

# 2019 AHR Expo Education Sessions

| Session Title                                                                                       | Date and Time              | Location                      | Type                                   |
|-----------------------------------------------------------------------------------------------------|----------------------------|-------------------------------|----------------------------------------|
| Professional Development Seminar: Commercial Building Energy Audits (code 60)                       | 01/12/2019<br>8:00 - 03:00 | B302                          | ASHRAE Learning Institute Courses (\$) |
| Professional Development Seminar: Effective Energy Management in New & Existing Buildings (code 61) | 01/12/2019<br>8:00 - 03:00 | B303                          | ASHRAE Learning Institute Courses (\$) |
| Professional Development Seminar: Operations & Maintenance of High-Performance Buildings (code 62)  | 01/12/2019<br>8:00 - 03:00 | B304                          | ASHRAE Learning Institute Courses (\$) |
| Short Course: Advanced Designs for Net Zero Buildings (code 63)                                     | 01/13/2019<br>3:30 - 06:30 | B302                          | ASHRAE Learning Institute Courses (\$) |
| Short Course: Latest in High-Performance Dedicated Outdoor Air Systems (code 65)                    | 01/13/2019<br>3:30 - 06:30 | B303                          | ASHRAE Learning Institute Courses (\$) |
| Short Course: Variable Refrigerant Flow Systems: Design & Applications (code 66)                    | 01/13/2019<br>3:30 - 06:30 | B304                          | ASHRAE Learning Institute Courses (\$) |
| Short Course: Air-to-Air Energy Recovery Applications: Best Practices (code 64)                     | 01/13/2019<br>3:30 - 06:30 | B305                          | ASHRAE Learning Institute Courses (\$) |
| New Deal Cybersecurity Summit                                                                       | 01/14/2019<br>7:00 - 11:00 | B310                          | Free Industry Sessions                 |
| NATE Testing & Review                                                                               | 01/14/2019<br>8:00 - 05:00 | C207                          | Certification Exams (\$)               |
| Short Course: Humidity Control I: Design Tips and Traps (code 67)                                   | 01/14/2019<br>8:30 - 11:30 | B302                          | ASHRAE Learning Institute Courses (\$) |
| Short Course: Solar PV & Thermal Analysis and Design (code 68)                                      | 01/14/2019<br>8:30 - 11:30 | B303                          | ASHRAE Learning Institute Courses (\$) |
| Short Course: Thermal Energy Storage Systems for Air Conditioning (code 69)                         | 01/14/2019<br>8:30 - 11:30 | B304                          | ASHRAE Learning Institute Courses (\$) |
| Short Course: Understanding and Designing Chilled-Beam Systems (code 70)                            | 01/14/2019<br>8:30 - 11:30 | B305                          | ASHRAE Learning Institute Courses (\$) |
| Low Cost Leads are Hurting Your Business                                                            | 01/14/2019<br>9:00 - 10:00 | B309                          | Free Industry Sessions                 |
| The Future of Building Automation Creating Our New Persona "Building Emotion"                       | 01/14/2019<br>9:00 - 10:00 | B311                          | Free Industry Sessions                 |
| Monetization of Intelligent Buildings                                                               | 01/14/2019<br>9:00 - 10:00 | B313a                         | Free Industry Sessions                 |
| Customer Service is Not a Department, it is a Mindset                                               | 01/14/2019<br>9:00 - 10:00 | B313b                         | Free Industry Sessions                 |
| BACnet 101: From an HVAC Perspective                                                                | 01/14/2019<br>9:00 - 10:00 | Thomas<br>Murphy<br>Section 1 | Free Industry Sessions                 |
| HVAC Duct Construction - Duct Design                                                                | 01/14/2019<br>9:00 - 10:30 | B315                          | Free Industry Sessions                 |
| Trends in the Global HVAC Market                                                                    | 01/14/2019<br>9:00 - 11:00 | B312                          | Free Industry Sessions                 |

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| Air Purification to Keep Ductless Mini-splits Free of Mold and Odors                             | 01/14/2019<br>10:15 - 10:35 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| How Fieldpoint's Latest Solution Can Help Your Enterprise Achieve Field Service Management Goals | 01/14/2019<br>10:15 - 10:35 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| TCOD-Clean; High Purity Filtration Selection & Design Software                                   | 01/14/2019<br>10:25 - 10:45 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Introduction to Building Automation Systems                                                      | 01/14/2019<br>10:30 - 11:30 | B311                          | Free Industry Sessions                             |
| Developing a Cyber Security Defense                                                              | 01/14/2019<br>10:30 - 11:30 | Thomas<br>Murphy<br>Section 1 | Free Industry Sessions                             |
| Psychrometrics Without Tears                                                                     | 01/14/2019<br>10:30 - 12:30 | B309                          | Free Industry Sessions                             |
