

# CHIEF ENGINEER™

JULY 2025



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# DON'T LET YOUR BUSINESS GO UP IN FLAMES!



**100% TAX DEDUCTIBLE  
INSTALL OR RETROFIT FIRE  
SPRINKLERS TODAY!**

## DEDUCT THE FULL COST OF QUALIFIED PROPERTY IMPROVEMENT!

### CARES ACT

The Coronavirus Aid, Relief, and Economic Security (CARES) Act closed a loophole that was included in the TCJA by making QIP 15-year property. This change made businesses of all sizes, regardless of the amounts spent on equipment, eligible to deduct the full cost of commercial fire sprinkler systems using bonus depreciation.

The time is now to upgrade your building's fire safety with a fire sprinkler system or a sprinkler retrofit. Under the new Section 179 guidelines, the one year deduction period phases out after 2022. Any new sprinkler system or retrofit completed between September 27, 2017 and December 31, 2022 will be able to be fully expensed in one year. After 2022, the allowed deduction percentage is as follows:

2021: 100%	2023: 80%	2025: 40%
2022: 100%	2024: 60%	2026: 20%

2027 and after: The depreciation schedule becomes permanently set at 15 years.

### WHAT IS QIP?

The Tax Cuts and Jobs Act (TCJA), passed in December, 2017, gave small businesses the ability to deduct the full cost of Qualified Improvement Property (QIP) up to \$1.04 million in the year of installation using Section 179.

QIP is defined as improvements to the interior of an existing building that is not residential property. Commercial fire sprinkler systems, including upgrades of existing systems or retrofitting in existing structures, are considered QIP.

The Section 179 deduction is not phased out over time. However, there is a phase out of the amount allowed as a deduction based on a maximum spending amount of \$2.59 million on equipment in a year. Businesses that spend over that amount will see a dollar for dollar reduction of their eligible deduction. So a business that spends \$3.63 million or more on equipment in a given year would not be allowed any Section 179 Deduction.

### WHAT HAS CHANGED?

Prior to the TCJA allowing Section 179 on qualified improvement property, including sprinkler systems, property of this type was only allowed a deduction on a straight line basis over a period of 39 years. In other words, a company spending \$390,000 on a commercial sprinkler system prior to the TCJA would only deduct \$10,000 per year for 39 years.

While many believe that the intention of Congress was to make Qualified Improvement Property 15-year property, which would have made this property eligible for bonus depreciation, the TCJA left the life of this property at 39 years. So, a taxpayer who did not elect to use the Section 179 Deduction or who has that deduction phased out would have been left to depreciate the remaining balance of the assets over a 39-year period.

Neither of these deductions is currently available for fire sprinkler systems installed in residential high rises. The National Fire Sprinkler Association (NFSA) continues to fight to obtain incentives for residential structures.

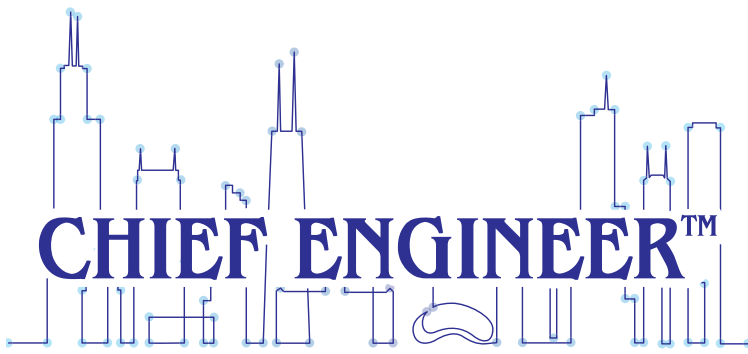
For more information on how these tax incentives might impact the business of your contractors, we would recommend that they contact their tax professionals, as situations differ based on the facts and circumstances for each business. As a general rule, we would not recommend that the Local provide tax advice to the contractors.



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We sit down with Lewis Borsellino Sr. and Lewis Borsellino Jr. of DefendEdge to discuss integrating cybersecurity into your maintenance routine.

**26 The Ebb and Flow of Apprentices Programs**

We engage Patrick Nolan, Chief Operating Engineer, Facilities Management of Cook County, in a conversation about the importance of apprentice programs in the growth of the profession.

**32 Electric Boilers Hasten Europe’s Clean Energy Transformation**

At the forefront of the EU’s transition, Finland accelerates its clean energy agenda by deploying high-efficiency electrode boilers across critical heat networks.

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Dear Members,

Thanks to everyone who came out for the Chicago White Sox event at the Fan Deck. This is always a great capper on the many events of the year, and one that we look forward to hosting. Big thanks to Tom Phillips for arranging the availability of the Fan Deck for our use, and to our Events Committee for planning everything to ensure such a memorable experience for our Associate Members and for all attendees.

With summer being here and the CEAC taking a break for family vacations, to enjoy festival season, and just to make some great memories with our loved ones, I want to wish everyone a safe and happy July 4th and travel season before we start our annual meeting schedule again in September.

