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## MEETING FORMAT

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

DATE:	January 25, 2023
TIME:	6:00pm to 8:00pm
PLACE:	<a href="#">Olive Grove Restaurant</a>
TOPIC:	IPC Code Changes
SPEAKER:	International Code Council

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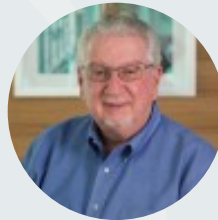
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## Newsletter Advertising

- 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:
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- Please contact Nikita Patel or Chuck Swope
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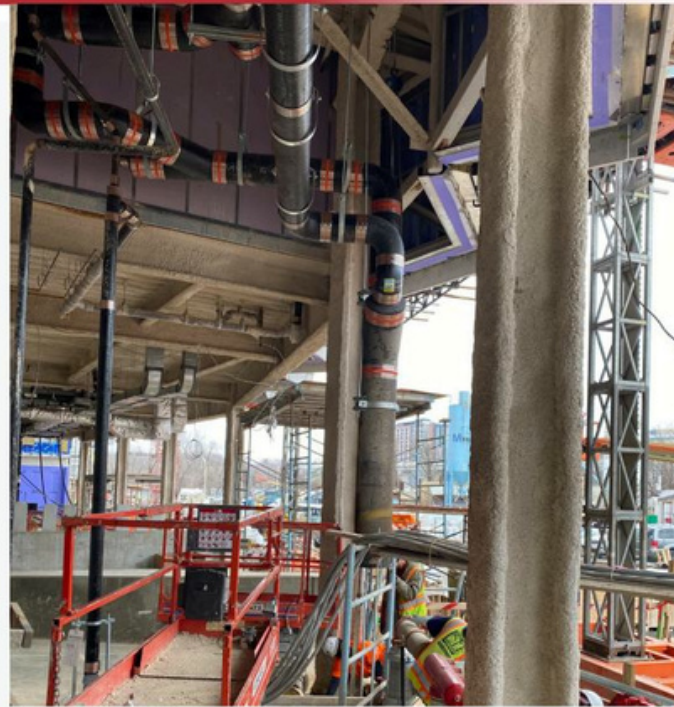
Chuck Swope, PE, CPD, LEED AP BD+C  
Chapter President

## The President's Report

Happy New Year! We often take this time to reflect on the previous year and remember all the good things that happened. In our case, we've continued our great successes and built upon what has made our chapter fantastic. This year's ASPE Convention was excellent, as always. Our chapter again earned the Award of Merit for the 2021-2022 season, and we sent a record three delegates to represent Baltimore to vote on bylaws and amendments. We are fortunate to have so many supporters to make this possible and we thank you all for your care.

But there's no more time for reminiscing, we've got to look towards the future! We have an excellent schedule of events coming up in the second half of our season. In addition to the regular season of technical topics that we bring every year, we also have new joint events with our friends in the industry. Many of you knew about our joint technical meeting with ASHRAE, but did you know about our upcoming event with the Local 486 Plumbers and Steamfitters union? We've worked out the kinks and are inviting any member in good standing to join us. Space will be limited, so please keep your eyes out for more information. Just looking to have fun? Bring your favorite engineer with you for our annual golf outing in April or bring the whole family to our summer party! More info to come on those too! We're still working out the details for each, but they're too good not to share.

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# Hey Young Professionals!



Nikita Patel, PE  
National AYP Liaison | Education Chair



## Education Report

ASPE Baltimore is scheduled to speak to a group of High School Students & Advisors on Friday, February 17th in celebration of Engineers' Week. This will be hosted at the Engineers' Club of Baltimore. If your company is interested in helping (donations, tabletop, speaker), please contact me directly for more information.

Additionally, I am working with the Local UA486 to prepare another hands-on training event for our Engineering Community. We have just begun planning it, so dates are not finalized at this time. Continue to read this section of the newsletter to learn more.

