



**PRIVATE UNIVERSITY PRODUCTS AND NEWS**

**SPRING SPECIAL EDITION 2022**

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**HEATING  
WATER  
EFFICIENTLY**

**THE IMPORTANCE OF  
MEASURING  
MOISTURE**

**HVAC  
RESTORATION**

**COVID-ERA  
PERCEPTIONS  
OF PUBLIC RESTROOMS**

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# EDITOR'S LETTER



Spring is here!

This time of year primes us all for new beginnings, and many of you are starting new projects across your campuses. Green construction has really become the norm, no longer needing to be promoted to planners now that almost everyone understands the continued benefits that are achieved by following sustainable principles of construction.

As many of you are planning expansions, renovations, and new facilities, one of the factors you look at is efficient building practices and energy conservation, in respect to both your mission of conservation and to considerations of cost-effective long-term operations. This moment is a perfect time for responsible planning, which will provide multiple benefits for the college and users of the facilities.

In response to your requests, we offer this special edition covering examples of green construction and its practical applications. As you continue to grow, your facilities are constantly being remodeled, repurposed, expanded, and added too. In all this you are also focused on adhering to your mission on providing “green” facilities to stay in agreement with your philosophy of responsible growth.

Your campus wide facilities embody these beliefs for visitors coming to your facility, and they often determine the atmosphere that is felt and carried into your sacred halls of learning and student life facilities. I am always amazed at how well you carry this assignment out and provide the perfect balance of beauty and function. As you read the following features and articles, we believe you will find practical applications to put into place across your wonderful campuses and your multiple and multi-purpose building facilities.

We hope you enjoy this special issue. If you have a project that you are especially proud of, please reach out to let us know—we would love to help you share it with the private higher education community.

Thank you again for the privilege of sharing with you—

Ed Bauer

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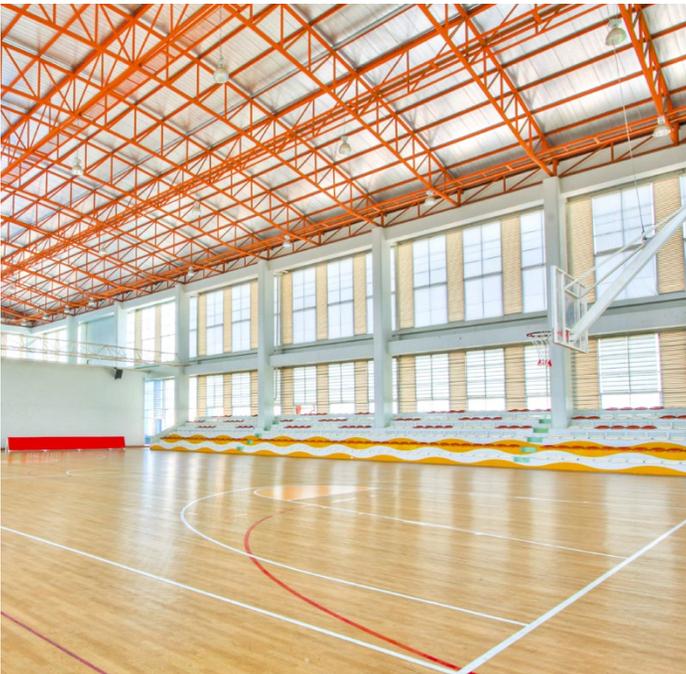
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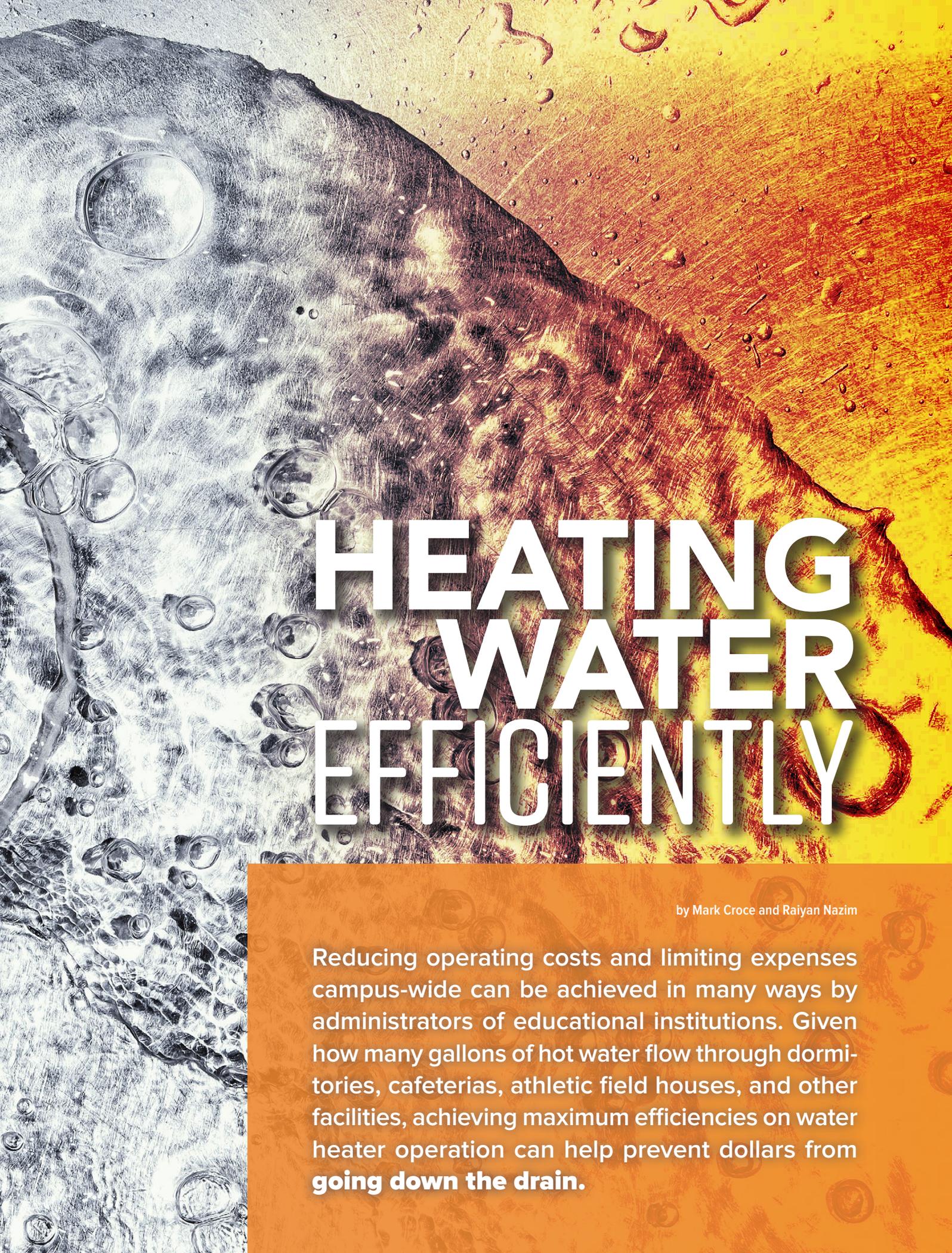


