

2023 HVAC Training Classes



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Welcome to Air Flow

Headquartered in Milwaukee, Air Flow is a heating, ventilating and air conditioning (HVAC) manufacturer's representative serving Wisconsin and Michigan's Upper Peninsula. Founded in 1973, Air Flow has earned a solid reputation among its customers in the commercial, industrial, and institutional marketplace.

So, what sets us apart from the competition?

It's our "Give-a-sh**-ology" guarantee. Yep, we really do give a sh*t about your project and about your business.

That means we are driven to solve problems and we do the little things others aren't willing to do, so you can have a successful project, get home in time for supper, and sleep well at night.

We know there are people like you who have that same customer focused mindset, want to do great work for their customers, and value collaborative partnerships.

Part of "Give-a-sh**-ology" is identifying new stuff that tells a story and solves an issue. New brands, new products, new concepts. Displacement, CFD, liquid desiccant dehumidification, cold climate heat pumps and more.

If it has the potential to improve life for the end user and falls into our ever-widening

wheelhouse, we want to know about it, share it with you, and bring it to market if it makes sense.

As part of our commitment to our customers, we are resuming our offering of live HVAC classes with renewed enthusiasm post-pandemic. We missed you all and we are excited to be offering these programs in person again.

Since we last met, Air Flow made a few changes to improve the class experience:

- *Our auditorium received a significant digital upgrade, allowing the classes to be large format, hybrid capable.*
- *All classes are held live at Air Flow but also offered in a hybrid fashion in case you can't be here in person.*
- *All seminars are recorded with quizzes so you can learn on your own schedule.*
- *Training, in many cases, will be bundled around a single application. Often, training will include multiple manufacturers.*
- *There are courses for new team members, which cuts down on the training you need to provide.*
- *All presentations are curated by Air Flow to prevent manufacturers from boring you to death.*

- *All classes are scheduled in advance so you can add the training to your calendar before the emergencies hit.*

- *Plan on having some fun, getting free swag and learning a lot.*

Why all this training?

Most of you chose this industry for the long term, so let's get better at what we do together.

Air Flow wants you to be more informed and solve more problems to keep your organization and its employees out of harm's way. Sometimes, we even want to delight you with some innovative thinking. The classes will bring to light the important practices surrounding these products and applications. Don't worry, we're still going to be there to take care of all the details.



CLASS #1

DISCOVERING Humidification in Reverse



DATE: JAN. 17, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: Humidifiers have a lot of challenges. Let's talk about what goes wrong first, and then design our way out of trouble.

CHALLENGE: With every humidifier, there's an opportunity for a problem with every turn. Identify and prepare for them.

