

IAPMO'S 94TH ANNUAL EDUCATION AND BUSINESS CONFERENCE

SEPTEMBER 24 – 28, 2023 | SAN ANTONIO, TEXAS

Co-located with the ASSE International Annual Meeting

2023 SCHEDULE OF EVENTS

SUNDAY, 9/24

- 7 a.m. Golfers Depart for the Roscoe King Memorial Golf Tournament
- 7:45 a.m. Arrive at Quarry Golf Course - 444 E. Basse Rd, San Antonio, TX 78209
- 8:30 a.m. Tee Off - Shot Gun Start - *Scramble format*
- 2 p.m. - 6 p.m. Registration Desk & Cyber Café Open @ [Guadalupe](#)

MONDAY, 9/25

- 7 a.m. - 5 p.m. Registration Desk & Cyber Café Open @ [Guadalupe](#)
- 7 a.m. - 8:30 a.m. Coffee and Light Breakfast @ [Regency Foyer](#)
- 7 a.m. - 9 a.m. Conference Exposition @ [Regency Foyer](#)
- 7:30 a.m. - 8:45 a.m. First Timers Breakfast @ [Garden Terrace](#) (*By Invitation Only*)
- 8:30 a.m. Photo Presentation of Previous Day's Highlights @ [Regency Ballroom](#)
- 9 a.m. Opening Session Begins @ [Regency Ballroom](#)
Call to Order, Invocation, Color Guard, Pledge of Allegiance, Welcome to San Antonio, Texas, CEO Report, Keynote Speaker
- 11 a.m. Coffee Break @ [Ballroom Foyer](#)
- 11:15 a.m. Appointment of Conference Committees, In Memoriam of IAPMO Members, Announcement of Essay Scholarship, Competition Winners, Award Presentations
- 12:30 p.m. President's Honored Guests Luncheon @ [Live Oak](#) (*By Invitation Only*)
- 2 p.m. - 3:15 p.m. **E.J. ZIMMER SEMINAR**
From Source to Tap the Complicated and Dangerous Journey of Our Water
@ [Regency FG](#) | Presenter: Sean Cleary | 0.15 CEUs | Concurrent Education
Most people take for granted when they open a faucet that whatever flows from the tap will be safe to drink and that a never-ending supply of this liquid will always exist. The vast journey water takes and dangers it encounters along the way as it begins as water vapor in the clouds, to rain, to lakes and streams, to the public water source, to the distribution system and to your faucet is a harrowing tale few people understand. During this presentation we will discuss and explore the cross-connection control and backflow problems and pitfalls that befall water systems in the modern world. The backflow protection for these sometimes complex, sometimes simple water systems are vital in protecting and promoting public health. The importance of conserving water and of the fast-growing reuse of fresh and wastewater in plumbing and mechanical systems are important parts of any discussion on protecting and preserving this important resource. What are the cross-connection hazards that exist in water systems and how can we ensure the quality of the product that is delivered to the end user. Finally, we will talk about how the industry should work together as a group to ensure that everyone understands the importance backflow prevention and cross-connection control programs in our world and how to work to provide safe drinking water to all who need it and preserve this life-giving liquid for generations to come.

MONDAY, 9/25

2 p.m. – 3:15 p.m.

Water Demand Calculator Sizing Application @ Regency H

Presenter: Randy Lorge | 0.15 CEUs | Concurrent Education

Plumbing systems in new home construction are routinely overbuilt, increasing housing costs because the most commonly-used pipe sizing formula is almost 90 years old – developed well before today's innovative low-flow fixtures and appliances came on the scene. Using the IAPMO Water Demand Calculator for new residential construction significantly reduces water aging, delivers hot water faster, generates significant construction cost savings, reduces the carbon footprint of the structure, and subsequently saves on water- and water heating-related energy utility bills for the entire life of the plumbing system. Join us as we apply the Water Demand Calculator and learn how to size water distribution piping with this new revolutionary tool!

3:30 p.m. – 5 p.m.

IWSH – Training and Education: The Legacy, Impact, and Sustainability of IWSH Projects @ Regency FG

Presenter: IWSH Team | 0.15 CEUs

Join members of the IWSH team as they discuss recent case studies working with indigenous communities and making training and education an integral component of IWSH projects. Participants will learn about IWSH's evolving work and how they can help support future projects. Attendees will have the chance to win some IWSH swag!