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# HEATING WATER EFFICIENTLY

by Mark Croce and Raiyan Nazim

Reducing operating costs and limiting expenses campus-wide can be achieved in many ways by administrators of educational institutions. Given how many gallons of hot water flow through dormitories, cafeterias, athletic field houses, and other facilities, achieving maximum efficiencies on water heater operation can help prevent dollars from **going down the drain.**





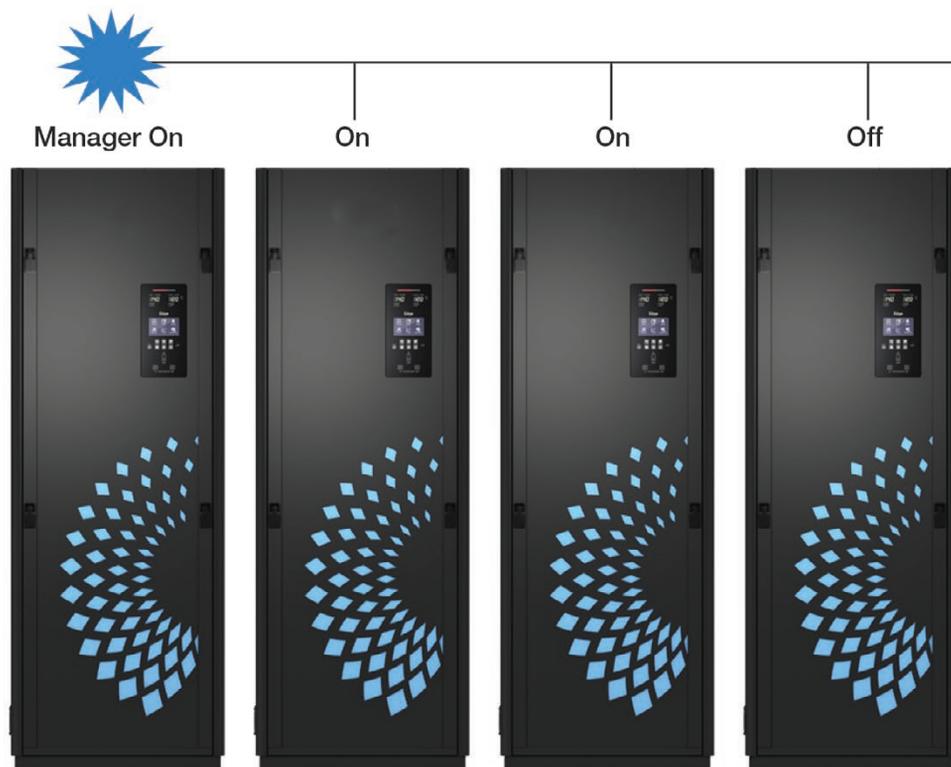
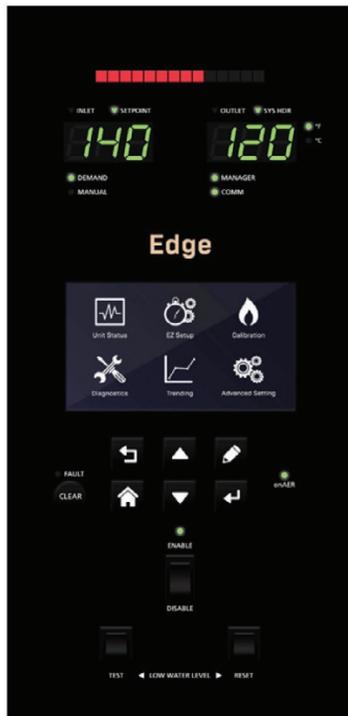
Installing water heaters with innovative design techniques such as dual returns and O<sub>2</sub> trim, advanced communications, and monitoring tools—along with properly sizing the units based upon load—can dramatically improve efficiency.

#### **Matching Loads to Improve Efficiency**

Understanding the application in which the water heater will be used is just as important as product design to achieve maximum performance. After all, load demand is considerably different for a 200-room dormitory than for one with 500 rooms. When misapplied, a water heater may not achieve peak performance. Considering the actual system load profile is key, as most systems are oversized when initially designed.

Facility managers can reduce load needs up to 10% by installing high-efficiency condensing water heaters that match existing load compared to mid-efficiency models. As an added benefit, properly sizing the water heater lowers the system's carbon footprint. Broadening the focus to the entire system can also reap efficiency advantages. A combination plant approach that integrates space heating boilers with indirect heat exchangers and water heaters can increase boiler efficiency by as much as 6%. This configuration also reduces total carbon footprint compared to two separate systems.

Taking a wider view will also help architects, engineers, and facility managers see other ways to maximize operation. Factors such as replacing older fixtures with low flow fixtures can improve overall system efficiency. Selecting the proper Building Automation Systems (BAS) can ensure optimal interoperability that can lead to better operation, as well.



### Advanced Communications and Controls

BAS is only one communications tool that can help improve water heater efficiency. Water heaters now integrate advanced control technology to create myriad benefits. Advanced controls provide unparalleled capabilities from setup and configuration to maintenance and diagnostics. They streamline and simplify operation for more effective and efficient management of domestic hot water systems campus-wide.

Advanced controllers come with integrated Water Heater Management (WHM) features that allow facility managers to easily sequence up to sixteen units to optimize system efficiency on the same system. By doing so, load requirements are met and all water heaters in the system operate at maximum efficiency. The result is the most energy-efficient and reliable water heating system design available (figure 1). Such systems monitor the fire rate of all water heater sequences by opening or closing the motorized valve, as required, to meet hot water demand.

Using such advanced controls allows only those units required to meet load operate. Water heaters in standby mode do not needlessly cycle to maintain set point,

minimizing system standby losses as well as unit wear. A system that features advanced controls with WHM provides reliable domestic hot water on demand in the smallest possible energy footprint. Operating costs, as well as maintenance expenses, are significantly reduced for maximum return on investment (ROI).

