IN THIS ISSUE

ASPE American Society of Plumbing Engineers™ BALTIMORE

MEETING FORMAT

6:00 - 6:30	Social
6:30 - 6:45	Announcements & Table Tops
6:45	Dinner Served
7:00 - 8:00	Presentation

DATE:	November 19, 2025
TIME:	6:00pm to 8:00pm
PLACE:	Little Havana
TOPIC:	Designing Effective Hot Water Recirculation Systems
SPEAKER:	Charles J. Swope, PE, CPD, LEED AP B+C

Register Today

LITTLE HAVANA Restaurante y Cantina Cubana

1325 KEY HWY, BALTIMORE, MD 21230
PHONE: 410-837-9903

Local Chapters are not authorized to speak for the Society.
Newsletter questions? Please contact Nicole Murphy

Explore Connect Engage

DOWNLOAD THE ASPE CONNECT MOBILE APP!

Download the Connected Community app in the Apple or Google Store

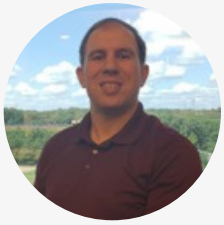
Enter the community's domain name: connect.aspe.org

Login using your usual community credentials. Select "stay logged in" if the option appears.

ASPE Baltimore Board of Directors

President
Charles J. Swope, PE, CPD, LEED AP B+C
Mueller Associates
president@baltimoreaspe.com

Vice President- Technical & Education Chair
Julian Chiveral, PE, CPD, LEED AP BD+C
Julian.Chiveral@gmail.com



Vice President- Legislative
Christopher Imhof, PE, CPD
WSSC
Christopher.Imhof@wsscwater.com

Vice President- Membership
Nicole Murphy
Harry Eklof & Associates
nmurphy@harryeklof.com

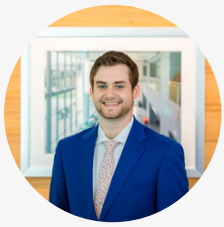
Vice President - Affiliate
Sepideh McQuay
The Joyce Agency
smcquay@thejoyceagency.com

Treasurer
Kathleen Dwyer-Stephens
EJ Dwyer Company, Inc.
KDwyer@ejdwyer.com

Historian & Scholarship Chair
Jason J. Eagles
Bay Associates Group
Jason@bayassociates.com

Women of ASPE- Liaison
Karen Schulte, PE, CPD, LEED AP BD+C
Mueller Associates
KSchulte@muellerassoc.com

Corresponding Secretary
Matt Obenchain, PE
Min Engineering, Inc.
Matt.Obenchain@minengineering.com



ASPE Young Professionals Liaison
Justin Saelens, LEED AP BD+C
Mueller Associates Inc
JSaelens@muellerassoc.com

Chapter Ambassador
Jay Otto
Otto Sales
JayOtto@ottosales.com

Chapter Ambassador
Nikita Patel, PE, ASSE 6060
Sherman Engineering Company
npatel@shermanengineering.com

Newsletter Advertising

- As a paid advertiser, you will have your advertisement in the newsletter for one full year (9 editions) and company logo displayed on the Chapter website.
- Ads for the year will begin in the September issue and run through the May issue.
- All ads must be paid in full prior to the advertisement being included in the newsletter.
- Advertiser must provide ads in high resolution PDF format. Logo must be provided in .jpeg format, 200px wide size

- Cost per advertisement is as follows:
  - Full Page $ 750.00
  - Half Page $ 500.00
- Please contact Nicole Murphy or Chuck Swope
- Make checks payable to Baltimore Chapter of ASPE. Please contact the Chapter Treasurer with any questions.

ZOELLER ENGINEERED PRODUCTS

STRIEM

Sencillo™ Simple.

SYMMONS

MUSTEE

KUSEL STAINLESS PRODUCTS

ACCOR TECHNOLOGY, INC.

ZOELLER PUMP COMPANY

RECTORSEAL

walraven

JONES STEPHENS We Got It

MAPA PRODUCTS

ISIMET

UV-System First in Siphonic

AQUATru BY IDEAL LIVING

Outdoor SHOWER COMPANY

WWW.VAMDASSOCIATES.COM

vmassociates

8505 Bell Creek Road, Suite E
Mechanicsville, VA 23116
804-569-0360
info@vamdinc.com

COMMERCIAL & INDUSTRIAL PLUMBING REP AGENCY FOR OVER 40 YEARS

NO. Features

Virginia Maryland Associates is a manufacturer's representative agency serving the commercial, mechanical, and industrial markets in our territory.

We proudly represent industry-leading manufacturers, providing superior sales and service throughout the entire construction channel. Engineers, wholesalers, and contractors rely on Virginia Maryland Associates from the early design stages to commissioning.

With extensive product knowledge and deep industry expertise, we help clients make informed business decisions that best suit their needs. Our hands-on sales team is ready to assist you in any way possible, making your job a little easier.

We look forward to working with you.

PLUMBING SOLUTIONS & SPECIFICATIONS

PL-101

ASPE
American Society of Plumbing Engineers™
BALTIMORE

Chuck Swope, PE, CPD, LEED AP BD+C
Chapter President

Greetings faithful members, I bring you tidings from far away lands! I'm very sorry to miss you all last month, but I'm sure you're excited for the engineer lead programs that have woven into our technical presentation schedule! As I would never ask anyone to do something that I would not do myself, I volunteered for the first position in the program. I always prefer to dive into the fundamentals. In our day-to-day projects, we're constantly challenged by scenarios that the textbooks never quite covered, making a rock-solid foundation essential. This month, we'll tackle an oft-forgotten hero of the domestic water system: Hot Water Recirculation.

We've all seen the boilerplate: Route a return line, slap a balancing valve on the end, and toss a pump at the heater - done. It's the last detail, and it's easy to overlook. But for an engineer, the real answer can be just as simple as the lazy one! It all comes down to truly understanding the design intent. When we know the why, adapting to and implementing better, technologies becomes second nature.

In ASPE news, it's come to my attention that there have been a few email scams that seem to come from legitimate ASPE sources. I've been asked to reinforce that ASPE will never ask you for your password, to purchase gift cards, or to click a link to see some pictures of my cats. I only do that in person. Kidding aside, I thank you for your diligence and please let me know if you do see any odd emails that don't come from those listed on the Board of Directors page on our website or from @BaltimoreASPE.com (including that postmaster@mg.baltimoreaspe.com guy that keeps sending you lots of emails). That all said, click here.