6 p.m. – 9 p.m.

Welcome Dinner @ Regency Ballroom

Theme: Western

(All registered IAPMO attendees are invited) (Badges required)

TUESDAY, 9/26

7 a.m. – 4:30 p.m.

Registration Desk & Cyber Café Open @ Guadalupe

7 a.m. – 8:30 a.m.

Coffee and Light Breakfast @ Regency Foyer

7 a.m. – 9 a.m.

Conference Exposition @ Regency Foyer

7:30 a.m.

Photo Presentation of Previous Day's Highlights @ Regency Ballroom

8 a.m. – 8:30 a.m.

Call to Order, Credentials Committee Report @ Regency Ballroom

9 a.m. – 9:50 a.m.

Effective Communication @ Regency FG

Presenter: Hugh Kelleher | 0.1 CEUs | Concurrent Education

No matter what your job is, a major part of it involves COMMUNICATING. Many people know things. Many don't know how to get their points across. This is a seminar for anyone who wants to improve their ability to communicate effectively. We will consider two of the most important methods of communicating: Written Communication and Verbal Communication. In this short seminar we will look at some simple ways to improve the clarity of your writing. We will also examine ways to maximize your effectiveness when making in-person presentations.

9 a.m. – 9:50 a.m.

Engineering Best Practices to Attain Net Zero Energy Building Performance using Heat Pumps with High Mass Heating and Cooling Structures and Advanced Controls @ Regency H

Presenter: Albert R. Wallace | 0.1 CEUs | Concurrent Education

This presentation provides a high-level overview of net zero energy and low carbon technologies, and insight from an engineering perspective into proven system configurations and controls using heat pumps, high mass radiant heating and cooling, and DOAS implemented in dozens of net zero energy buildings.

10 a.m. – 10:50 a.m.

Building Performance Analysis - the Quest for Ultimate Efficiency @ Regency FG

Presenter: Markus Lenger | 0.1 CEUs | Concurrent Education

Do you feel a growing frustration throughout the industry because heat pump water heaters are getting a bad rap? Why is that? The technology is sound and they're an excellent alternative to the regular water heater, yet most of them don't work as they should and don't provide the energy and water savings the owner expected. When hired by a major utility to determine the efficiency of heat pump water heating systems, we found that collecting accurate and relevant data was surprisingly difficult. Despite spending a significant amount of time and money on testing different technologies to find the answers our client needed, we found most of them unreliable, proprietary, and expensive and few provided the scope of assets we were looking for. Initially, we set out to create a tool that would measure HPWH efficiency but on our journey found that analyzing a building's performance is becoming increasingly important to reduce running costs and lower carbon footprint. It therefore became imperative to find cost effective, reliable, comprehensive, and traceable data collection technology to assess an entire building's performance. Our challenge was clear - to create a tool that didn't exist that provided us comprehensive building system data for an entire building, in other words the analysis of the Building-as-a-System.

10 a.m. – 10:50 a.m.

Standard for Press Connections - IAPMO/ANSI/CAN Z1117-2022 @ Regency H

Presenter: Ricky Maynard | 0.1 CEUs | Concurrent Education

This industry presentation will cover the performance standard developed by the IAPMO Technical Subcommittee and approved by IAPMO Plumbing Standard Committee, for various copper-tube-size and iron-pipe-size press-connect fittings offered in our industry today for materials such as copper, carbon steel, and stainless-steel piping systems used in different market segments including residential, commercial, industrial, and marine shipbuilding. Topics will include technical information about press technology including approved applications, pressure ratings, safety factors, performance, and proper installation procedures.

10:30 a.m. – 12:30 p.m.

IAPMO Product Standards Committee @ Rio Grande

11 a.m. – 11:50 a.m.

Growth of geothermal energy networks in the US & throughout the world @ Regency FG

Presenter: Jay Egg | 0.1 CEUs | Concurrent Education

Geo - Thermal Energy Networks (TENs) are utility scale infrastructure projects that connect multiple buildings into a shared network with sources of thermal energy like geothermal boreholes, abandoned oil and gas wells, surface water, and wastewater infrastructure. This panel will provide insights from across the world on implementation of these energy networks utilizing various strategies and temperature variations.

11 a.m. – 11:50 a.m.