### Optimize System-related Issues

Facility managers, as well as architects and engineers, must consider system-related issues that can contribute to poor performance or failures of existing equipment. Two key factors are water quality and piping. The impact of water quality cannot be underestimated relative to maximizing efficiency and longevity of water heaters.

Some manufacturers offer environmentally-friendly commercial scale control systems. Certain solutions include Template Assisted Crystallization (TAC) technology to control the formation of scale in plumbing systems by transforming dissolved hardness minerals into harmless, passive microscopic particles without using salt or harsh chemicals such as water softeners and chemical additives. Water heaters supported by TAC have increased operational efficiency. Maintenance costs

Above: Water Heater Management systems allow multiple water heaters to be easily sequenced to increase operational efficiency.

Left: Proper O<sub>2</sub> levels help achieve a higher dew point, which enables a larger condensing zone for greater efficiency and reliability.

are reduced, as well, which helps prevent premature equipment failure.

### Overall Water Heater Design

Water heating designs have evolved over time to address the needs of the market as well as regulations. When evaluating water heaters, people who select units will be helped in their choices when they understand efficiency and lower cost of ownership.

### Materials of Construction

Advanced materials of construction provide long-life, high efficiency, and improved operation. A new generation of water heaters utilize an engineered material that blends austenitic and ferritic steels to combine the

*continued on page 12*



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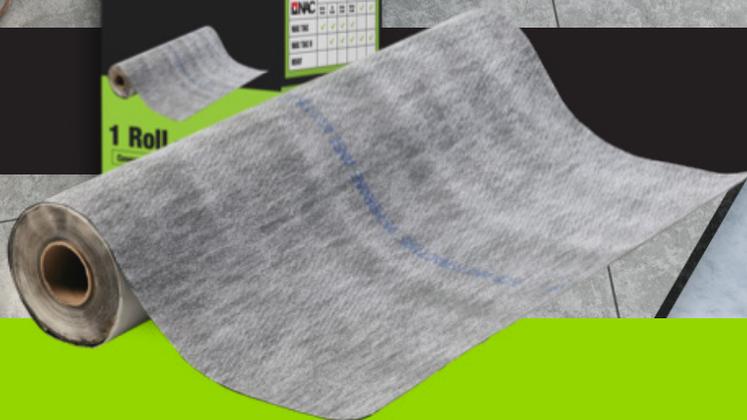
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Two key factors are water quality and piping. The impact of water quality cannot be underestimated relative to maximizing efficiency and longevity of water heaters.

advantages of 300 and 400 series stainless steel. This synergy makes water heaters highly resistant to aqueous corrosion and chloride stress corrosion cracking in potable water at any temperature. Tank linings and anode rods have reduced service needs, as well.

**Dual Returns**

Circulation of hot water into the cold inlet on a condensing water heater lowers the efficiency. To offset this issue, some water heaters feature dual returns. They have a dedicated connection to building return loops in order to maintain two distinct temperature zones. To increase efficiency, only the coldest water enters the lower condensing zone of the water heater during a firing cycle.

**O<sub>2</sub> Trim Technology**

Advanced combustion control systems in high-efficiency water heaters need to maintain precise air-to-fuel ratios to work properly

and maximize efficiency. Environmental variations—such as humidity, atmospheric pressure, filter dust loading, and delivered gas energy content—can create problems in gas-fired water heaters. The result is inefficient operation, as water heaters do not achieve the ideal oxygen: fuel ratio.

There are other adverse effects if O<sub>2</sub> levels are not optimized. If they are too low, unstable combustion can occur, creating faults and increasing unscheduled maintenance, ultimately adding to the lifetime costs of a water heater. Conversely, if O<sub>2</sub> levels are too high, the dew point is lower and the water heater is less likely to condense, lowering efficiency.

Proper O<sub>2</sub> levels can be achieved by water heaters with O<sub>2</sub> trim technology, which creates the ideal environment for condensing to occur. Water heaters will have increased uptime reliability and efficiencies for cost savings. Lower emissions will also be achieved.

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Lighting	20%
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## Conclusion

Facility managers and institutional administrators can lower operating expenses while also reducing a campus' carbon footprint by installing high-efficiency water heaters. Selecting units that utilize advanced design and materials, integrate innovative communications and monitoring tools, and maintain high water quality will increase efficiency. Proper sizing of the water heaters also aids in optimizing efficiencies to achieve operational and budget goals.



**ABOUT THE AUTHORS:** Mark P. Croce, Senior Product Manager with Watts Heating and Hot Water Solutions, is responsible for all Domestic Hot Water products within the AERCO & PVI Brands. He has over thirty years of experience in product management, sales management, system design and direct sales of commercial HVAC and plumbing products.



Raiyan Nazim, Product Manager at Watts Water Technologies, is responsible for managing the product lifecycle of commercial water heaters.

Raiyan is certified as a ASSE 12080 Legionella Water Safety and Management Specialist.