| DOE Regulations and the HVACR Industry                                                           | 01/14/2019<br>10:45 - 11:05 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Intuitive Refrigerant Compliance Monitors for Commercial and Industrial Gas Leak Applications    | 01/14/2019<br>10:45 - 11:05 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Scalable Building Control Solutions from Trane                                                   | 01/14/2019<br>10:55 - 11:15 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Low GWP Refrigerants: Components and System Designs                                              | 01/14/2019<br>11:00 - 12:00 | B313a                         | Free ASHRAE<br>Conference Sessions                 |
| Pairing Geothermal and Hydronic Systems in Residential Buildings                                 | 01/14/2019<br>11:00 - 12:00 | B313b                         | Free ASHRAE<br>Conference Sessions                 |
| Commissioning Based Energy Management: A High Impact, High Performance Approach                  | 01/14/2019<br>11:00 - 12:00 | B316                          | Free Industry Sessions                             |
| New Products and Solutions in a Changing Industry, an EU Perspective                             | 01/14/2019<br>11:15 - 11:35 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Marley® MD Everest® Counterflow Cooling Tower                                                    | 01/14/2019<br>11:15 - 11:35 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Redefining Modern Building Management with Latest Metasys® Release                               | 01/14/2019<br>11:25 - 11:45 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Connected Multi-Dwelling Units and the Internet of Things                                        | 01/14/2019<br>11:30 - 12:30 | B310                          | Free Industry Sessions                             |
| Building and Drinking Water – Managing the Emerging Risks                                        | 01/14/2019<br>11:30 - 12:30 | B315                          | Free Industry Sessions                             |
| WebCTRL v7 Building Automation System – Advanced Reporting, Dashboards & Visualization           | 01/14/2019<br>11:45 - 12:05 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |

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| Tackling New R-12 Insulation Requirements with a Single Layer of Insulation                        | 01/14/2019<br>11:45 - 12:05 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| New Nonflammable, Reduced GWP Replacement for R-410A                                               | 01/14/2019<br>11:55 - 12:15 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Building Automation 101                                                                            | 01/14/2019<br>12:00 - 01:00 | B311                          | Free Industry Sessions                             |
| Increasing Energy Efficiency in Air Handling Units with punker D-SERIES Diffuser Fan Wheels        | 01/14/2019<br>12:15 - 12:35 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Ethernet BACnet IP/ WIFI BACnet IP- Thermostats and VAV Controllers                                | 01/14/2019<br>12:15 - 12:35 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Smarter Building Controller: The Cloud-based, Affordable, Portfolio-wide HVAC Management System    | 01/14/2019<br>12:25 - 12:45 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Addressing Risk In an IoT-Connected World                                                          | 01/14/2019<br>12:45 - 01:05 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| The New RenewAire Slimline ERV                                                                     | 01/14/2019<br>12:45 - 01:05 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Why is Filtration Critical for Minimizing Legionella Growth                                        | 01/14/2019<br>12:55 - 01:15 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Necessity of Filtration on Open Cooling Systems                                                    | 01/14/2019<br>1:00 - 02:00  | B309                          | Free Industry Sessions                             |
| Airflow Testing Accuracy in the Field                                                              | 01/14/2019<br>1:00 - 02:00  | B315                          | Free Industry Sessions                             |
| Marketing through Engagement                                                                       | 01/14/2019<br>1:00 - 02:00  | B316                          | Free Industry Sessions                             |
| Is HVACaaS (HVAC as a Service) in Your Future?                                                     | 01/14/2019<br>1:00 - 02:00  | Thomas<br>Murphy<br>Section 1 | Free Industry Sessions                             |
| Cooling Tower and Water Treatment Fundamentals                                                     | 01/14/2019<br>1:00 - 03:00  | B312                          | Free Industry Sessions                             |
| The Array Boiler: High-efficiency Condensing Boiler with the Benefits of Redundant Heat Exchangers | 01/14/2019<br>1:15 - 01:35  | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Symphony: The Next Step in Intelligent Automation and IoT for the Hospitality Industry             | 01/14/2019<br>1:15 - 01:35  | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Wireless Pressure Sensing for Refrigerant Monitoring in AC and Refrigeration Systems               | 01/14/2019<br>1:25 - 01:45  | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Smart Environments for Humans                                                                      | 01/14/2019<br>1:30 - 02:30  | B311                          | Free Industry Sessions                             |