Cured-in-Place Pipe for Plumbing Professionals @ Regency H

Presenter: Tom Bowman | 0.1 CEUs | Concurrent Education

CIPP application by plumbing professionals is continuously evolving to meet unique needs and challenges. In this presentation, the scope of the need for CIPP is discussed, along with associated advantages to the Property Owners, the Contractors, and the Authorities Having Jurisdiction. Training & education requirements for the successful utilization of CIPP is emphasized. The successful 50-year performance history of CIPP is outlined while discussing methods and materials differences which have evolved (and somewhat diverged) to address challenges across utility, plumbing, and mechanical sectors. An overview of CIPP materials, equipment, and methods advancements to improve plumbing sector performance is detailed. The comparatively recent rapid adoption of light cured CIPP is specifically highlighted while addressing its considerable potential within the plumbing sector.

As a focal point of the presentation, the types of imperfections encountered with improper CIPP application or installation are examined with an emphasis on the good practices available for avoidance and for identifying & addressing such challenges should they occur. Specific planning & construction phase practices that reliably improve CIPP project outcomes are emphasized. Current industry efforts to develop improved CIPP contractor training & professional certification requirements are addressed. The need for consensus Inspection Standards with associated training and certification is also discussed.

1:30 p.m. – 2:20 p.m.

Raining in our Future @ Regency FG

Presenter: Kurt Steenhoek and Dave Stark | 0.1 CEUs | Concurrent Education

Do you want to hear how ARCSA/IAPMO are combining forces to bring sustainable solutions to the rainwater industry? Come find out what it means to have ASSE/ARCSA/IAPMO working together on "Raining in our future" through Responsible Harvesting. It's the right thing to do!

1:30 p.m. – 2:20 p.m.

Innovative Water Management: The Role of IoT Technology in Achieving Sustainable and Efficient Water Practices @ Regency H

Presenter: Avishai Moscovich | 0.1 CEUs | Concurrent Education

As the world increasingly focuses on sustainability and efficient resource management, the plumbing and mechanical industry is presented with a unique opportunity to modernize how water is managed and conserved. The integration of Internet of Things (IoT) technology in water management systems enables real-time monitoring, analysis, and control of water usage, resulting in more sustainable and efficient water practices.

This presentation will explore the benefits of IoT technology applied to water management, including its role in achieving net zero water, and its impact on water conservation and efficiency. We will also discuss the critical advantages of IoT water management in smart homes and buildings, including real-time monitoring, leak detection, and optimized water usage. Attendees will gain an understanding of the opportunities and potential benefits of incorporating IoT technology in water management systems, and the impact this could have on the plumbing and mechanical industry, as well as the environment. Join us as we explore how innovative water management with IoT technology can lead to more sustainable, efficient, and cost-effective water usage.

1:30 p.m. – 4:30 p.m.

Radiant Professionals Alliance (RPA) and Hydronics Industry Alliance Committee (HIA-C) meetings @ Nueces/Frio

2:30 p.m. – 3:20 p.m.

Point of Use Legionella Control @ Regency FG

Presenter: Troy A. Rackley | 0.1 CEUs | Concurrent Education

Understanding the risks associated with Legionella and knowing how to prevent its spread is essential in safeguarding individuals and communities. Increasing awareness involves educating the public about the potential sources of Legionella, such as water systems, cooling towers, and hot tubs, and highlighting the importance of proper maintenance and regular testing to ensure the bacteria's eradication. We can't solve new problems without new innovations in prevention and filtration. By fostering Legionella awareness, we can strive towards creating a healthier and safer environment for all.

2:30 p.m. – 3:20 p.m.

E.J. ZIMMER SEMINAR

Why Your Shower Feels Wimpy; and What You Can Do About It! @ Regency H

Presenter: Gary Klein and Association, Inc. | 0.1 CEUs | Concurrent Education

Your shower feels wimpy for two reasons, the spray pattern is too spread out for the flow rate or the available pressure at the shower head is too low, or both. Shower head flow rates are measured at a test pressure of 80 psi, yet this is generally the maximum pressure allowed into the building by code. It also turns out that the data we use to estimate the pressure loss in premise plumbing systems is based on a paper published in 1941 which contains research conducted in 1892 which studied steel pipe with threaded and flanged fittings. Modern domestic water systems use copper with soldered or press fittings, CPVC with solvent welded fittings, or PEX with insert fittings. These pipe materials and the associated fittings have very different characteristics from steel pipe. Yet the tables widely used by plumbing industry practitioners have not been updated to account for these differences. The efforts to right-size piping based on real flow rates and probabilities of simultaneous use are being hindered by the lack of up-to-date values.