Speaking of which, the 2025-2026 Chief Engineer season will begin with the landmark Chief Engineers 85th Golf Outing, which will take place Friday, Sept. 12, at Cog Hill, with a shotgun start at 9:00am. Registration is now open, and sponsorships are available. Any event questions can be directed to [golf@chiefengineer.org](mailto:golf@chiefengineer.org). Our big thanks go out to Kevin Kenzinger and Brendan Winters for their impeccable planning and execution of this event from year to year. It's the biggest CEAC event of the year, and we really appreciate everything they do to bring it off so beautifully every time.

While August lies ahead of us, usually bringing some of the hottest temperatures of the year, the cool season is not far off. We will want to make sure we're performing our due diligence on our heating systems in preparation for the weather that it's hard to imagine is just around the corner. As always, if you need to outsource any of that work, please call on our Associate Members listed on the QuickShopper. They deserve our continued support.

I'll take this opportunity to wish everyone a happy and safe Independence Day, and to keep in mind our first responders who keep our communities safe.

I look forward to seeing all of you in September at Cog Hill!

Sincerely,



Doug Kruczek





- “Careers in Building Decarbonization: Navigating an Emerging Industry” – Moderated by Amanda Webb, University of Cincinnati, Cincinnati, Ohio.
- “Decarbonizing Campus Infrastructure: A California College Example” – Kent Peterson, P2S Inc., Long Beach, Calif.

For more information, the full program or to register for the 2025 Building Decarbonization Conference, visit [ashrae.org/2025decarb](https://ashrae.org/2025decarb).



## 2025 ASHRAE Building Decarbonization Conference Technical Program Released

ASHRAE has released the technical program for the 2025 Building Decarbonization Conference, Oct. 22-24, 2025, in Chicago, Ill., at the Westin Chicago River North. The technical program is now available and registration is open.

“This conference is part of the movement shaping the future of sustainable buildings — join us in Chicago in 2025. Discover groundbreaking strategies, forge lasting partnerships, and gain practical insights to drive decarbonization at scale — all in a city renowned for turning bold ideas into real-world impact,” said Conference Chair Luke Leung. “As the global response to climate change grows more complex, this is the moment to connect, collaborate, and lead,” he added.

The two-and-a-half-day event includes 21 seminars, 14 panels and three keynote sessions. The technical program is structured around four key tracks: Scaling Decarbonization, Innovator’s Showcase, Blueprints for Change, and Beyond Decarbonization.

The program will include presentations from invited speakers such as:

- “Beyond Energy: A Workshop on Tackling Whole Life Carbon” – Wyatt Ross
- CMTA, Cincinnati, OH and Juan Guarin, Perkins Eastman, Washington, D.C.
- “Is Zero Even Possible?” – Moderated by Elizabeth K. Tomlinson, Stantec, Calgary, AB Canada
- “Similar Decarbonization Goals, Different Decarbonization Paths for Two District Energy Systems” – Blake Ellis, Burns & McDonnell, Kansas City, Mo.



## ASHRAE and International Code Council Announce Second Public Review Period for Proposed Emissions Quantification Standard

ASHRAE and the International Code Council have announced the opening of a second public review period for proposed Standard 240P – Quantification of Life Cycle Greenhouse Gas Emissions of Buildings.

The draft standard is available for public comment through July 21, 2025. Interested stakeholders can access the draft and submit comments at [osr.ashrae.org](http://osr.ashrae.org).

Standard 240P is designed to establish a consistent methodology for quantifying both embodied and operational greenhouse gas (GHG) emissions over the entire life cycle of buildings and their sites. It also outlines minimum requirements for documentation of those emissions.

Major changes proposed from the first public comment draft include:

- Refined definitions for improved clarity and alignment with industry terminology
- Updated figure of life-cycle stages that are included in the system boundary
- Revised global warming potential metric, changing the default from GWP-20 to GWP-100
- Expanded guidance on quantifying embodied greenhouse gas emissions

The goal of the standard is to provide a unified platform that enables building industry professionals, government agencies and the finance and investment sectors to measure, report and act on GHG emissions in a clear and coordinated manner.

“Standard 240P is intended to bring clarity and consistency to how we evaluate embodied emissions throughout the building process,” said 2024–25 ASHRAE President M. Dennis Knight, P.E., BEMP, Fellow Life Member. “By working with the International Code Council, we are helping ensure that building professionals have practical, standardized tools for emissions accounting that align with broader industry needs.”

“This standard offers a unified framework for GHG accounting, empowering the building industry and related sectors to work from a common platform to measure and report GHG emissions transparently and across a building’s life cycle,” said Ryan Colker, Executive Director, Energy, Resilience & Innovation for the Code Council. “This kind of cross-sector collaboration with ASHRAE is essential to accelerating the transition to a climate-resilient future.”

To view the draft of Standard 240P and participate in the public review process, visit [osr.ashrae.org](http://osr.ashrae.org). To stay informed about all ASHRAE standards activities, including public review announcements, calls for members and more, sign up for Standards Actions at [ashrae.org/StandardsActions](http://ashrae.org/StandardsActions). 

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## **AGC's 2025 Technology Conference** **Aug. 5-7, 2025** **Fairmont Chicago Millennium Park** **Chicago, Ill.**

The AGC Technology Conference presents an opportunity for industry leaders, innovators and technology enthusiasts to convene in Chicago and explore the newest in construction technology. Featuring workshops, keynote sessions, and engrossing panel discussions led by experts in construction technology, this premier event brings together ideas in a robust and energetic environment focused on networking and collaboration to foster innovation and new partnerships to help propel the future of the construction industry.