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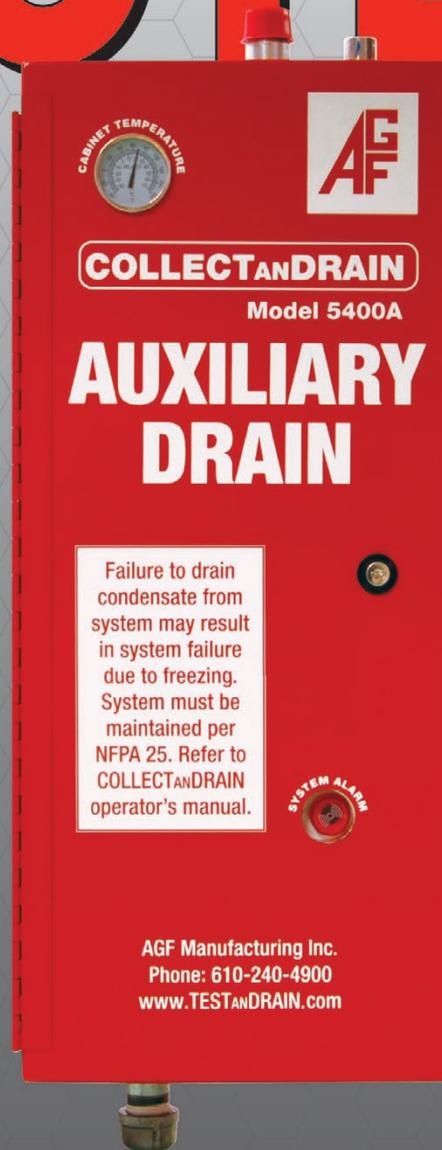
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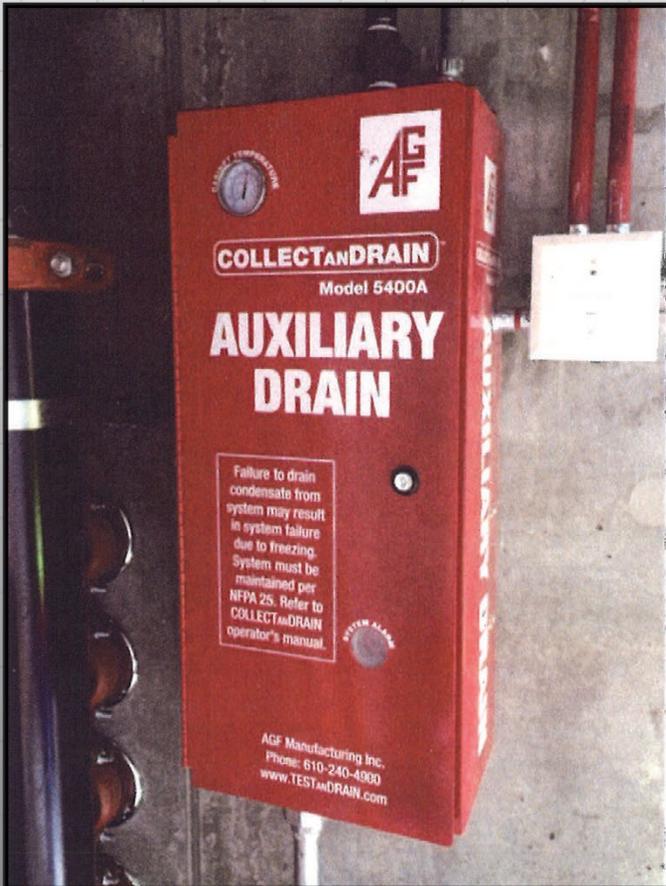
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# Part of Utah State's Maverik Stadium Renovation

## The AGF COLLECT<sub>AND</sub>DRAIN<sup>®</sup> M5400 Protects Maverik Stadium's Fire Sprinkler Systems from Freeze-Ups



Utah State University, located in the Northern Utah Mountains, is known for its top-notch academics and research, and nationally recognized for its athletics. In August 2016, Utah State's Division 1 Aggies returned to their newly renovated and renamed football stadium for the start of the 2016 season.

While fans, students, staff, and public celebrate the premium enhancements and state-of-the-art upgrades, they will also appreciate the safety improvements most people never see or notice, but are critical to ensure the safety and protection of both lives and property.

AGF Manufacturing is proud to announce that our COLLECT<sub>AND</sub>DRAIN M5400 Auxiliary Drains are part

of the Maverik Stadium Renovation. The M5400 goes beyond our patented prevention features that protect fire sprinkler systems from being tripped by improper maintenance or vandalism. The M5400 provides a temperature-controlled environment that deters system failures caused by freezing condensation in dry pipe system auxiliary drains. The heated and insulated cabinet contains an auxiliary drain with a float switch to monitor condensation levels. When condensation reaches a level where maintenance is needed, the float switch activates an audible alarm and LED warning light, making freeze-ups a thing of the past. It also features fire control panel notification capabilities.

Dry Fire Sprinkler System Auxiliary Drains can cost \$5,000 to \$10,000 or more every time they fail. Every year, building owners spend thousands of dollars from their operating budget replacing auxiliary drains that collect water, freeze, and break.

John Blankman, President of Paradise Fire Protection, learned about AGF and the M5400 at an American Fire Sprinkler Association Trade Show in Phoenix. Frustrated with standard auxiliary drains that freeze and break, John was looking for a more reliable product that would prevent freezing. John was impressed with the M5400's heated cabinet, and stated, "The 5400 would ensure that they did not have failures at the new stadium."

USU's Maverik Stadium Redevelopment Project includes a newly built press box, 24 luxury suites, 20 loge box suites, 700 club seats, a student-athlete training area, and state-of-the-art media, technology, and operations upgrades. The project also significantly boosted the number of public restrooms and upgraded concessions.

"Part of Utah States Maverik Stadium Renovation" *FPC Magazine*, Sept. 2016

Visit [www.agfmfg.com](http://www.agfmfg.com) for more information on the M5400 and to learn about AGF's other product lines.