WHO'S IT FOR: Project managers and engineers of all experience levels

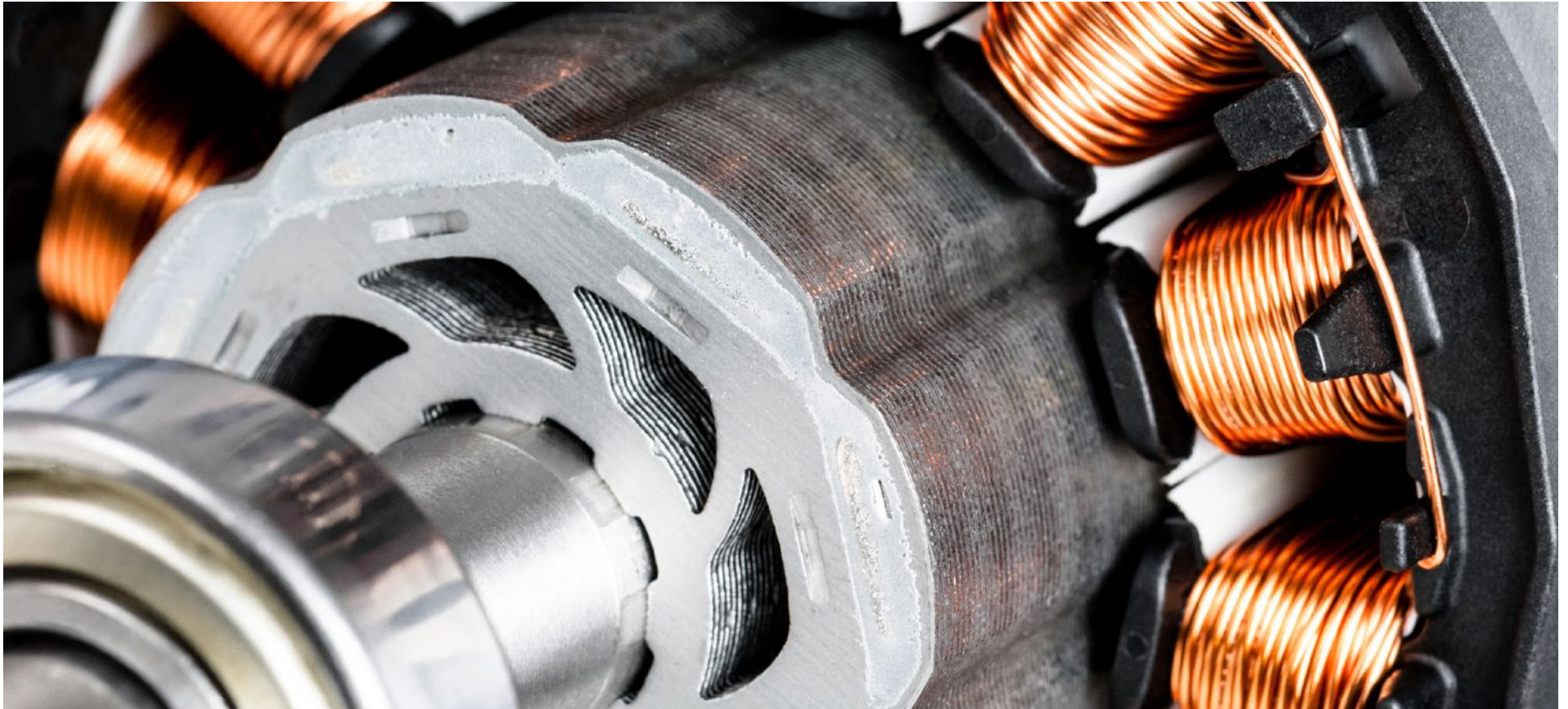
SUBJECTS COVERED:

- Everything that ever went wrong with a humidifier
- Types
- Selection/sizing
- Layout
- Controls
- Maintenance
- Water quality

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURER REPRESENTED: Neptronic



CLASS #2

EMBRACING Advanced Fan Training



DATE: FEB. 14, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: A challenge for the pros on fan selection with an assortment of challenging topics. No one will leave without learning something they hadn't known previously.

CHALLENGE: Can you articulate when you SHOULD and SHOULD NOT use a permanent magnet motor? If you can answer this, I'll give you your PDH certificate without showing up.

WHO'S IT FOR: Experienced mechanical engineers and contractors that do some work in specialty markets (food, industrial and wastewater).

SUBJECTS COVERED:

- The possibilities and limitations of electronically commutated (EC) and permanent magnet motors (PM) versus induction motors with drives
- Deep dive on direct drive vs. belt drive
- Specialty construction for fans and their applications (AMCA A, B, C; UL Smoke rating; pressurization fans, ammonia applications, explosion-proof construction)

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURER REPRESENTED: Loren Cook



CLASS #3

UNDERSTANDING Fan Basics

DATE: FEB. 16, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: We all need to start somewhere with fans, and it's not in the catalog.

CHALLENGE: It's easy to use fan software and select a fan. It's expensive and difficult to fix one that's selected improperly.

WHO'S IT FOR: Mechanical engineers and mechanical contractors, with less than five years of experience

SUBJECTS COVERED:

- Fan curves
- Fan wheels
- Fan laws
- Fan software and all the little ins and outs to keep you out of trouble
- System effect demonstration

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURER REPRESENTED: Loren Cook





CLASS #4

LEARNING About Large Building Heating and Control



DATE: MAR. 14, 2023 | 8:30 a.m. to 1:00 p.m.

SUBJECT: You are charged with the design of a large, heating only space, with makeup air requirements and summer ventilation.

CHALLENGE: The exhaust, envelope and budget constraints are changing during design.

YOU MUST: Quickly consider different systems for cost, comfort, operating cost, maintainability and carbon footprint.

WHO'S IT FOR: Lead mechanical engineers, future lead mechanical engineers, design-build contractors and supporting team members.