## AYP Report

The FREE (to AYPs) Revit Webinar has been postponed to 2/15. Please watch your inbox for instructions on how to sign up in the next few days. Scroll further down in the newsletter to learn more about our first Region 1 AYP webinar for the year, Fundamentals of Centrifugal Pumps. Special thanks to the Connecticut Chapter for selecting our highly qualified speaker!

Thanks,  
Nikita Patel, PE  
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Julian Chiveral, LEED AP BD+C  
Vice President- Technical

## Technical Report

Well, ASPE folks, it's 2023. A new year with plenty of exciting technical sessions already in the works. Do you have any goals for the new year? One of my new years resolutions is to start writing my ASPE articles before they're due... starting in February. Hopefully, you are having a little more success with your goals for the new year than I am!

We had two informative technical sessions recently, our December meeting covering gas piping systems with Ed Williams from OmegaFlex, as well as our joint virtual session with the ASHRAE Baltimore chapter on heat pump water heaters with representatives from Mitsubishi Electric Trane. Many thanks to our presenters and everyone who attended – if you have any questions, comments, or suggestions about these sessions or future ideas, please let me know! If you have any specific follow up questions from the gas piping presentation, you can reach Ed at [ed.williams@omegaflex.net](mailto:ed.williams@omegaflex.net).

Our first dinner meeting of the year will feature a presentation from Lisa Reiheld, director, PMG technical resources for the International Code Council. Lisa will be leading a code review session that will be sure to entice veterans and newcomers alike. Specifically, the presentation will cover the design, installation, and inspection principles that are covered in the 2018 IPC Chapters 6, 7, and 9.

IPC Chapter 6, Water Supply and Distribution, covers the requirements for water distribution piping systems to and within buildings. The regulations include the types of materials and the connection methods for such systems. The prevention of backflow of contaminated or polluted water into any potable water system is critical for protection of users of potable water. This chapter regulates the assemblies, devices and methods that are used for this purpose.

IPC Chapter 7, Sanitary Drainage, regulates the methods and piping systems that remove water that has served a purpose such as flushing water closets, bathing, culinary activities, and equipment discharges. The types of materials, drainage fitting and the connection methods are covered for these systems that begin at the receiving fixtures and end at the point of disposal for the liquid waste. A design method for a gravity flow system of vertical and horizontal piping is provided based on the probability of flows from specific fixtures. Vacuum and pumped types of liquid waste removal methods are also regulated by this chapter.

IPC Chapter 9, Vents, regulates connection locations, various venting system arrangements and the sizing of piping for vent systems. The proper operation of a gravity flow drainage system depends on maintaining an air path throughout the system to prevent waste and odor "blow back" into fixtures and siphoning of the trap seal in fixture traps.

I can't wait to see everyone at the Olive Grove for a great meeting! We are returning to our usual schedule, so this meeting will be on January 25th!

Julian Chiveral, LEED AP BD+C  
Vice President - Technical

# Cannabis Grow Facility Design 101, Part 2: Water Usage

Engage the local water utility early to understand water quality issues and ensure capacity is available for the proposed project.

*June 3, 2022*

The first article in this series provided a broad overview of the indoor cultivation and production of cannabis, describing the typical components and key infrastructure systems required for a successful operation. This article expands upon the importance of water to these unique and challenging facilities.

Cannabis and other indoor farming operations are highly dependent on an adequate and quality water supply. These facilities use water for many purposes; the most important and largest usage is plant irrigation.

“Cannabis H2O: Water Use & Sustainability in Cultivation,” a 2021 report published by the Research Innovation Institute (RII), New Frontier Data and the Berkley Cannabis Research Center, found that, on average, indoor cannabis facilities use 209 gallons/square foot/year for irrigation (<https://bit.ly/3vHs93O>). Other noncultivation uses include:

- Evaporative cooling applications, such as pad and fan systems in naturally ventilated greenhouses and cooling towers for water-cooled indoor growing operations. Evaporative cooling systems require a constant supply of makeup water to offset the moisture that has evaporated and been lost to the atmosphere.
- Humidification of indoor grow rooms and post-harvest spaces such as drying and curing rooms.
- Cooking and dishwashing equipment in commercial kitchens for the preparation and production of edible cannabis products.
- General domestic water uses including employee welfare spaces, showers and locker rooms, onsite laundry, cleaning, emergency showers/eyewash stations, etc.