Your Chapter President,
Chuck Swope

P.S. If you fell for that link that you shouldn't have clicked, you have to tell me at the meeting.


Viega, LLC - Mike McCarthy:
Technical Manager (571) 328-1143
mike.mccarthy@viega.us
Viega Questions? Lunch & Learn sessions, project support & specification review.
viega


ALWAYS ON THE JOB
THE 585HP BALL VALVE TAKES THE PRESSURE
NIBCO
585HP
GREGORY AMICUCCI
Commercial Sales Manager - Northeast
P: 631.304.4955 | amicuccig@nibco.com

SHAFER, TROXELL & HOWE Inc.

Your Solutions Partner Since 1973

Representing:

Grundfos • Peerless •
PACO • Myers • SyncroFlo •
Cougar Controls • Topp Industries •
Primex Controls • See Water

Sales and Service Specialization:

Sump/Sewage Pump Stations • Water Booster Systems •
Fire Pump System • Rainwater Harvesting Systems •
Circulating Pumps • Water Filtration Systems

Contact our Engineering Team

800•233•7718 | engineering@sthinc.com

97 - D Monocacy Blvd. • Frederick, MD 21701 • www.sthinc.com

ASPE
American Society of Plumbing Engineers™
BALTIMORE

Julian Chiveral, PE, CPD, LEED AP BD+C
Vice President- Technical & Education Chair

Technical Report

A heartfelt thank-you to everyone who joined us in October. Niki Patel's Med Gas 101 presentation delivered a thought-provoking dive into NFPA 99 and the intricacies of design patient care spaces for plumbing engineers. Thank you, Niki, for your time and expertise! Niki Patel and Jordan Myers from Sherman Engineering are great resources for medical gas questions you may have and can be reached at npatel@shermanengineering.com and jtmyers@shermanengineering.com.

This month, we shift our focus to the fundamentals of hot water recirculation. Our speaker will be our very own Chuck Swope, Baltimore ASPE president and chief engineer at Mueller Associates. From determining if recirculation is required, to component specifics and how to size and balance a system, there will be plenty of information for our newest engineers as well as our seasoned veterans.

Chuck promises to cover:

- Why DHWR Systems are Essential for Comfort and Efficiency.
- Understanding the Critical Roles of TMVs and Recirculation Pumps.
- Identifying When DHWR Systems Can Be Eliminated (and Why).
- Now that I know when I need one, how do you size and balance the system?
- Reconciling DHWR Design with ASHRAE 90.1 and Energy Code Mandates.
- Exploring Emerging and Alternative DHWR Design Strategies.

We're excited to see you on November 19th at Little Havana for another enriching meeting. Until then, stay curious, stay engaged, and let's continue to advance the plumbing engineering profession together!

Julian, VP-T

Domestic Hot Water Recirculation Systems

From Plumbing Engineer, a PHCP Publication
February 6, 2017
By Ron George, CPD, ASSE 12080 Legionella Management Professional, president of Plumb-Tech Design & Consulting Services.

Domestic hot water systems have been installed in buildings for many years dating back to ancient times. Recirculating hot water systems are not quite that old. Gravity hot water circulation began in the U.S. in the late 1870s, right after plumbing moved indoors. During the early years, water and space heating was done in cabins by burning wood in a fireplace or cast iron stove, and water was heated in pots or kettles for bathing or cooking purposes. Eventually, coal replaced wood as a fuel source, but there was still no electricity for heating, lights or electrical circulating pumps during these early years. As domestic hot water systems became more sophisticated, cold water was piped to buildings and closed vessels were installed with burners or fire chambers below them for heating the domestic hot water.

In the early years, there were many explosions associated with uncontrolled heat to the water heater in closed piping systems. Eventually, controls were installed to relieve the pressure and temperature, and to control the fuel and combustion air. Coal and wood as a heating source were phased out because of the difficulty of controlling the heat input. Heating oil, natural gas, electricity, solar and geothermal were phased in over many years as heating sources for domestic hot water. The early plumbing fixtures had hot and cold spigots and drain connections to vented drainpipes. As buildings grew in size and complexity, and as the distance from the water heater to the most remote fixture increased, getting hot water from the fixture would take longer because the previously heated water in the pipes had to be drained first.

In the late 1870s, tradesmen were using looped hydronic heating systems to replace steam systems with limited safety controls. Tradesmen learned that hot water rises in the piping system because it was lighter than cold water. They also applied this gravity circulation to domestic hot water systems. Hot water leaving the water heater went up in a pipe vertically through the building and looped back down un-insulated and ran parallel to the hot water riser to the bottom of the water heater. The return riser was not insulated to encourage heat loss, and the cooler water caused gravity circulation. As people on the upper floors of the building used hot water, they only had to drain water from the branch piping until hot water from the riser arrived at the fixture.

The more vertical the system was, the better it worked up to a point. As buildings were built to be about three or four stories in height, depending on the insulation type and thickness, the systems would get too big, and the water would cool down and lose its buoyancy. There were also some other things that were problematic with gravity circulation systems: Horizontal swing check valves resisted flow. Large dips in the piping would allow water to cool off, and the cool water in trapped areas would resist flow. Long horizontal runs with minimal vertical rise had difficulty getting gravity circulation.

The biggest problem to overcome was air trapped in the high point of the system. They addressed this by connecting a regularly used fixture or an automatic air vent at the top of the gravity hot water circulation loop to allow any air to be vented. If air was trapped, a large bubble would resist gravity circulation. A commonly used fixture to the top of the hot water riser vented air and allowed the gravity circulation to continue. Gravity domestic hot water systems were commonly installed before the introduction of electricity and circulating pumps, and some have been installed in newer homes with moderate success. Newer code requirements for water heaters require flappers or a device in the top of the water heater to prevent gravity circulation. This makes the water heater more efficient during efficiency testing, but makes many older buildings that install new water heaters experience problems with respect to gravity circulation. That is when it is time to install a circulating pump.

Domestic Hot Water Recirculation Systems

Modern systems

Since the advent of the circulator pump, many improvements have been made. Early pumps were the same ones used on hydronic systems. The pumps were made of ferrous metals with cast iron and steel parts, and most of them suffered corrosion problems or had rusty water shortly after being installed. Hydronic systems were closed systems with air eliminators to keep air and oxygen out of the piping circuit. Some hydronic systems use corrosion inhibiting chemicals to help prevent corrosion of the ferrous metals. Oxygen contributes to the corrosion process and domestic water systems are open systems with air and oxygen entrained in the water flow. It is for this reason that hydronic pumps and piping can be black steel and cast iron ferrous metals, and domestic hot water systems should be non-ferrous bronze or stainless steel parts with copper piping. Pump manufacturers have continually improved the materials, bearings, seals and efficiency of the circulator pumps.