This presentation will present results of research the author has conducted on the pressure drop through modern pipe materials and fittings and through anti-scald shower valves that are now required by most plumbing codes in the United States. We will also compare the performance of pressure-independent and fixed-orifice flow regulators, both types of which are common in faucets and showers, but which perform very differently under the range of pressure conditions found in our buildings.

3:30 p.m. – 4:20 p.m.

The Smart Leak Detection Opportunity @ Regency FG

Presenter: Ian Greene | 0.1 CEUs

Leak detection devices are becoming standard equipment in homes and businesses, as insurance companies begin to require them and property owners recognize their value. This session reviews the category of products available today, the key demand drivers leading to adoption, regulatory standards and building code implications, and a basic review of how systems are installed and sold.

6:30 p.m. – 9:30 p.m.

Evening Outing @ Enchanting Springs Ranch

Buses will begin departing at 5:30pm.

(All registered attendees are invited) (Badges required)

- 8:30 a.m. – 5 p.m. **Registration Desk & Cyber Café Open @ Guadalupe**
- 7 a.m. – 8:30 a.m. **Coffee and Light Breakfast @ Regency Foyer**
- 7 a.m. – 3:30 p.m. **Conference Exposition @ Regency Foyer**
Dismantle 3:30 p.m. – 4:30 p.m.
- 7:30 a.m. – 9 a.m. **Chapter Photos**
- 8:30 a.m. **Photo Presentation of Previous Day's Highlights @ Regency Ballroom**
- 9 a.m. – 9:15 a.m. **Call to Order, Nominations Committee Reports @ Regency Ballroom**
- 9:30am. – 11 a.m. **2024 Uniform Plumbing Code Changes @ Regency FG**
Presenter: Brian Hamner | 0.15 CEUs | Concurrent Education
The International Association of Plumbing and Mechanical Officials (IAPMO) recently released the 2024 Uniform Plumbing Code (UPC). This presentation will provide a thorough overview of the changes from the 2021 UPC to the 2024 UPC.
- 9:30am. – 11 a.m. **Combustion Air and Combustion Air Accessories @ Regency H**
Presenter: Jesse Kealy | 0.15 CEUs | Concurrent Education
This 1.5-hour course is designed to enhance the students' knowledge of the provisions in the UMC Chapter 7 with sizing calculations. Throughout the class students, with the use of hands-on experience training and bookwork, each student should be able to correctly apply the following by the end of the course; The Standard Method, Known Infiltration Rate, Interior Space Calculations, The One Permanent Opening Calculation, and both Two Permanent Opening Calculations.
- 11:15 a.m. – 12:30 p.m. **Wet Venting @ Regency H**
Presenter: Rich Harlan | 0.15 CEUs | Concurrent Education
A vent that also serves as a drain? Join us as we discuss the 2024 UPC requirements for vertical and horizontal wet venting.
- 11:15 a.m. – 12:30 p.m. **2024 Uniform Mechanical Code Changes @ Regency FG**
Presenter: Randy Young | 0.15 CEUs | Concurrent Education
The International Association of Plumbing and Mechanical Officials (IAPMO) recently released the 2024 Uniform Mechanical Code (UMC). This presentation will provide a thorough overview of the changes from the 2021 UMC to the 2024 UMC.
- 1:30pm – 5 p.m. **UPC and UMC Workshops @ Regency FG**
Presenter: UPC & UMC Workshop Committees | 0.4 CEUs | Concurrent Education
The UPC & UMC Workshop Committees present an opportunity for participants to test their code knowledge and learn from their peers. During the workshops, participants are placed into virtual groups and are given drawings of installations and asked to determine if the systems and components are in compliance with the applicable 2024 Uniform Code. The findings are then presented to everyone in attendance to determine if they are correct and discuss any code issues discovered in the drawings.

