planet in a new direction and hurtled us toward planetary consequences that we could not quite imagine, much less predict. I can't help but think of the new film *Oppenheimer* as I write that, but it also evokes the Stan Lee line from the *Spiderman* comics series, "With great power comes great responsibility."

Responsibility, in many ways, is a calling embedded in engineering, of course. Efficiency is better than waste, no matter how you slice it. That's just logic. Some others see a higher source in that calling.

"My faith calls for us to be good stewards of our resources," said Dr. **Donald Colliver**, an engineering professor at the University of Kentucky, ASHRAE past president and former co-chair of its Task Force for Building Decarbonization (TFBD), formed in 2021. Dr. Colliver told us in an episode of *HPAC 'On The Air'* 15 months ago that his faith was one big reason why he had postponed retirement to devote himself to decarbonization.

Toward that same end, the new TFBD Chair **Kent Peterson**, PE, explained the urgency behind his own calling to promote decarbonization within our industry.

Appearing on *HPAC 'On The Air'* earlier this year, he said, "We know that greenhouse gases trap heat in our atmosphere. As population has been growing, and as we build more buildings, we're now scheduled to double the global building stock by 2060. When we get to 2050, there will be close to 10 billion people on this Earth. So, we need to figure out better ways to do it. And that's the bottom line... We're all on a journey. We have to find reliable and affordable methods to decarbonize. The building industry and the electric generation industry are going to have to work together to optimize what that solution is going to be."

Working together is also something at which engineers excel. May we all find the partners we need to help us succeed in those vital efforts, sooner than later. After all, as we all now know, the heat truly is on.

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Responding to Pandemic, ASHRAE Publishes Standard 241, Control of Infectious Aerosols

"Groundbreaking, pioneering" new standard for buildings now available to public.

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) announced July 7 that it has published its new "pioneering, consensus-based, code-enforceable standard," developed to reduce the risk of infectious aerosol transmission in buildings.

ASHRAE Standard 241, Control of Infectious Aerosols can be purchased at ashrae.org/241.

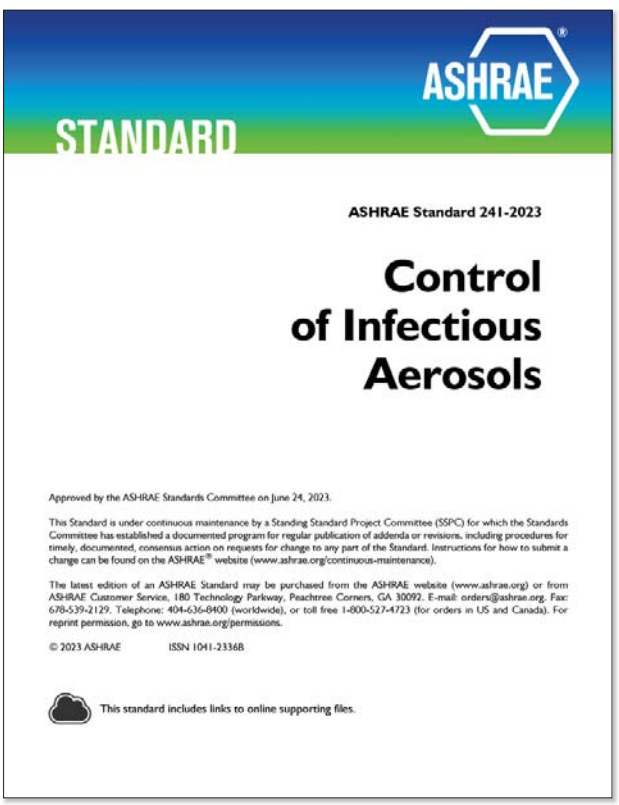
Described as "groundbreaking," Standard 241 establishes minimum requirements to reduce the risk of airborne disease transmission, such as SARS-COV-2 virus, which causes COVID-19, the flu virus and other pathogens in buildings such as single-family and multi-family homes, offices, schools and healthcare facilities.

Of note, the standard applies to new and existing buildings and major renovations and provides requirements for many aspects of air system design, installation, operation and maintenance procedures and schedules.

"Standard 241 represents a significant step forward in prioritizing indoor air quality," said 2022-23 ASHRAE President **Farooq Mehboob**, Fellow ASHRAE. "By implementing the requirements outlined in this standard, we can improve the health, well-being and productivity of building occupants. This standard empowers building owners, operators and professionals to take proactive measures in safeguarding indoor environments. It's an essential tool for creating healthier indoor environments and promoting sustainable practices."

While not an ANSI standard, the consensus process from project approval, development and final approval of this standard, including a public review, took just six months from authorization to completion and only four months of development time dating from the first meeting of the project committee.

"Volunteers and staff dedicated their expertise and thousands of hours of their time to address this urgent industry and societal need," added ASHRAE Presidential Fellow and Standard Project Committee 241 Chair **William Bahnfleth**, Ph.D., P.E. "The development of this standard shows not only ASHRAE's ability to respond rapidly to a societal need, but also a steadfast commitment to the health and safety of people in buildings everywhere. This is a significant achievement and milestone in connecting building design and operation with public health."



ASHRAE Standard 241, *Control of Infectious Aerosols* establishes minimum requirements to reduce the risk of disease transmission by exposure to infectious aerosols in new buildings, existing buildings, and major renovations. Infectious aerosols are tiny, exhaled particles that can carry disease-causing pathogens and are so small that they can remain in the air for long periods of time and be inhaled. Use of this standard would reduce exposure to SARS-COV-2 virus, influenza viruses and other pathogens that cause major personal and economic damage every year.

Important topics addressed in the standard:

- **Infection Risk Management Mode** (IRMM) – Establishes requirements for an infection risk management mode, which applies during identified periods of elevated disease transmission risk. AHJs (Authorities Having Jurisdiction) can determine when the enhanced protections of Standard 241 will be required, but its use can also be at the discretion of the owner/operator at other times, for example, during influenza season. This aspect of Standard 241 introduces

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the concept of **resilience** – the ability to respond to extreme circumstances outside normal conditions - into the realm of indoor air quality control design and operation;

- **Requirements for Equivalent Clean Airflow Rate** – Sets requirements for equivalent clean airflow rate target per occupant of pathogen-free air flow, reducing the risk of infection Other indoor air quality standards, including ASHRAE Standards 62.1, 62.2, specify outdoor airflow rate and filtration requirements to control normal indoor air contaminants. Standard 241 breaks new ground by setting requirements for occupied areas of a building that would have the same effect as the total of outdoor air, filtration of indoor air, and air disinfection by technologies such as germicidal ultraviolet light. This approach allows the user of the standard flexibility to select combinations of technologies to comply with the standard that best satisfy their economic constraints and energy use goals;
- **Requirements for Use of Filtration and Air Cleaning Technology** – Dilution of indoor air contaminants by ventilation with outdoor air can be an energy intensive and expensive way to control indoor air quality. Standard 241 provides extensive requirements for use of filtration and air cleaning (such as HEPA filters, air ionizers, or UV lights) to effectively and safely achieve meet equivalent clean airflow requirements efficiently and cost effectively. These include testing requirements to establish performance and to demonstrate that operation does not degrade indoor air quality in other ways, for example by elevating ozone levels;
- **Planning and Commissioning** – Standard 241 provides assessment and planning requirements culminating in the development of a building readiness plan, a concept carried over from the work of the ASHRAE Epidemic Task Force. It also describes procedures for commissioning systems to determine their installed performance.

The Standard 241 committee will continue and work on improving sections of the standard adding additional requirements, clarifying requirements and developing tools to help the public use the standard. Industry and consumer-friendly resources such as courses, podcasts, factsheets and information events will be introduced in the future.

For additional details or to purchase Standard 241, visit ashrae.org/241, or contact ASHRAE Customer Contact Center at 1-800-527-4723.

Welcoming 2023-24 Leadership – In June, at its annual meeting in Tampa ASHRAE installed its 2023-24 Society president, officers and directors.

Ginger Scoggins, P.E., Fellow ASHRAE, will serve as the 2023-24 Society president.

During her inaugural presidential address, Scoggins introduced the theme for the 2023-43 Society Year, *"Challenge Accepted: Tackling the Climate Crisis."* The theme explores integrated solutions to address the effects of the climate crisis through meaningful building decarbonization strategies.

"We are living in a climate emergency," said Scoggins. "Our desire to be more comfortable has brought us to a place where we need to make uncomfortable decisions. We can accept the challenge of our day regarding the impact of our buildings on the climate crises by equipping our members with the knowledge they need to design and renovate buildings to address the greenhouse gas emissions of our industry."

Scoggins is President and owner of Engineered Designs, Inc., a consulting engineering firm in Cary, NC.

Elected officers who will serve one-year terms are:

President-Elect: **Dennis Knight,** P.E., BEMP, Fellow ASHRAE, Principal, Whole Building Systems, LLC., Mount Pleasant, SC;

Treasurer: **Bill McQuade**, P.E., Fellow ASHRAE, LEED AP, Vice President, Regulatory Affairs, Baltimore Aircoil Company, Jessup, MD;

Vice President: **Billy Austin**, P.E., BCxP, BEAP, BEMP, CHD, HBDP, HFDP, OPMP, Member ASHRAE, Principal, Shultz Engineering Group, Charlotte, NC;

Vice President: **Ashish Rakheja**, Member ASHRAE, Director/Chief Operating Officer, Aeon, Noida, India.

The following officers will serve one, two-year term:

Vice President: **Wade H. Conlan**, P.E., BCxP, Member ASHRAE, CxA, LEED AP BD+C, Principal, Hanson Professional Services, Maitland, FL;

Vice President: **Chandra Sekhar**, CPEng., Ph.D., Fellow ASHRAE, Professor, National University of Singapore, Singapore.

About ASHRAE

Founded in 1894, ASHRAE is a global professional society committed to serve humanity by advancing the arts and sciences of heating ventilation, air conditioning, refrigeration, and their allied fields. As an industry leader in research, standards writing, publishing, certification and continuing education, ASHRAE and its members are dedicated to promoting a healthy and sustainable built environment for all, through strategic partnerships with organizations in the HVAC&R community and across related industries. HPAC

For more information and to stay up-to-date on ASHRAE, visit ashrae.org and connect on Instagram, LinkedIn, Facebook, Twitter and YouTube.

Letter: New Ventilation Guidelines Neglect Geometry

Re the May/June 2023 cover story, "Big News: CDC Key Recommendations for Improving Ventilation in Buildings":

Dear Editor,

As a member of the *HPAC Editorial Advisory Board*, I feel I have an obligation to point out that the CDC ventilation recommendation is based merely on air changes per hour, with no mention of the geometry of the air movement through the occupied space. This can have a huge impact on the effectiveness of the ventilation being provided.

For example, in the all-too-familiar design for mixed air ventilation, both the locations for air entering the space and leaving the space are located in the ceiling. This design is not resilient or fail-safe. Should the situation arise where the supply air (SA) is not being cooled, the clean air will stay aloft until drawn away by its nearest exhaust grille. This failure to cool the supply air can be due to either design, equipment failure, or to a major power outage during a heat wave.

In one investigation I performed in an elementary school during a hot spell in May of its first year of occupancy, this was what I found. While four air changes per hour of ventilation were reported as being provided, all this air movement was near the ceiling. Nearer to the floor, where the children were, it was so stifling that one student was sent to the hospital as a precaution.

And that was pre-pandemic.

If the placement of both the supply and exhaust locations in the ceiling is to be avoided, a preferable geometry would have the SA introduced low in the space, while the exhaust air to be removed would be as high in the space as possible. This air movement geometry is called **displacement ventilation**.