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| steamOvap is Introducing the First Smart Electric Steam Humidifier                                      | 01/14/2019<br>1:45 - 02:05 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| QuickVic™ SD: Most Efficient & Economical Way to Join Small Diameter Carbon Steel Pipe                  | 01/14/2019<br>1:45 - 02:05 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Caleffi CONTECA™ Connect Made Easy                                                                      | 01/14/2019<br>1:55 - 02:15 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Overcoming Errors Associated with System Variations When Using Insertion Flowmeters                     | 01/14/2019<br>1:55 - 02:15 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Boiling Down to the Best Boiler Solution                                                                | 01/14/2019<br>2:00 - 03:00 | B310                          | Free Industry Sessions                             |
| Reduce the Space Required for Your Evaporative Cooling Equipment while Saving Water and Energy          | 01/14/2019<br>2:15 - 02:35 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Single-tool Infrastructure for Connecting Systems that Takes Operational Efficiency to the Edge         | 01/14/2019<br>2:15 - 02:35 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| How Revisions to Standard 180 will Help Improve Maintenance Services                                    | 01/14/2019<br>2:15 - 03:45 | B313a                         | Free ASHRAE<br>Conference Sessions                 |
| Update on Global Policies and Programs for Best Use of Refrigerants                                     | 01/14/2019<br>2:15 - 03:45 | B313b                         | Free ASHRAE<br>Conference Sessions                 |
| Revolutionary Press Fittings for Air-conditioning and Refrigeration Applications                        | 01/14/2019<br>2:25 - 02:45 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Quick Guide to Applying Fan and Pump Laws                                                               | 01/14/2019<br>2:30 - 03:30 | B315                          | Free Industry Sessions                             |
| A Review of HEPA Filters and Newer Purification Technologies for their Effectiveness and Health Impacts | 01/14/2019<br>2:30 - 03:30 | B316                          | Free Industry Sessions                             |
| Alexa Has Left the Building - Because Building IoT is So Much More                                      | 01/14/2019<br>2:30 - 03:30 | Thomas<br>Murphy<br>Section 1 | Free Industry Sessions                             |
| Controls Strategies for Maximizing Condensing Boiler System Efficiency                                  | 01/14/2019<br>2:30 - 04:00 | B309                          | Free Industry Sessions                             |
| High Efficiency Plug & Plenum Fans for (Retrofit) AHU With Static Pressure of Up to 10" WG              | 01/14/2019<br>2:45 - 03:05 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Geothermal Heat Pumps Meet the Future                                                                   | 01/14/2019<br>2:45 - 03:05 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Short Course: Humidity Control II: Real-World Problems and Solutions (code 74)                          | 01/14/2019<br>2:45 - 05:45 | B302                          | ASHRAE Learning<br>Institute Courses (\$)          |
| Short Course: Designing and Operating High-Performing Healthcare HVAC Systems (code 73)                 | 01/14/2019<br>2:45 - 05:45 | B303                          | ASHRAE Learning<br>Institute Courses (\$)          |
| Short Course: Design of Affordable and Efficient Ground-Source Heat Pumps Systems (code 72)             | 01/14/2019<br>2:45 - 05:45 | B304                          | ASHRAE Learning<br>Institute Courses (\$)          |

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| Short Course: ASHRAE Guideline 0 – The Commissioning Process (code 71)                                      | 01/14/2019<br>2:45 - 05:45 | B305                    | ASHRAE Learning Institute Courses (\$)       |
| Elevating the Occupant Experience                                                                           | 01/14/2019<br>2:55 - 03:15 | Theater C - room C103   | Exhibitor Product & Technology Presentations |
| Grid Connected Buildings as a Transactive Hub                                                               | 01/14/2019<br>3:00 - 05:00 | B311                    | Free Industry Sessions                       |
| HVAPP! - Reinventing the Way We Access HVACR Industry Information                                           | 01/14/2019<br>3:15 - 03:35 | Theater A - room C101   | Exhibitor Product & Technology Presentations |
| Keep Your Operations Flowing - Accurate Flow Metering without Cutting the Pipe or Shutting Down Your System | 01/14/2019<br>3:25 - 03:45 | Theater C - room C103   | Exhibitor Product & Technology Presentations |
| The Benefits of Manifold Flow Meters in Design and Installation for Radiant                                 | 01/14/2019<br>3:30 - 04:30 | B310                    | Free Industry Sessions                       |
| HVAC System Cleaning 101                                                                                    | 01/14/2019<br>3:30 - 04:30 | B312                    | Free Industry Sessions                       |