## **Irrigation**

The most important application of water for indoor cannabis facilities is plant irrigation. The first challenge is determining the amount of water required for this purpose. Typically, the plumbing designer will collaborate closely with the facility's cultivation team or head grower to develop an understanding of the total irrigation program.

This includes the quality of water required, how water will be delivered to the plants, watering frequency, and the amount to be delivered during a certain period. Watering rates are often described using a metric of gallons per plant per day, or gallons per square feet of plant canopy per day.

Equipment can be sized and selected once the total daily irrigation quantity is understood. The starting point is usually filtration and purification. Most cannabis operations will use a reverse osmosis (RO) system to remove contaminants from the water supply. According to the Cannabis H2O report, RO is especially helpful in cannabis as it is one of the only ways to remove sodium and heavy metals from the plants.

With the stringent testing requirements for cannabis products, growers err on the side of caution by using this treatment method. The RO system should be sized to provide the minimum daily output for the facility, and storage tanks should be sized for at least one day's worth of irrigation to provide a buffer for any hiccups in operation.

Incoming water from the utility should be pre-heated to room temperature for two purposes: to improve the efficiency of RO membranes, and ensure that cold water is not fed directly to plants (think of taking a cold shower). RO water is pumped from tanks to nutrient injection and mixing equipment, with the resulting fortified water known as fertigation.

Fertigation water is stored in batch or day tanks or pumped directly to grow rooms. Most operations will use separate recipes or batches for each type of grow room or stage of plant growth. Each grow room will have one or multiple zones, with each zone controlled by a solenoid valve.

Inside the grow rooms, fertigation piping will be routed to each zone, which generally consists of multiple plants on a rack or bench, with one or more drip emitters serving each plant (see Figure 1). In general, watering events are set up as reoccurring schedules or can be initiated by a signal from soil moisture sensors.

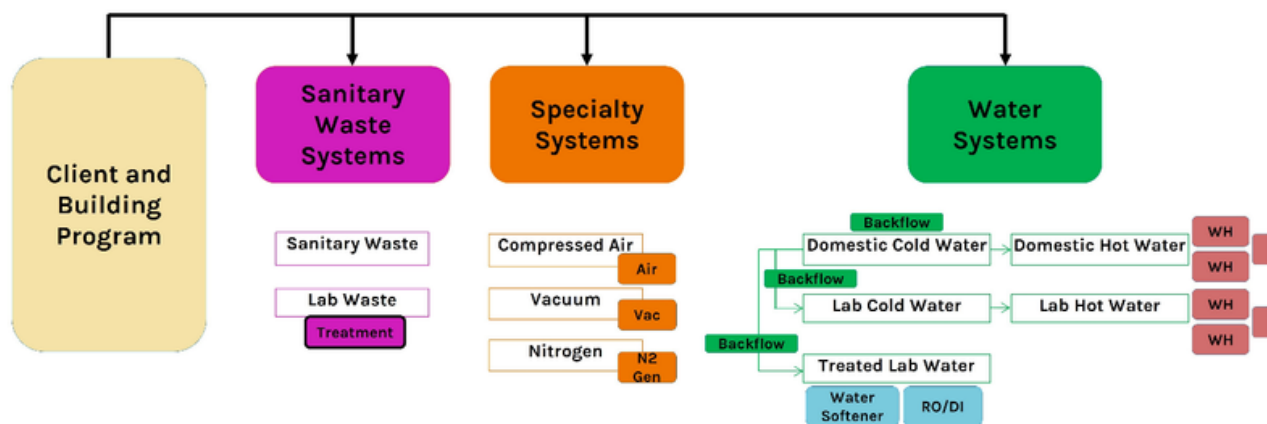


Figure 1

Irrigation and fertigation systems can range from relatively simple to complex and fully automated. Small operations may water plants by hand. Other facilities may use a small residential-type irrigation controller and an inline nutrient injection device (see Figure 2).