To increase resiliency, the exhaust could be augmented by using solar energy to increase thermal buoyancy of the air leaving the building. That way, should there be a power outage during an extended heat wave, embracing natural ventilation forces would achieve some air movement through the building as opposed to stifling conditions.

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Positive Signs Point to Defiant Economic Strength

As inflation slows, supply chains improve, hiring stays hot and projects proceed, the latest consensus forecast foresees no real downturn until well into 2024.

"Reports of my death have been greatly exaggerated."

According to legend, Mark Twain reportedly issued that memorable clarification in 1897 after rumors of his earthly demise had circulated widely. Properly attributed or not, it would seem that those words apply equally well to the still-vital U.S. economy in the summer of 2023.

Despite persistent predictions of a post-pandemic recession dating back to last summer, back-to-back quarters of GDP decline, and 15 straight months of Federal Reserve interest rate hikes targeting high inflation, the economy is still quite healthy. And the latest numbers on both unemployment and inflation in July are evidence of extraordinary resilience in the face of multiple, epic, global challenges.

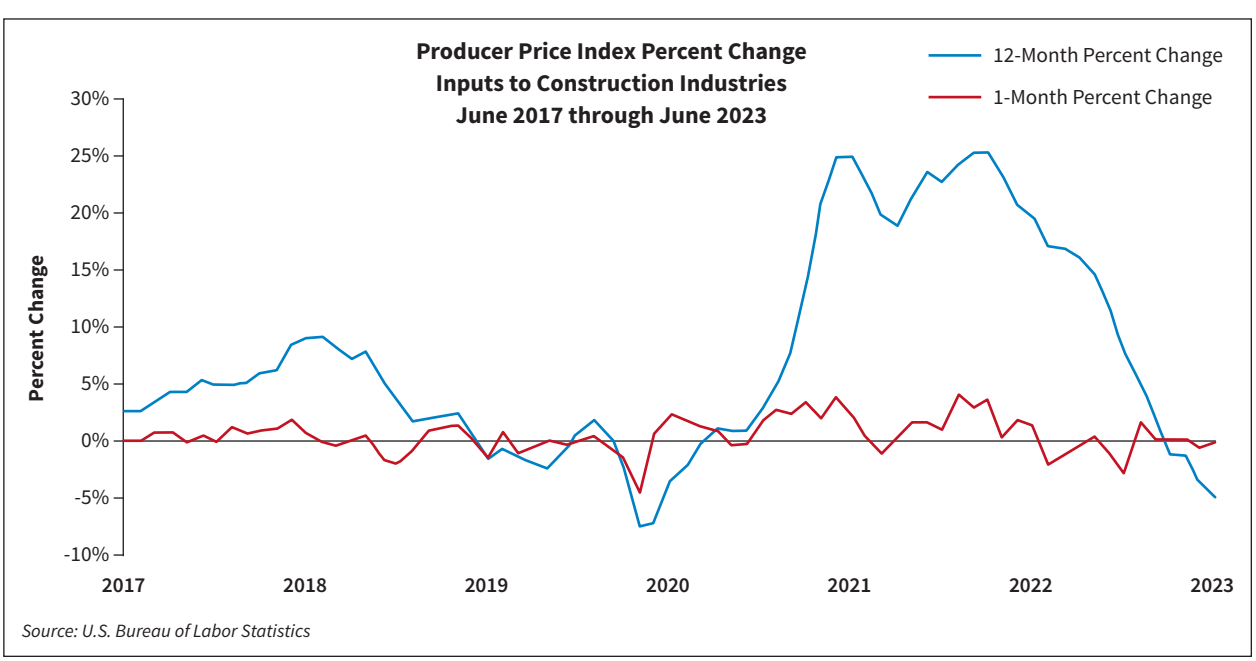
"This time, the optimists were right," wrote Nobel Prize-winning economist **Paul Krugman** July 14. "If you were saying that we would need years of high unemployment to tame inflation, the fact that inflation has come way down without *any* rise in unemployment means that you got it really, really wrong."

Added Moody's Analytics chief economist **Mark Zandi**, "The deep pessimism about the U.S. economy's prospects appears to be giving way to a more hopeful outlook."

Indeed, the latest industry employment

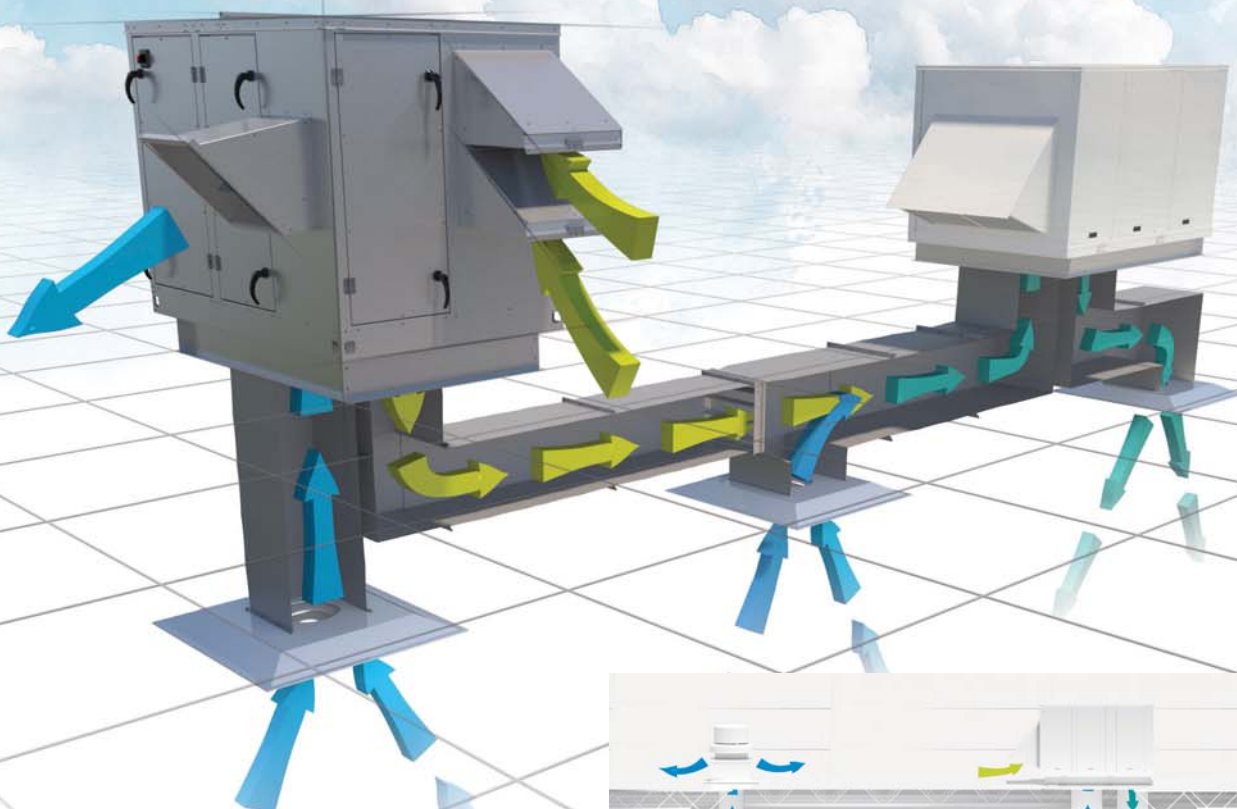
CONSENSUS CONSTRUCTION FORECAST, JULY 2023

Consensus		Actual $	Forecast % Change	
		2022	2023	2024
Dodge Construction Network	Nonresidential Total	—	19.7	2.0
S&P Global, Market Intelligence	Commercial Total	—	11.2	-1.7
Moody's Analytics	Office	—	8.0	-1.4
FMI	Retail & Other Commercial	—	10.8	-2.8
ConstructConnect	Hotel	—	24.0	7.0
Associated Builders & Contractors	Industrial Total	—	55.1	5.4
Wells Fargo Securities	Institutional Total	—	10.0	3.6
Markstein Advisors	Health	—	10.4	3.0
Piedmont Crescent Capital	Education	—	10.5	4.3
	Religious	—	8.4	1.0
	Public Safety	—	3.9	5.3
	Amusement & Recreation	—	10.2	1.9



Source: U.S. Bureau of Labor Statistics

Improve Indoor Air Quality with Energy Recovery



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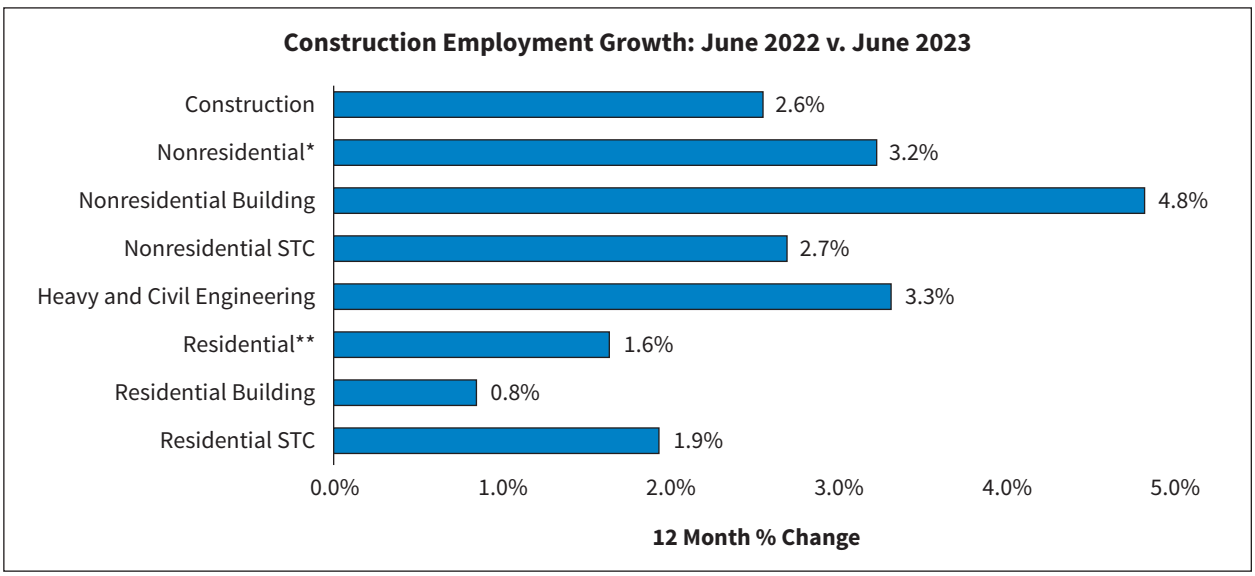


*Includes Nonresidential Building, Nonresidential STC, and Heavy and Civil Engineering
**Includes Residential Building and Residential STC

numbers in mid-July still pointed to worker shortages, indicating that the supply of qualified labor, itself, may actually be the biggest impediment to greater hiring at this moment.

"The construction unemployment rate inched up to 3.6% in June, but that's still the second-lowest rate on record," noted **Anirban Basu**, chief economist for Associated Builders and Contractors (ABC). "Across all industries, unemployment remains near a 50-year low."

Meanwhile, inflation and supply chain issues have moderated considerably.

"The pandemic-induced period of rapid construction input cost increases is over," proclaimed Basu on July 13. "Today's Producer Price Index data, along with yesterday's Consumer Price Index release, show that inflation has slowed, at least with regard to goods. This recent moderation is partially due to a drastic improvement in supply chains; both international and domestic freight rates have plunged back toward pre-pandemic levels."