| The Final Evolution of Pressure Boosting Technology!                                                        | 01/14/2019<br>3:45 - 04:05 | Theater A - room C101   | Exhibitor Product & Technology Presentations |
| Infrared Sensors for Refrigerant Gas Leak Detection in the Commercial/Industrial HVACR Sector               | 01/14/2019<br>3:45 - 04:05 | Theater B - room C102   | Exhibitor Product & Technology Presentations |
| IAQ Management for Residential Single and Multi-family Construction                                         | 01/14/2019<br>3:55 - 04:15 | Theater C - room C103   | Exhibitor Product & Technology Presentations |
| Assessing the Effectiveness of Economizers for De-Centralized Cooling Systems                               | 01/14/2019<br>4:00 - 05:00 | B313a                   | Free ASHRAE Conference Sessions              |
| Using Air to Air Energy Recovery to Help Balance Comfort, IAQ and Energy                                    | 01/14/2019<br>4:00 - 05:00 | B313b                   | Free ASHRAE Conference Sessions              |
| Exposure Risk of Laboratory Fume Hoods                                                                      | 01/14/2019<br>4:00 - 05:00 | B316                    | Free Industry Sessions                       |
| How Much Energy Can HVAC System Balancing Save?                                                             | 01/14/2019<br>4:00 - 05:30 | B315                    | Free Industry Sessions                       |
| Ask the Expert: Have Your BACnet Questions Answered                                                         | 01/14/2019<br>4:00 - 05:30 | Thomas Murphy Section 1 | Free Industry Sessions                       |
| Why Use NSF Certified Pressure Gauges                                                                       | 01/14/2019<br>4:15 - 04:35 | Theater A - room C101   | Exhibitor Product & Technology Presentations |
| Balancing in an IoT World - Kanomax Capture Hoods                                                           | 01/14/2019<br>4:15 - 04:35 | Theater B - room C102   | Exhibitor Product & Technology Presentations |
| Super-V: The World's Newest & Most Efficient Whole-house Air Cleaner                                        | 01/14/2019<br>4:25 - 04:45 | Theater C - room C103   | Exhibitor Product & Technology Presentations |
| Virtual Reality Training for HVAC is Here                                                                   | 01/14/2019<br>4:30 - 05:30 | B309                    | Free Industry Sessions                       |

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| Smart Connected Actuators Making Systems Transparent                                             | 01/14/2019<br>4:45 - 05:05 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Ventilation in a High Performance Home                                                           | 01/14/2019<br>4:45 - 05:05 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Simplifying Solar Thermal Design: Solar Stations for<br>Every Project Size                       | 01/14/2019<br>4:55 - 05:15 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Hanging Ductwork Using Cable, Even in Restricted<br>Spaces, Using DobyGrip Max                   | 01/14/2019<br>5:15 - 05:35 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Find Parts in the Most Unexpected Place: Your<br>Smartphone                                      | 01/14/2019<br>5:15 - 05:35 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Bearing Protection for HVACR Motors with Drives                                                  | 01/14/2019<br>5:25 - 05:45 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Air Source Heat Pumps for Domestic Hot Water<br>Generation in Cold Climates                      | 01/14/2019<br>5:45 - 06:05 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| The Energy Wall Universal ERV: Innovation In Energy<br>Recovery                                  | 01/14/2019<br>5:45 - 06:05 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| How to Deliver Smart and Open Building Applications for<br>IoT                                   | 01/15/2019<br>8:00 - 09:15 | B309                          | Free Industry Sessions                             |
| Commissioning Authority (CxA) Workshop & Exam (2 day<br>program)                                 | 01/15/2019<br>8:00 - 05:00 | C207                          | Certification Exams (\$)                           |
| New Construction Commissioning and ACP Exam (2 day<br>program)                                   | 01/15/2019<br>8:30 - 05:00 | Thomas<br>Murphy<br>Section 1 | Certification Exams (\$)                           |
| Smart Building Automation Evolution from Ethernet to<br>Emotion                                  | 01/15/2019<br>9:00 - 10:00 | B311                          | Free Industry Sessions                             |
| Defining the Pathway to Building-to-Grid                                                         | 01/15/2019<br>9:00 - 10:00 | B313a                         | Free Industry Sessions                             |
| The Importance of Humidity in Modern Buildings                                                   | 01/15/2019<br>9:00 - 10:00 | B316                          | Free Industry Sessions                             |
| Fundamentals of Heat Metering in Hydronic Systems                                                | 01/15/2019<br>9:00 - 10:30 | B313b                         | Free Industry Sessions                             |
| Providing Safety, Efficiency, and Value with Hydronic<br>Snow Melting                            | 01/15/2019<br>9:00 - 10:30 | B315                          | Free Industry Sessions                             |