Code requirements for hot water and temperature maintenance systems

Recently, criteria for temperature maintenance for hot water systems in the models codes were changed from 100-foot distance criteria to a 50-foot criteria. I wrote about this many years ago. I proposed code changes showing a maximum distance of about 25 feet from a circulated main or hot water source would be the ideal maximum distance to allow hot water within a reasonable time, but knowing that would have many industry groups upset with a requirement for recirculation systems in most residences and small buildings, I compromised and proposed a reduction to a maximum of 50 feet. This would allow most residences and smaller buildings to not be required to have temperature maintenance systems. The code change did not pass the first time, but eventually it prevailed.

The 2015 International Plumbing Code section 607.2 has the following language:

- 607.2 Hot or tempered water supply to fixtures. The developed length of hot or tempered water piping, from the source of hot water to the fixtures that require hot or tempered water, shall not exceed 50 feet (15 240 mm). Recirculating system piping and heat-traced piping shall be considered to be sources of hot or tempered water.

- 607.2.1 Circulation systems and heat trace systems for maintaining heated water temperature in distribution systems. For Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, the installation of heated water circulation and temperature maintenance systems shall be in accordance with Section R403.5.1 of the International Energy Conservation Code.

For other than Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, the installation of heated water circulation and heat trace systems shall be in accordance with Section C404.6 of the International Energy Conservation Code.

- 607.2.1.1 Pump controls for hot water storage systems.

The controls on pumps that circulate water between a water heater and a storage tank for heated water shall limit operation of the pump from heating cycle start-up to no greater than five minutes after the end of the cycle.

607.2.1.2 Demand recirculation controls for distribution systems. A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe shall be a demand recirculation water system. Pumps shall have controls that comply with both of the following:

- The control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture, or sensing the flow of hot or tempered water to a fixture fitting or appliance.

Domestic Hot Water Recirculation Systems

- The control shall limit the temperature of the water entering the cold water piping to 104 F (40C).
- 607.2.2 Piping for recirculation systems having master thermostatic valves. Where a thermostatic mixing valve is used in a system with a hot water recirculating pump, the hot water or tempered water return line shall be routed to the cold water inlet pipe of the water heater and the cold water inlet pipe or the hot water return connection of the thermostatic mixing valve.

Demand circulation controls dilemma

In the 2015 code change cycle, a change was presented to the model codes, and it was touted as saving water and energy along with reducing the time it takes to get hot water at a fixture. The code change was the technology, demand recirculation. I testified against this technology because health and safety should trump water and energy conservation. Many other in the backflow prevention industry have voiced concerns about this technology, but it fell on deaf ears at the code hearings. The code committee voted on this change based on the thought of having instant hot water in their homes, and saving a little water was more important to them than cross-connection. Many of the code committee members voted for this and commented that it would be nice to have for their own home. This code change will allow contaminated hot water to flow into the domestic cold water supply pipes. I have always said that circulating domestic hot water through the cold water pipes is a bad idea, and here's why:

1. The hot water tank has a magnesium or aluminum anode rod in the hot water tank, which is designed to corrode to sacrifice itself to the steel in the hot water tank. The dissolved metals end up in the hot water. This is why they say don't cook with hot water.
2. The demand recirculation pumps are supposed to shut off at 104 F. This is an ideal temperature for organic pathogens like Legionella bacteria to grow in the cold water piping.
3. If the thermostat or temperature sensor is not affixed properly to the cold water pipe, when there is a remote temperature sensor, the temperature can overshoot and scalding can become a concern for people using the cold water system.

I was all for allowing this technology in residential applications only, but the code allows it anywhere. So, there will be a condominium or apartment building where someone decides

to install one of these demand circulator pumps under their lavatory to circulate hot water. Now everyone in the building will be drinking water with high magnesium or aluminum content and possibly high bacteria content associated with new breeding grounds in the cold water pipes, which will be in the ideal temperature range for Legionella and other bacteria growth. In addition, most of the people in the building will not get clean cold water to cook or brush their teeth with.

I see this as a ticking time bomb and a lawsuit waiting to happen. I prefer minimizing liability and designing hot water systems the correct way with a dedicated hot water return piping system in the original design. The hot water return piping system should be properly sized and balanced. I will not design a building with a demand circulator connecting the domestic hot water to the cold water pipes. Demand circulators are retrofit products for improperly designed systems, that should only be used in single-family homes where the homeowner will live with the consequences of using such a product. Demand circulators should not be designed or installed in commercial or multi-family buildings because of the obvious crossconnection and water quality issues it brings with it.

Designing the domestic hot water recirculating system

Ideally, hot water should arrive at the fixture between zero and ten seconds from the time a faucet or fixture valve is opened. There are a couple of manufacturers that offer fittings and designs to allow the hot water to circulate right up to the fixture, and some manufacturers allow circulation right up to the faucet spout, such as Kemper hygiene systems (bit.do/Kemper) and Viega drinking water systems - Hygiene (bit.do/Viega). Surveys of how water users showed wait times between 10 and 30 seconds were marginally acceptable and wait times in excess of 30 seconds were considered unacceptable.

Domestic Hot Water Recirculation Systems

The following are a few considerations when piping the recirculated hot water return (HWR) piping:

1. Route the circulated hot water pipe as close to fixtures as possible.

The closer a circulated line is to a fixture, the less time it will require to get hot water from the fixture.

2. Balance the system to have equal flow in the closest and farthest branches.

If the building has multiple hot water mains and branches, each branch should have a balancing valve and check valve before connecting to the hot water return main. Simply installing the valves is not enough; after the system is started up, it must be balanced to assure each branch has the calculated flow rate to maintain the desired temperature in that branch. This prevents short-cycling of the hot water through the path of least resistance (closest branch circuit). I have investigated numerous systems with problems and the problems began because the system was never balanced when it was installed. Untrained maintenance personnel find that there is no flow in the farthest portion of the piping system, so they install a bigger pump. This typically does not solve the problem, but soon after the larger pump is installed, the piping system starts to spring leaks near elbows and valves. Balancing the hot water system is a relatively simple process, but calculations must be performed and flows in gallons per minute must be determined for each balancing valve prior to setting.