And, of course, all this has happened during the Fed's historic, sustained battle to quell inflation. Many had feared that its repeated monthly rate hikes would bring on recession. In normal times, they probably would have. But the worldwide pandemic thrust all of us into abnormal times that are still far from over. Even if, as expected, the Fed resumes its rate hikes in July after pausing them in June, the pervasive fear of imminent recession has all but evaporated.

Consensus Forecast Still Healthy

That widespread optimism is evident in the latest economic data compiled by the American Institute of Architects (AIA) and released July 17. The report averages the latest, mid-year market predictions from nine different forecasting agencies focused on design and construction. They include forecasts from Dodge Construction Network, FMI

Producer Price Index, June 2023			
	1-Month % Change	12-Month % Change	Change Since Feb. 2020
Inputs to Industries			
Inputs to Construction	0.0%	-4.9%	38.3%
Inputs to Multifamily Construction	0.1%	-2.0%	37.1%
Inputs to Nonresidential Construction	0.0%	-4.5%	39.2%
Inputs to Commercial Construction	0.1%	-2.5%	39.7%
Inputs to Healthcare Construction	0.0%	-2.4%	39.1%
Inputs to Industrial Construction	0.1%	-2.0%	34.7%
Inputs to Other Nonresidential Construction	0.0%	-5.2%	39.0%
Inputs to Maintenance and Repair Construction	-0.1%	-5.8%	36.5%
Commodities			
Adhesives and Sealants	0.0%	5.6%	34.2%
Brick and Structural Clay Tile	0.0%	8.2%	25.0%
Concrete Products	0.6%	11.3%	31.6%
Construction Machinery and Equipment	0.0%	7.9%	25.1%
Copper Wire and Cable	-3.3%	-7.3%	27.7%
Crude Petroleum	-5.9%	-42.6%	37.7%
Fabricated Structural Metal Products	-0.7%	-2.0%	51.4%
Gypsum Products	-0.7%	2.5%	41.3%
Hot Rolled Steel Bars, Plates, and Structural Shapes	-0.5%	-10.8%	56.7%
Insulation Materials	-0.3%	7.7%	38.1%
Iron and Steel	-2.5%	-16.2%	65.3%
Lumber and Wood Products	-0.4%	-10.0%	26.5%
Natural Gas	-5.3%	-76.8%	23.0%
Plumbing Fixtures and Fittings	0.3%	2.3%	17.1%
Prepared Asphalt, Tar Roofing and Siding Products	1.9%	3.1%	39.5%
Softwood Lumber	-1.3%	-20.8%	16.4%
Steel Mill Products	-0.6%	-18.0%	83.9%
Switchgear, Switchboard, Industrial Controls Equipment	1.5%	9.5%	37.1%
Unprocessed Energy Materials	-5.0%	-50.9%	50.1%

Source: U.S. Bureau of Labor Statistics

Corp., Moody's Analytics, S&P Global, and Wells Fargo Securities. *Find the report at AIA.org.*

"The AIA Consensus Construction Forecast for nonresidential construction activity remains healthy through the second half of 2023 and into 2024," said AIA Chief Economist **Kermit Baker**, PhD, Hon. AIA. "The industry got off to an extremely strong start in the first half of the year, and that momentum will ensure healthy gains for the year before moving to a much more moderate pace of expansion in 2024."

Even as this spring's "torrid pace" moderates during the second half of the year, the consensus panel projects that spending will still increase by nearly 20% for the year. "That pace of growth hasn't been seen since the construction boom years leading up to the Great Recession," noted Baker.

Looking at the balance of the year, the group forecast predicts continued strength in several nonresidential categories before spending contracts more markedly next year.

"Leading the charge is the manufacturing sector, where spending is projected to increase more than 50% this year on top of an exceptional performance last year," added Baker. "And while industrial construction spending is expected to be the bright light, healthy gains are also expected across the board, with both the commercial and institutional construction categories projected to increase at a double-digit pace."

And so far, these are bright lights that just refuse to fade. HPAC

QUINONEZ NAMED PHCC EDUCATIONAL FOUNDATION EXECUTIVE DIRECTOR

The Plumbing-Heating-Cooling Contractors—National Association (PHCC) Educational Foundation has hired **Daniel Quinonez** as its executive director. With a rich background in association management and public affairs, Quinonez brings a wealth of knowledge and experience to lead the foundation in its mission to support the plumbing, heating and cooling industry.

Quinonez

Before joining the PHCC Educational Foundation, Quinonez served as a senior account executive for the Kellen Co., a prominent association management firm. In this capacity, he served as the executive director for the Roof Coatings Manufacturers Association and the Professional Electrical Apparatus Reconditioning League, playing a pivotal role in expanding and promoting these organizations through various initiatives, including education, outreach, technical advancement, and advocacy.

Quinonez's career has taken him across the country, representing esteemed organizations within the building industry. Notably, he served the National Association of Home Builders (NAHB) in Washington DC, where he advocated for the broader home building community. His expertise also contributed to the International Council of Shopping Centers, the Grocery Manufacturers Association and the Consumer Healthcare Products Association.

FRANKLIN ELECTRIC NAMES LEVINE VICE PRESIDENT AND PRESIDENT, GLOBAL WATER

Franklin Electric Co. announced that **Donald Kenney**, vice president/president of global water, will retire after nearly 32 years with the company. Kenney was a driving force behind Franklin Electric's global water growth and strategy over the last decade, and he will remain with the company through the end of July to ensure a smooth transition to his successor, **Greg Levine**.

Levine

Levine joins Franklin Electric from Nidec Corp., where he served as president of the motion control and drives business for the past six years. In his new role, Levine will be responsible for Franklin Electric's global water systems business.

"Don's strategic vision and customer-centric approach was essential to our growth these past few years," said **Gregg Sengstack**, Franklin chairperson and chief executive officer. "We are excited to bring on a leader with a proven track record of identifying and nurturing growth opportunities. This insight will allow us to build on the strong foundation we have in place."

Kenney

Levine served in global profit and loss and technology roles for Nidec for 13 years, where he oversaw an international team of 3,800 individuals across 13 operational sites. During his time with Nidec, Levine positioned the company to grow two-fold in five years through organic growth and acquisitions. Before working at Nidec, Levine held senior engineering roles at Emerson for 15 years.

COOPER EQUIPMENT RENTALS PROMOTES SPILAK TO CHIEF OPERATING OFFICER

Cooper Equipment Rentals has promoted **Brian Spilak** to the position of chief operating officer. Since joining Cooper in 2016, Spilak has played a central role in the company's growth and development. With nearly 30 years of experience in the equipment rental industry, he has held various leadership roles encompassing operations, fleet management, customer relationship management and new technology.

Spilak

"I am excited to embrace the responsibilities of COO and continue working closely with our talented teams nationwide," Spilak said. "At Cooper, we are firmly committed to our customer-first focus, ensuring our customer service and support is second to none while expanding our national brand. Our teams across the country possess a remarkable level of passion and dedication, which truly sets us apart.

"This genuine determination to go above and beyond for our customers is a key factor that drives our success. I am eager to continue leading our teams, contributing to driving growth, fostering innovation, and leveraging this invaluable attribute to provide outstanding experiences for our customers."

As COO, Spilak will continue to spearhead the company's initiatives aimed at driving profitable business growth, efficient team management, expansion into new

markets, and the implementation of optimized technology solutions across 65 locations nationwide. His unwavering commitment to customer engagement combined with his exceptional execution skills have been key differentiators in Cooper's growth trajectory.

Also, Spilak's ability to build cohesive teams across diverse sectors of the business has played a pivotal role in the successful integration of Cooper's numerous acquisitions, and his deep understanding of sales and operations have had far-reaching impact on all levels of the organization.

"Brian's focus on innovation, customer-centricity and team building has made him an outstanding leader within our organization, and we have full confidence in his ability to excel in his new role as COO," stated **Doug Dougherty**, CEO.

Darryl Cooper, company president, added: "Brian's contributions across various facets of our organization have significantly enhanced our operations, fostering deeper customer relationships and operational efficiency. His rapport with our operations teams has been instrumental in our success, and I look forward to our continued collaboration in his new role."

SODERQUIST PROMOTED TO VP OF CONSTRUCTION INNOVATION AT JACOBSEN

Jacobsen Construction Co. has named **Heather Soderquist** as the firm's first-ever vice president of construction innovation. With an eye toward elevating innovative practices as a core competitive differentiator for the firm, Jacobsen formed the new position with the goal of investing in innovation as key to its construction management process long-term, strengthening the company's preparedness for significant future advances in the industry.

Soderquist

"We recognize that our project teams' ability to innovate will continue to be a key element to gaining and keeping a competitive edge," Soderquist said. "Looking ahead, it is clear that innovation in construction and the strategic use of leading technologies will be important differentiators separating good contractors from excellent contractors."

Soderquist has been with Jacobsen for 18 years, most recently as director of operations training and development, where she helped project teams regularly grow and refine their construction skillsets. She has additionally played a key leadership role in pioneering Jacobsen's company-wide use of essential jobsite technologies such as BIM, laser scanning, Viewpoint, Bluebeam, Autodesk Build, and more.

In her new role, Soderquist immediately launched a new tech training initiative at Jacobsen: the addition of a comprehensive technology fair to the company's quarterly operations workforce training sessions. Leading-edge tech vendor partners and the firm's own in-house tech experts recently attended this inaugural fair to give demonstrations showcasing the latest jobsite uses of laser scanning, drones, virtual reality, robotics and more, presenting their insights to Jacobsen project leaders.

The tech fair is expected to be instituted as a regular feature of Jacobsen workforce training sessions moving forward.

ASAHI/AMERICA ADDS TO SALES, TECHNICAL TEAMS

Asahi/America has announced the addition of **Brian Zagrodny** to its outside sales team as national sales manager for fabricated products, and **Edwina Merin Johns** as valve and actuation product manager to its technical service team.

Zagrodny

Zagrodny's role is to manage, support and develop sales and client relationships for the company's fabricated products portfolio. He will work closely with the sales management, business development and technical services teams to ensure that company goals and objectives related to fabrication are properly aligned.

He comes to Asahi/America with more than 15 years of industrial sales experience specializing in thermoplastic piping products. Based out of Connecticut, Zagrodny can be reached via email at bzagrodny@asahi-america.com or phone at 781-502-6255.

Johns

Johns is responsible for maintaining all product documentation and technical sales tools for the company's portfolio of valve and actuation products. She will be working closely with the company's sales team to support customers' industrial valve and actuation applications.

She previously worked as a process engineer and quality supervisor, where she gained experience with electrical assembly and manufacturing.

Additionally, Johns is pursuing a master's degree in industrial engineering from Lawrence Technological University in Michigan. Johns is based out of Asahi/America's Lawrence, MA, headquarters. She can be reached via email at emerin@asahi-america.com, or by phone at 781-388-4568.

Update on Legionella, with Dr. Janet Stout

It may not be in the news every day, but Legionnaires' Disease is still out there. One leading expert updates us on our industry's continuing battle to end it.

In this episode, *HPAC 'On the Air'* welcomes **Dr. Janet E. Stout**, executive vice president and founder of the Special Pathogens Laboratory and an associate professor at the University of Pittsburgh Swanson School of Engineering.

An infectious disease microbiologist, Dr. Stout is recognized worldwide for her pioneering research in Legionella and now, after three decades, remains on a mission to **End Legionnaires' Disease**. She updates us here on where that mission is today.