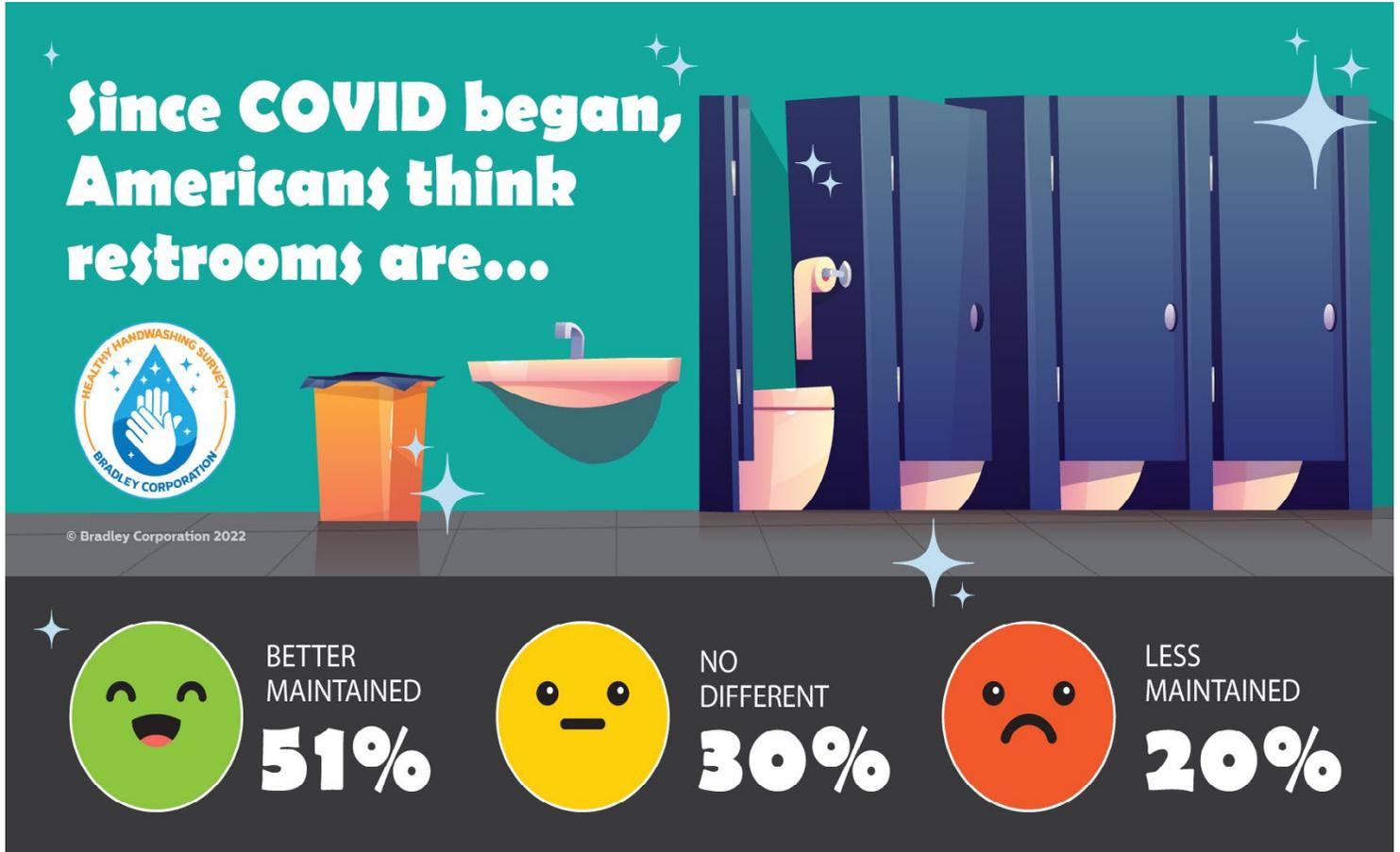


A photograph of a public restroom sink. The sink is a long, rectangular, light-colored speckled countertop with a dark grey or black drop-in basin. Two modern, dark-colored faucets are mounted on the countertop. Above the sink is a large, dark mirror reflecting the sink and the surrounding area. The wall behind the sink is covered in white square tiles with dark grout. The overall lighting is bright and clean.

# Covid-Era Perceptions

## OF PUBLIC RESTROOMS

Upon entering the third year of the pandemic, Americans are not only more sensitive to germs in public restrooms, but we also now hold higher standards for cleanliness, condition, and technology in these shared spaces, according to the Bradley Corporation's annual Healthy Handwashing Survey conducted in January.



Currently, 84% of Americans believe it's important for public restrooms to be equipped with touchless fixtures, and 63% say they are more likely to return to a business that offers no-touch capabilities in its restrooms.

Despite ongoing Covid outbreaks, most Americans have not been deterred from using public bathrooms. In fact, 41% of Americans report using public restrooms as often as they did before Covid came on the scene. Interestingly, 27% say they use public facilities more now than previously. "Thanks to the pandemic, more people are paying closer attention to various elements in public restrooms—how clean they are, how easy they are to navigate without touching surfaces, and how they can be improved," says Jon Domisse, Vice President of Marketing and Corporate Communication for Bradley Corporation, a global manufacturer of commercial restroom equipment.

The survey, which has examined the state of U.S. public restrooms and handwashing habits for thirteen years, identified key Covid impacts on how Americans view public restrooms, as well as the businesses and establishments that provide these amenities.

**Restroom Maintenance Gets Higher Marks**

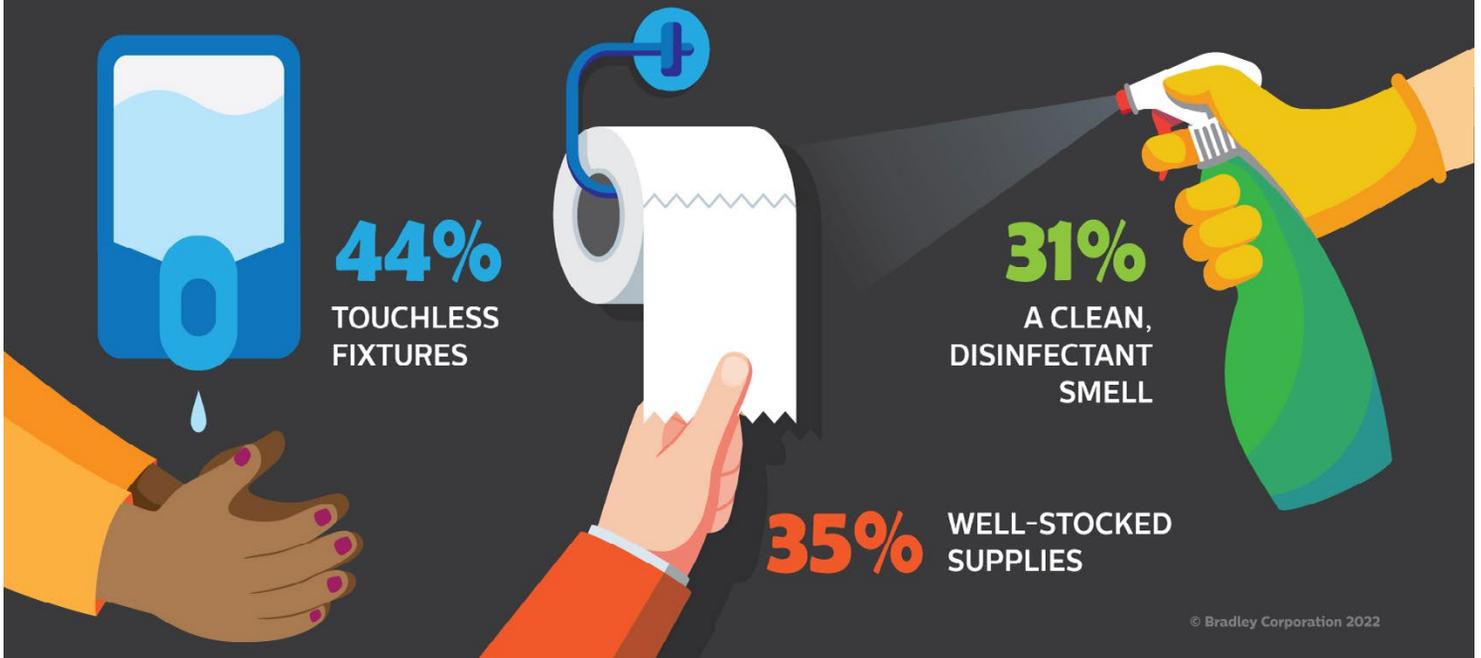
A positive side effect of the virus is that half of the population believes public restrooms

are now cleaner and in better condition than before Covid. More men (55%) give a thumbs up to the cleanliness of restrooms compared with women (47%). "Prior to Covid, upwards of 70% of Americans reported having an unpleasant restroom experience," Domisse explains. "Evidently, increased cleaning protocols and stocking of supplies is being observed and appreciated by restroom users." Further, 79% think a posted and updated cleaning schedule in a restroom is important. "Signage goes a long way in helping to reassure visitors the facility is taking steps to ensure a clean environment and cares about keeping them safe," he says.