Attendees will have the chance to develop new skills in sessions, training bootcamps and networking experiences covering a broad array of topics, including:

- Artificial Intelligence (AI)
- Cybersecurity & Ransomware
- Data-Driven Construction
- Tech Lessons Learned on Large Projects
- IT Career Advancement
- Industry Outlook

Agenda highlights include:

### **Oracle's Chicago Innovation Lab Tour**

Aug. 5, 9:00am-4:00pm

Visit Oracle's Chicago Innovation Lab. This day trip will include informative, interactive sessions on augmented reality, virtual reality, robots, drones, tech for worker health, progress management and digital access control/credentialing. The shuttle will leave the conference hotel at 9:00am and return at approximately 4:00pm. Registration for this special event is \$75/person and is limited to 40 attendees. Lunch at Oracle's Innovation Lab is included.

Bootcamps:

### **From Technologist to Business Leader: Mastering the Language of Leadership in Construction**

(For large companies)

Aug. 5, 1:00-3:00pm, 3:30-5:00pm

Presenter: Jeffrey Sample, Ironman of IT

This interactive bootcamp is designed for construction technology professionals ready to lead. Participants will develop the skills to align tech initiatives with business goals, bridge the gap between IT and operational teams, and communicate with confidence at the executive level. Through role-play and real-world scenarios, attendees will learn how to avoid common pitfalls and make strategic decisions that drive meaningful business outcomes.

### **Level Up and Win With the C-Suite by Mastering How You Manage IT & Technology**

(For small/mid-size companies)

Aug. 5, 1:00-3:00pm, 3:30-5:00pm

Presenter: Jay Snyder, Big Blue Innovations

This bootcamp will help construction technology professionals develop the skills to align management of IT & Technology with the executive team and business objectives. The focus will be on program management, strategic planning, software selection and implementation, skills critical to the technologist at smaller organizations.

General Session:

### **AGI Excellence in Construction – Exploring the Future of A.I. in Construction**

Aug. 6, 8:30-9:30am

Presenter: Nate Fuller, Placer Solutions

The rapid advancement of A.I. is reshaping industries at an unprecedented pace, prompting construction leaders to quickly grasp its implications. As organizations integrate new A.I. tools in their business, they are also looking ahead to what comes next. Artificial General Intelligence (AGI) is an outcome of these A.I. advancements, representing a future where machines can reason, learn and adapt across a wide range of tasks without human intervention. What would this mean for construction? How close are we to seeing AGI applications in the industry? And what practical steps should construction professionals take now to prepare for this future?

This session will present findings from a Placer Solutions research report on AGI Excellence in Construction. Through a combination of executive interviews and broad-based survey data, the report synthesizes perspectives on AGI's potential impact, expected timelines, and barriers to adoption.

Breakout Sessions:

### **7 Things Construction Companies Were Doing Wrong That Got Them Hacked and 3 Things You Can Do Now to Prevent Getting Hacked**

Aug. 6, 10:15-11:05am

Presenter: Terry Bradley, Mile High Cyber

The construction industry is increasingly targeted by cybercriminals, yet many companies unknowingly leave themselves vulnerable to attacks. From ransomware shutting down operations to data breaches exposing sensitive project details, the consequences can be severe — and costly. In this session, you'll explore seven critical cybersecurity mistakes that have led to real-world breaches in construction firms. We'll uncover the weak spots hackers exploit, including poor password management, lack of multi-factor authentication (MFA), insecure project file sharing, and unprotected remote access. More importantly, you'll cut through the noise and

focus on three immediate actions your company can take to strengthen its defenses today. You'll leave with practical, easy-to-implement security measures that don't require a massive IT budget but can significantly reduce your risk of an attack. Whether you're a general contractor, subcontractor or construction technology provider, this session will equip you with the knowledge to safeguard your business, protect sensitive project data, and keep operations running smoothly. Don't wait until it's too late — take action now to avoid becoming the next target.

**Firefighting Schedules: How Reality Capture Detects Risks Before They Burn Your Budget**

Aug. 7, 9:55-10:45am

Presenters: Daniel Kagan and Trevor Owen, Rogers-O'Brien Construction

Construction schedules are always changing. Delays happen, mistakes cost money, and teams rush to fix problems. But what if you could see problems before they happen? In this session, you'll see how reality capture tools like drones, 360 cameras, and laser scanning help stop schedule problems before they get out of control. Instead of firefighting and reacting to last-minute delays, you'll see how to install smoke detectors to catch risks early.

The session will start by talking about the biggest problems in construction today:

- Not enough skilled workers
- Rising costs and tighter deadlines
- Missed schedules leading to safety risks and unhappy clients
- Then, we will introduce a new way to schedule smarter.
- Using real-time jobsite data to track progress
- Comparing planned and actual work using AI tools
- Detecting early warning signs before they slow down the project
- We will share real-world results from our pilot projects at Rogers O'Brien Construction.
- How we tested reality capture for scheduling
- What worked and what did not
- How much time and money we saved

Finally, you'll receive a simple step-by-step plan that any contractor can use to start today. Attendees will leave with a clear action plan to make their schedules more accurate, prevent costly mistakes, and keep projects on track. Stop firefighting fires. Start fireproofing your schedules. ■■■

For more information and to register, visit [tech-con.agc.org](http://tech-con.agc.org)





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ChemTreat's latest white paper offers a scalable model for operational improvements and environmental benefits at AI data centers.