What follows is an edited transcript of our conversation, recorded in June...

HPAC: Our topic this month is Legionella, the notorious bacteria first detected in a hotel water system at the American Legion Convention in Philadelphia in 1976. That outbreak sickened over 200 attendees, killed 34 and spawned decades of new research, scientific scrutiny and remedial strategies for building engineers worldwide.

Our guest is one of the world's foremost experts on the subject, Dr. Janet Stout, whose expertise includes detection, prevention, and control strategies for Legionnaires' Disease in building water systems. She advances the mission to End Legionnaires' Disease by speaking and serving on numerous industry committees, including those for ASHRAE Legionella Standard SSPC 188, Guideline 12-2020, and Proposed Standard 514. Dr. Stout, welcome to HPAC 'On The Air'.

Dr. Janet Stout: Thank you so much. It's truly a pleasure to be with you and your audience.

HPAC: Please tell our listeners a bit more about your background, your current work, and how you came to study this subject nearly 40 years ago.

Dr. Stout: Well, I say I'm an infectious disease microbiologist who has studied Legionella for more than 30 years. I refuse to say 40. That makes me sound too old. Of course, when a microbiologist studies Legionella for their entire career, they are not a microbiologist anymore. So, I'm a "legionellologist." And yes, I did make that up. But I think it adequately describes my career. And it all started when I got my master's degree at the Graduate School of Public Health in 1982, studying Legionella. And there was an outbreak of Legionnaires' Disease then at the Pittsburgh VA Medical Center. I had the good fortune to be doing my master's work there. And Legionella and I have been together ever since.

HPAC: Just so we are all on the same page here, could you please define Legionnaires' Disease and talk about its origins? Is it exclusively something connected to the arrival of HVAC in society? If so, was there evidence of it in the decades prior to the Legionnaires' convention in '76?

Dr. Stout: So, I love telling the story about Legionella. At the American Legion Convention in 1976, they deduced that Legionella was coming from the air conditioning system because the epidemiologist had studied who got Legionnaires' disease and who didn't.

Most of the people who got it were in Ballroom A. So, the only way to transmit it must have been through the air, they thought. But what we learned later, in 1982, we published in a seminal article in the *New England Journal of Medicine*. It said that in our VA hospital (in Pittsburgh), it wasn't coming through the air ducts. It was coming out of the faucets in the showers and infecting the veterans there from the potable water distribution system.

So back in 1976, Legionella was not a new bacteria, per se. It was a newly discovered bacterium. And the reason is because this bacteria requires a very specialized culture, media to grow it, which was developed as a result of that outbreak.

Investigators at the Center for Disease Control and Prevention (CDC) formulated a brand new media. Then when they were able to grow the bacteria, they went back to their freezers for unsolved mysterious cases of pneumonia. And they found a type of Legionella going back to 1947 that had caused pneumonia in a patient. Then they also saw some that were from the 1950s, and so forth. So that's how we know it existed prior to 1976.

And to your point, we also have these man-made systems that provide Legionella bacteria with just the right conditions to grow — which is nice, warm water, some organic material in our piping systems, our cooling towers and such, and hot tubs. *Don't get me started on hot tubs!* But that creates a great environment for Legionella and other bacteria to grow.

So, what I say is happening is that "Legionella is having a party in the pipes." And so yes, (HVAC) has sort of created an ideal resort for these bacteria.

HPAC: As I understand it, stagnant building systems circulating air and water have long been seen as the key contributing factor to the development of Legionella. So, in the wake of building shutdowns globally for the Covid pandemic over the last three years, how much has that led to a resurgence of Legionnaires' today?

Dr. Stout: Well, I'm a 'glass half-full' person. So, the good news was that in 2020, we knew that Legionella was in these buildings and their water distribution systems, and that closures, shutdowns, and stagnation would provide that great environment for Legionella and its friends to grow. And

Dr. Janet E. Stout

so that meant that there was a much greater awareness about it. We said, "Okay, let's not just let this happen; let's do things to mitigate the risk."

And in fact, in 2020, the American Water Works Association (AWWA) and the International Association of Plumbing and Mechanical Officials (IAPMO) wrote a white paper on responding to water stagnation in buildings with reduced or no water use. That was their answer to helping people to manage the fact that building shutdowns impact water quality. For instance, cold water warms up and warm water cools down into that sweet spot for Legionella to grow. And any disinfectant that was there is gone because of water age and just sort of sitting there.

So, they had a program for that they described there, and they actually just updated it in January 2023. Your readers can look for the *AWWA/IAPMO Manual-2022: Manual of Recommended Practices for the Safe Closure and Reopening of Building Water Systems.* Those documents are free. So, they can go online and download them. And so, yes, we already knew that there was a potential problem.

Did we have outbreaks of Legionnaires' Disease during the pandemic?

Certainly, we had cases, and sometimes they actually got confused with

> **"If we control this bacterium in the water, prevent its replication, then we can prevent the disease entirely."**

the diagnosis of Covid because they present so similarly in terms of pneumonia. But actually, what happened was the number of (LD) cases nationally went down. After all, everybody's wearing masks, nobody's going out, etc. So that was interesting. We actually presented that information at the National Infection Prevention Conference a couple of years ago, that during the Covid pandemic, cases actually went down. But we're returning back to baseline now. Because the problems persist, which is very frustrating for a 'legionellologist.' But we can talk about that 'til the cows come home.

HPAC: And ASHRAE also just developed its first-ever pathogen mitigation standard for infectious aerosols. It recommends several HVAC-related measures to reduce the risk of transmission of Covid-19, influenza, and other airborne viruses and homes, offices and hospitals, etc. Once adopted this summer, will those measures also help in the renewed fight against Legionnaires' Disease?

Dr. Stout: Anything that improves air quality has the potential of mitigating risk from anything that may be transmitted through the air. So, I applaud ASHRAE, and because I've been on these committees myself, I know they work long and hard to get across that finish line. But the thing about Legionella is that we need to stop it before it ever gets into the HVAC system, because it's in the water.

If we control this bacteria in the water, prevent its replication, then we can prevent the disease entirely. So this is part of the reason why we have this mission to end Legionnaires' Disease. Because no one needs to become infected with this bacteria if we control it in the water. So what ASHRAE had done, and I was first invited to sit on an ASHRAE committee back in 1995, I think, when they were first working on Guideline 12. That was then published in 2000.

And then that morphed into Standard 188, which is a paradigm of water management, recognizing the risk, assessing the risk, both in the potable water system, as well as in devices like cooling towers, hot tubs and spas and decorative water features — places where we know outbreaks have occurred — and then addressing that risk directly. The most recent work that ASHRAE has done, and I'm also on that committee for Proposed Standard 514, is about managing the risk of physical, chemical and microbial hazards. So, these are other bacteria that are in water, particularly in hospital water systems that can cause infection.

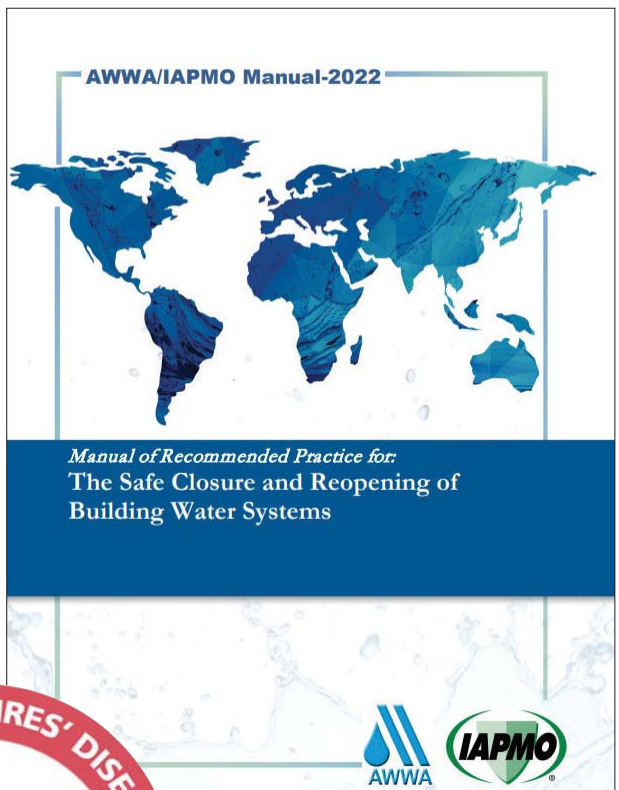
And just because it's fun, I'm going to tell you a few of the names of these other pathogens. My favorite is "Stenotrophomonas maltophilia." I always say I feel like I should be doing a line dance when I say that. Others are Pseudomonas aeruginosa, Burkholderia, and really, the most problematic one is nontuberculous mycobacteria. So now your listeners are going, "All that's in my water?"

Yes. But most of us don't have to worry too much about it. It's people that have compromised health conditions, particularly if they're hospitalized, that can become a problem. And so ASHRAE felt that the water management approach should be applied to these other bacteria. But the problem is that they're also transmitted in other ways than just exposure to the water.

For instance, they can be transmitted on the hands of healthcare workers, on surfaces, and things like that. So, their prevention is a little more complicated than for Legionella, where it's just in the water. So, if we control the water, we control the disease.

HPAC: Overall, where do you think we are now on that spectrum of actually controlling Legionnaires' Disease? How would you say the fight is going? You say that you are on a mission to end the disease. Do you think that is something that can be accomplished in our lifetime?

Dr. Stout: Yes. So, you know, some of your listeners might have read some of the popular books by **Jim Collins**. In one of his books, *Successful Habits of Visionary Companies*, he talks about setting BHAGs, which stands for "Big, Hairy, Audacious Goals." For me, ending Legionnaires' Disease is that "big, hairy, audacious goal." But I say it's not so much audacious, as achievable.



IAPMO

As we get people to test for Legionella in their water systems, if they find it, particularly the type that causes a lot of infection, Legionella pneumophila 1, then they can prevent it. They can control it. I just wrote a piece in May for *Plumbing and Mechanical Engineer* magazine where I talked about how we can end Legionnaires' Disease with smart plumbing design.

But first, we need to know whether your building is positive for Legionella. About half are. But more importantly, half are not. So, find out which half you're in by testing for Legionella. Then you'll know what to do next in terms of prevention.

HPAC: When you say half are, do you mean that half are susceptible? Or that half already have it?

Dr. Stout: Half are colonized. They have Legionella in their water systems. Half do not. One of the myths about Legionella is that it's everywhere, or ubiquitous. It is not everywhere. And our studies and other people's studies

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have shown that when you go out and you look at buildings in a large metropolitan city, whether it's a hospital or a high-rise building, the rule of thumb and the results show that about half have legionella in them.

And so there's risk there that can be mitigated and disease prevented. And one of the points that I wanted to make about this disease — which is a very serious form of pneumonia — is that if someone goes into a hospital for some other reason, and that hospital has Legionella in its water and it has not been mitigated, and they get Legionnaires' Disease, the risk of death from that pneumonia is 25 to 30%. That is huge.

And so that's why the emphasis has to be on prevention. Because once somebody becomes infected, it's a downhill spiral of inflammation, even if they get the right antibiotic. They're trying to control the inflammation in the lungs, and they get adult respiratory distress syndrome, and 25 to 30% of them die. It's completely unnecessary.

HPAC: Do you feel like there is the necessary commitment out there from government and building owners to attack this problem on the level that you're suggesting that it needs to be on?