SYSTEMS ADDRESSED:

- Makeup air system selection
- Managing large exhaust fan selections for design, performance and maintenance
- When to incorporate industrial air curtains
- Destratification
- Infrared

SUBJECT LENGTH: 4 hours

PDH/CEU: 4 hours

MANUFACTURERS REPRESENTED: AbsolutAire, Loren Cook, Powered Aire, Airius and Detroit Radiant



CLASS #5

DEALING with Products that are a Pain in the Ass to Select



DATE: MAR. 16, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: A few products that are not fun but require meticulous attention to select properly, considering sound, pressure drop and BTU performance.

CHALLENGE: There's nothing sexy about picking 300 fan powered terminals. Can we get days of work down to hours?

WHO'S IT FOR: Mechanical engineers and mechanical detailers

SPECIAL TREAT: *If you come to this class, you'll get some manufacturer and Air Flow SWAG to reward your diligence.*

PRODUCTS COVERED:

- Diffusers and grilles
- Fan coils
- Fan powered terminal boxes
- Silencers
- VAV Boxes

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURER REPRESENTED: Price Industries

BRING YOUR LAPTOP!!



CLASS #6

OPTIMIZING Large Volume Building Air Conditioning, Heating and Control



DATE: APR. 11, 2023 | 8:30 a.m. to 1:00 p.m.

SUBJECT: You are charged with the design of a large, heated and cooled manufacturing facility with makeup air requirements.

CHALLENGE: The exhaust, envelope and budget constraints are changing during design.

YOU MUST: Quickly consider different systems for cost, comfort, operating cost, maintainability and carbon footprint.

WHO'S IT FOR: Lead mechanical engineers, energy modelers, design-build contractors and supporting team members.

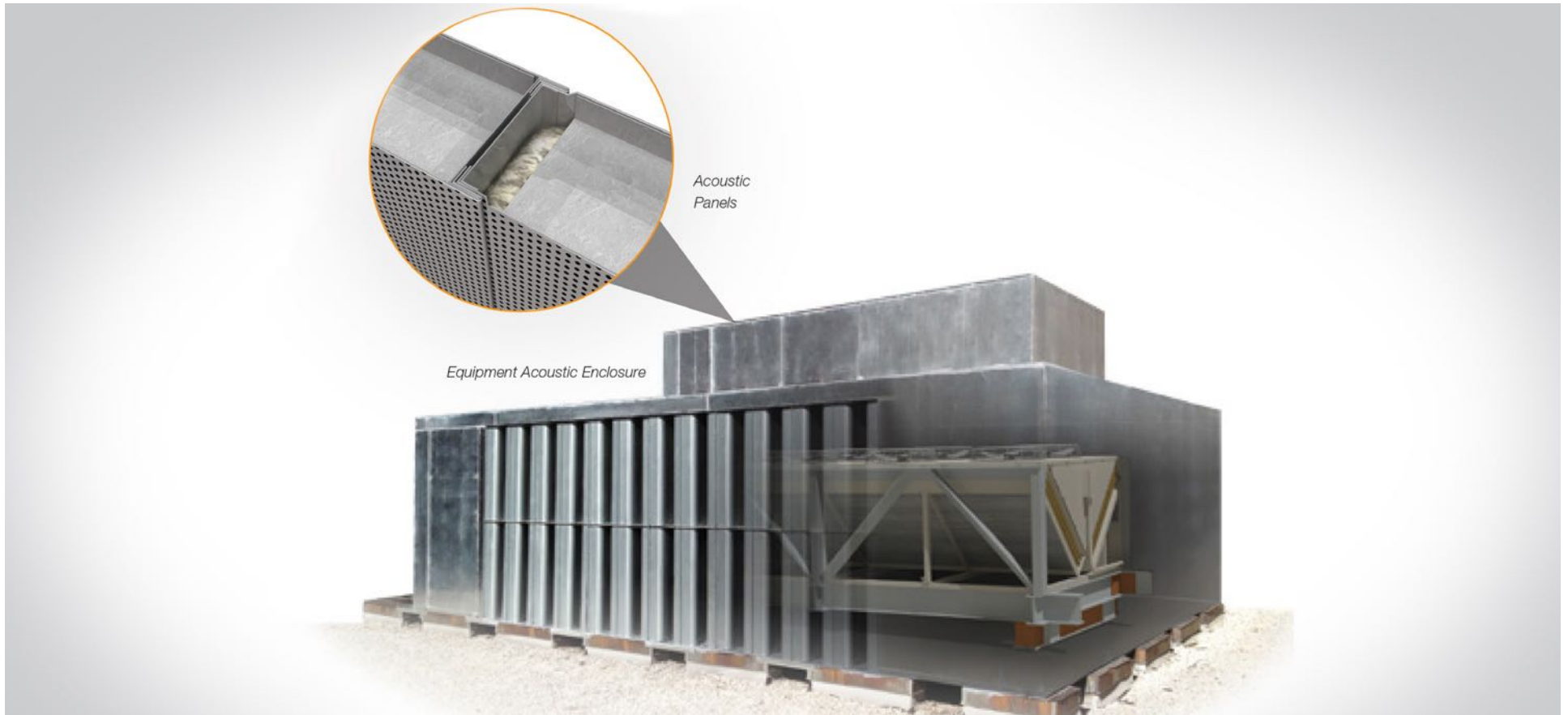
SYSTEMS ADDRESSED:

- All rooftop applications, optional dehumidification control, with economics of size
- Mixing air distribution in large, cooled spaces,
- Displacement distribution in large, cooled spaces,
- Alternates to metal ducting systems with Koolduct, fabric duct
- Makeup air with cooling

SUBJECT LENGTH: 4 hours

PDH/CEU: 4 hours

MANUFACTURERS REPRESENTED: Tempmaster by JCI, Price Predict CFD, AbsolutAire and Fabricair



CLASS #7

**SOLVING
Advanced Acoustic
Challenges**



DATE: MAY 9, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: Acoustic field challenges of lighter buildings, hard ducted systems, no duct liner and higher-pressure fans inside air handling equipment.

CHALLENGE: The acoustician's price was too high, and the architect fired them. Now you're the acoustician.

WHO'S IT FOR: The problem solver in your office.

SUBJECTS COVERED INCLUDE:

- Understand the acoustic section of catalog data
- Terminal devices with integral sound control
- Noise control options for chillers and loud rooftop equipment

- Generator noise including property line requirements and solutions
- Case study addressing hospital exhaust fan noise
- Case study addressing exposed air terminal units in occupied spaces
- Case study addressing large equipment noise transmission

COURSE LENGTH: 3 hours with prerequisite of having more than five years of relevant experience.

PDH/CEU: 3 hours

MANUFACTURER REPRESENTED:

Price Noise Control



CLASS #8

UNDERSTANDING Duct Acoustics 101



DATE: MAY 11, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: Basic duct path acoustics.

CHALLENGE: Design or manage the process of delivering the customer's required NC (noise) levels in all spaces.

WHO'S IT FOR: All engineers and contractors who do not have experience with Acoustic Analysis tools.

SUBJECTS COVERED INCLUDE:

- Acoustic basics specific to duct path (supply and return, insertion loss, breakout noise, etc.)
- Make use of Acoustic Analysis free software to model sound paths
- Make use of manufacturer's Acoustic Analysis services that include recommendations and

product selections

- Review other sound reduction methods (lined duct, flex duct, return air canopy (RAC), sound boots, lined plenums)
- Case study addressing mechanical room (MER) noise to surrounding occupied spaces
- Case study addressing rooftop equipment noise to surrounding occupied spaces
- Case study addressing office speech privacy between adjacent spaces

COURSE LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURERS REPRESENTED: Price Industries and Noise Control



CLASS #9

UNCOVERING Four Ways to Dry Out Your Client's Buildings



DATE: JUN. 13, 2023 | 8:30 a.m. to 1:00 p.m.

SUBJECT: Dehumidification is never one size fits all, but with this lineup, you can cover all the possibilities.

CHALLENGE: Your client drops on you "by the way, we need to maintain humidity levels." Do you have a solution for every RH/WB number that the design requires?

WHO'S IT FOR: Experienced mechanical engineers and contractors that do some work with dehumidification systems.

SUBJECTS COVERED:

- Universal laws of humidity migration control
- Maximize the dehumidification controls of rooftop units with Tempmaster
- Traditional desiccant wheel systems with BryAir
- Low dewpoint R410A solutions with Solutionair
- Liquid Desiccant solutions with Airgreen

SUBJECT LENGTH: 4 hours

PDH/CEU: 4 hours

MANUFACTURERS REPRESENTED: Tempmaster by JCI, Bry-Air, Air Green and Solutionair by Price Industries.