## ChemTreat Cooling Upgrades at DOE Supercomputing Lab Offer Scalable Model for AI Data Centers

ChemTreat, Inc., recently announced the official release of its latest white paper, *Water Treatment Projects at a DOE National Laboratory Improve Supercomputer and Utility System Performance and Environmental Impact*. The comprehensive document provides an in-depth look into ChemTreat's state-of-the-art technologies and customized solutions that have significantly enhanced the efficiency and sustainability of water systems at a prominent Department of Energy national laboratory. The insights gained from this project offer a scalable model for AI data centers, showcasing how advanced water

treatment can lead to substantial operational improvements and environmental benefits.

The white paper highlights ChemTreat's success in optimizing water usage efficiency while enhancing system performance at a DOE national laboratory. The details underscore ChemTreat's innovative approaches to tackling inefficiencies and environmental challenges associated with water treatment. As facilities face escalating water and chemical costs, new treatment and process solutions become increasingly important for efficient operations. 

*To learn more about ChemTreat's innovative solutions and the benefits achieved at the DOE national laboratory, download the white paper at [tinyurl.com/5afr7af6](https://tinyurl.com/5afr7af6)*



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Dust storms like the one that hit Chicago on May 16, 2025, are a rarity, but they can have a major impact on our HVAC systems.

## DUST STORMS AND YOUR HVAC SYSTEMS

On Friday, May 16, 2025, we experienced a rare phenomenon here in Chicago. Weather conditions converged just right to create a dust storm that picked up dirt and debris across dry farmland in central Illinois and carried it, with considerable force, right through the Chicagoland area.

This isn't a typical weather phenomenon for us, but with the precedent comes an awareness that it's something we may have to deal with. Such events are much more common in the American Southwest, so taking a cue from HVAC professionals in Tucson, Az., we thought we would review how they cope with dust storms with an eye to our being better prepared for them should they recur here, as they may. Being prepared for an incoming dust storm can not only protect your HVAC equipment, but can help to safeguard tenants' health, as well.

### Turn Off A/C for the Duration of the Event.

You might not have a lot of lead time, as dust storms can be volatily unpredictable, but as soon as you learn that one is headed your way, turn off your building's air conditioning and close supply vents as possible. Dust storms typically pass in a short period of time, so once the storm has passed and the dust in the air has been given a chance to settle, and the air appears clear once again, take some time to inspect your outdoor units and perform as much post-storm cleanup as you can within a reasonable amount of time before switching the A/C back on.

### Consider Investing in a Hail Guard for Rooftop Units

Building owners in the Southwest know that dust storms bring more than just dust and small particulates — they can bring quantities of larger debris. Hail guards installed on your rooftop A/C unit will protect your condenser coils not just from the occasional hailstorm, but from the heavier

elements carried by dust storms that can damage your coils and other equipment that otherwise might lead to expensive repairs and costly downtime.

### Seal Off Cracks and Gaps


Any cracks or gaps around entry points into your building — under lobby or bay doors, around windows, etc. — are vulnerable to the dust and debris brought on by dust storms. Any dust particulate entering your building through such apertures will negatively affect indoor air quality (IAQ) for tenants and everyone working in the building, and will lead to necessary filter replacement and additional stress on your A/C as a whole.

### Replacement of Air Filters

Regardless of where you are in your air filter replacement schedule, you'll likely want to at least check on your filters in the immediate wake of a dust storm to ensure that any that are adversely affected by dust intake are replaced. Dust storms are guaranteed to have at least some impact on your building's IAQ, your rooftop condensers and the amount of accretion on your system's filters. Effective filtration helps limit the stress on your A/C units, so this also can be a good time to evaluate if you might need to upgrade your filters to a higher MERV rating, particularly if your building has tenants who might be elderly, infants or toddlers or others with compromised immune systems (i.e., medical facilities, daycare or elderly care facilities) or if there are potentially tenants or visitors with sensitive respiratory systems.

### Thoroughly Clean Your Outside Condenser Unit

Your rooftop or other outside condenser will be the biggest worry in case of a dust storm. If it takes a good hit during such an event, you'll definitely want to address its cleanup prior to switching it back on. Remove any good-sized debris on or near the unit first, then open the unit and carefully inspect for damage. If none is found, vacuum the condenser coils. Spray them thoroughly with an appropriate alkaline-based, non-acidic cleaner, then carefully power wash them at low pressure with a 25-40-degree nozzle so as not to damage the fins. A soft bristle brush can be used if scrubbing is necessary. Rinse and repeat the process as necessary until the coils are clean.

With changing weather patterns, it's difficult to say when we might see our next dust storm here in the Chicago area, but it's a good bet that we haven't seen the last of them. With an eye to future storm seasons, a bit of planning ahead and proper response can help to minimize the impact of a dust storm from a major headache to a minor irritant in the larger scope of your HVAC maintenance plan. 