Figure 2

More sophisticated operations may use pre-packaged, skid-mounted equipment with integral pumps and controllers to generate RO water, produce fertigation water and deliver water to grow rooms (see Figure 3). Figure 4 shows a flow diagram developed for a large cannabis facility.

Equipment and tanks for irrigation/fertigation can be large and require a fair amount of floor space and ceiling height. Floor space is also needed to store and stage bulk nutrient totes or drums. Therefore, it is important to work with the owner's team to determine the program for the irrigation and fertigation systems as early in the process as possible.

Also, make sure there are large enough pathways and doorways to get large tanks from the exterior of the building to the irrigation/fertigation room – a lesson that, unfortunately, may have been learned the hard way by some!

**1 IRRIGATION/FERTIGATION FLOW DIAGRAM**  
NO SCALE

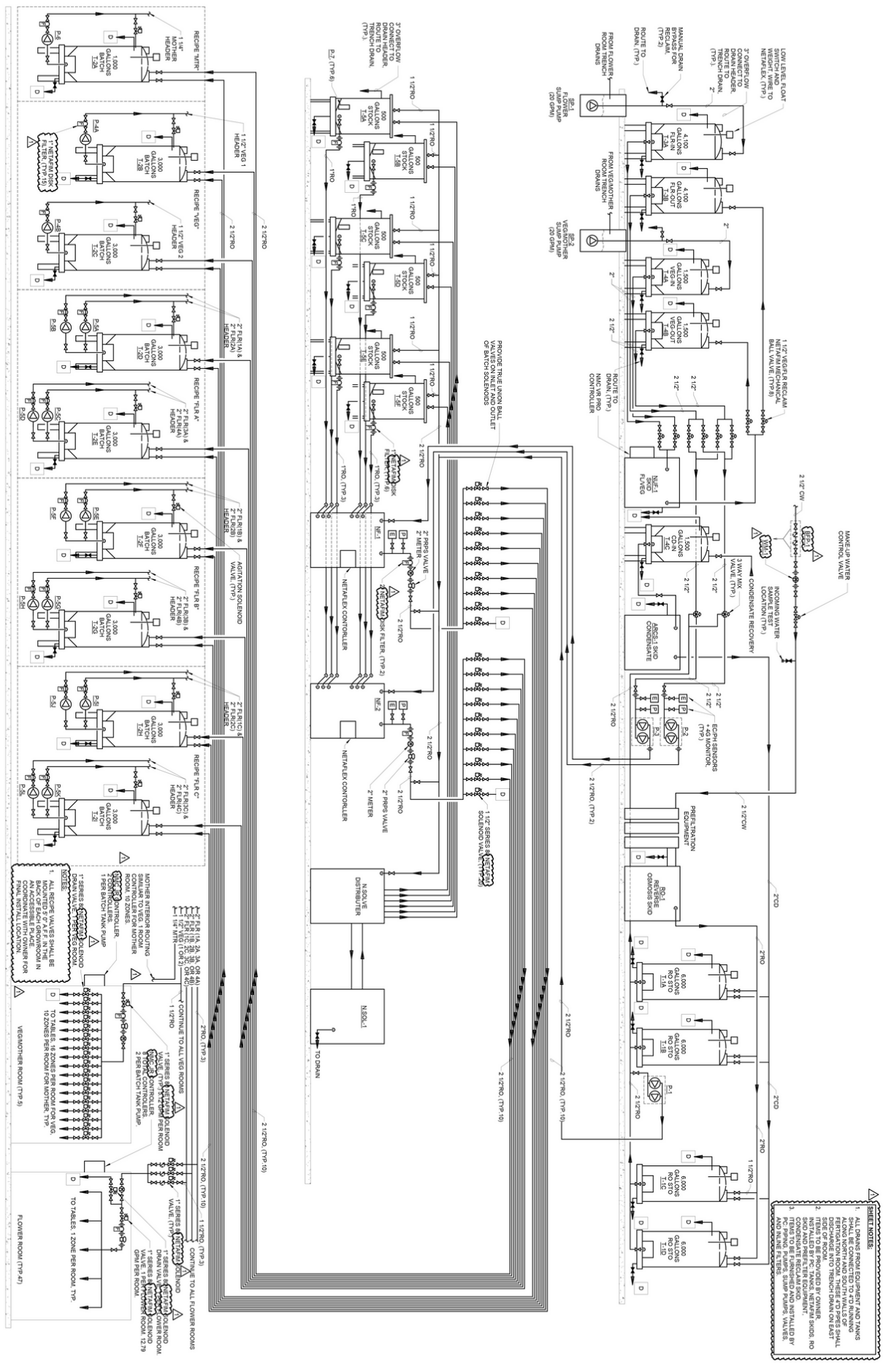


Figure 3

Piping material for RO and fertigation water should be selected to handle the characteristics of purified water and withstand ultraviolet light produced from grow lighting inside the grow rooms. Irrigation and fertigation equipment and controls may need to be on the facility's emergency power system to avoid service disruption during a power outage.

### **Drainage and Wastewater**

The collection of excess irrigation/fertigation water (runoff), or leachate, is often overlooked early in the design process but can significantly impact grow room and drainage system layouts. Many growers are using moveable benches or racks to improve floor area efficiency. Some benches include integral trays that collect excess irrigation water and slope to a drain port. Other benches slope continuously from end to end. Benches and racks may have single or multiple tiers/levels.

No matter the setup, plumbing designers must coordinate leachate drain piping with the bench/rack equipment selected by the owner to maintain working clearances and prevent trip hazards. Collected leachate is typically directed to a trench drain or floor drain in the grow room, or to a sump or condensate pump if reclamation is being considered.