Dr. Stout: So, there is awareness. But as you know, oftentimes, people don't take the next step to execute a water management plan. For example, they say that ASHRAE Standard 188 is a *voluntary* standard. "So, I don't have to. It has not yet been incorporated into the code." People too often think it will never happen to them.

So, I say, "Legionella is the problem that you don't think you have until you have it. And then it's an emergency, and the health department's knocking at your door. Now you have to implement disinfection procedures in the next 48 hours. You have to have a sampling plan. The health department's going to be very unhappy with you."

Special Rx: Dr. Stout's 'chill pills' relieve LD-related anxiety!

> **"Legionella is the problem that you don't think you have until you have it. And then it's an emergency."**

All of that you need to be prepared for. Facility engineers know about preparation, i.e. fire preparation, electrical outages, etc. Well, they should think about preparing for a Legionella emergency, too. By having all the vendors approved for disinfection, for bottled water, for point-of-use filters, all of these things that need to be implemented. Find your consultant, because the health department will tell you to get one. Because the health department recognizes that this is specialized knowledge that people on site may not have..

So there's awareness, sure. But there's still a lot more to be done. And one of the sticking points is that people don't want to test their water. They're afraid to test the water.

So, I have a very unique thing here. They're called "Dr. Stout's Legionella Chill Pills for Legionella-related Anxiety." And if anybody wants to get in touch with me, they can email info@specialpathogenslab.com. I will send them these chill pills, which are mints, by the way. They come in a real cute little prescription bottle, too. And they really work!

HPAC: Good to know. Thank you for sharing. As a matter of fact, I think I do have more Legionella-related anxiety now than when we started. But this is not exclusively a U.S. problem, is it? So where are we globally now in the fight to end Legionnaires' Disease?

Dr. Stout: You're absolutely right. For many years, other countries across the world have been far ahead of the U.S. in mandating testing in control of Legionella, in water systems of hospitals and cooling towers. Places like Spain, France, Germany, the Netherlands, Australia, etc. So when we came out with our guidance document, Standard 188-2015, I was like, "Finally, the United States is catching up with the rest of the world."

But we still fall short of the rest of the world because the rest of the world says "test." They actually require a certain frequency of testing in almost all of those countries. And cases of Legionnaires' Disease are on the rise, both in the United States and across the globe.

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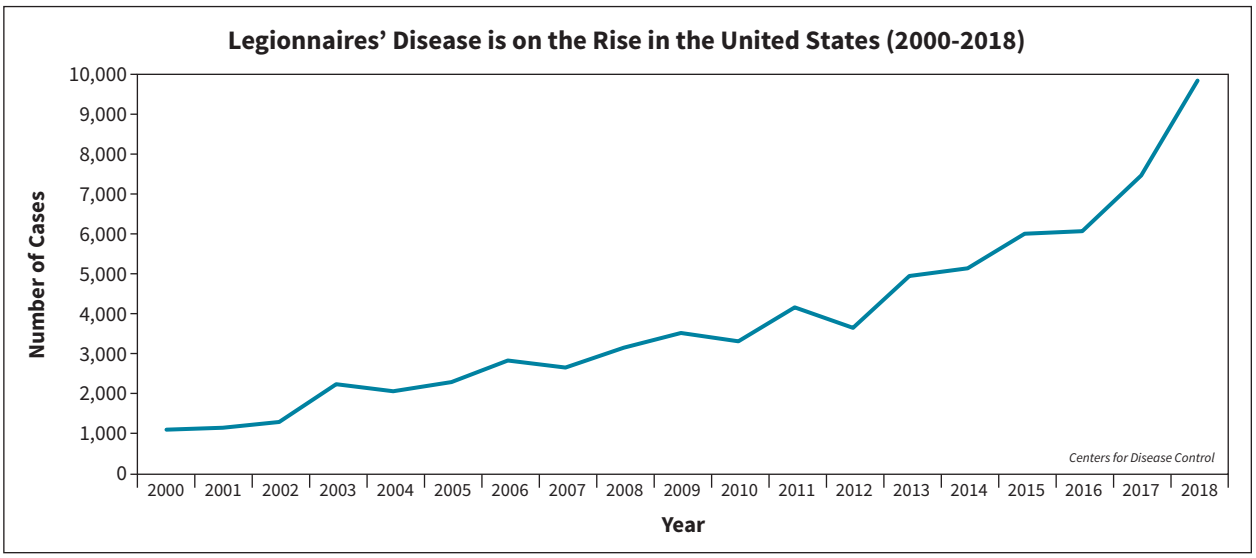

Well before the pandemic, Legionnaires' Disease cases already had been climbing steadily each year.

Of course, people speculate about the causes for that.

Certainly, the warming of the planet creates a nicer environment for Legionella in our source waters. We're aging and so many people in the population have those diseases that increase risk, like diabetes and cancer and chronic lung disease. And many of them are also on steroids.

Aging infrastructure is also something that the CDC has talked about as contributing possibly to the increase in LD cases. So, Legionella is on the rise, which does make this 'legionellologist' a little depressed.

But as I said, I'm also a glass-half-full person. So, if we can just get everyone to have a water management plan and then to do testing as part of that plan, then we really are moving in the right direction.

In fact, a water management plan and risk assessment are now mandated for hospitals through the Center for Medicare & Medicaid Services in the Joint Commission, which just came out with its new Environment of Care standards in January 2022. So, as I said, we are going in the right direction.

In terms of our mission to end Legionnaires' Disease, ASSE also has a Standard 12080, which is a professional qualification standard for people doing water management. And that 24-hour training is delivered through our Special Pathogens Lab and IAPMO. The next training to be certified as a water management specialist is actually July 31st. It's a three-day training session. You can get more information about that, as well as future sessions, on our website. And if you want more education about Legionella, we also do a Wednesday webinar series where you can learn more at puzzledbylegionella.com.

> "If we can get everyone to have a water management plan and to do testing as part of that plan, then we're moving in the right direction."

HPAC: Dr. Stout, thanks so much for your time here. Somehow this was both alarming and hopeful. We certainly wish you continued success on your mission to end Legionnaires' Disease.

Dr. Stout: You're very welcome. Thanks for letting me speak to your audience. And don't forget, anyone can e-mail me for their own bottle of Chill Pills at jstout@specialpathogenslab.com. Thanks again! HPAC

Additional links for some key items mentioned in this podcast:

Stagnation

Manual of Recommended Practices for Safe Closure and Reopening of Building Water Systems

www.iapmo.org/media/31196/awwa-iapmo-manual-2022.pdf

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Emerging "Resimercial" Market Will Demand More HVAC Versatility

After the pandemic, more downtown building owners and designers are seeking to lure back tenants with properties that blur the lines between work and home life.

METUS

New 'resimercial' space at Fairway Independent Mortgage in Madison, WI, is typical of the new trend.

By MIKE SMITH, Senior Manager, Marketing Communications, METUS

When the recent pandemic began, much of our country's in-office workforce grew accustomed to taking calls and filing reports from their kitchen tables, or even their bedrooms. Remote work became so prevalent that it blurred the line between professional and home life across the U.S. and also elevated employee expectations for comfort while working.

Today, as businesses encourage more and more of their remote workers to return to the office, building engineers and designers have faced growing demand for corporate working environments that foster productivity and a flexible, relaxed, and even "homey" feel. For that reason, the relatively new concept of "resimercial", which seeks to blend the best of both the residential and commercial worlds, is now growing in many downtown markets.

Increased Focus on IAQ

The comfort and aesthetic of an indoor environment play a huge role in how we use a space. Successfully curating a resimercial facility involves the thoughtful selection of décor, furnishings and building systems such as lighting, heating and air conditioning.

So, what's the ideal HVAC choice for a resimercial project?

Based in Suwanee, GA, the author is a senior executive at Mitsubishi Electric Trane HVAC US (METUS). Smith has more than 25 years of industry experience and now manages the strategic marketing communications and promotional activities for both residential and commercial businesses.

A heating and cooling system with flexibility, efficiency and customized controls. For smaller spaces, an all-climate heat pump system fits the bill, while larger commercial facilities benefit from Variable Refrigerant Flow (VRF) technology.

Both systems deliver superior, reliable comfort by transferring heat from one area to another with refrigerant. VRF systems and all-climate heat pumps use inverter-driven compressor technology to reach and maintain temperature set points without the noisy, distracting and inefficient on/off cycling of conventional systems.

They also offer zoning capabilities for customizable comfort. Each zone can have an individually controlled indoor unit. Residential and light-commercial heat pump systems support up to 12 indoor units per outdoor unit, while commercial VRF systems can support up to 50 indoor units per outdoor unit. If equipped with a branch circuit controller, VRF zoning systems can use heat recovery to cool some zones while simultaneously heating others.

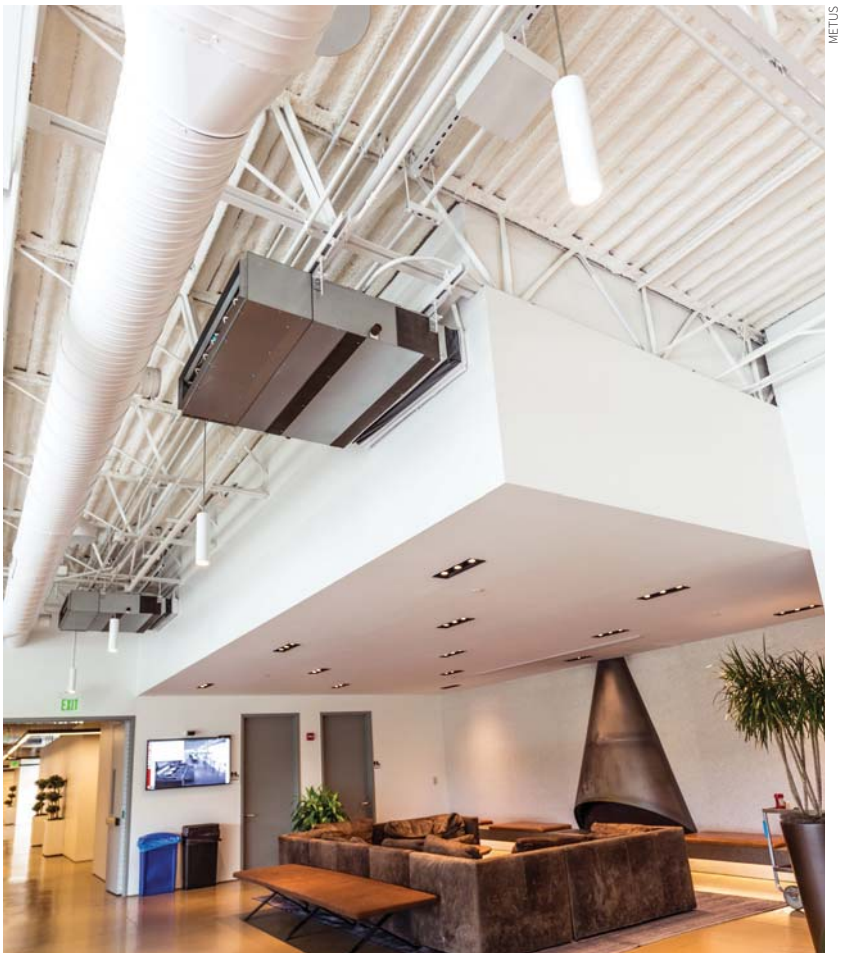
Resimercial Requires Versatility

If resimercial is about making our commercial spaces feel like home, then incorporating versatility and customized comfort is a natural first step.