| Trends in the Global HVAC Market                                                                 | 01/15/2019<br>9:00 - 11:00 | B312                          | Free Industry Sessions                             |
| Short Course: How Smart, Efficient, Sustainable Systems<br>Lead to Improved Resilience (code 78) | 01/15/2019<br>9:00 - 12:00 | B304                          | ASHRAE Learning<br>Institute Courses (\$)          |
| Short Course: Avoiding IAQ Problems (code 77)                                                    | 01/15/2019<br>9:00 - 12:00 | B305                          | ASHRAE Learning<br>Institute Courses (\$)          |

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| Professional Development Seminar: Commissioning Process in New & Existing Buildings (code 76)                                             | 01/15/2019<br>9:00 - 04:00  | B302                  | ASHRAE Learning Institute Courses (\$)       |
| Professional Development Seminar: Choosing the Right Energy Code for Your Project – IECC 2018 or ASHRAE 90.1-2016 (code 75)               | 01/15/2019<br>9:00 - 04:00  | B303                  | ASHRAE Learning Institute Courses (\$)       |
| Synergies Between BACnet and LON                                                                                                          | 01/15/2019<br>9:30 - 10:45  | B309                  | Free Industry Sessions                       |
| NAFA Best Practice Guideline for Hospital & Healthcare Facilities – Updated to Include the Impact of SSPC 170 Updates                     | 01/15/2019<br>10:00 - 11:00 | B310                  | Free Industry Sessions                       |
| Hot Water Recirculation for Tankless Heaters with & without Built-in Pumps: Indoor/Outdoor Installation, On Demand Option, Code Compliant | 01/15/2019<br>10:15 - 10:35 | Theater B - room C102 | Exhibitor Product & Technology Presentations |
| Increase Your Sales & Earn Your Customer's Trust with HVAC Surge Protection                                                               | 01/15/2019<br>10:15 - 10:35 | Theater C - room C103 | Exhibitor Product & Technology Presentations |
| Air Curtains - Clean Air Series                                                                                                           | 01/15/2019<br>10:25 - 10:45 | Theater A - room C101 | Exhibitor Product & Technology Presentations |
| Semantic Tagging Passes an Inflection Point - Understanding Project Haystack                                                              | 01/15/2019<br>10:30 - 11:30 | B311                  | Free Industry Sessions                       |
| CRUSH Your Numbers: What You Need to Know to Grow                                                                                         | 01/15/2019<br>10:30 - 11:30 | B313a                 | Free Industry Sessions                       |
| Global Market and Policy Trends for CO2 and Ammonia in Refrigeration                                                                      | 01/15/2019<br>10:30 - 11:30 | B316                  | Free Industry Sessions                       |
| Daikin Fit™ Residential Inverter HVAC System for Ducted Furnace Applications                                                              | 01/15/2019<br>10:45 - 11:05 | Theater B - room C102 | Exhibitor Product & Technology Presentations |
| NEW NexusPremier™ 25-50T Packaged Rooftop                                                                                                 | 01/15/2019<br>10:55 - 11:15 | Theater A - room C101 | Exhibitor Product & Technology Presentations |
| The BEST Way to Compare HVAC Systems in the Early Project Design Phase                                                                    | 01/15/2019<br>11:00 - 11:45 | B315                  | Free Industry Sessions                       |
| Design for High Performance Air Distribution Systems                                                                                      | 01/15/2019<br>11:00 - 12:00 | B313b                 | Free Industry Sessions                       |
| Fire Resisting Ductwork - Test Standards, Regulations & Applications                                                                      | 01/15/2019<br>11:15 - 11:35 | Theater B - room C102 | Exhibitor Product & Technology Presentations |
| The Future of Hydronic Pumps: Self Optimizing Pre-packaged HVAC Pump Systems                                                              | 01/15/2019<br>11:15 - 11:35 | Theater C - room C103 | Exhibitor Product & Technology Presentations |
| VFD Trends and Time Savers                                                                                                                | 01/15/2019<br>11:25 - 11:45 | Theater A - room C101 | Exhibitor Product & Technology Presentations |
| La Mejor Guia de NAFA para Hospitales y Centros de Salud - Actualización que Incluye el Impacto de Cambios del Standard ASHRAE SSPC 170   | 01/15/2019<br>11:30 - 12:30 | B310                  | Free Industry Sessions                       |
| Improving Organizational Productivity with Building Automation Systems                                                                    | 01/15/2019<br>11:30 - 12:30 | B312                  | Free Industry Sessions                       |

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| Fluke's Professional HVAC Toolkit - Keeping Your World Up and Running                                     | 01/15/2019<br>11:45 - 12:05 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Brand-New iManifold Pulse: Versatile, Low-cost HVAC/R Installed Monitoring & Diagnostics Platform         | 01/15/2019<br>11:45 - 12:05 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| Next Generation HVAC Controls: Open Hardware – Open Software                                              | 01/15/2019<br>12:00 - 01:00 | B311                     | Free Industry Sessions                             |