The amount of condensate from heating, ventilation, air conditioning and dehumidification (HVACD) equipment is substantial in indoor grow facilities. Irrigation water delivered to plants ends up as excess as described previously or will be "exhaled" by the plants through the evapotranspiration process.

Around 80% to 95% of irrigation water will be transpired by plants, which means moisture will be handled by the HVACD systems serving the grow rooms and discharged in the form of condensate from cooling coils and dehumidifiers. A fair amount of condensate also is produced from HVACD systems serving drying and curing rooms. Most facilities operate year-round, so any condensate drains on exterior HVACD equipment will need to be protected from freezing conditions.

If a facility is served by a municipal sewer system, the design team should verify with the utility that the wastewater from the facility can be accepted into the system without pretreatment. If it is served by an onsite septic system, designers should evaluate the potential impact of the amount of backwash from the RO equipment on the septic system capacity, as well as the impact of the constituents of waste fertigation water on the septic system performance.

### **Water Efficiency Opportunities**

Indoor cannabis facilities have several opportunities to reduce water usage or reclaim water. First, growers can use drip irrigation systems that have been shown to reduce water consumption by 30% to 70% and improve water productivity by 20% to 90%. Adding sensor-based controls to a drip irrigation system can further reduce water usage. These statistics are explained in the Cannabis H2O report.

The vast majority of condensate from HVACD equipment can be captured and reclaimed, greatly reducing the amount of raw water required for irrigation or other needs. To be reused for irrigation, collected condensate will need to be stored in a tank(s) and should be retreated through the RO system to remove any contaminants.

Leachate is another waste stream that can be considered for recycling but typically does not make financial sense in smaller operations. Leachate is generally collected in floor or trench drains in each grow room and will need to be pumped back to the water treatment room and stored in a separate tank(s). From there, it will need to be routed through a separate treatment skid before being reintroduced as irrigation water.