Toward that end, the personalized control offered by heat pumps and VRF technology opens a world of possibilities for how people interact with their workplaces. When employees feel too hot or too cold at work, for instance, their productivity and mood can suffer. So, having control over the temperature of their space can improve a person's performance and overall sentiment toward their work.

Future Opportunities

Once we've made buildings more comfortable using these technologies, new possibilities will emerge as this market evolves, broadening the definition of resimercial.



METUS

METUS worked to meet the HVAC needs at UBER Advanced Technologies Group's new offices in Pittsburgh, PA.

One increasingly popular, but expensive example, is the conversion of former commercial spaces into residential apartments

"Urban loft"-style living has been a trend for decades, of course, but those warehouses-turned-apartments often lacked a genuinely home-like atmosphere. They often required extensive renovations and system updates.

While challenges regarding the profitability of conversions are still being addressed, in the meantime, building owners are including amenities such as shopping and dining to attract tenants. In this way, as commercial spaces prioritize comfort, they're better positioned for seamless transitions into residential use and can also offer improved resident experiences.

Worldwide, resimercial design is becoming increasingly popular, too, especially in densely populated cities, as more building industry professionals and business owners understand how well-being and comfort preserve and enhance a property's value.

With that in mind, it is already evident that heat pumps and VRF systems are ideal for resimercial applications, offering energy-efficient, versatile and comfortable temperature control solutions to meet the demands of modern workplaces.

Investing in all-climate heat pumps and VRF zoning systems can help building owners create a more comfortable and productive environment for their tenants while enhancing the building's market potential. Truly a win-win all the way around. HPAC

Syracuse Hancock International Airport

Airport Observation Leads to Church IAQ Improvement

Anxious to reconvene safely after the pandemic, a California church chanced upon UV-C technology that has since helped it to reach its goal.

By JOE KALMAN, UV Resources

When a congregant suggested that the Church of the Foothills in Ventura, CA, could quickly and affordably leverage the same UV disinfection technology as LAX International Airport, **Louis Vigorita** was immediately sold.

Of course, the former president of the church's Board of Facilities said it also helped that the congregant was both a respected physician and a public health researcher fresh from seeing the technology in action on a recent trip through New York's Syracuse Hancock International Airport (above).

While traveling to a family wedding, long-time church member **Nancy Merrick**, MD, MSPH, had spotted the UV disinfection fixtures —about the size and length of two shoeboxes— mounted near the ceiling on multiple columns throughout the airport's TSA security screening area.

Dr. Merrick spoke with TSA staff about the blue-light fixtures she had observed at the security checkpoint. They told her that germicidal UV-C fixtures could be found in many hospitals, municipal facilities, sports arenas, commercial lobbies, and other high-traffic communal areas.

Upon returning home to Ventura, Dr. Merrick conducted further research that showed UV-C had been used successfully for decades to disinfect air, water and surfaces. It has also proven effective in reducing the transmission of tuberculosis and measles. And UV-C is even endorsed by the U.S. Centers for Disease Control and Prevention (CDC) to reduce infectious aerosols.

When Dr. Merrick approached Vigorita, she had already identified UV Resources, the California-based manufacturer of UV disinfection technology used at the Syracuse, Dallas Fort Worth and Los Angeles International Airports. In fact, UV Resources' founders had pioneered the application of UV-C energy in HVAC equipment nearly 25 years ago to address a lesser pandemic of sorts, sick building syndrome, which had emerged in the early 1990s.

A director with UV Resources since 2020, the author works with facilities management companies and HVAC engineers. He has written and presented on such topics as indoor air quality, how to leverage ROI from germicidal UV-C, and HVAC sustainability issues. Contact him at Joe.Kalman@UVResources.com.

Protecting Congregants

"Like any facility manager, we wanted to safeguard our parishioners, clergy and lay leadership from airborne viruses and get back to our in-person fellowship," notes Vigorita. "Nancy brought us an effective and affordable method for reducing Covid transmission that was swiftly approved by our governing board."

Everyone at the church was frustrated that the Covid-19 pandemic had forced parishioners onto their home computers and away from their close-knit community.

"When in-person services resumed, Nancy would bring a carbon dioxide monitor into the sanctuary to help us measure ventilation levels and safeguard our congregants," explains Vigorita. "When CO2 levels rose to a certain level, we would open windows and doors and adjust portable fans to improve the room's ventilation levels. Sometimes these actions proved unpopular and uncomfortable, especially on very hot or cold days."

Once church administrators approved the use of UV disinfection, Vigorita turned to germicidal specialist **Jim Edson**, with Santa-Clarita-based consultant NUView Environmental. After conducting a site visit, Edson specified two types of upper-room UV-C units to protect the church's 50-ft-x-37-ft, 200-person sanctuary. Specifically, he recommended the GLO™ series of Upper-Room UV-C fixtures from UV Resources.

Two GLO-225 baffled or louvered-type luminary units were mounted above occupants' heads on either side of the rectangular sanctuary. At the same time, a GLO-1500 open-ended fixture was installed at the rear of the worship area, where UV-C energy blankets the upper air in the cathedral ceiling. Both fixtures utilize an exclusive, high-spectral parabolic reflector system to maximize germicidal output levels.

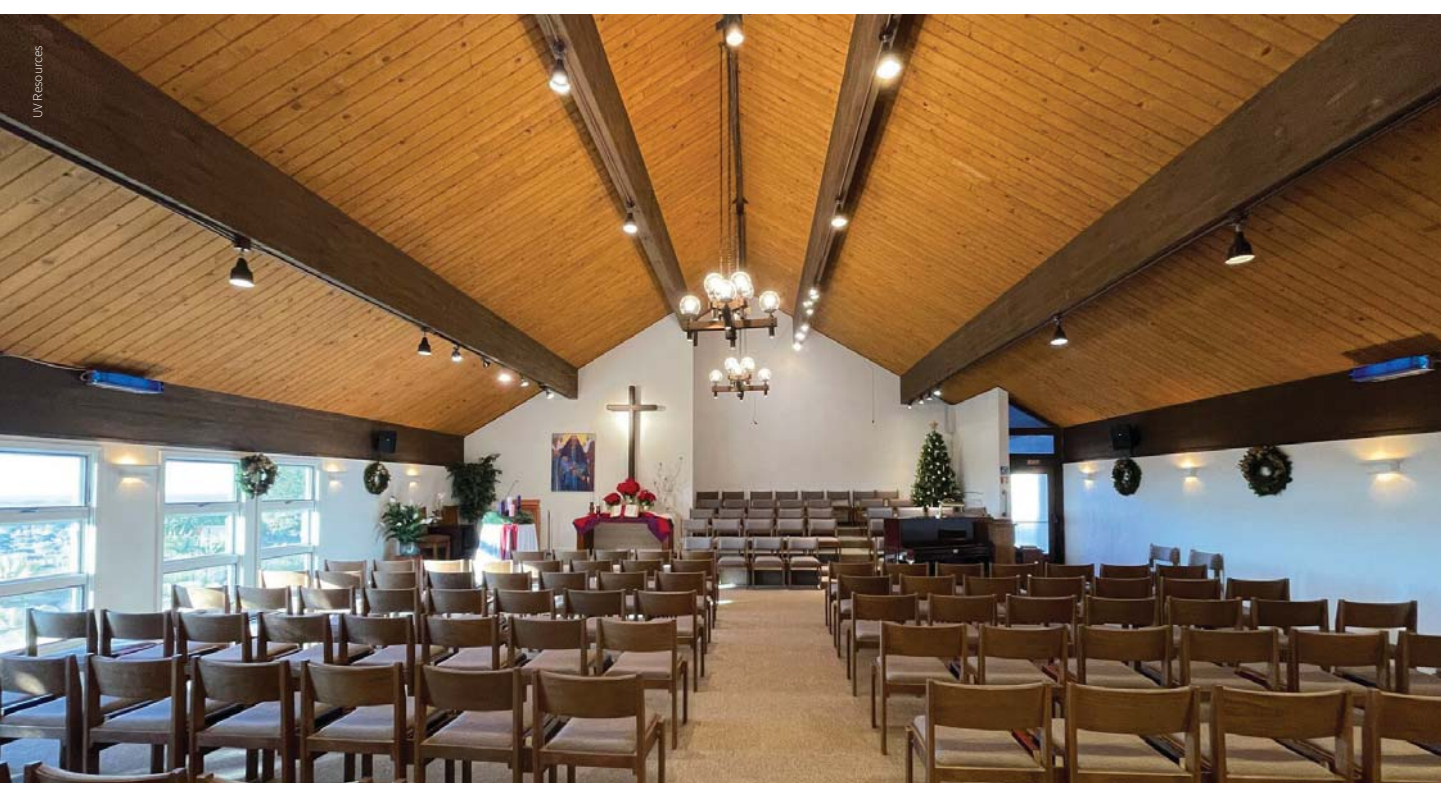
Hospital-Grade Disinfection

"It's the same type of UV disinfection technology that we've installed extensively at nine Los Angeles community colleges," explains Edson. "While hospitals and schools have used UV disinfection technology since the 1930s to control airborne infectious diseases, its application in houses of worship, dormitories, restaurants and courthouses is relatively new."

One installation challenge was positioning the fixtures so the UV-C energy was safely above the church's 30-member choir loft. Edson and his team adjusted the angle of the UV fixture closest to the choir loft and used a UV radiometer to ensure no stray light entered the occupied portion of the sanctuary. All fixtures were then safety-tested to meet CDC guidelines.

The upper-room fixtures leverage the continuous natural rise-and-fall of convection or mechanical air currents to lift airborne infectious agents overhead, where they are inactivated by UV-C energy.

"The safety of our church community is our top priority and we've taken multiple measures to mitigate risks to our congregants," says Vigorita. "Since we installed the UV disinfection systems, our congregation has had no outbreaks. And the air we breathe is safer." HPAC



Two GLO-225 baffled or louvered-type luminary units were mounted above occupants' heads on either side of the sanctuary.

Energy Savings Grow in Brooklyn

Large urban housing complex carves path to decarbonization with new boilers that reduce both energy costs and NOx emissions.

Spring Creek Towers

Sprawling Spring Creek Towers complex has upgraded its infrastructure.

Case Study by AERCO

A 46-building, multi-family housing complex with 5,881 apartments and its own school in Brooklyn, NY, is experiencing significant energy savings while lowering carbon emissions and improving air quality – all by installing a high-efficiency heating system.

The new system of condensing boilers replaced an aging, inefficient underground system at Spring Creek Towers. As a result, residents now have reliable heat, while facility management and the property owner have a superior system that is easy to operate and maintain, delivers major energy savings, and provides peace of mind.

Just Too Much for The Grid

Heat and domestic hot water for every building at Spring Creek Towers had previously been generated and distributed by a central, gas-fired, combined heat and power (CHP) plant that was more than a half-century old. Brooksville Partners, owners of the complex, initially planned to upgrade to an electric heating system, but the local electric utility's grid could not support the heavy loads for the plant's electrification to upgrade the deteriorating infrastructure.

When Brooksville and its facility manager at The Experts decided to upgrade their infrastructure with high-efficiency, compact gas-fired boilers, they turned to G.A. Fleet Associates, an engineered solutions provider in Rye Brook, NY. The new modular plants now provide residents with reliable heat, without adding stress to the power grid or to the occupants' lives.

Fleet selected AERCO Benchmark boilers for multiple reasons. Among the persuasive factors were high-efficiency, patented AERtrim O2 Trim combustion technology, ultra-low NOx (under 9 ppm) capability and predictive maintenance remote monitoring. That allows facility managers to ensure the units continue to operate at peak performance.