Source: U.S. Chemical Storage



## CHIEF ENGINEER MEMBER INFO AND REMINDERS

Here are a few things to keep in mind about your membership and Chief Engineer events.

- Members are invited to monthly meetings that take place once a month October-May
- Meeting topics, speakers and times can be found online at [chiefengineer.org](http://chiefengineer.org)
- Membership dues are good for one year. If not renewed, your membership becomes inactive, and you will need to renew before or upon entering events

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The cost of NOT protecting high-rise buildings with fire sprinklers.

# Two years after the fatal Harper Square fire, the trauma continues as residents in more than 80 units remain displaced.

On January 25, 2023, the Harper Square fire was the first of 17 fires in unsprinklered high-rise residences in Chicago that year. It resulted in one fatality, multiple injuries, hundreds of residents displaced, and millions of dollars in property loss and displacements. For Harper Square residents, the last two years have been a time of uncertainty, stress, frustration and exhaustion as costs mount and insurance coverage has been exhausted. Unfortunately, a similar tragedy could strike again since fire sprinklers are not being retrofit during reconstruction after the fire.

All 17 buildings were built before the 1975 City of Chicago Code requiring fire sprinklers in all new high-rises. Today, more than 600 residential high-rise buildings in Chicago stand without fire sprinkler

protection, with cost often cited as the reason not to retrofit fire sprinklers. **The real question is, “What is the cost of NOT installing fire sprinklers when a fire occurs?” Harper Square is a model example of post-fire costs far exceeding the cost of installing fire sprinklers.**

Fire sprinklers prevent these tragedies. Heat from a fire individually activates each sprinkler to extinguish or control the fire while it is small, allowing residents to safely escape. Fire sprinklers are the most effective solution to reduce fire risk, protecting residents, firefighters and property.

Two years after the Harper Square fire, it is clear the life- and property-saving benefits of fire sprinklers far outweigh the staggering, ongoing costs of a tragic fire without them.

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# **Future-Proofing Building Automation Systems: A Real-World Look at Cybersecurity for Operating Engineers**

*By Michael A. Badame*

If you've been around buildings long enough — whether adjusting boiler controls, troubleshooting HVAC issues, or answering that 3:00am emergency call — you've gotten used to dealing with risk. Maybe it's the risk of a fire pump failure, or a tenant complaint during a heatwave. But in today's buildings, another kind of risk has joined the mix: cyberrisk.

To many engineers, cybersecurity might feel like something for the IT department. But here's the truth: The systems you manage every day — the HVAC controllers, chillers, air handlers and lighting panels — are all now part of your building's digital footprint. And as they've become more connected, they've also become more vulnerable.

I sat down with Lewis Borsellino Sr. and Lewis Borsellino Jr. from DefendEdge, a company that specializes in securing Building Automation Systems (BAS), and with Professor Andrew Kumiega, who teaches Risk Management to Local 399 Operating Engineers at the Illinois Institute of Technology. What I found was that cybersecurity, rather than being an IT mystery, is really just another layer of the job that Operating Engineers have always done — managing risk.

### **“We're Not Just Tuning Boilers Anymore”**

During our conversation, Borsellino Sr. leaned forward and said, “You're not just keeping the air flowing anymore. You're protecting critical infrastructure.”

He shared stories that hit close to home. “We've seen heat systems shut down in winter. Water treatment valves accessed remotely. Hotels where no one could open their room doors. These aren't abstract tech stories. They're real, physical events with real consequences.”

It's a sobering thought. But not one meant to scare — it's a call to awareness. Because, as Borsellino Jr. put it, “If you've been troubleshooting mechanical systems for 20 years, you already think in terms of consequences. Cyberrisk is just another thing to factor into that equation.”

I asked him if most buildings he visits have cybersecurity top of mind. He shook his head. “Most of the time, it's after something has already happened. Or it's a wake-up call — like a failed audit, a data breach, or a tenant demanding proof of cybercontrols.”

### **Risk Management Isn't New — It's Evolving**

Professor Kumiega emphasized this idea in his classroom. “Operating Engineers already understand risk. What we're doing is helping them see cyberthreats as part of their existing mental model.”

He described a moment in class when a seasoned engineer realized cybersecurity was no different from checking water pressure or verifying valve operation. “He said, ‘So we're just applying preventative maintenance to our digital systems too?’ And I said, ‘Exactly.’”

Kumiega uses the ISACA Risk IT Framework to teach engineers how to map digital threats to physical outcomes. “If your BAS goes down due to ransomware, what happens to life safety systems? Elevators? Climate control for sensitive equipment?”

These aren't tech problems — they're operational ones. The same way you'd assess a failing pressure relief valve, you now assess whether an unpatched controller could open your building to an attacker.

### **How Cyberincidents Actually Happen**

You might think an attacker needs to be some elite hacker to cause damage. But more often, breaches happen because of very ordinary mistakes:

- Someone forgets to change a default password
- A remote access connection is left wide open
- Software updates are skipped for months (or years)

“We worked with a building where the entire HVAC system went down because a cheap smart thermostat got hacked,” Borsellino Jr. recalled. “That device had access to the BAS backbone — nobody realized how much control it had.”