If operations use cleaning solutions in grow rooms between crop cycles, the leachate treatment equipment may need to be enhanced to process the additional chemicals in the waste stream. Additional system controls will be required when using a combination of raw water, condensate or reclaimed leachate water for irrigation purposes.

### **Facility Water Service Sizing**

Irrigation needs will generally dictate water service sizing for an indoor cannabis cultivation facility. However, makeup water for evaporative cooling systems could also impact the total amount of water required.

My firm recently was involved with designing a very large indoor cannabis operation in a rural area and found out midway through the design process that the local water utility did not have the capacity to serve the proposed cooling towers and irrigation requirements. Therefore, we had to change the cooling approach for the facility.

The lesson here is that the design team should engage the local water utility early to understand water quality issues and ensure capacity is available for the proposed project.

Part three in this series will explore HVACD systems and air distribution for indoor cannabis cultivation facilities.

*Luke Streit, PE, is a project executive and mechanical/process engineer for IMEG Corp., where he has led the firm's growing portfolio of controlled environment agriculture facility design. He also has an agricultural engineering degree from Iowa State University, was named an ENR Midwest 2020 Top Young Professional, and belongs to several industry organizations, including ASABE, ASHRAE, NFPA and RII.*

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**BALTIMORE**  
**Legislative Report**

Chris Imhof, PE, CPD  
 Vice President- Legislative

**Recent news from the Maryland/DC area regarding Climate Action**

Maryland: Climate Solutions Now Act of 2022 (effective date June 1, 2022)

- The legislation is designed to reduce greenhouse gas emissions 60% by 2031.
- It mandates large commercial buildings and multifamily dwellings to reduce emissions 20% by 2030 and achieve net-zero emissions by 2040.

You can read the bill here: <https://mgaleg.maryland.gov/2022RS/bills/sb/sb0528E.pdf>

Source: <https://www.wbaltv.com/article/climate-solutions-now-act-amended-passes-maryland-house/39574978>

**Montgomery County: County Approves Bill to Ban Fossil Fuel Use in Most New Buildings (effective date: March 13, 2023)**

- The Montgomery County Council voted unanimously to approve the Comprehensive Building Decarbonization bill, which will ban fossil fuels, such as gas heating, from almost all newly-constructed buildings by 2026.
- There are exceptions. The ban will not apply to hospitals or other facilities that need emergency backup systems, such as generators, or buildings that need commercial cooking facilities.

You can read the bill here: [https://apps.montgomerycountymd.gov/ccllims/DownloadFilePage?](https://apps.montgomerycountymd.gov/ccllims/DownloadFilePage?FileName=2754_1_23710_Bill_13-22_Signed_20221212.pdf)

FileName=2754\_1\_23710\_Bill\_13-22\_Signed\_20221212.pdf

Source: <https://wtop.com/business-finance/2022/11/montgomery-county-approves-bill-to-ban-fossil-fuel-use-in-most-new-buildings/>

**District of Columbia: Climate Commitment Act of 2022 (effective September 21, 2022)**

- Accelerates earlier climate commitments to reach carbon neutrality by 2045.
- Commits the government to achieve carbon neutrality in its operations by 2040 and establishes a task force to develop an action plan to achieve this goal
- Requires the government to cease purchases of fossil-fuel burning building-heating equipment (such as natural-gas-powered furnaces and water heaters), in favor of more efficient electric heat pumps by 2025

You can read the act here: B24-0267 - Climate Commitment Act of 2021 (dccouncil.gov)

Source: <https://www.jdsupra.com/legalnews/the-district-takes-significant-steps-2601767/>

**District of Columbia: Clean Energy DC Building Code Amendment Act of 2022 (effective September 21, 2022)**

- Instructs the mayor to establish the new net-zero-energy building codes no later than December 31, 2026.
- Prohibits buildings from using fossil fuels such as natural gas for furnaces and/or water heaters (except for backup power generators in buildings that are “essential to protecting public health and safety” and are exempt).
- Applies the new requirements to all buildings that are subject to the District of Columbia Energy Conservation Code, including to all commercial buildings, residential condominiums and apartment complexes, in addition to residential homes exceeding three stories above grade plane.