To service the large complex, Fleet provided eight modular EnviroSep plants that consist of 46 Benchmark boilers of various sizes. Each plant is

Aerco

Each of the eight EnviroSep modular plants services a mechanical room in an adjacent parking garage surrounded by a cluster of high-rises.

designed with multiple Benchmark 5000 and two Benchmark 2500 boilers or multiple Benchmark 6000 and two Benchmark 3000 boilers. The smaller two units in each modular plant were selected to provide higher turndown and lower boiler water flow rates for direct hot water (DHW) during the summer.

Each plant includes heating water pumps, summer pumps, controls and full electrical systems, lighting and heat. All the plants are approved by the New York City Office of Technical Certification and Research (OTCR) and UL listed. Each of the eight plants services a mechanical room located in a parking garage that is surrounded by a cluster of high-rise buildings. They are monitored by a SCADA system, which is also capable of remote monitoring via the predictive maintenance analytics tool. That allows Spring Creek Towers facility managers to remotely view boiler plant operations and status, track performance and efficiency, and set and view alerts such as faults or maintenance.

Having 24/7 off-site access helps ensure the units are operating at the maximum efficiency with the lowest possible emissions. Because it monitors on a constant basis, the tool also helps prevent potential costly issues before they develop.

Improved Performance, Reliability

Since the boilers have been installed, the fuel-to-hot water efficiency at the mechanical room entrances has improved from 49% to 89%. Not surprisingly, the 40% increase has also provided significant energy savings for the sprawling property.

Overall reliability has been markedly improved through diversification and redundancy created by the modular plant design. The new Benchmark plants will help reduce future maintenance costs due to improved monitoring via the SCADA system, as well as the onAER predictive maintenance tool.

Aerco

Since installation, overall boiler efficiency has greatly improved while maintenance needs have gone down.

So far, Spring Creek Towers has also seen a 91% reduction in NOx emissions. This is no small feat, as its campus has a larger population density than many small towns and sits in an area with high levels of NOx due to its proximity to major highways and John F. Kennedy International Airport.

Additionally, the new system helps to conserve the world's most precious resource – water. Aged piping had begun to crack in the complex and water was leaking into the ground. By decentralizing the system, Spring Creek Towers now no longer has to worry about wasting water via leaky/damaged pipes, or the additional costs needed to chemically treat the make-up water. HPAC

For more information, visit AERCO.com.

First Canadian Conference a Resounding Success

Boiler manufacturers are still buzzing after ABMA's engaging, productive and informative summer meeting in British Columbia.

By SHAUNICA JAYSON, American Boiler Manufacturers Association

At the end of June, ABMA convened its 2023 Summer Meeting at the luxurious Fairmont Chateau Whistler resort, located at the base of the beautiful Blackcomb Mountain in Whistler, British Columbia.

With attendance exceeding 200, the lively gathering in Canada took our ABMA events to new heights at our first international meeting. Based on the initial feedback, the event was a big success and offered attendees an experience that far outweighed their investment.

"ABMA was excited to host our first membership meeting in Canada," said ABMA President & CEO **Scott Lynch**. "Attendees truly had a unique experience in Whistler and many explored

Pike Place Fishmongers conducted memorable team-building exercises.

the surrounding areas of British Columbia, as well."

This year's meeting also featured a very special opening, as Ambassadors from the Squamish Lil'wat Cultural Centre provided a Native blessing and song customary of the Squamish and/or Lil'wat Nations.

Of course, it would not be a true ABMA meeting without a little bit of fun. That arrived in the Opening Keynote from the always entertaining Pike Place Fishmongers, who joined us from Seattle. They engaged our audience in the action by tossing fish across the aisles and then selecting volunteers to try to help them throw and catch even more fish during their interactive demonstration.

The Fishmongers wrapped it all into their presentation about how highly engaged teams can be all the difference between a thriving organization and one that is faltering. Toward that end, they stressed that an important key to employee engagement and high morale is a positive workplace environment where deep trust and mutual respect form the backbone of an organization.

For our closing keynote speaker **John Grotzinger**, NASA's Chief Scientist and Head of Strategic Planning for the Mars Rover Mission, took us to outer space with a presentation about the challenges, discoveries, teamwork, and leadership that all came together to make the Mars Mission a success.

Grotzinger talked about how to fail intelligently using the best-practice approach of "test as you fly, and fly as you test," resulting in significant risk reduction. He outlined how his team confronted and resolved unexpected challenges along the way and still accomplished remarkable achievements.

Educational sessions also had many highlights. They included these topics and speakers:

- *Importance of Proper Water Chemistry in Rentals*, **Jeff O'Hara**, Delval Equipment;
- *The Supply Chain of Workers Compensation and How You Can Use It to Your Advantage*, **Christopher Yanakos** & **Kevin Tracey**, Reli;
- *Cybersecurity for Control Systems*, **Kent Nelson**, UL;
- *2023 Changes to the ASME Boiler and Pressure Vessel Code/International Codes Using ASME as a Basis*, **Jay Vattappilly**, P.E., HSB;
- *Alternative Fuels for Packaged Boilers*, **Kent Nelson**, UL;
- *Predict & Prevent - Insurance*, **Jon DeWald**, HELIXintel;
- *Essentialness of Boilers*, **John Bartley**, Louisville Medical Center. HPAC

NASA chief scientist Grotzinger emphasized the importance of leadership.

Choice Commercial Rooftop Unit Line

Introducing a new Choice line of commercial rooftop units, available from Johnson Controls, York and TempMaster. High-efficiency, ultra-high-efficiency and heat pump models surpass DOE 2023 requirements. They feature a convertible filter rack with pleated filters up to MERV 13, multiple airflow strategies (VAV, exclusive IntelliSpeed discrete fan control and continuous reset, single-zone control) help to improve ventilation based on building requirements. Compatible with a full suite of system accessories to further support IAQ performance. Available in 12.5- to 27.5-ton sizes.

Johnson Controls

Citadel Commercial Condensing Boilers

The Citadel commercial condensing boilers from U.S. Boiler are available in five capacities from 399 to 1,000 MBH. They can be stacked two-high without the need for accessory racking systems. Zero side and top clearance optimizes the amount of BTUs that can be offered per square foot. AHRI-certified and rated up to 97% thermal efficiency, the boiler is available in either a natural gas or propane configuration. Included at no additional cost are the low water cut-off and high and low gas pressure switch, making the boilers CSD-1-compliant. A standard, reinforced 3-in-1 vent connector facilitates the use of polypropylene, CPVC or stainless steel venting.

U.S. Boiler Co.

EVERLOC+ Polymer Multi-Port Tees

EVERLOC+ polymer multi-port tees from REHAU include closed-end, flow-through and opposing port configurations. The increased range of 22 polymer multi-port tees provides more tailored options for multifamily and other light commercial plumbing projects. Tees function as reducing tees in home-run piping layouts, while minimizing the number of connection points. Designed for use with RAUPEX PEXa pipe and EVERLOC+ PEXa compression sleeves. Each connection contains multiple sealing edges to provide enhanced security, while the textured interior of the compression sleeve offers an extreme grip and immediate seal. Connections are made quickly using a consistent, two-step expansion and compression process with battery-powered compression-sleeve tools.

REHAU

Hercules Cryo-Tek GL48 Fire System Antifreeze

Hercules Cryo-Tek GL48 fire system antifreeze from Oatey is designed to be used in wet fire sprinkler systems. It is formulated to be used in place of water and other sprinkler system fluids where freezing can occur. Approved for use with CPVC and metal sprinkler systems, and complies with NFPA Requirements for Wet Fire Suppression. Made of a pre-mixed blend of glycerin and water, the antifreeze also has burst protection to -50° F. Available in two variations of weights: 5 gal. and 55 gal.

Oatey Co.

evoQ4 Electromagnetic Water Meter

The evoQ4 electromagnetic water meter from Honeywell delivers high accuracy through a wide range of flows and applications. Can be sized to suit either high or low flow rates, and is ideal for a wide variety of bulk flow metering applications, such as network monitoring, leakage detection and commercial billing. Features stainless-steel flow tube; lightweight for easy storage, transport and installation. IP68 rating provides protection for internal electronics from water ingress; stainless-steel electrodes to eliminate corrosion concerns; and unobstructed flow tube that ensures minimal pressure loss to reduce network system pressures.
Honeywell International

AER Configurable Condenser Fan

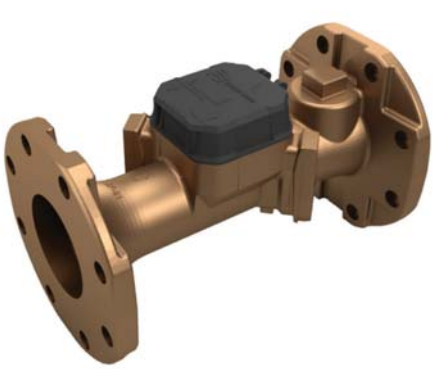
Greenheck introduces its AER direct-drive configurable condenser fan, which can help regulate temperature and provide proper ventilation for equipment, even in the most demanding applications where elevated water and temperature protection is required. Available in four sizes ranging from 20 to 36, the unit offers performance up to 29,800 cfm and external static pressure up to 2.80 in. wg. Features galvanized steel construction and can be specified in multiple mounting configurations with fabricated steel or cast aluminum propellers. Motor options include alternating current or electronically commutated motors that can be specified with up to IP55 and 60c severe-duty motor protection ratings. AMCA-certified for sound and air performance and UL/cUL 705-listed.
Greenheck Fan Corp.

Kagami Mini-Split and VRF Controller

Fujitsu unveils the Kagami controller, offering modern, touchscreen control of Airstage H, J and V-Series systems, designed to blend with interior designs. A backlit touch panel that displays room temperature, current time and a variety of other information when activated. Controller is intuitive for the occupant to switch between custom auto, cool, dry, fan and heat modes. Up to 16 individual Fujitsu indoor units can be simultaneously controlled from a single unit. Select sensor values, including the connected heat pump's EEV pulse value, can be monitored from within the new controller, and room temperature offset can also be modified.
Fujitsu General America

E-Series G2 Ultrasonic Meter

Badger Meter's E-Series G2 Ultrasonic Meter uses solid-state technology in a compact, tamper-protected, weatherproof and UV-resistant housing. Made of lead-free bronze alloy in 3-in., 4-in., 6-in. and 8 in. sizes. Measuring potable cold water in commercial and industrial services, the meter is also ideal for nonpotable, reclaimed irrigation water, as well as less than optimum conditions where small particles exist. Features lead-free bronze alloy housing, ultrasonic transducers, a meter-control circuit board with wiring, LCD and battery. Wetted elements are limited to the pressure vessel and transducers. Open flow tube design prevents flow obstruction to reduce pressure loss.
Badger Meter



Smart and Connected W561 Thermostat

Watts launches the W561, a smart and connected Wi-Fi thermostat that provides precise temperature control of a single-stage heating system. When connected to the Internet, it can be controlled remotely using the Watts Home mobile app. It offers a seven-day, four-event programmable schedule and an early start feature that automatically heats up a room by the scheduled time. An "away" mode can be quickly and easily accessed to provide energy savings when the space is unoccupied. In addition, the thermostat supports radiant floor heating with a floor sensor that can be installed to enhance comfort and protect floor coverings.