The problem wasn't high-tech. It was oversight. And that's exactly where Operating Engineers can make the difference.

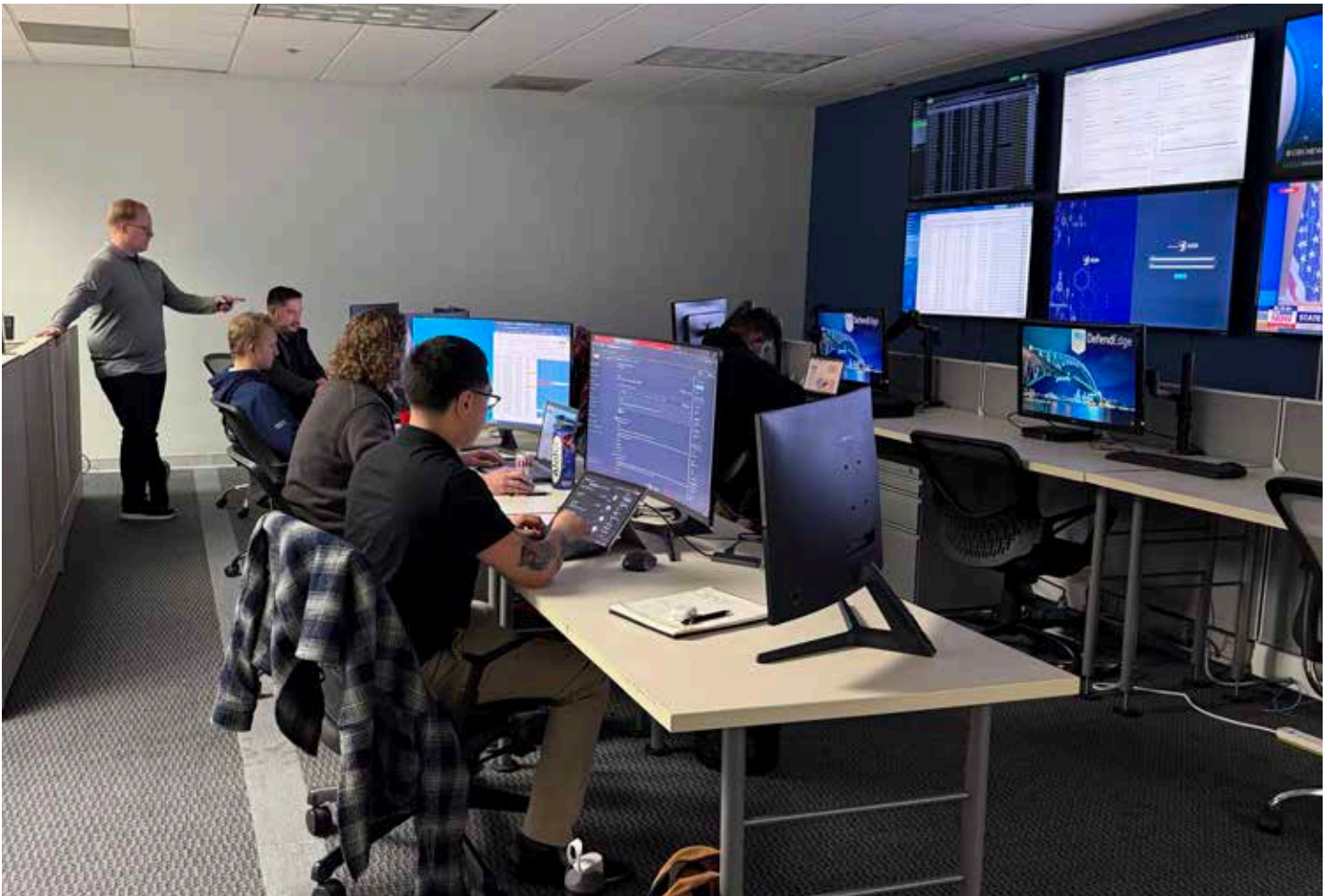
### **From Mechanical Maintenance to Digital Housekeeping**

Cybersecurity can sound overwhelming. But in practice, much of it mirrors what you already do:

- Routine checks become security audits
- Control schedules extend to access management
- Response drills now include digital incident plans



Training sessions at DefendEdge include phishing simulations to probe for human vulnerabilities and to reinforce best practices.



The team at DefendEdge works closely with Chief Engineers to make their properties' cybersecurity a seamless part of the existing workflow.

"If you can troubleshoot a stuck VAV box," said Borsellino Sr., "you can understand how to identify a suspicious data flow. It's just another system input to monitor."

I asked him what kind of reaction he gets from engineers when he introduces these concepts. "Relief," he laughed. "Once they see it's just a matter of applying their existing skill set to a new problem, the anxiety drops."

Their team at DefendEdge works closely with engineers to make cybersecurity part of the existing workflow — not an extra burden.

### Securing the Old With the New

Many buildings run legacy gear: old BACnet routers, serial controllers, or Modbus devices from the 90s. These systems were never designed with cybersecurity in mind.

"We don't tell clients to throw everything out," said Borsellino Jr. "We segment the network so those devices don't become a gateway for attackers."