| There are No Secrets to Success                                                                           | 01/15/2019<br>12:00 - 01:00 | B316                     | Free Industry Sessions                             |
| New High Temperature Heat Pump Series WWB (Water/Water Booster)                                           | 01/15/2019<br>12:15 - 12:35 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| New Applications of High-lift, Oil-free Centrifugal Compressors                                           | 01/15/2019<br>12:15 - 12:35 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| Distribution Efficiency: The Often Overlooked Advantage of Hydronics Technology                           | 01/15/2019<br>12:30 - 01:30 | B313b                    | Free Industry Sessions                             |
| NAFA CAFS Testing and 2-Hour Tutorial; NCT Testing                                                        | 01/15/2019<br>12:30 - 04:30 | C204                     | Certification Exams (\$)                           |
| How to Maintain the Right Humidity and Dewpoint without the Mess and Hassle                               | 01/15/2019<br>12:45 - 01:05 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Co-branding Tools for Contractors to Drive Visibility and Business                                        | 01/15/2019<br>12:45 - 01:05 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| Recruiting and Retaining Women in the HVACR Industry                                                      | 01/15/2019<br>1:00 - 02:00  | B310                     | Free Industry Sessions                             |
| The Power of the Billable Hour, and How to Get it Right                                                   | 01/15/2019<br>1:00 - 02:00  | B313a                    | Free Industry Sessions                             |
| Existing Building Cx: What's New                                                                          | 01/15/2019<br>1:00 - 02:00  | B315                     | Free Industry Sessions                             |
| LonMark Technology Updates                                                                                | 01/15/2019<br>1:00 - 02:15  | B309                     | Free Industry Sessions                             |
| What it Takes to Get an Installed HVAC System to Operate at Equipment Rated Capacity                      | 01/15/2019<br>1:00 - 02:30  | B312                     | Free Industry Sessions                             |
| Advancing Lower-GWP Alternatives in Air-Conditioning Sector in the Middle East                            | 01/15/2019<br>1:00 - 03:00  | B305                     | Free Industry Sessions                             |
| Short Course: High-Performance Building Design: Applications and Future Trends (code 79)                  | 01/15/2019<br>1:00 - 04:00  | B304                     | ASHRAE Learning<br>Institute Courses (\$)          |
| Using the New and Improved Building Efficiency System Tool™ (BEST) for Early-stage HVAC System Evaluation | 01/15/2019<br>1:15 - 01:35  | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Eliminate the Hassle of High Volume Duct Liner Adhesives – Mix On-demand Easily                           | 01/15/2019<br>1:15 - 01:35  | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| Exploring Our Human Connection: 7th Annual Connection Community Collaboratory                             | 01/15/2019<br>1:30 - 02:30  | B311                     | Free Industry Sessions                             |

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| Compounding Pharmacy Certification for Compliance                                                 | 01/15/2019<br>1:30 - 02:30 | B316                  | Free Industry Sessions                       |
| 2019 U.S. Department of Energy (DOE) Energy Conservation Standards                                | 01/15/2019<br>1:45 - 02:05 | Theater B - room C102 | Exhibitor Product & Technology Presentations |
| All About Oil Separators                                                                          | 01/15/2019<br>1:45 - 02:05 | Theater C - room C103 | Exhibitor Product & Technology Presentations |
| HVAC Microbial Growth                                                                             | 01/15/2019<br>2:00 - 03:00 | B313b                 | Free Industry Sessions                       |
| GeneralAire Touch Screen & Wi-Fi Control Dehumidifiers                                            | 01/15/2019<br>2:15 - 02:35 | Theater B - room C102 | Exhibitor Product & Technology Presentations |
| Ethernet I/O Module with Router Function                                                          | 01/15/2019<br>2:15 - 02:35 | Theater C - room C103 | Exhibitor Product & Technology Presentations |
| Reducing Your System Operating Costs by 40% with Closed Circuit Cooling Towers                    | 01/15/2019<br>2:30 - 03:30 | B310                  | Free Industry Sessions                       |
| Safety, Innovation, and Other Benefits of CSST in Residential and Commercial Applications         | 01/15/2019<br>2:30 - 03:30 | B313a                 | Free Industry Sessions                       |
| Best Practices for Designing Large Systems Using LON Open Protocol                                | 01/15/2019<br>2:30 - 03:45 | B309                  | Free Industry Sessions                       |
| Low GWP Alternative Refrigerants for Cooling - Skills Needs and Solutions                         | 01/15/2019<br>2:30 - 04:30 | B315                  | Free Industry Sessions                       |