**Unclean Restrooms Tarnish the Overall Perception of the Business**

Americans increasingly think poorly of a business when they encounter a messy restroom. In 2022, 51% of Americans say an unpleasant public restroom at a business shows poor management, up from 39% in 2021. Respondents also report that encountering neglected restrooms lowers their opinion of the establishment (43%) and shows the business doesn't care about its customers (38%).

# What Makes Americans Feel Safer from Germs In Restrooms?



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## Consumers Say a Poorly Maintained Restroom...



Shows poor management

51%



Causes them to lower their opinion of the business/establishment

43%



Demonstrates that the business doesn't care about its customers

38%

### Americans Place High Value on Touchless Restrooms

Currently, 84% of Americans believe it's important for public restrooms to be equipped with touchless fixtures, and 63% say they are more likely to return to a business that offers no-touch capabilities in its restrooms. "In fact, Americans view touch-free technology as the number one feature that makes them feel safer from germs in restrooms," Domisse says. "Touchless features are also Americans' most requested improvement in restrooms.

pupnmag.com

More cleaning/restocking takes second place." Which touchless restroom features are considered most important? Respondents cite faucets, soap dispensers, flushers and restroom entrance doors as their top four.

### Consumers Spend More Money at Businesses with Pleasant Restrooms

Americans are willing to put their money behind restroom cleanliness. Almost 60% say they are likely to spend more cash at a business with clean, well-maintained restrooms.

Another 58% say when out running errands, they'll take restroom breaks at a business they know has "good" restrooms.

### In General, Coronavirus Concerns Persist

The majority of Americans continue to be in an elevated state of germ consciousness triggered by the coronavirus. While 89% of the general population felt more aware of germs in April 2020, that number has fallen to 78%. Northeasterners currently have the

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## Top Public Restroom Requests

### #1



**Make everything touchless**

### #2



**Make them cleaner and better stocked**

highest level of germ concerns (86%) while Midwesterners have the lowest level (72%). “Certain types of facilities cause more trepidation about coming into contact with germs,” Domisse adds. “Specifically, Americans are most concerned about germs in stores (50%), medical facilities (39%), restaurants (34%), and gas stations (28%).”

The annual Healthy Handwashing Survey queried 1,035 American adults January 10-21, 2022, about their handwashing habits, concerns about the coronavirus and flu, and their use of public restrooms. Participants were from around the country and were fairly evenly split between men (46%) and women (54%).

**ABOUT THE AUTHOR:** For one hundred years, Bradley ([www.bradleycorp.com](http://www.bradleycorp.com)) has created the most advanced, coordinated commercial washrooms and comprehensive emergency safety solutions that make public environments hygienic and safe. Headquartered in Menomonee Falls, Wisconsin, Bradley serves commercial, institutional, and industrial building markets worldwide. For more information, visit [www.bradleycorp.com/handwashing](http://www.bradleycorp.com/handwashing).

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# Americans Want Touchless Restroom Fixtures



**84%**

believe it is important that public restrooms have touchless fixtures



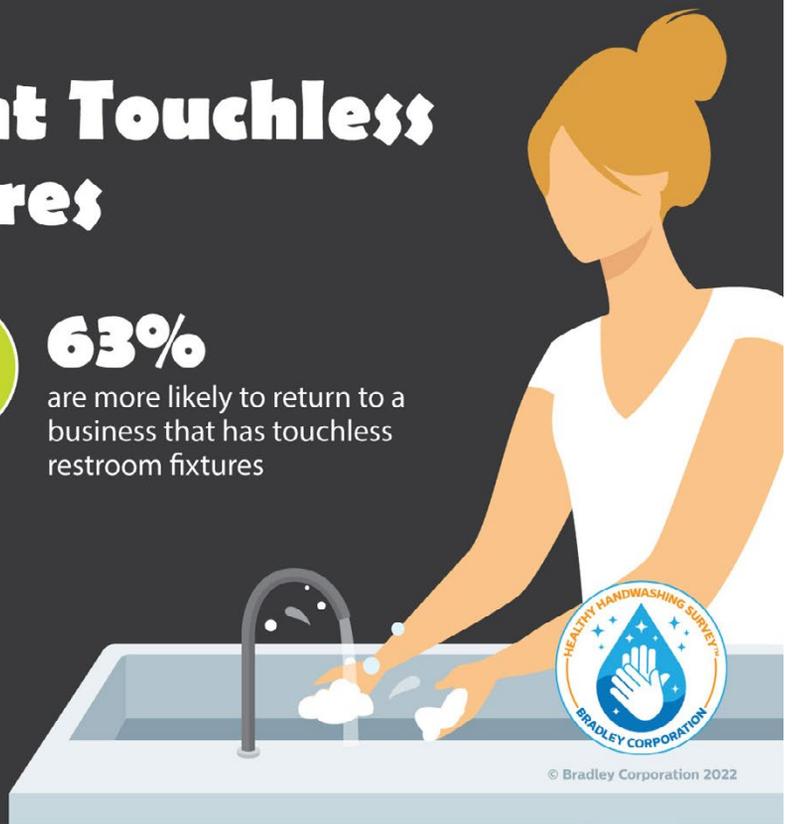
**63%**

are more likely to return to a business that has touchless restroom fixtures



**45%**

have a negative impression of a business that doesn't have touchless restroom fixtures



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# The Importance of Measuring Moisture

by Grete Heimerdinger

**Building moisture and  
humidity is followed by  
two different serious  
problems.**



First, changes in moisture content in wood products are accompanied with dimensional changes which ruin the beauty and functionality of wood products. Just a few examples: wood floors in gymnasiums cup, chairs de-laminate, doors do not close easily.

The second problem is more serious: mold. Mold not only affects the structural integrity of buildings, it also affects the health of the occupants in the building.