That means:

- Creating VLANs or separate firewalled networks
- Monitoring traffic with intrusion detection systems
- Applying endpoint detection on newer devices that can support it
- Locking down what's exposed to the wider Internet

IoT devices add another wrinkle — everything from occupancy sensors to Wi-Fi thermostats. "They're convenient," said Kumiega, "but they also broaden your attack surface."

His advice? "If a device talks to your BAS, treat it with the same care you would a high-voltage panel."



According to the Borsellinos, team involvement is key — awareness sessions are encouraged to plan what to do if something a team member encounters doesn't feel right.

## People Are Still the Weakest Link

Ask any security professional and they'll tell you: Tech can be solid, but it only takes one mistake to open the door.

Phishing emails. Weak passwords. USB sticks in the wrong ports.

That's why DefendEdge focuses on training alongside technology. "We run phishing simulations," Borsellino Jr. said. "Not to catch people out, but to build muscle memory. When you see a weird link, you pause — that's a win."

He also recommends:

- Role-based access: Don't give full control to every user.
- Logging and alerts: So odd activity doesn't go unnoticed.
- Quarterly reviews: Check who has access and why.

"It's not about blame," said Borsellino Sr. "It's about culture. Making everyone part of the defense team."

## Regular Testing — Just Like Your Other Systems

Engineers already know the drill: Test generators, fire pumps, backup batteries. Now, add cybersecurity to that list.

"Think of it as a new kind of inspection," said Kumiega. "Instead of looking for rust or noise, you're looking for exposed ports or missed patches."

- At a minimum, he recommends:
- Quarterly vulnerability scans
- Annual penetration testing
- System audits after upgrades or vendor changes

"It's like PMs for your digital infrastructure," he added. "You wouldn't skip checking your chillers. Don't skip this, either."

## Where to Start — Practical Steps Today

You don't need to become a cybersecurity expert overnight. But here's how you can start moving the needle:

- Take inventory: Know what's connected, who has access, and what's exposed to the Internet.
- Segment your network: Separate the BAS from your corporate or tenant systems.
- Update credentials: Kill default passwords, and turn on multi-factor authentication.
- Involve your team: Run short awareness sessions. Talk about what to do if something feels off.
- Find the right partners: Whether it's DefendEdge or another specialist, build a relationship before you have a crisis.

## Regulations Are Coming — Be Ready

Cyberstandards like NIST CSF, CISA and ISA/IEC 62443 are no longer optional in many industries. Insurance companies, regulators, and even tenants are starting to ask: "How secure is this building?"

Being proactive isn't just smart — it's soon going to be required. But again, this isn't new ground for Operating Engineers.

"You've always been the first line of defense when something goes wrong," said Borsellino Sr. "This is just the 21st-century version of that."

## Final Thoughts: You're Already Built for This

The most important takeaway from my conversations with DefendEdge and Professor Kumiega?

Operating Engineers are already wired for this work. You're methodical. You assess risk. You take responsibility for critical systems every day.

Cybersecurity is just an evolution of that responsibility. One more system to understand. One more safeguard to put in place.

And the good news? You don't have to do it alone.

DefendEdge isn't just another tech vendor — they're folks who speak your language. They understand that keeping a building running is about more than pushing updates or watching dashboards. It's about reliability, trust, and the people who make it all work behind the scenes.


So when the conversation turns to cybersecurity, don't tune out. You're not starting from scratch. You're building on decades of risk management, problem-solving, and dedication.

You've got this. 🧩

*Michael A. Badame is a journalist and technical writer covering engineering, facilities management, and smart building technologies.*



Professor Andrew Kumiega uses the ISACA Risk IT Framework to illustrate how digital threats can lead to physical outcomes as an exercise in prevention.



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- Meeting topics, speakers and times can be found online at [chiefengineer.org](http://chiefengineer.org)
- Membership dues are good for one year. If not renewed, your membership becomes inactive, and you will need to renew before or upon entering events

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## The Ebb and Flow of Apprentice Programs

By Kate Gawlik

*Apprenticeship programs are vital to the continued growth of the profession in Chicagoland.*

The concept of apprentices may be rooted in the history of ancient lands, but formally, apprenticeship programs have evolved within the trades. Like many groups, the foundation of the Chief Engineers Association of Chicagoland (CEAC) Local 399 is its apprentices. It is through an apprentice program that the thought process and skills of an organization's workforce expands and flows.

"Without that first step, it would be nearly impossible to pass the operators exam," Patrick Nolan, Chief Operating Engineer, Facilities Management for Cook County, says. "I myself went through the program, and it was a great learning experience. Journeymen look at it as a way to pass down their knowledge and ability to the next generation. I would even compare it to a father and son or mother and daughter relationship. It is how we can engage the next generation."

The CEAC leadership recognizes the importance of the program, but they also acknowledge that the ways people are recruited, look for employment and learn have evolved. In addition, Local 399 has sought out protections within the program to ensure assets — like time, money and people's

talents — are not wasted.

"An apprentice program cannot be stagnant," says CEAC President Doug Kruczek. "We as an organization have to protect our interests, and finding and training qualified apprentices who are committed to this profession is in our best interests."