| HEEZ: Connected Efficiency with Today's Technology for Uncompromised Performance in Refrigeration | 01/15/2019<br>2:35 - 02:55 | Theater A - room C101 | Exhibitor Product & Technology Presentations |
| POWERTWIST Drive Link Belts Eliminate the Need to Re-tension                                      | 01/15/2019<br>2:45 - 03:05 | Theater B - room C102 | Exhibitor Product & Technology Presentations |
| Reaching New Heights in Fan Coil Applications                                                     | 01/15/2019<br>2:45 - 03:05 | Theater C - room C103 | Exhibitor Product & Technology Presentations |
| The Future of the "Super" Master Systems Integrator                                               | 01/15/2019<br>3:00 - 04:00 | B311                  | Free Industry Sessions                       |
| Fan Sizing and Selection: Basics and Fine Points                                                  | 01/15/2019<br>3:00 - 04:00 | B312                  | Free Industry Sessions                       |
| Your Best Marketing Is Only As Good As Your Total Customer Experience                             | 01/15/2019<br>3:00 - 04:00 | B316                  | Free Industry Sessions                       |
| Forane® R-32 Refrigerant: Its Use Today and a Bridge to the Future in HVAC Applications           | 01/15/2019<br>3:05 - 03:25 | Theater A - room C101 | Exhibitor Product & Technology Presentations |
| Not Just Another Wheel: The New CR Series Brings Innovation to Forward-curved Blower Wheels       | 01/15/2019<br>3:15 - 03:35 | Theater B - room C102 | Exhibitor Product & Technology Presentations |
| HLR Technology: Superior HVAC Systems at Lower CAPEX                                              | 01/15/2019<br>3:15 - 03:35 | Theater C - room C103 | Exhibitor Product & Technology Presentations |

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| Clean IAQ Essential for a Healthy Lifestyle                                                                    | 01/15/2019<br>3:30 - 04:30 | B313b                    | Free Industry Sessions                             |
| Powerful Energy Analytics with Automated Fault Detection                                                       | 01/15/2019<br>3:35 - 03:55 | Theater A -<br>room C101 | Exhibitor Product &<br>Technology<br>Presentations |
| BACnet Manager for Standard Packaged Equipment                                                                 | 01/15/2019<br>3:45 - 04:05 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Leveraging IIoT to Boost Process Efficiency                                                                    | 01/15/2019<br>3:45 - 04:05 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| New Low GWP Centrifugal Chiller & Commercial<br>Packaged Rooftop Fan Technology                                | 01/15/2019<br>3:45 - 04:05 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| Variable Frequency Drives: Method of Laboratory Test<br>and a Case Study                                       | 01/15/2019<br>4:00 - 05:00 | B313a                    | Free Industry Sessions                             |
| Panel Session: Convergence of Building Automation and<br>IoT Applications                                      | 01/15/2019<br>4:00 - 05:15 | B309                     | Free Industry Sessions                             |
| Pre-insulated INCOTHERM® Pipe for the Conduction of<br>Chilled and Hot Water                                   | 01/15/2019<br>4:05 - 04:25 | Theater A -<br>room C101 | Exhibitor Product &<br>Technology<br>Presentations |
| Technology Update                                                                                              | 01/15/2019<br>4:15 - 04:35 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Introducing the New SmartServer IoT Edge Server for<br>Building Management Systems                             | 01/15/2019<br>4:15 - 04:35 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| Innovative Sedona Open Control with BASpi-BCC<br>(BACnet Client Controller) Powered by Raspberry Pi3           | 01/15/2019<br>4:35 - 04:55 | Theater A -<br>room C101 | Exhibitor Product &<br>Technology<br>Presentations |
| Solutions for Common Venting High Efficiency Appliances                                                        | 01/15/2019<br>4:45 - 05:05 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Technology Connecting Solutions                                                                                | 01/15/2019<br>4:45 - 05:05 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| Using Smart Edge Controllers to Easily Manage a Flat and<br>Open Network (BACnet IP, MS/TP, REST API)          | 01/15/2019<br>5:05 - 05:25 | Theater A -<br>room C101 | Exhibitor Product &<br>Technology<br>Presentations |
| Air Curtains and Heaters, New Generation Devices,<br>Innovation with Modern Industrial Design                  | 01/15/2019<br>5:15 - 05:35 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Jobber App: New Team, Scheduling, and<br>Customer-focused Features Provide a Competitive<br>Service Experience | 01/15/2019<br>5:15 - 05:35 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| BIM Technology Workflow                                                                                        | 01/15/2019<br>5:35 - 05:55 | Theater A -<br>room C101 | Exhibitor Product &<br>Technology<br>Presentations |