CLASS #10

WRESTLING with Electrification and Carbon Footprint



DATE: JUL. 11, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: Creative methods to accomplish greenhouse gas reduction in the built environment.

CHALLENGE: You are interviewing for a project for an as-fully-as-possible-electrified net zero government facility. The facility director, who owns aN EV and has solar on her home, is challenging the team for the best possible design. The first blush on the project leaves you far short of meeting the owner's goals.

YOU MUST: Present viable, executable solutions for the construction team.

WHO'S IT FOR: Customer-facing engineering team members, experienced engineers and energy modelers.

SUBJECTS COVERED:

- CHP (combined heat and power)
- Gas fired heat pumps and VRF
- Cold Climate Heat Pumps

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURERS REPRESENTED: Yanmar and Kinghome by Gree



CLASS #11

DISCOVERING Price's Air and Light Operating Theater

DATE: AUG. 15, 2023 | 9:00 a.m. to 12:00 p.m.

CHALLENGE: Your customer heard about Price's Ultrasuite integrated light/diffuser system and wants it, but the space is a challenge.

YOU MUST: Deal with the lighting requirements, the structural requirements, air flow requirements and the equipment

WHO'S IT FOR: Healthcare engineers and healthcare contractors.

SUBJECTS COVERED:

- How the system works
- System requirements (air flow, lighting)
- Working in specialty systems (Cath labs, Biplane)
- Integrated structural steel

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURER REPRESENTED:

Price Critical Environments





CLASS #12

PURSUING Dust Collection System Safety



DATE: SEP. 19, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: Dust collection systems must adhere to NFPA. We'll explore the language, what it all means and how to collect dust properly.

CHALLENGE: Your customer has a dust collection application. That's the good news. The bad news is you must design it so it works, complies with NFPA and the inspector and will meet the requirements of the insurer, who knows little about dust collection safety.

YOU MUST: Propose a system that protects the owner from their own process.

WHO'S IT FOR: Anyone who works with dust collection systems. Schools, mechanical engineers for the school market, manufacturing and insurance carriers.

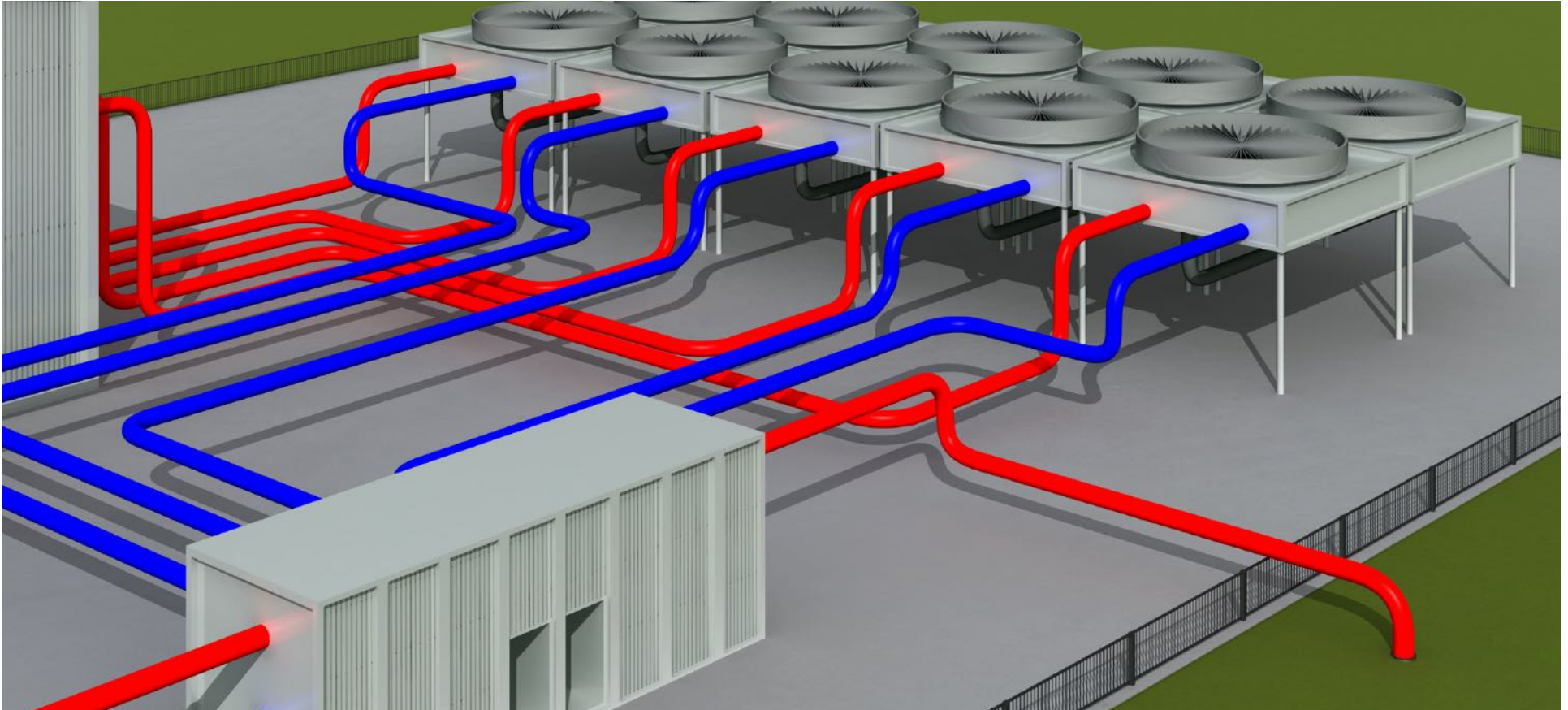
SUBJECTS COVERED:

- Combustible dust
- Dust collection safety devices
- Dust collection equipment

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURER REPRESENTED: Imperial Systems



CLASS #13

OPTIMIZING Heating Devices for Low Water Temperature



DATE: OCT. 10, 2023 | 9:00 a.m. to 12:00 p.m.

CHALLENGE: Your electrified building makes use of a heat recovery chiller that supplies only 120F water.

YOU MUST: Address this with VAV boxes that can work with 120F water, and there are 1,000 terminals. You have the option to supplement the hot water system if it can be justified.

WHO'S IT FOR: Mechanical engineers, design build contractors, all levels.

SUBJECTS COVERED:

- Combined Heat and Power
- Price's All-In-One Excel Plug in tool
- Linear floor terminals

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURERS REPRESENTED: Yanmar, Price Industries Software Group and Price Industries Sustainable Group



CLASS #14

EXPLORING Duct Leakage, Duct Construction, Phenolic Duct Systems and Outside Air Systems



DATE: OCT. 12, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: HVAC system leakage.

CHALLENGE: Nuts and bolts for engineers and contractors who look at ductwork as two lines, and need to understand what it really is.

WHO'S IT FOR: All engineers and contractors. A great class for engineers with less than five years of experience.

SUBJECTS COVERED:

- Duct construction for engineers
- Duct leakage
- System leakage
- Alternative duct systems, indoors
- Alternative duct systems, outdoors

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURERS REPRESENTED: Therma duct and Special Operations Ductwork, Inc. (SODI)



CLASS #15

ACHIEVING Net Zero with Heat Recovery Chillers by Dunham Bush USA



DATE: NOV. 14, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: Understand and then assemble the path to meet code requirements for heat recovery, and your client's goals of Electrification/Decarbonization and Net Zero Energy.

CHALLENGE: Let's look at a new way to use heat recovery chillers and net energy water loops to drive toward net zero buildings.

SECRET SAUCE: Alan Niles of Dunham Bush is an ASHRAE distinguished lecturer.

WHO'S IT FOR: Lead contractors, engineers and facility managers.