You can read the act here: <https://lims.dccouncil.gov/Legislation/B24-0420>

Source: <https://www.jdsupra.com/legalnews/the-district-takes-significant-steps-2601767/>

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**Nikita Patel, PE**  
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**01**

### **Growing Healthcare Industry**

The healthcare industry is growing rapidly and designing a facility that meets code requirements and owner preferences will be made easier after completion of this course.

**02**

### **Code Requirements**

Although it's not a current code requirement for medical gas designers to have this credential, it will be something we foresee being written into many specifications, and possibly even AHJ requirements.

**03**

### **Engaging the Facility AHJ**

As Designers and Engineers, I'm sure you've been asked to make decisions for a project that are the responsibility of the owner. This course helps you navigate those conversations to avoid bearing that responsibility as the designer.

**04**

### **Professional Growth**

With this credential, you can seamlessly transition into medical gas design with minimal support from supervisors, helping you become a true medical gas design expert

**05**

### **Class + Credential**

Unlike other companies hosting this course, this class hosted by Sherman Engineering will include both the course led by Mark Allen, as well as the course exam, proctored by MGTC.

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**Note:** The valve never fully closes, allowing a small amount of bypass flow to the return to avoid deadheading the recirculation pump.

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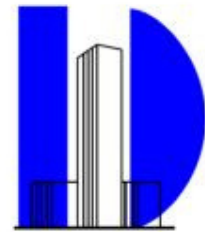
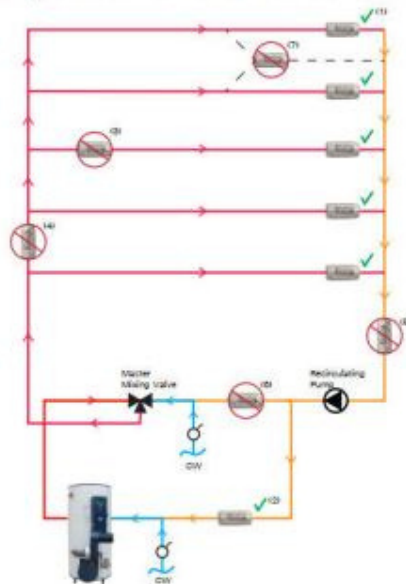
- (1) ✓ at the end of each branch/riser
- (2) ✓ in the return line back to the water heater
- (3) ✗ not in the middle of a branch/riser
- (4) ✗ not in a supply line
- (5) ✗ not in the return line
- (6) ✗ not after the recirculating pump
- (7) ✗ don't combine 2 branches/ risers

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**Temperature:** Select the set-point temperature equal to the desired return temperature.

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**And many more!**



# POWERS INNOVATIONS

**DIGITAL MIXING SOLUTIONS ENABLE THE SAFE, EFFICIENT DELIVERY OF HOT WATER IN COMMERCIAL AND INSTITUTIONAL FACILITIES. BOTH PRODUCTS HAVE THE SAME FUNCTIONALITY BUT AT DIFFERENT FLOW CAPACITIES AND HELP TO PREVENT SCALDING WHILE SAVING ENERGY.**



## INTELLISTATION®

The IntelliStation®, with its large-capacity valves, is designed for use in hospitals, universities, and large hotels. The digital water mixing and recirculation solution can be integrated into a building automation system (BAS) to allow facilities managers to remotely monitor and control water temperatures. Help mitigate Legionella and other waterborne pathogens with the high-temperature sanitization mode. Key capabilities include a digital temperature regulation within  $\pm 2^{\circ}\text{F}$  to ASSE 1017, even during low and zero demand periods, and is field configurable without the need for a laptop or special software.