Mold is a fungus living by its own rules. Spores are the start of any mold growth, and they are ever-present anytime, anywhere, dormant and waiting for the right conditions. Once enough humidity is available, mold will start to grow on any carbon-containing surface; buildings harbor many such surfaces, from concrete to sheetrock, wood, and even paint (unless carbon-free paint has been used). As mold digests its food, toxic compounds are released into the air; once the mold is mature, spores are produced and released into the air by the millions. Both the

toxic compounds and the spores contaminate the air and can cause serious health issues. For these reasons, moisture and humidity in buildings have to be kept in a safe range.

Improper cleaning practices, water spills, a roof leak, a burst pipe, or—worst of all—a flood can cause problems. Under normal circumstances, buildings are only exposed to seasonal changes, which can generally be kept in check with a HVAC system. Here are some numbers for the extremes:

- At 70°F and 35% relative humidity, the equilibrium moisture content (EMC) for wood is 7%, representing ideal conditions.
- At 85°F and 85% relative humidity, the EMC for wood is 17.5%, as in moist summer.
- At 32°F and 20% relative humidity, the EMC for wood is 5%, as in dry winter.

Detection is the first step in prevention of moisture-related issues. A moisture meter and a thermo-hygrometer are the right tools for detection of conditions of wood floors which are experiencing conditions outside the ideal range of 6-9% moisture percentages and 30-50% relative humidity at 70oF. These tools will help to pinpoint any problems and areas of concern.

**Wood Measurements**

Measuring the moisture in wood was more straightforward when all wood floors were made from solid floor planks. Measuring solid floor planks requires a meter calibrated for different wood species, and the user has to set the meter to the floor species for measurements. Pin and pinless meters can be used to measure floor planks. If it is suspected that the moisture problem originated in the subfloor or the concrete underneath, then a pin meter is required with a depth electrode to investigate moisture conditions in the subfloor.

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### Wood Moisture Equivalent Measurements

Engineered floor planks composed of a wear layer and a different material core can be measured with a wood moisture meter as well. The meter may need to be calibrated to the specific engineered floor plank; this calibration can be fairly easy if a sample acclimated to a certain relative humidity is available. For example, in an environment of 45% relative humidity, the sample's moisture content can be assumed to be around 7%. The test sample can be measured and then the calibration setting adjusted until the meter reads 7%. Future measurements of that particular floor can be measured at that setting. Once the calibration setting has been established, all future measurements can be compared to the preliminary values.

### Reference Scales or Comparative Measurements

Many materials besides wood are used in the building envelope. If the moisture meter has a calibration for a specific building material, maintenance personnel can choose the



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calibration for measuring the material. To make sense of the different scales, users must know what value represents dry. For example, wood floors are considered dry at 6-9%, moldings are considered dry at 12%, and construction lumber is considered dry at 16%. When measuring drywall with a drywall scale, the values are very low because of the ratio between the small weight of water and the larger weight of the material. Here the manufacturers of the meters may state a value of 0.5% for being dry and 0.8% already questionable.

Many materials used within buildings are not listed for any moisture meter; for these materials, the only way to establish moisture levels is by using a reference scale. Most meters have a reference scale, which divides the maximum moisture range between low and high moisture values into equal parts. For meters that do not have a reference scale, users can dedicate a calibration setting to measure a particular material, then take

comparative measurements to determine whether all pieces have the same moisture content or whether some have higher values, meaning more moisture, and some have lower values, meaning less moisture. This strategy can only be applied if the measurements were taken of the same material with the same calibration setting. This detail should be noted because measuring at different depths could result in measuring different materials. This method becomes more meaningful if a dry piece of the material can be found, since all measurements can then be compared to the dry value.

Maintenance crews should document moisture levels in critical areas even if there are no apparent moisture problems. On a regular basis, maintenance personnel should take measurements, note the measured value, the calibration setting, and the location where the readings were taken, along with the meter's measuring mode, the meter's name, and the meter's manufacturer.

When moisture problems are discovered, the first step is to establish the extent of moisture infiltration by using a moisture meter. Problems might be confined to the surface, or they could come from sources farther away within walls, roof, or the foundation of the building. A combination pin and pinless meter with suitable hand probes is the best choice to map moisture problems and locate their source. In many cases, professional help is required to remedy the problem quickly before more damage has occurred and the environment is contaminated by mold.



**ABOUT THE AUTHOR:** Grete Heimerdinger has been the technical adviser for the moisture meter division for Lignomat. She graduated from the technical university in Stuttgart and started Lignomat with her husband in 1982. Lignomat now offers a full line of pin, pinless, and RH meters as well as wireless monitoring devices for buildings. Visit [www.lignomat.com](http://www.lignomat.com); 800-227-2105.

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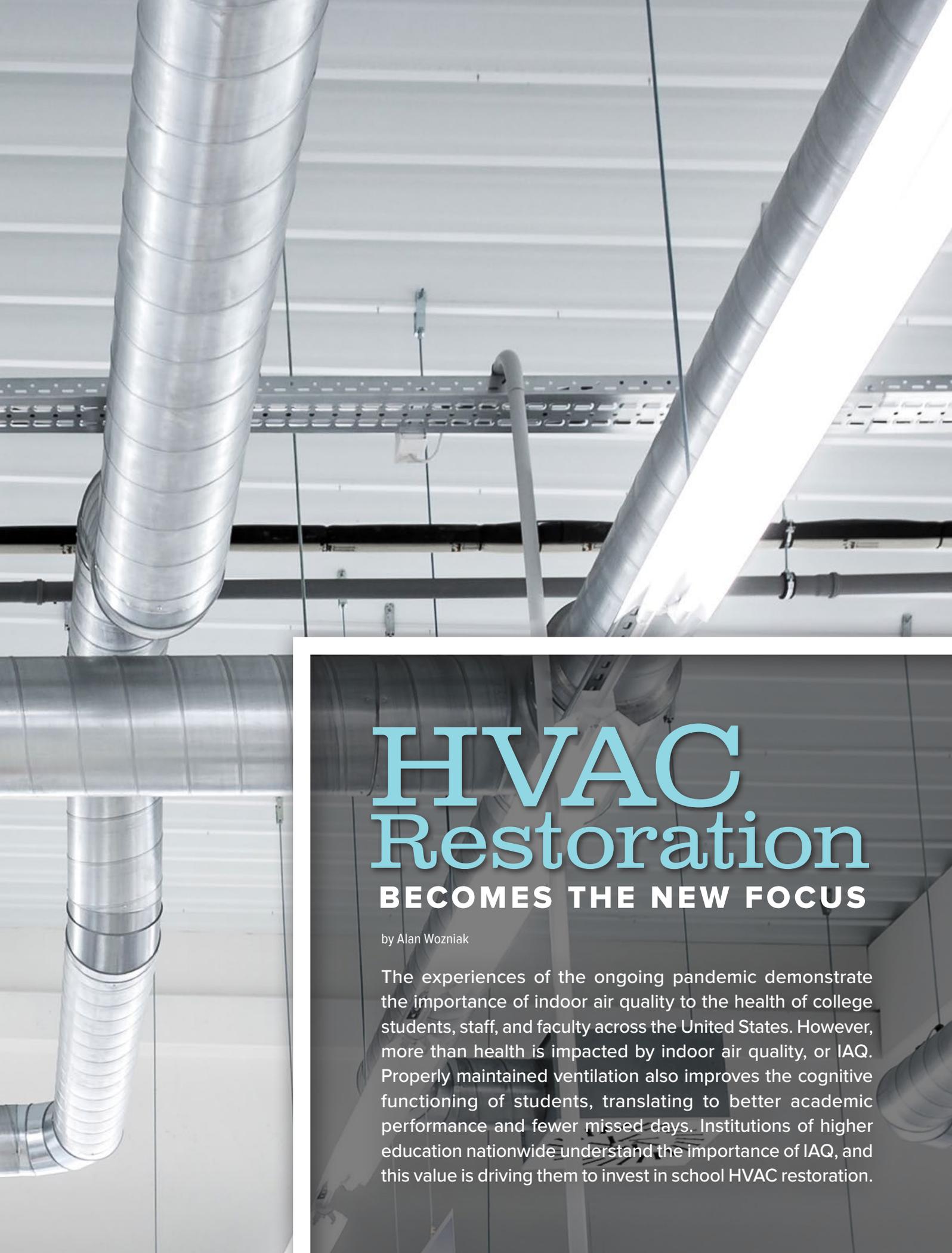
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# HVAC Restoration