- 8 a.m. – 9 a.m. **Coffee Only @ Regency Foyer**
- 8:30 a.m. – 1:30 p.m. **Registration Desk & Cyber Café Open @ Guadalupe**
- 8:30 a.m. **Photo Presentation of Previous Day's Highlights @ Regency Ballroom**
- 9 a.m. – 10 a.m. **Call to Order, Election of Officers, Treasures Report, Membership Report, President's Report @ Regency Ballroom**
- 10 a.m. – 11 a.m. **Publication Committee Townhall Meeting @ Regency FG**
Presenter: IAPMO Publications Committee | 0.1 CEUs
Join this unique opportunity to sit in and participate in a 'townhall' style meeting with members of the IAPMO Publications committee. This session will allow you to interact with the committee members to learn more about what they do and how they help IAPMO respond to the needs of its members for support products to assist them in the enforcement of the Uniform codes, primarily the UPC and UMC Study Guides and the Illustrated Training Manuals for the UPC and UMC.
- 11:30 a.m. – 1 p.m. **Leadership Forum @ Rio Grande (By Invitation Only)**
Lunch will be provided
- 1:30 p.m. – 3 p.m. **Holistic Approach to Infection Control, Security, and Resilience, for All Building Systems @ Regency H**
Presenter: Scott Hamilton | 0.15 CEUs
Today's building systems are more complex than ever. Technology is ever changing to move society forward, but one very dangerous subject remains when discussing the mechanical trades - exposure to pathogens. Covid and Legionella have been the headline grabbers, but other dangerous pathogens exist especially when working in healthcare facilities. Whether working on a drain line, duct systems, or even inspecting these systems, great thought and care should be given to protect the occupants and the workers themselves. This presentation will explain the new ASSE Series 12000 Standard and certification program. We will discuss why infection control is important to technicians and inspectors, and how the ASSE Series 12000 can help achieve the CDC's and CMS's goals to eliminate healthcare acquired infections (HAI) and Legionella. We will also discuss the importance of water and air quality programs. The ASSE Series 12000 now provides a holistic approach for the entire building. Whether it is during construction, maintenance/repair, remodeling, or reopening a building, special considerations should be taken to protect the water and air within the building. Construction workers, engineers, and inspectors must be educated to work safely to protect those within the healthcare facility along with themselves. We will also discuss how and where the ASSE Series 12000 can be implemented.
- 5:30 p.m. **Installation of Officers Reception @ Regency Foyer**
- 6 p.m. **Installation of Officers Dinner @ Regency Ballroom**



COMPANIONS PROGRAM

All registered companions are heartily welcome to take part in any of the events or sessions listed in this program. The Conference Planning and Special Projects Committee has also created a program full of interesting speakers and activities. Come and enjoy them with us!

MONDAY, 9/25

- 7:30 a.m. – 8:45 a.m. **First Timers Breakfast @ Garden Terrace**
(By Invitation Only)
- 12:30 p.m. – 3 p.m. **Lunch and Historical Speaker @ Spring Branch**
Presenter: Tom Jackson

TUESDAY, 9/26

- 9:30 a.m. – 12 p.m. **Wooden sign painting with board and brush @ Live Oak**

Lunch on own
- 1:30 p.m. – 3 p.m. **Old Western Murder Mystery Theater @ Live Oak**
- 6:30 p.m. – 9:30 p.m. **Evening Outing @ Enchanting Springs Ranch**
Buses will begin departing at 5:30pm.
(All registered attendees are invited) (Badges required)

WEDNESDAY, 9/27

- 8:45 a.m. – 4 p.m. **Companions Outing**
San Antonio Mission Tours, River Barge Tour, Lunch at the Iron Cactus, Shopping at The Pearl Experience the must-sees of the Alamo City with our Best of San Antonio Tour! Guests will see what makes San Antonio unique, from our iconic historical landmarks to our cultural hotspots. The tour will start with a tour of the Missions to see the UNESCO World Heritage Sites for themselves. All aboard! After touring the Missions, guests will cruise down the San Antonio River in a chartered river barge. We invite you to relax and take in the picturesque surroundings while learning about San Antonio Riverwalk culture and history. Finally, guests will experience firsthand some of San Antonio's history at the Pearl where they will enjoy free time to explore the unique boutique shops and eateries. (All registered attendees are invited) (Badges required)

THURSDAY, 9/28

- 5:30 p.m. **Installation of Officers Reception @ Regency Foyer**
- 6 p.m. **Installation of Officers Dinner @ Regency Ballroom**