## INTELLISTATION® JR

IntelliStation® Jr. provides safe hot water consistently and on-demand for smaller applications than IntelliStation. It is also ASSE 1017 compliant, available in 3/4" through 2" sizes, and has a programmable temperature set-back/scheduling program that lowers water temperature when the building is unoccupied. Register the Jr. with the Watts OnSite mobile or web app for remote temperature control, monitoring, and visibility across locations and sublocations.

***Scan the QR Code below to access the Selexit Configuration Tool.***





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Fiberglass Basins & Covers

AK Industries

Sump Pumps & Sewage Ejectors

Weil, Tsurumi, Stancor, Wilo

DIP - Direct In-line Pumping System

Control Panels

AMES/MESSCO Controls & Systems, Weil, Wilo

Domestic Water Systems

Tigerflow, Aurora, Wilo

Rainwater & Reuse

Tigerflow, ATS

Grease Interceptors

"Proceptor" Fiberglass Grease and Oil Separators

Stancor

Elevator Sump Pump with (Oil Minder) System

Stainless Steel Pumps

H2O Traffic Load Covers

USF Fabrication, AK Industries, Greenturtle

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# DURAGUARD® PRODUCT LINE



Public health and safety are a common concern. Targeted for commercial applications, Bemis has a comprehensive offering of seats with DuraGuard® Antimicrobial Built-In Seat Protection™ and STAY·TITE™.

## WHAT IS DURAGUARD?

DuraGuard is an antimicrobial property built into the toilet seat to inhibit the growth of bacteria. The active ingredient in DuraGuard is zinc pyrithione, a non-VOC (volatile organic compound), broad-spectrum, highly effective antimicrobial agent used to control mold, mildew, yeasts, fungi, algae, gram positive and negative bacteria. DuraGuard does not protect users or others against bacteria, viruses, germs, or other disease-causing organisms.

## WHAT IS STAY·TITE?

STAY·TITE Seat Fastening System™ anchors the toilet seat to the bowl by using a patented bolt design with a finned bushing and glass-filled nylon nut, eliminating the need to retighten the seat to the bowl after installation.

**CONTACT YOUR REP FOR  
ADDITIONAL INFORMATION**

OFFICE



HOSPITALITY



SCHOOLS



HEALTHCARE



# Schedule of Events

<u>DATE</u>	<u>TOPIC</u>	<u>PRESENTER</u>
<b>SEPTEMBER 9</b>	Enhance Revit Design to Increase Design Efficiency	Microdesk - Boston Chapter
<b>SEPTEMBER 15</b>	Industry Night on the Terrace	MCA
<b>SEPTEMBER 28</b>	Lab Gas Design Using the NIH DRM	Sherman Engineering - Nikita Patel
<b>OCTOBER 26</b>	Commercial Water Softening & RO Systems	Canature Water Group
<b>NOVEMBER 14*</b>	Valve Material Applications	Jomar - Lauren Berenato
<b>DECEMBER 14</b>	Natural Gas Design	OmegaFlex
<b>JANUARY 25</b>	VPMIA Code Review	Amtron
<b>FEBRUARY 19-25</b>	Engineer's Week	-
<b>FEBRUARY 22</b>	Sprinkler Design	UMD - Ken Isman
<b>MARCH 22</b>	Fire Pumps	STH
<b>APRIL 26</b>	Booster Pumps	QuantumFlo
<b>APRIL TBD</b>	Annual Golf Outing	-
<b>MAY 24</b>	WSSC Code Update	WSSC - Chris Imhof
<b>SUMMER 2023</b>	Summer Holiday Party	-

*\*Please note, this meeting will be held on a Monday*

**MONTHLY  
SPONSORSHIP  
OPPORTUNITIES**

**Tabletop Presentations:** \$100 to provide a tabletop presentation of equipment or material relative to the plumbing profession. The tabletops will be set up from the beginning to the end of the monthly meeting and provides the opportunity to provide a brief (under 5 minutes) presentation.

*Please make checks payable to the Baltimore Chapter of ASPE. Contact Kathy Dwyer or Chuck Swope if interested*