3. Minimize flow velocity to prevent erosion in copper piping.

Water flow velocity is very important in domestic hot water pipes with copper piping and brass or copper alloy valves. High water velocities, combined with hot water, can cause velocity erosion issues for the pipe and valve walls. The minimum pipe size I use for the hot water return system piping is ¾-inch pipe. I often see half-inch pipe installed. Smaller diameter pipes create a condition where the velocity increases at the same flow rate, and it also causes system temperature differentials from the supply to the return temperature that exceed the design criteria of 5 F, 10 F or 20 F. In the old days, we would design the return system for a 20-degree temperature differential using the ASPE/ASHRAE sizing method because hot water recirculation systems with older technology like the bi-metallic coil type temperature actuated mixing valves used on master mixing valve installations required at least a 20-degree temperature differential for the bi-metallic coil technology to react properly. Digitally-controlled mixing valves use digital probes with products like the Armstrong “Brain,” which offers accuracies capable of mixing hot water return temperatures with less than 5 F temperature differential and still maintaining a mixing valve outlet temperature setting within 1 F to 2 F of the set point.

The Copper Development Association recommends a maximum flow velocity of eight feet per second for cold water flowing in copper pipes and five feet per second for hot water. It also recommends a maximum velocity of two to three feet per second for hot water over 140 F. These recommendations are sufficiently vague enough to lead you in the right direction, however, I have come up with a more accurate table for pipe sizing and a chart you should refer to in order to assure the flow velocities do not erode the pipe walls. This table has worked well for me and should provide a system that will work without velocity erosion issues.

Domestic hot water above 180 F is not recommended because of the potential for scalding, and as temperatures get higher, the corrosion accelerates. In some unique cases, domestic hot water temperatures can go higher than 180 F booster heaters and steam heat exchangers, or with some types of heat recovery systems or other industrial or institutional piping systems. In these cases, consider sizing the piping to keep velocities lower than two feet per second.

1. Piping hot water return piping in Systems with mixing valves

Domestic Hot Water Recirculation Systems

a. When there is a mixing valve in the system, the tempered water return (TWR) must split and be routed to the cold-water side of the mixing valve and to the cold-water inlet of the water heater. A balancing valve should be placed in the line going to the water heater and the mixing valve for flow adjustments if needed.

b. If the TWR is only piped back to the water heater, when there is no usage in the system and the tempered water circulating pump is running, hot water will leak through the mixing valve manufacturing tolerances, and the temperature of the tempered water system will rise above the mixing valve set point to reach the highest temperature flowing from the water heater.

2. Sizing the circulator

The ASPE Plumbing Engineering Design Handbook, available to ASPE members, has a precise way of sizing the circulating pump based on a 20-degree temperature differential from the water heater out to the farthest fixture and back to the circulator near the water heater. If the system has 140-degree water in the water heater, then the sizing method maintains 130-degree hot water at the end of the system and then back at the cold water inlet to the water heater the temperature would be approximately 120 degrees. The calculation is based on heat loss in the hot water piping circuit. It lists the British thermal unit loss per hour (BTU/Hr) losses for insulated and bare piping based on a 70-degree ambient temperature. A quick and simple way to estimate insulated pipe is to assume 25 to 30 BTUs/Hr per linear foot ignoring the hot water supply and return pipe size. This may simply result in a system where the temperature differential in most cases will be slightly less than 20 F.

If you want to take the time to calculate the system exactly, you can use the Table in the Plumbing Engineering Design Handbook and the BTU/Hr losses can be summed up for the various lengths of different pipe sizes and a total BTU/Hr loss can be calculated. For a 20-degree temperature differential, you would then divide by 10,000 to get the required gallons per minute (GPM) for the branch or pump. This is how the GPM is determined for the pump sizing. For the pump head requirement, the appropriate GPM is assigned to each section of pipe based on the BTU/Hr loss requirements above and from pipe friction loss charts, a total feet of head or pressure drop in pounds per square inch (PSI) can be determined.

Remember when selecting pumps to convert from PSI to feet of head, most manufacturers list their pumps on curves listing feet of head on vertically and GPM horizontally. Just remember 1 PSI = 2.31 feet of head and 1 foot of head = .433 PSI.

3. New technology for circulator pumps

Circulator pump manufacturers are coming out with smart pumps with intelligent, built-in controls that can adjust the speed with variable speed motor technology. Features offered on newer circulator pumps include proportional pressure controls. Some options adapt to the changing pressures and flows in the system and adjusts or reduces the speed/pump head to change the efficiency in order to operate at a better efficiency point when water is flowing in the system and the pump does not need to pump as hard. There are flow adapt limits that limit the maximum flow. This is good for minimizing flow velocities in the piping system and can eliminate the need for a balancing valve on the discharge of a circulating pump.

Domestic Hot Water Recirculation Systems

Other circulator pump control methods are constant pressure control methods; the pump will adjust its speed to maintain a constant pressure. Another control method is constant temperature controls where the pump senses the return temperature. As the return temperature rises to the set point, it slows the pump down to prevent overheating when peak usage periods draw hot water out to the end of the system, and then the pump can slow down and save energy. Another option is a constant pump curve mode, which is used when there is a demand for constant flow and constant head. The pump can be adjusted to speed up or slow down to maintain a desired duty point on the pump curve. This setting can allow the elimination of a pressure-reducing valve on the pump discharge. For more information on the new circulator pump technologies contact the following manufacturers:

- Grundfos: bit.do/Grundfos
- Taco: bit.do/TacoComfort
- Bell & Gossett: bit.do/BellGossett
-

Following these suggestions should keep you out of hot water, but with plenty of hot water.

SHERMAN ENGINEERING
ESTABLISHED 1920
MEDICAL | SCIENCE | INDUSTRIAL

ARE YOU RESPONSIBLE FOR DESIGNING MEDICAL GAS SYSTEMS?



ONE-DAY MEDICAL GAS DESIGN GUIDE SEMINAR

Instruction by Mark Allen

October 29, 2025

This class does not provide include healthcare design credentials, only design instruction.

8:30AM - 3:30PM

Lunchisincluded. Pleaseplan to arrive early to find parking and our meeting room.

MontCo Community College

AdvancedTechnology Center | Rm101
340 DeKalb Pike, Blue Bell, PA 19422

FREE

Attendance is free! RSVP is **required** in order to attend. Please RSVP no later than 10/22.