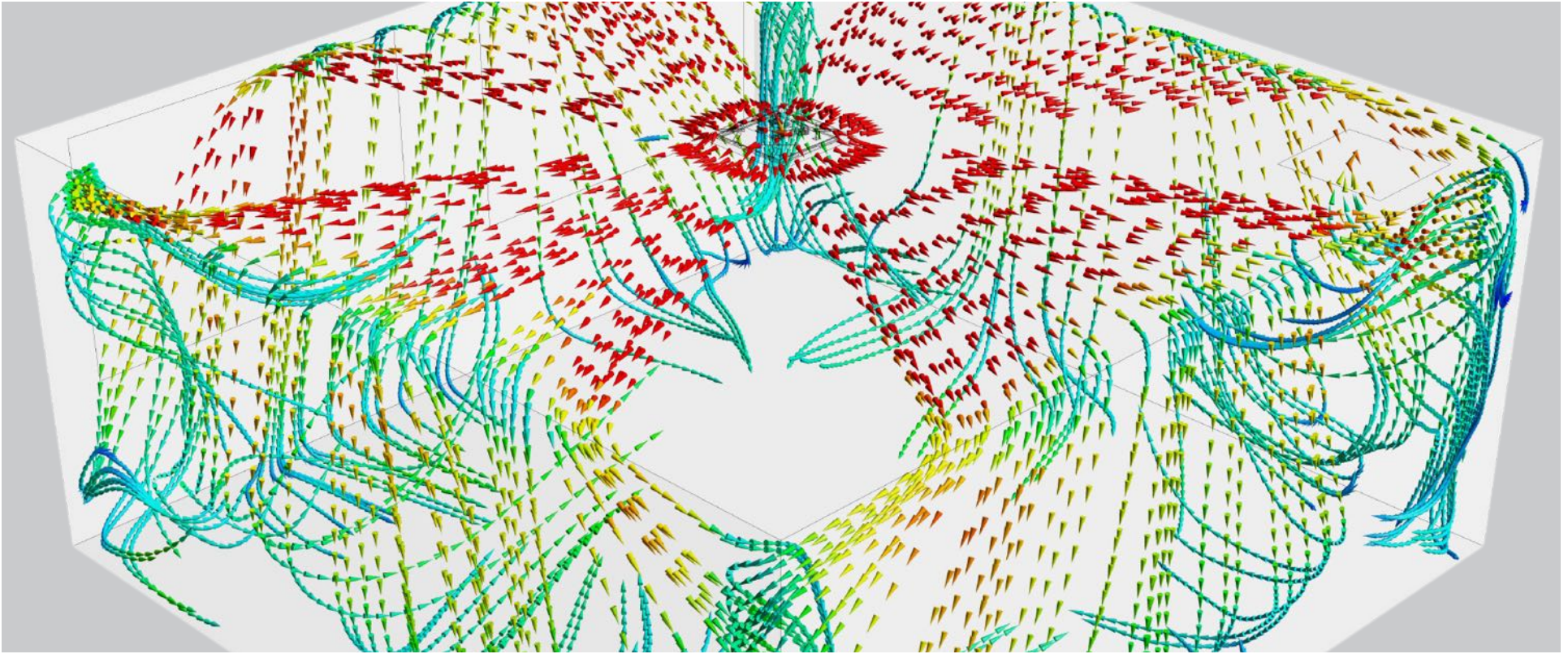
SUBJECTS COVERED:

- TOPIC 1: Opportunities, De-Carbonization and Other Considerations with Heat Recovery Chillers
- TOPIC 2: Net-Energy Water Loops: A Clear Path to Net Zero Energy Buildings
- TOPIC 3: Design and Economics of Commercial Ground Loop Heat Pump Systems
- TOPIC 4: Dunham Bush Returns to U.S. Market

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURER REPRESENTED: Dunham Bush USA



CLASS #16

CONTROLLING Office Building Comfort Through Air Distribution



DATE: DEC. 12, 2023 | 9:00 a.m. to 12:00 p.m.

SUBJECT: The assignment is comfort. Your customer is building a boutique office building, intended to attract the best of the best of her industry.

CHALLENGE: Comfort and individual room control is the new standard, but at the same time, the project has cost constraints.

YOU MUST: Present multiple options for the customer's leadership team.

WHO'S IT FOR: The innovators of your engineering teams.

SUBJECTS COVERED:

- Diffuser deep dive (how does a diffuser really work vs. what the catalog says) presented by Price CFD

- o Isothermal vs. real performance in heating and cooling
- o When to use specialty diffusers, or always use a plaque?
- Displacement for comfort presented by Price destratification team
- Individual room control for comfort presented by Price Controls
- Radiant heating and/or cooling systems in concert with air distribution presented by Price Sustainability

SUBJECT LENGTH: 3 hours

PDH/CEU: 3 hours

MANUFACTURERS REPRESENTED: Price Predict CFD, Price Industries Sustainable, Acutherm and Price Electronics



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