## BECOMES THE NEW FOCUS

by Alan Wozniak

The experiences of the ongoing pandemic demonstrate the importance of indoor air quality to the health of college students, staff, and faculty across the United States. However, more than health is impacted by indoor air quality, or IAQ. Properly maintained ventilation also improves the cognitive functioning of students, translating to better academic performance and fewer missed days. Institutions of higher education nationwide understand the importance of IAQ, and this value is driving them to invest in school HVAC restoration.



Companies such as Pure Air Control Services examine the air quality and ventilation systems in many buildings, including schools. They work closely with administrators to help improve ventilation systems through strategies like upgrades, restoration, cleaning, and disinfecting. These companies test system performance to diagnose issues. Afterward, they monitor the indoor conditions to keep buildings safe.

### **Funding School HVAC Restoration**

School HVAC restoration requires funding. Fortunately, schools can access funds allocated by the Education Stabilization Fund (ESF), which exceeds \$200 billion. This money was allotted through the CARES and ARP Acts and is intended for emergency use. Therefore, schools can safeguard classrooms during the COVID-19 pandemic by using this resource to improve the ventilation in their school buildings.

### **Choosing Bids**

To meet the goal of better IAQ, schools must enlist the services of trusted IAQ partners. Of course, many contractors will bid for the opportunity to perform school HVAC restoration. In many cases, school districts choose

the lowest bid to save money. Decision-makers, however, have considerations beyond money—such as safety—so they should choose partners who are qualified in all aspects of HVAC cleaning, restoration, and testing for initial diagnosis and monitoring to maintain optimal conditions.

### **Complete School HVAC Restoration**

School administrators should consider what the HVAC contractor offers when considering a bid. For example, a contractor who offers performance testing can isolate issues for priority attention. The upfront cost of cleaning and disinfecting a system is offset by lower long-term energy costs. Restoring and retrofitting existing HVAC units can pay for themselves through the reduction of maintenance and repair costs and by extending the lifetime of the equipment. Additionally, using funds provided by the CARES Act makes school HVAC restoration more attainable.

### **Well-Maintained Systems Save Money**

While spending money in order to save money can perhaps seem counterintuitive, systems that are operating at their best cost less to run and repair. Therefore, institutions

of higher education that hire contractors providing a full suite of services to clean and disinfect systems will save money over the lifetime of the system. For example, a clean HVAC system is crucial to optimal building health, but these clean systems contribute to energy efficiency, as well. In fact, many customers have seen a return on invest minute in a little over a year using HVAC steam cleaning energy savings.

### **Cleaning and Restoration**

The HVAC steam cleaning method uses high-temperature steam to disinfect the coils, destroy bacteria and pathogens, eliminate odors, and optimize system performance, thereby lowering operating costs. Restoration is another way to lower costs by improving IAQ and system efficiency. Restoration offers tremendous cost savings over buying new equipment—up to 20-40% savings over new. This avenue also results in less facility disruption, quicker turnaround, and better sustainability.

Restoration includes methods to restore equipment to near factory specifications. After steam cleaning, a HVAC certified high performance coating method sands and blasts the unit prior to the application of specialized paint that prevents rust, corrosion, and

microbial growth. Next, a zero-porosity, fiber-glass-free insulation is installed to repel moisture and slow microbial growth. The last step is refinishing the drain pan with an HVAC certified high performance liner which repels moisture and slows oxidation.

While this complete restoration process makes sense, it is only part of the entire procedure of school HVAC restoration. Planners need to renovate the entire system to avoid spending money on the restoration process only to have the system fouled again or airflow restricted by dirty ducts. A hygienic duct cleaning process should follow the HVAC restoration, meeting NADCA (National Air Duct Cleaners Association) guidance. Maintenance personnel should make sure the duct cleaning contractor uses the correct processes, including containment, to prevent cross-contamination; contractors should also clean in-line HVAC equipment like reheat coils.

HVAC Restoration, including hygienic duct cleaning, improves IAQ, is sustainable, and

also creates a more efficient system that lowers energy costs.

**Focus Spending on School HVAC Restoration**

Companies such as Pure Air Controls help school administrators establish optimal indoor air quality in their buildings. These companies work closely with building engineers to inspect and test HVAC systems before cleaning, disinfecting, and restoring begins. For continual upkeep, some companies offer system monitors to check conditions in real-time so that IAQ problems can get dealt with as they occur.

 **ABOUT THE AUTHOR:** Alan Wozniak, CIEC, CIAQP, has been an industry leader/expert in indoor air quality (IAQ) for over 36 years with Pure Air Control Services. They help their clients by identifying and solving IAQ problems while improving IAQ/building health, saving energy and improving occupant well-being.

While spending money in order to save money can perhaps seem counter-intuitive, systems that are operating at their best cost less to run and repair.



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