To learn more about this class, please contact:
NIKITA PATEL, PE, ASSE 6060
npatel@shermanengineering.com
570-899-9090

TOPICS COVERED

- DESIGN PHASE
- NFPA 99 REVIEW
- DISCOVERY PHASE
- LAYOUT & DESIGN
- SPECIFICATIONS

REGISTER

ASPE
American Society of Plumbing Engineers™
BALTIMORE

Julian Chiveral, PE, CPD, LEED AP BD+C
Vice President- Technical & Education Chair

Education Chair Report

The Baltimore chapter Education Committee is looking for volunteers to get involved with planning and participating in ASPE education programs. This is a great opportunity for ASPE Baltimore members of all experience levels and backgrounds to get more involved with the chapter, without the commitment to join the board of directors (though we'd love you to join the board as well)!

The education committee already has some events in the works, but we're also looking for your input – what would you like to see?

Industry Night with the Local 486 Plumbing & Steamfitters Union – we have hosted this event with the local union several years in a row now. Each year we have changed up the programming a bit but always maintained a focus on offering our engineers some hands-on experience with the plumbing apprentices, while offering the apprentices the chance to pick our brains on how we do system design. Last year saw hands-on demonstrations with cast iron and copper, an interdisciplinary panel discussion, and a mini product show.

Engineers Week Outreach at the Engineering Society of Baltimore – this is our opportunity to connect with the next generation of plumbing engineers! Each year we host around 100 high school students from the Baltimore region for a day full of plumbing education and entertainment. Our offerings will tentatively include an introduction to plumbing engineering, a mini career fair showing off the many roles within the industry, and a plumbing design competition – last year we had students take a stab at creating plumbing drawings for a fully functional residential system, to varied success! Our event will be either February 20th or 23rd.

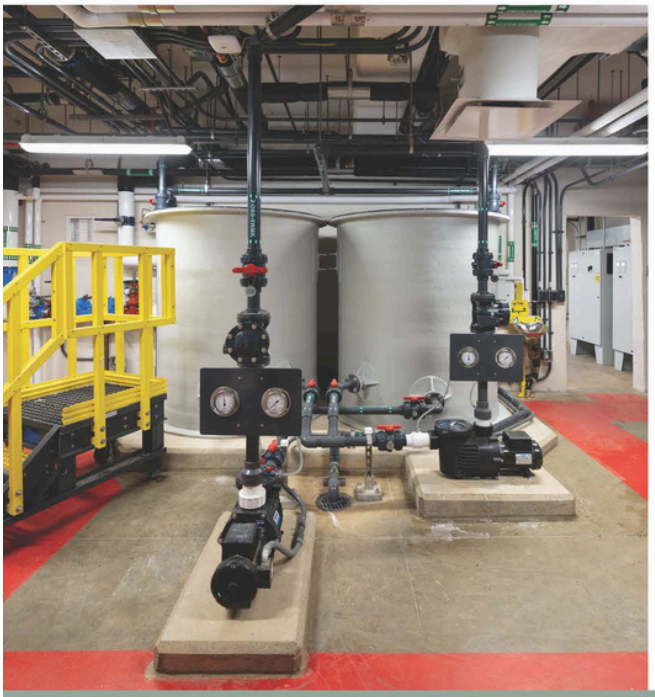
Additional Opportunities abound – plant tours, virtual learning hours, collaboration with local university engineering programs, the opportunities are endless; we just need someone like you to make them a reality.

Whether you're looking to volunteer, plan the next event, or just want to be in the know, send me an email to get added to the mailing list. You young'uns can even put it on your resume so that everyone knows you're serious about improving your plumbing expertise!

Contact Julian Chiveral, Education Chair at Julian.Chiveral@cmta.com to learn more.

PROUD TO SUPPORT ASPE BALTIMORE

Smithsonian National Zoo's Bird House
All photos: © Joseph Romeo



For nearly 60 years, Mueller Associates has delivered plumbing engineering designs that strengthens communities through health, sustainability, and innovation.

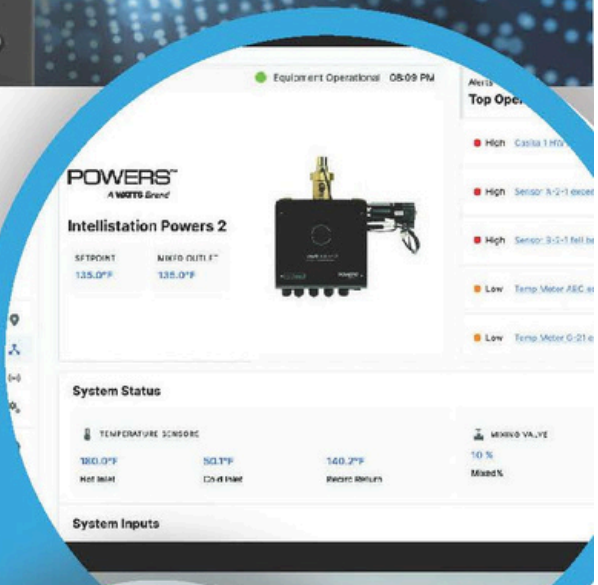
Mueller

Mueller Associates
1306 Concourse Drive, Suite 100
Linthicum, MD 21090
www.muellerassoc.com
410.646.4500

ENGINEERING GREAT EXPERIENCES

THE NEXT GENERATION OF DIGITAL MIXING

Temper Water. Not Expectations.



Key Features:

- Improved temperature control with Globe Valve Design
- Sensor package options to fit any application
- Improved touchscreen with screen swipes
- Full temperature monitoring and pressure/flow rate monitoring options

works with nexa

IntelliStation 2 performance data can be viewed from anywhere and tracked over time for trends that can help optimize your system and anticipate issues. This next generation mixing valve can be monitored and controlled remotely via **Nexa** or your BMS, and doesn't require factory preprogramming, a laptop, or special software when commissioning or making or adjustments.

nexaplatform.com

POWERS™
A WATTS Brand

The JOYCE AGENCY

703-866-3111 | www.thejoyceagency.com

E.J. Dwyer Company

10910 Pump House RD
Annapolis Junction, MD 20701

+ years of professional service!