OUR PRESENTERS



Sean Cleary is a licensed master plumber from Scranton, Pennsylvania. Over the course of his 42-year career he has worked in all phases of the cross-connection, plumbing, and mechanical industries. He is a graduate of the United Association Instructor Training Program. Sean is a past president of the American Society of Sanitary Engineering. He also served as the chairman of the ASSE Cross-Connection Control Technical Committee for over ten years. Sean is employed by the International Association of Plumbing and Mechanical Officials (IAPMO) as the vice president of Industry Programs and Backflow Prevention Institute Operations. The institute is the industry leader in cross-connection control training with the United States and on an international basis. Sean is also the technical editor for the Backflow Prevention Journal Magazine. He is also the co-author of the IAPMO Backflow Reference Manual and has written articles for a number of plumbing and mechanical publications. Sean has given presentations on water and cross-connection issues for IAPMO, ASSE, ASPE, ABPA, NEHA, IA, and a number of state plumbing inspector organizations.



After serving in the US Navy nuclear power field, **Jay Egg** began a career in mechanical design engineering & contracting. Now, as an expert consultant, Jay sits on several technical code committees internationally; notably the technical committee for the IAPMO Uniform Mechanical Code. Jay has co-authored two McGraw-Hill Textbooks focused on geothermal HVAC technologies and continues to write curriculum and lecture on the merits of Clean Heating and Cooling technologies.



Ian Greene is Marketing Director for FloLogic, Inc. where for the past six years he has worked to grow leak detection category adoption within the plumbing and insurance industries and amongst homeowners and property managers. He is a featured contributor to plumbing trade publications and past industry conference speaker. Prior to FloLogic, Ian worked for advertising and marketing consultancies within the pharmaceutical, consumer packaged goods and durable goods product categories.



Scott Hamilton is a 34-year licensed plumber and member of Plumbers Local 75, Milwaukee. Scott graduated from the UA Instructor Training Program, and he has been training the industry for 30 years. Throughout his career, he has served on many state and national code, standard, licensing, and training committees. He has been involved with standard and certification development for the past 15 years. He has been involved with the development and instruction of the ASSE Series 12000 - Water Management and Infection Control Risk Assessment for Building Systems. Scott is the senior director at IAPMO/ASSE.



Brian Hamner is a commercial plumbing/residential combination inspector for the city of Des Moines, Iowa since 2007. Brian is a second-generation tradesman, as his father was a 33-year Journeyman gas fitter. He has 26 years of experience in the plumbing trade. He began his career as a sprinkler fitter before switching to plumbing. In 1996 he started his plumbing career and obtained his journeymen and master's plumbing licenses.

He's a certified IAPMO plumbing inspector and plans examiner, an IAPMO member since 2013, has served on the UPC Answer and Analysis Committee, 2016 Circuit Vent Ad Hoc Committee, Board of Directors and the Education and Training Committee. He has served as the chairman of the Plumbing, Mechanical, and Fuel Gas Committee for the Central Iowa Code Consortium, a group of 17 communities that joined together to adopt codes for the Central Iowa metro area. He serves as treasurer for the Iowa Chapter of IAPMO.



Rich Harlan has twenty-three years of plumbing and mechanical experience, including eleven years in the field working with the tools. His professional roles have included mechanical system design, project management, and building information modeling. He is a Training Specialist for UA Local 38 in San Francisco where he creates curriculum, supports instructors, and teaches all facets of the pipe trades.

Before becoming a Training Specialist, he was a Senior Project Manager at a top twenty-five mechanical firm specializing in design build projects such as airports and hospitals. Rich earned an MS in Engineering from the University of California, Riverside and an MBA from Baruch College, City University of New York. He is certified in both mechanical and plumbing codes. In his free time, Rich likes exploring hiking and biking trails with his three children.



Jesse Kealy is a proud HVAC Instructor and Vice President for UA Local 441 in Wichita, Kansas. He has been in the HVAC trade since 2011, with over 8 years of experience as a field service technician, and 4 years as a HVAC Instructor. Jesse sits on the Mechanical Board for the City of Wichita and holds a Masters' Mechanical License. As an active IAPMO member, he serves on the Education and Training committee, the Mechanical Workshop committee, and the Test Writing committee. When he isn't teaching apprentices, Jesse can be found kayaking with his dog, engaging in a Ford vs. Chevy debate with his friends, or maintaining his position as Grill champion of the neighborhood.