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| Maximize ROI in Construction through BIM                                                                                    | 01/15/2019<br>5:45 - 06:05  | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| Zero-Maintenance, Zero-Visibility Solid State<br>Micro-Climate Control                                                      | 01/15/2019<br>5:45 - 06:05  | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| ASHRAE Certification Exams                                                                                                  | 01/16/2019<br>8:00 - 12:30  | C213                          | Certification Exams (\$)                           |
| Commissioning Authority (CxA) Workshop & Exam (2 day<br>program)                                                            | 01/16/2019<br>8:00 - 05:00  | C207                          | Certification Exams (\$)                           |
| New Construction Commissioning and ACP Exam (2 day<br>program)                                                              | 01/16/2019<br>8:30 - 05:00  | Thomas<br>Murphy<br>Section 1 | Certification Exams (\$)                           |
| UL 1738 (non-metallic vent standard for Categories II, III<br>& IV) and the Introduction of System 1738 Flue Gas<br>Venting | 01/16/2019<br>10:15 - 10:35 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| The All-new APCO-X Air & Coil Treatment System,<br>Designed with the Contractor in Mind                                     | 01/16/2019<br>10:25 - 10:45 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| High Performance Radiant Chilled Sails: Combining<br>Aesthetics and High Energy Efficiency                                  | 01/16/2019<br>10:25 - 10:45 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| The Concealed Air Conditioning Revolution                                                                                   | 01/16/2019<br>10:45 - 11:05 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Using 3M™ VHB™ Tape In Place of Conventional<br>Fastening Methods                                                           | 01/16/2019<br>10:45 - 11:05 | Thomas<br>Murphy<br>Section 1 | Exhibitor Product &<br>Technology<br>Presentations |
| Hot Water with an IQ: On-demand Water Heaters & IoT<br>Innovations                                                          | 01/16/2019<br>10:55 - 11:15 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| BoilerMag Air, Dirt, and Magnetite Separator - The Best<br>Value Option                                                     | 01/16/2019<br>10:55 - 11:15 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Refrigerant Pressure Transducer Specifically Designed<br>for Hermetically Sealed HVAC/R without O-rings                     | 01/16/2019<br>11:15 - 11:35 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Integration of DX 1x1 Air Conditioning Units into BACnet<br>IP/MSTP or Modbus TCP/RTU                                       | 01/16/2019<br>11:25 - 11:45 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |
| A “Mobile First” Approach to Operations Management<br>Software Will Change Your Contracting Business                        | 01/16/2019<br>11:25 - 11:45 | Theater C -<br>room C103      | Exhibitor Product &<br>Technology<br>Presentations |
| Utilizing SMART Tools to Optimize Leak Testing,<br>Processing, and Manufacturing                                            | 01/16/2019<br>11:45 - 12:05 | Theater A -<br>room C101      | Exhibitor Product &<br>Technology<br>Presentations |
| Changing the Pollen Data Landscape                                                                                          | 01/16/2019<br>11:55 - 12:15 | Theater B -<br>room C102      | Exhibitor Product &<br>Technology<br>Presentations |

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| The World's First Embeddable Flat Rate Engine from the Pricing Experts                               | 01/16/2019<br>11:55 - 12:15 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| NEW E500 - Combustion Gas Analyzer for Residential HVAC Installation & Maintenance                   | 01/16/2019<br>12:15 - 12:35 | Theater A -<br>room C101 | Exhibitor Product &<br>Technology<br>Presentations |
| Facility Analytics [FDD, BI Engines & Analytical Dashboards]: Focus Resources on High Impact Tasks   | 01/16/2019<br>12:25 - 12:45 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Yuston - The Pipe's Revolution                                                                       | 01/16/2019<br>12:25 - 12:45 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| Overwhelmed with Attracting Customers? Introducing Journey 360 & Thriving in a Digital Marketing Age | 01/16/2019<br>12:45 - 01:05 | Theater A -<br>room C101 | Exhibitor Product &<br>Technology<br>Presentations |
| The Future of Field Service Management with IoT                                                      | 01/16/2019<br>12:55 - 01:15 | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Payzerware: Expand Your Maintenance Agreements                                                       | 01/16/2019<br>12:55 - 01:15 | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| New Motor & Drive Solutions for the HVAC Industry                                                    | 01/16/2019<br>1:15 - 01:35  | Theater A -<br>room C101 | Exhibitor Product &<br>Technology<br>Presentations |
| Legend Connect                                                                                       | 01/16/2019<br>1:25 - 01:45  | Theater B -<br>room C102 | Exhibitor Product &<br>Technology<br>Presentations |
| Automatic Balancing Solutions                                                                        | 01/16/2019<br>1:25 - 01:45  | Theater C -<br>room C103 | Exhibitor Product &<br>Technology<br>Presentations |
| The Dirty Little Secret Associated with High Turndown                                                | 01/16/2019<br>1:45 - 02:05  | Theater A -<br>room C101 | Exhibitor Product &<br>Technology<br>Presentations |