Proudly representing quality BAA compliant products:

AGS
americangassafety.com
Laboratory, Kitchen, CO2, Gas detector UL approved valves & enclosures. Emergency off button w/valve. Complete utility control for water. Merlin digital controller. **In Stock!**

Aquarius Showers
aquariusproducts.com
Residential & commercial. Acrylic & gel-coat ADA compliant showers. Barrier free shower pans + tube replacement pans. **In Stock!**

Bradley Corporation
bradleycorp.com
Washfountains, lavatory centers, Halo emergency fixtures, repair parts. Natural quartz Evero, Verge, Advocate, Omni Deck, Washbar. Washrooms accessories. **In Stock!**

Chicago Faucet Company
chicagofaucets.com
Quality faucets for commercial applications, now offering sensor faucets. Meet the no-lead laws with our E-cast products. Food service for your entire kitchen, restaurant needs. Full lines of back mount, deck mount styles with pre-rinse, glass & pot fillers, faucets built to last! **In Stock!**

Chronomite Heaters
chronomite.com
Electric instantaneous hot water heaters from 0.2gpm to high capacity. Instant-micro & insta-temp digital mixers for multiple applications. Including **Omni** laminar flow controls. **In Stock!**

Circuit Solver
circuitsolver.com
Thermostatic balancing valve, automatically & continuously maintains recirc temperature. Manufactured by **ThermOmegaTech**, inline valve eliminates time consuming balancing procedures.

Comfort Designs
comfortdesignsbathware.com
ADA compliant, tile finish & tub replacement fixtures. Shower pans, ADA units, multi-piece with solid surface finish. Asura trench drain. New integral trench drain w/zero threshold shower systems. **In Stock!**

Filtrine Drinking Fountains
Filtrine.com
Drinking water products with a tradition of superior quality craftsmanship. Bottle filling stations, chillers, UV purifiers. Taste master carbon filters with stainless steel housing.

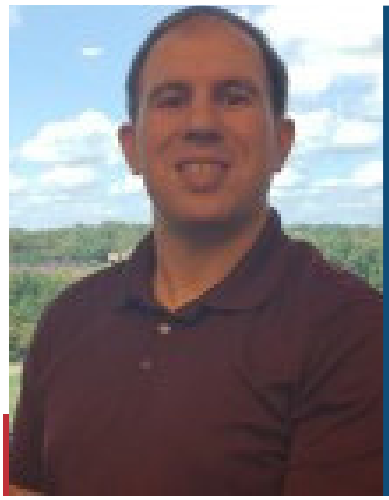
Keltech Tankless Heaters
keltech-inc.com
Commercial, industrial, & emergency applications. Precisely engineered, for quality tankless performance to suite your needs. 5kW to 144kW, ASME.

ThermOmegaTech
thermomegatech.com
Drain tempering valve - DTV - to add cold water to drain lines for codes. The STV - steam wash down station high temp mixing w/hose & wash down gun. Scald guard & freeze protection valves for emergency fixtures.

Established - 1970

Contact Us:
www.ejdwyer.com
Phone: 240-553-0112
Fax: 888-811-4830
customerservice@ejdwyer.com
Kathy Dwyer - kdwyer@ejdwyer.com - 443-250-0285

Buy American Act Compliant
BAA



ASPE American Society of Plumbing Engineers™
BALTIMORE

Chris Imhof, PE, CPD
Vice President- Legislative

Legislative Report

WSSC Water Adopts 2024 WSSC Plumbing and Fuel Gas Code

On October 15, 2025, the Washington Suburban Sanitary Commission adopted the 2024 WSSC Plumbing and Fuel Gas Code. The signed resolution can be viewed here: www.wsscwater.com/pfg-code-update.

The effective date of the resolution is December 1, 2025.

The Plumbing and Fuel Gas Code can be viewed here: https://www.wsscwater.com/codebooks

For additional code-related information, contact Technical Standards Engineering Manager Chris Imhof at christopher.imhof@wsscwater.com or 301-206-8514.

Apply Now: Code Action Committees and the Codes and Standards Council

The International Code Council is now seeking volunteers for five ICC Code Action Committees and the Codes and Standards Council to participate in the code development process for the 2027-2029 cycle.

The International Code Council (ICC) invites dedicated volunteers to apply for committee positions in the 2027–2029 Code Development Cycle. By serving on these committees, you will help shape the 2030 International Codes (I-Codes), advancing building safety through model codes used by your communities and others globally. Your involvement directly influences the safety and well-being of approximately two billion people worldwide, ensuring that our communities benefit from up-to-date, effective building codes.

Visit here for more information:

https://www.iccsafe.org/building-safety-journal/bsj-hits/apply-now-code-action-committees-and-the-codes-and-standards-council/

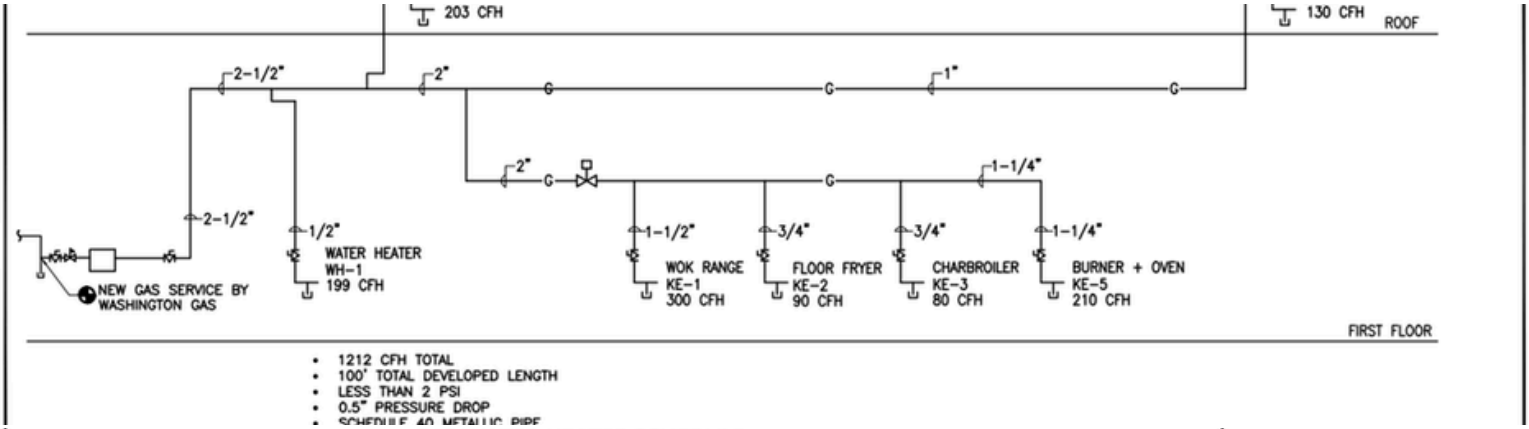
Chris Imhof, PE, CPD
Vice President – Legislative

ASPE American Society of Plumbing Engineers™ BALTIMORE

David Bailey
PLUMBING PLANS REVIEWER'S CORNER

Well, no attendees at the DC Chapter October meeting correctly responded to the issue of the four single-user toilet rooms displayed in the screenshot. The error revolves around "Bathroom 3" presented as a Men's Toilet. Per 2021 IPC Chapter 4, all single-user toilets shall be gender neutral. The Plans Reviewers and Inspectors look for this. Because the Architectural background displayed no "divider" between the urinal and the water closet, Code requires this toilet room to be gender neutral as well as locking mechanism on the door for the single occupant when min use. Had there been "divider", the male gender designation would have been acceptable.