Hugh Kelleher is a graduate of Harvard College. He has published in papers such as *The Boston Globe*, and in plumbing trade magazines. A licensed Master Plumber, he is a member of Plumbers Union Local #12. He was Executive Director of the Greater Boston Plumbing Contractors Association and served on the IAPMO Board of Directors.



Gary Klein, President of Gary Klein & Associates, Inc. has been intimately involved in energy efficiency and renewable energy since 1974. One fifth of his career was spent in the Kingdom of Lesotho, the rest in the United States. Mr. Klein has a passion for hot water: getting into it, getting out of it and efficiently delivering it to meet customer's needs. After serving 19 years with the California Energy Commission, he has provided consulting on sustainability since 2008, with an emphasis on the water-energy-carbon connection. Mr. Klein received a BA from Cornell University in 1975 with an Independent Major in Technology and Society with an emphasis on energy conservation and renewable energy. The International Association of Plumber and Mechanical Officials (IAPMO) recognized his efforts in 2014 presenting him their Green Professional of the Year award. In 2015 the Department of Energy awarded him the Jeffrey A. Johnson Award for Excellence in in the Advancement of Building Energy Codes.



Dr. Markus Lenger, a water physicist, is CEO and Co-founder of CleanBlu Corporation, an organization dedicated to inspiring an environmental revolution in wastewater management. A 35-year wastewater professional, Markus is well known in the industry for testing the limits of science and technology, developing solutions to problems and innovating ways to help improve water quality and availability.

Recently, Markus developed the BluSENSE Building Performance Analyzer that maximizes the performance of a building to create water and energy savings. Using CleanBlu's in-house production and manufacturing facility, he develops new tools and sensors for the BluSENSE system and custom controllers for water reuse.

Markus also developed, patented, and marketed the CleanBlu FOG-DS, an at-source, in-situ FOG Disposal Reuse System allowing commercial food establishments to reuse kitchen wastewater for the first time ever. He has designed gray water systems, specifically one for Whirlpool's ReNEWW House, and a blackwater (toilet) reuse system for the Navajo Indian Nation reducing water usage by over 80%.

Markus serves on many committees and is a voting member of the IAPMO WE-Stand (Water Efficiency Standard) Committee, chairs the Residential Direct Potable Reuse Standard Committee, is an ASME plumbing code member and an ARCSA (American Rainwater Catchment Association) board member.

OUR PRESENTERS



Randy Lorge, director of Workforce Training and Development for the International Association of Plumbing and Mechanical Officials (IAPMO), has more than 25 years of experience teaching plumbing and plumbing codes both in the United States and internationally in India, South Africa, and Indonesia. Lorge is also the North American IWSH project manager, overseeing the installation of safe water and sanitation systems for those less fortunate in the United States. He has been involved with the installation of plumbing systems internationally for the past six years with IWSH. In 2018, he was awarded the IAPMO Industry Person of the Year. Lorge is also a master plumber in Wisconsin and Alabama.



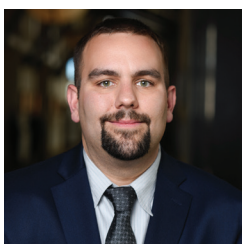
Troy A. Rackley was born and raised in Akron, Ohio. I received a full scholarship to play football at Ohio University. I have a BS from Ohio University in Industrial Technology Engineering and received my MBA from Mt. Eliza Business School in Melbourne, Australia.

Being a captain of sports teams during my earlier years has been the foundation for me as a leader.

I have 20+ years in Operations management with 7 of those years in Australia. I worked with well known companies in Australia such as Campbell Soup Company, Goodman fielder, and Coca-Cola Amatil.

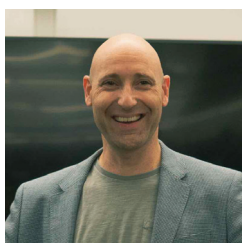
I spent over 10 years in various operational positions for companies including Pepsi Cola, Coca Cola Bottling Company, Sherwin Williams and Nestle Beverage Company in the United States.

I have owned my own business since August of 2006. Have been in the water treatment and technology space since 2009.