Watts

KSQ Mixed Flow Untempered Roof Supply Fan

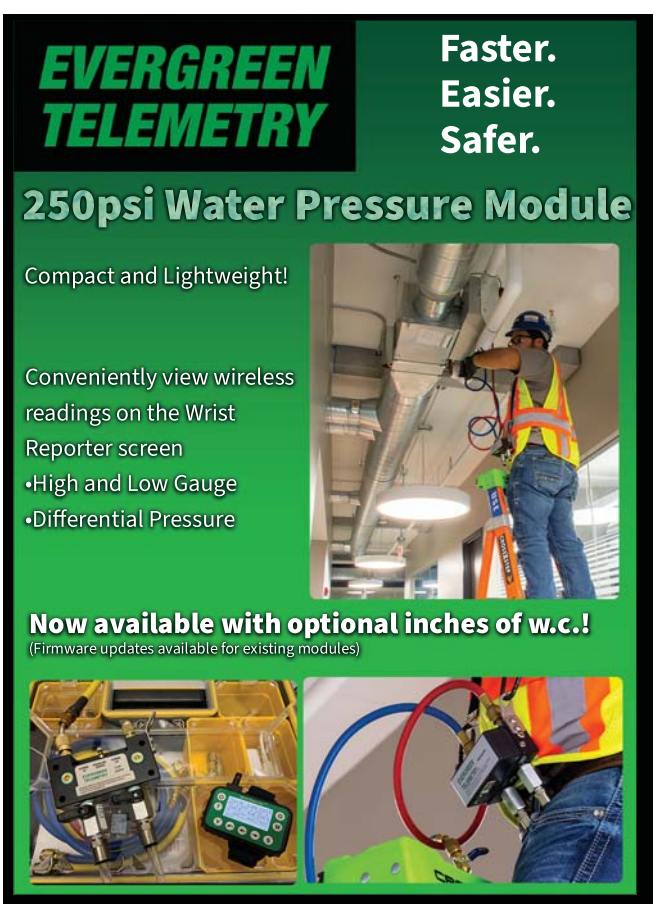
Greenheck's KSQ mixed flow roof supply fan provides energy-efficient building supply or untempered makeup air in applications where heating and cooling are not required. Available in direct drive sizes 7 through 33, with performance up to 16,750 cfm and 2.75 in. wg in multiple configurations (horizontal or bottom intake and horizontal or bottom discharge). The mixed flow wheel improves airflow and efficiency while reducing sound levels, and its compact design enables a smaller footprint. Washable aluminum filters are included. Vari-Green motors are available through 10 hp. Multiple configurations to supply clean outdoor air.

Greenheck Fan Corp.

Cool Braze Reusable Heat Absorption Putty

RectorSeal introduces Cool Braze reusable heat absorption putty, which blocks soldering, brazing and welding heat conduction and sparks from damaging nearby soldered fitting joints, piping and valves. It can be used on a variety of surfaces and metals, including composite panels, rubber and plastics. It is especially useful for protecting reversing valves, ball valves and TXV components. Developed to completely stop the transfer of heat up to 3,000° F, it is effective when using MAPP gas, oxy-acetylene, MIG, TIG, arc and propane torches. Can be reused multiple times; its formulation is easily rejuvenated with a spritz of water before being stored back in its convenient plastic jar.

RectorSeal



FCP-SS Series Flexible Couplings

FCP-SS Series flexible couplings from Easyflex are versatile fittings for sewage, drain, waste and vent applications. They come in standard, reducing and shielded types. Features include a water-tight seal, low expansion/contraction, and resistance to vibrations, chemicals and fungus. The rust/corrosion-resistant, stainless-steel clamps, screws and shield enhance longevity. Sizes range from 1 1/2 in. to 6 in., with installation torque rating of 60 in-lb., a max. test pressure of 4.3 psi, and a max. operating temp of 140° F. Couplings are UPC-certified and comply with ASTM C1173 and D5926 standards.
Easyflex

RP 241 Compact Press Tool for HVACR

The RP 241 compact press tool for HVACR from Ridgid now includes RLS press jaws designed to press 1/4-in. to 1 3/8-in. copper. The jaws, designed for use with RLS fittings, were developed in partnership with RLS creators of the first press-to-connect fitting systems for high-pressure HVACR projects. Their fittings are fully registered and listed to UL 207 for pressures up to 700 psi. The tool has a low-profile design that is lightweight and balanced. It also features an ergonomic design to help users easily work in tight spaces. Bluetooth connectivity connects the tool to the Ridgid Link app, which allows users to track number of cycles, battery information, and more.
Ridgid

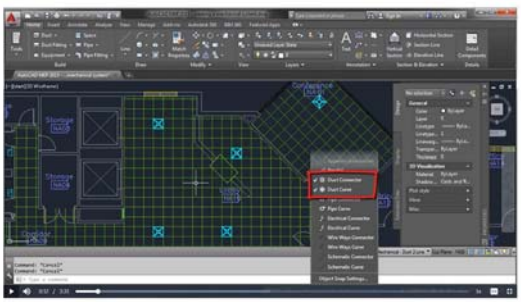
TotalFit Push-To-Connect Fittings

TotalFit push-to-connect fittings from Uponor are designed for use with PEX, PE-RT, CPVC and copper piping systems. The professional-grade, engineered polymer, push-to-connect fitting solution is ideal for service repair, maintenance, remodels and retrofits for potable hot water and cold water distribution piping systems in single-family homes, townhomes, apartments and condominiums. The new offering includes 33 of the highest-volume push-to-connect fittings in sizes from 1/2 in. to 1 in. to meet the greatest need in the market. The complete offering is approved for direct burial in soil or concrete (with 4-to-6 mil poly wrap) as well as behind walls without access panels.
Uponor

Oil-Free Check Valve

Danfoss' new oil-free check valve brings even greater functionality and efficiency to Turbocor compressors. Designed specifically for an oil-free environment, the valve delivers a discharge solution that improves the performance and reliability of oil-free centrifugal compressors with magnetic bearings. It enhances these Turbocor-based chillers by reducing discharge pressure drop, while increasing capacity and efficiency. It combines multiple functions into one by incorporating both a ball valve-style shut-off and the check valve needed to protect the compressor during startup. Provides a flanged connection for easy installation to the condenser heat exchanger.
Danfoss

AutoCAD MEP Toolset



HVAC and building systems are made easy with an industry-specific toolset for MEP (mechanical, electrical and plumbing) that increases productivity. With AutoCAD's 2024 MEP toolset you can: access a library of 10,500-plus real-world MEP objects; optimize workflow tasks for MEP-specific workspace environments with individual palettes and domain-specific ribbons; automatically update drawings, sheets and schedules when changes occur; and prevent unauthorized modifications and ensure drawing integrity.
Autodesk

Elite Series Small-Split Systems

The Lennox Elite Series small-split systems feature a two-stage scroll compressor operating primarily on low stage for quieter and more consistent comfort and humidity control. High-efficiency outdoor coil provides heat transfer and low air resistance for high-efficiency operation. Precision-balanced, direct-drive fan is designed to run slower for an enhanced quiet operation. Humiditrol dehumidification system reduces moisture and controls the spread of airborne contaminants. High-capacity liquid line filter/drier extends the life of the unit by trapping moisture and dirt that could contaminate the system, Energy Star-qualified, with efficiency up to 16.5 SEER and 9.5 HSPF.
Lennox International

NEMA-Style Surge Protection Series

Littelfuse launches its NEMA-style surge protective device series to safeguard equipment from transient overvoltage events lasting micro-seconds and help mitigate costly damage and downtime. The external panel mount is available for 120V to 480V nominal voltage subdistribution board applications in various industries. Capability to clamp and withstand high-energy transients ensures low-residual voltage during high-energy events and higher nominal discharge current to prevent disruption, downtime and degradation to equipment. Includes more direct modes of protection in a smaller package, increasing protection and design flexibility. Stacked metal oxide varistor design provides more high-transient voltage protection in a compact, multi-layered structure; thermally protected MOV eliminates catastrophic failure.
Littelfuse

MARKETPLACE

AD INDEX

Reflecting on 10 Years of Environmental Advocacy

From climate change and sea level rise to decarbonization and regulatory upheaval, our sustainability columnist reflects on a stormy decade.

Larry Clark

A regular contributor to HPAC Engineering and a member of its editorial advisory board since 2012, the author is a principal at Sustainable Performance Solutions LLC, a south Florida-based engineering firm focusing on energy and sustainability. Email him at larry@sustainflorida.com.

Wow. That was quick! When this column, *Clark's Remarks*, made its debut in June 2013, my first topic was Sect. 179D of the IRS Code, the commercial building energy-efficiency tax deductions authorized by the Energy Policy Act of 2005. At that time, the deduction was expiring, so I was encouraging Congress to extend the provision.

After that, continuation of 179D was reprised again in 2014, 2017, and 2020, with the goal of having it become permanent. Since it was included in the Inflation Reduction Act, its likelihood of being a permanent part of the tax code now appears better than ever.

In subsequent columns, now numbering well over 100, the topics that I have returned to the most have been climate change and sea level rise, refrigerants and refrigerant additives, and related industry initiatives and governmental regulations.

In 2015, I first wrote about hydrochlorofluorocarbons (HCFCs) like R-22, that had replaced chlorofluorocarbons (CFCs) — the really bad players for ozone depletion, like R-11 and R-12 — and were now themselves being targeted for phaseout. These HCFCs had medium ODP (Ozone Depleting Potential) and GWP (Global Warming Potential), and were scheduled to be phased out over a much longer time frame. That set the stage for hydrofluorocarbon (HFC) refrigerants, such as R-134a, R-404a, and R-410a, to gain prominence.

Today, of course, the HVACR industry is undergoing yet another refrigerant transition, as those HFCs are being phased down in favor of new, lower-GWP refrigerants, such as R-32 and R-454B. Various refrigerant additives, such as polarized refrigerant oil additives (PROAs) and synthetic refrigeration additives (SRAs), have also been addressed over the years.

Of course, as a resident of coastal South Florida, sea-level rise is top of mind for me, and I first wrote about it in 2013. Since then, it has been the focus in at least seven more essays. Indeed, according to NOAA, the sea level in Miami is rising by about 3 mm per year.

Most climate scientists agree that sea-level rise is caused primarily by two factors related to global warming: the added water from melting ice sheets and glaciers, plus the expansion of seawater as it warms. Of course, that segues nicely into by far the most recurring topic of *Clark's Remarks* over the past decade: **climate change**.

Because climate change has influenced so much here, it is difficult to say exactly how many times it has been discussed in my writing. In May 2013, according to NOAA, the combined average temperature over global land and ocean surfaces was 0.66°C (1.19°F) above the 20th century average of 14.8°C (58.6°F). In May 2023, it was 0.97°C (1.75°F) above that average.

The overarching goal of the 2105 Paris Agreement — arguably the most important international response to climate change — was to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels."

In recent years, however, that goal has been intensified to limit global warming to 1.5°C by the end of this century. In order to achieve that, greenhouse gas emissions must peak before 2025 and decline 43% by 2030!

So, there is much important work right in front of us now, as I embark on my second decade of these columns. I look forward to sharing that journey with all of you.

In the meantime, I would like to thank *HPAC Engineering* for its strong position on critical environmental issues over the years, and to its editor **Rob McManamy**, as well as his predecessor, **Scott Arnold**, for allowing me to use this platform.

Along the way, perhaps I have even changed the minds of a few climate change deniers and influenced some politicians on both sides of the aisle who may have been reluctant to follow the science.

At the end of the day, we engineers know that is always our most reliable guide. HPAC

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- 1911ecm: 425W, 50 feet max head, 105 GPM max flow
- 1915ecm: 650W, 65 feet max head, 120 GPM max flow

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