This month's review is the result of an approved drawing set where the Plumber then provided a fifth grease ladened cooking equipment to the flow-based grease abatement system after the fact. The Plumbing Inspector spotted the violation per 2021 WSSC Water P&FGC Section 1003.2.7.1.3.3 and a subsequent follow-up waiver by the Principal Master. As a result of reviewing the approved drawing set, I stumbled across the following riser diagram.



GAS WATER HEATER SCHEDULE

DESIGNATION	DESCRIPTION	GALLONS	GPH @ 100° RISE	EWT (°F)	LWT (°F)	BTUH	V/PH/Hz	BASIS OF DESIGN	NOTES

Can you find anything wrong with this riser diagram? Note, see the partial gas table below. Also, WSSC Water uses the Total Equivalent Length versus the Total Developed Length when using the Sizing Tables. The TEL equals the TDL multiplied by 1.3.

	PIPE SIZE (inch)													
Nominal	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
Actual ID	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938
Length (ft)	Capacity in Cubic Feet of Gas Per Hour													
100	50	104	195	400	600	1,160	1,840	3,260	6,640	12,000	19,500	40,000	72,600	115,000
125	44	92	173	355	532	1,020	1,630	2,890	5,890	10,600	17,200	35,400	64,300	102,000
150	40	83	157	322	482	928	1,480	2,610	5,330	9,650	15,600	32,100	58,300	92,300
175	37	77	144	296	443	854	1,360	2,410	4,910	8,880	14,400	29,500	53,600	84,900

Manufacturers Representative Since 1968

Harry Eklof & Associates, Inc.

Representing :

CALEFFI Hydronic Solutions

FIELDCONTROLS

FUJITSU AIRSTAGE

NAVIEN

FLORESTONE

A spec above.

SCAN THE QR-CODE

to get more information on product and training!

www.harryeklof.com 1.800.556.7556

BAY Associates

Proudly representing leading manufacturers in the plumbing and mechanical industry

PVI INDUSTRIES: *www.pvi.com*
ASME Water Heaters for all energy sources. AquaPLEX Duplex stainless steel tank, semi-instantaneous, instantaneous, flexible fuels, condensing boilers, digital mixing valves.

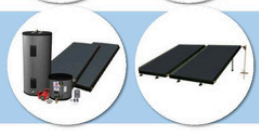
PVI A WATTS Brand

HUBBELL WATER HEATERS: *www.hubbellheaters.com*
ASME and Non-ASME water heaters. Electric, gas, steam and indirect. Cement lined tanks, hazardous locations, tepid water heating systems, RO/DI, heat pump water heating.

Hubbell WATER HEATERS

LYNC: *www.lyncbywatts.com*
Engineered System Solutions; Commercial Heat Pump Water heating, Packaged Water Heating Systems, and Hot Water Wellness Solutions.

Lync by WATTS

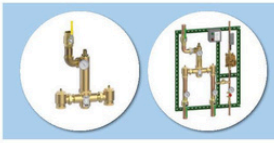


AET ALTERNATE ENERGY TECHNOLOGIES: *www.aetsolar.com*
Solar Water Heating Systems, complete drainback systems, flat panel solar collectors, engineering support.

ALTERNATE ENERGY TECHNOLOGIES

AMTROL: *www.amtrol.com*
ASME and non-ASME Expansion Tanks, Hydropneumatic Tanks, Storage Tanks, and Air Elimination Equipment

AMTROL



LAWLER MANUFACTURING: *www.lawlervalve.com*
Thermostatic Mixing Valves for Domestic Water; manifold recirculation stations, Emergency Mixing Valves, Combination Temperature and Pressure Valves, Photographic Control Valves, thermostatic and Digital Mixing valves.

LAWLER

STINGRAY SYSTEMS: *www.tepid.com*
Emergency fixture and mixing valve solutions; eyewash, eye/face, shower only, combination stations, emergency mixing valves.

STINGRAY systems

THERMON MANUFACTURING: *www.thermon.com*
Freeze Protection for Pipes, Control and Monitoring Systems, Roof and Gutter Deicing, Snow Melting and Floor Warming Cables, Domestic Hot Water Temperature Maintenance.

THERMON

HEATIZON: *www.heatizon.com*
Electric Snow Melting Systems, Electric Roof Deicing, Electric Slab Heating, Electric Radiant Floor Heating, Turn Key Electric Snow Melting Systems.

HEATIZON SYSTEMS

FRIO: *www.frio.co*
Next generation heat trace controllers using IoT connectivity, innovative sensing, and advanced control methods to provide 24/7 advanced monitoring with automatic fault notification.

frio

REIMERS: *www.reimersinc.com*
Electric steam boilers, electric hot water boilers, custom engineered skid packages, unvented blow off tanks, vented blowdown separators.

Reimers ELECTRA STEAM, INC.

TRICON FORCE PIPING SOLUTIONS: *www.tfpiping.com*
Pre-Fabricated, Pre-Insulated Piping Systems, Secondary Containment and Conduit Piping Systems for Industrial and Commercial Applications.

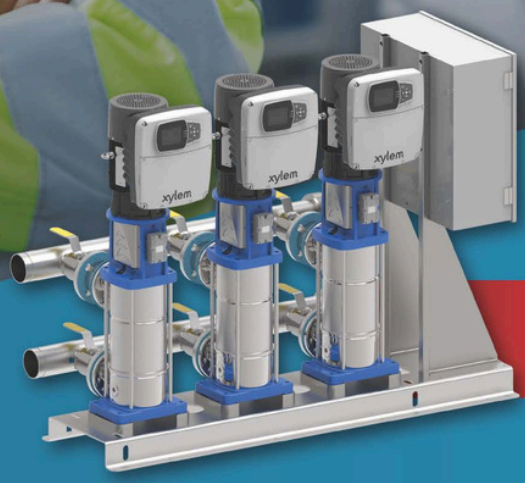
TRICON FORCE PIPING SOLUTIONS

Please contact **Jason Eagles – Jason@bayassociates.com**
10943 McCormick Rd, Hunt Valley, MD 21031
PHONE 410-825-6616 | FAX 410-825-6618 | www.bayassociates.com

Bell & Gossett
a xylem brand

NEXT GENERATION

PACKAGED BOOSTER SYSTEMS



TECHNOFORCE™
e-HVX/e-HVXR
PACKAGED
BOOSTER SYSTEM

Ultra-premium efficiency.
Simplified components.
Easily serviceable.
Highly compact.