Ricky Maynard is the VTEN (Viega Trades Education Network) Sales Manager for Viega, covering US and Canada. He is responsible for the recruiting of new VTEN program members, onboarding new member locations and conducting train-the-trainer classes for the instructors.

Ricky is a Licensed Master Plumber in the state of Colorado, and a proud member of UA Local 3 Denver where he did his apprenticeship, with 16 years of experience in the Pipe Trades Industry. Experience ranging from new installation to service, focused primarily on the commercial market. Ricky was fortunate to oversee several large-scale commercial projects but is most proud of Viega's US Corporate Headquarters and Seminar Center in Broomfield CO, which was the last project he oversaw prior to joining Viega in 2018 as a Technical Trainer.



Avishai Moscovich PE, P.Eng. LEED AP is Head of Partnerships at WINT, in charge of the company's partnership growth strategy. Previously, he co-founded reed, acquired by Eddy Solutions, Global Marketing Manager at Armstrong Fluid Technology and a mechanical consulting engineer at AECOM. Avishai is an engineering graduate of Ryerson University and holds an Executive MBA from Kellogg School of Management at Northwestern University.



Dave Stark is a Design and Sales Specialist for Rainwater Management Solutions www.rainwatermanagement.com an industry leading supplier, system integrator and manufacturer of water reuse systems. Dave's role at RMS includes integrating rainwater, stormwater and graywater harvesting techniques for residential, industrial and commercial applications. Dave has led design teams to achieve net zero water requirements for Living Building Challenge (LBC) projects and the first permitted commercial rainwater harvesting systems for indoor use in Duluth and St. Paul, Minnesota. Dave holds a M.S. in Water Resource Sciences from the University of Minnesota and sat on the first ARCSA/ASPE standard 63 code committee.



Kurt Steenhoek began his Plumbing career in 1983 and became a Colorado licensed journeyman in 1988. From 1994-2002 Kurt served as UA Local 3 Business Agent-Financial Secretary-Treasurer. Kurt was elected Business Manager in 2002 until his election as UA International Representative in 2016. During his tenure at Local 3, he also held positions on several other industry boards, and committees in the plumbing and mechanical industries.

Mr. Steenhoek is also a past president of the Western States Pipe Trades and a former member of the Board of Directors of the United Association, International Training Fund. Currently, Kurt oversees the UA's Water Quality Program and its Standard for Excellence Program. He is a member of the International Association of Plumbing and Mechanical Official, a member of the American Society of Sanitation Engineers (ASSE) and the vice-chair of ASSE's Committee for ASSE/IAPMO/ANSI 12000 Series, Professional Qualifications Standard for Infection Control Risk Assessment for All Building Systems.



Albert Wallace is the principal of Energy Environmental Corporation (EEC), a service-disabled veteran-owned small business. Al's expertise lies in developing high performance heating, cooling and ventilation solutions for low and net zero energy buildings using ground source heat pumps, radiant heating and cooling, and energy recovery ventilation. He is an expert in these technologies with certifications as a Certified GeoExchange Designer and Certified Energy Manager with the Association of Energy Engineers, and a LEED for Homes Accredited Professional with the USGBC. Al served on the IAPMO technical committee creating the 2015 Uniform Solar, Hydronics and Geothermal Code. He is an ASHRAE member and Associate AIA member with professional degrees in Aeronautical Engineering, Architecture, and Landscape Architecture. He has been awarded seven U.S. patents for these net zero energy technologies and served as a consultant to design and/or install these integrated systems in over 50 buildings over the past 15 years.



Randy Young currently serves as the codes and standards representative for SMART Local Union No. 104 as well as the Northern California Valley Sheet Metal Workers' Joint Apprenticeship Committee. Since 1985, Randy has worked in every aspect of the trade from manufacturing, installation, maintenance, and service of commercial HVAC systems. He also participates in various codes and standards development processes for the IAPMO and ASHRAE. In particular, Randy has served on IAPMO's Uniform Mechanical Code Technical Committee for several code development cycles and has participated or chaired numerous task groups addressing topics including, but not limited to, factory made ducts, indoor horticulture facilities, A2L refrigerants, and control and intervention of Legionella associated with mechanical systems and equipment.

Randy's life revolves around his twin grandbabies, and he loves golfing, fishing, and all things adventurous.