Introducing the e-HVX/e-HVXR – engineered with the modern mechanical room and modern-day building challenges in mind. Coupled with Xylem's hydrovar® X smart motor technology, the e-HVXR offers a higher performance with a reduced footprint compared to legacy generation models.

Maximized by X: Space-saving by design

bellgossett.com/poweredbyx

CUMMINS-WAGNER
100% Employee Owned

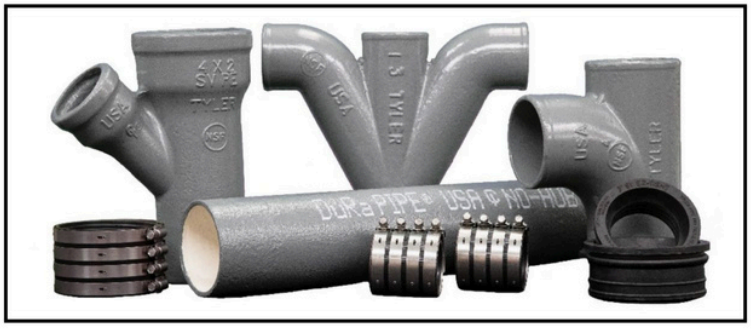
Info-CW@cummins-wagner.com
410.792.4230 | cummins-wagner.com

xylem

TYLER PIPE & COUPLING

anaco–husky

SOURCED IN AMERICA. MADE IN AMERICA.



4 LEAF SALES AGENCY

Patrick Leonard: (443)401-9695
Patrick@4leafsales.com

Dave Jones: (443)834-4410
Dave@4leafsales.com

Countless Solutions All Built to be the Best®

Residential and commercial solutions offering exceptional performance, efficiency, reliability and innovations, including Microban® antimicrobial technology inside all tank-type water heaters.

Learn more

BRADFORD WHITE®
WATER HEATERS
Built to be the Best®

A Thinner Shield is Better!

TRANSFERENCE OF TORQUE
Thicker gauge shield material blocks the torque from getting to the gasket. A thinner shield protects the gasket while allowing a more efficient transfer of torque therefore providing a better seal.

DEFLECTION
A thinner shield is more forgiving, flexible, and malleable. It bends with the joint allowing the seal to remain strong. A thick shield is rigid and does not form itself over the joint.

STEPPED JOINTS
The thinner shield allows the shield to conform over the stepped joint providing a more effective seal.

Interested in learning more? Contact Glenn Spilling, National Sales Manager
gspilling@idealtridon.com | 615-686-7826

IDEAL TRIDON

Or visit us online at IdealTridon.com!

Barnard Associates
55 Aileron Court, Suites 1 & 2
Westminster, MD 21157
(P) 410-720-0900, (F) 410-720-0904

Canplas
Plastic Grease Traps, PVCDWV Fittings and Plumbing Specialties
Centoco Corp
Toilet Seats
Compass Manufacturing
Toilets and Stainless-Steel Sinks
Enfield
Acid Waste Piping, High Purity Piping
Guardian
Double Containment Piping Systems
Hammond Valves
Plumbing and Heating Valves
Ideal Tridon Couplings
No Hub, Heavy Duty and Specialty Couplings
Ipex
Schedule 40 & 80 PVC and CPVC Pipe
Milwaukee Valve
Domestic & Import Metal Ball, Butterfly, Check, Gate, Globe
High Performance Butterfly
NAC-NewAge Casting
Cast Iron and Epoxy Coated Pipe
SAS Safety Corporation
Protective Safety Equipment
Speakman Company
Hospitality Fixtures, Commercial Brass Emergency Equipment
Wolverine Brass
Plumbing Products for the Professional

Contact:
Office Phone: 410-720-0900
Office Fax: 410-720-0904

AMES
ASSOCIATED MECHANICAL EQUIPMENT SUPPLIERS

ASSOCIATED MECHANICAL EQUIPMENT SUPPLIERS

AMES, Inc. is a manufacturer's representative of water and wastewater treatment, pumping, and HVAC equipment. We serve the municipal, commercial, and industrial markets in Delaware, Maryland, Northern Virginia, West Virginia, and District of Columbia.

PARTNERING WITH THE INDUSTRY'S PREMIER BRANDS

PENTAIR AURORA
OverWatch Direct In-Line Pump System
STANCOR
wilo
TIGERFLOW
ZURN GreenTurtle
wahaso
USF FABRICATION
TSURUMI PUMP
AK INDUSTRIES

PRODUCT OFFERINGS:

- Overwatch Direct Inline Pumping System
- Pumps
- Controls
- Water & Wastewater
- Packaged Systems
- Rainwater & Water Reuse
- Grease/Interceptor

PARTS & SERVICES

- New Construction Field Service
- Warranty & Repair
- Maintenance Contracts
- Parts & Aftermarket Sales

8918 Herman Drive | Columbia, MD 21045
www.amesinc.com | info@ames.com

HOW CAN WE HELP?
410.995.6971

McWANE PLUMBING
TECHNICAL SERVICES

NOTHING PROTECTS LIKE GRAY

Hari Patel
Regional Manager
Technical Services
570.899.9413
hari.patel@mcwaneplbgrp.com

AB&I FOUNDRY · DURA PIPE · TYLER PIPE & COUPLING

Schedule of Meetings

DATE	Topic	Speaker
SEPT 17	Engineering Ethics And Dispute Resolution	Rebecca Bowman
OCT 15	Medical Gas	Niki Patel
NOV 19	Hot Water Recirculation Systems	Engineer Presentation - Chuck Swope (Mueller)
DEC 17	Everything We Do Wrong	Panel – moderator, code reviewer, Contractor, Sr. Engineer
JAN 28	Industry Night	Local UA5
FEB 18	Topic TBD	Engineer Presentation - Michael Do (Setty)
MAR 11	Communication Skills and Bridging Generational Gaps	Niki Patel and BJ Allen
APR 22	Fire Protection	Ken Isman
MAY 20	Topic TBD	Engineer Presentation - Joe Niedzielski (2RW)

If you have a specific topic, speaker, or case study you would like to see included in our program, please let us know. Likewise, if you or your firm would be interested in presenting at one of our sessions, we encourage you to share your availability.