### Expanding the Training

The concept of training for CEAC has expanded in how and where it is done. After conducting work in a one-room, multipurpose site at Halsted and Jackson, Local 399 moved to The Hall. The newer training facility, which opened in 2008, now has the space to accommodate hands-on and classroom work in dedicated areas.

Nolan says, "Local 399 realizes that it has a responsibility to have the most qualified members it can out there, so it has invested greatly in its members through The Hall."

In addition to investing in the training space, union leadership reviewed apprentice program obligations. The classroom and hands-on combination now is a requirement. In the past, members did not have to take any classes to qualify to be on



*Kallie Fogarty greases one of many centrifugal chilled water pumps.*



*Trainee George Frazer rotates sites every 16 weeks to be exposed to a variety of tasks during his apprenticeship.*



Thanks to the two-year apprentice program with Local 399, which she completed in November 2024, Kallie Fogarty, an Operating Engineer at the Cook County Department of Corrections, finds each day on the job a rewarding experience.

a hire list. This not only left operators missing important gaps in preparation, but it also created employers who questioned the pace in which people would resign.

"The combination of training was one of the biggest changes in the apprentice program since it started," Nolan says. "The reasoning behind it was the employers were getting upset that they would onboard someone, and, after a couple of days, the person would quit because it was not what they expected. It was a trial-and-error game that wasted everyone's time."

Eventually, Local 399 implemented a prerequisite that a person must complete five classes before being considered for a job. This gives apprentices a vested interest and a better understanding of what it means to be a Chief Engineer. That classroom work now remains throughout an engineer's journey as continuing-education hours. This change not only led to increased employee retention, but it created career advancement opportunities into upper management positions. Nolan notes that in the past, a Chief Engineer was considered the highest level of advancement.

### A Cook County Case Study

The March issue highlighted a cohort of women who have completed or are nearing the end of their apprenticeship work. This group and others stem from a partnership that started in 2022, when the Cook County Board teamed up with Local 399 by approving the Facilities Management Engineer Trainee Program. The goal of the partnership is to train candidates in real-life operational and stationary engineering at Cook County buildings. The program, which has a focus on equity

and inclusion, was recognized by the National Association of Counties (NACo) with a 2023 NACo Achievement Award.

The cohorts that go through the program are exposed to different areas of operations to be well-prepared for employment. They are notified in advance about work-area rotations, which change every 16 weeks to coincide with their courses. Apprentices are exposed to high-rise facilities, courtrooms, hospitals, schools, prisons, powerhouses, kitchens/food prep areas, and tenant spaces. Taking on shift-work rotations is part of the training too, so people can experience off-hour shifts.

"This helps people to see how shift work would fit into their day-to-day life," Nolan says. "Some people can't work 2:00pm to 10:00pm because of family needs. Some can't work 10:00pm to 6:00am for the same reason. We have tried to make it a realistic approach to what it is to be a journeyman."

Local 399 supports apprentices in test-taking skills as well, by emailing two sample test questions per week. And yes, a response is expected. At times, additional online testing takes place, with a recent email of 66 questions hitting trainees' inboxes.

Nolan notes, "We know in today's world that people can just Google the answers. They have that option, but it only hurts them if they don't absorb the answer."

Just as medical students have anatomy classes where they have to identify body systems, Local 399 trainees have equipment challenges where they place labels on the correct parts of various machinery. Nolan also meets with Cook County



Knowing the inner workings of the systems on which you work is as key to an operating engineer as knowing anatomy is to a surgeon. Apprentices get very well acquainted with their operating systems.



Like all other candidates, Trainee Brian Young will have to successfully complete five courses before even being considered for employment.

apprentices regularly for feedback about the program.

“From these talks, we have brought some items to light or challenges to the table,” Nolan says. “The first one involved their study materials from class. The department of corrections does not allow you to bring outside materials into the jail. I had never thought about that until they brought it up. I went to the director of the jail to get written permission to allow them to bring their materials in to study. We will continue to have these meetings to listen for the needs to help them get where they need to be.”

### A Balanced Approach

Kallie Fogarty, an Operating Engineer at the Cook County Department of Corrections, completed her two-year apprentice training program with Local 399 in November 2024. Fogarty grew up in a family of male union members, but she never saw herself as a union person — until she finally tried it as part of the Facilities Management Engineer Trainee Program.

She says, “I was surprised all the time at what I was learning in the program and what I was able to accomplish. I felt so supported and was determined to be part of this. Now I have a career that I am proud of.”

Fogarty urges other women to give Local 399 a try. Nolan couldn’t agree more, and also recommends that other organizations look at their programs for tweaks and

partnerships. From finding the right candidates, reducing job vacancy rates and saving budgeted funds, these changes have brought another level of success.

Nolan says, “With this program, we are expediting the hiring process and ultimately limiting job vacancies and overtime that we have to pay to other engineers to cover open shifts. Candidates are interviewed just like everyone else. If we do hire them, we have eliminated a lot of red tape in the onboarding process because the candidate is already known and in the system. Some people don’t interview well, but we know if someone is a hard worker by watching them in the program. Ultimately, if someone from the program is hired, it means that they want to be here and they know what they are getting into because of the apprenticeship program. That is a huge win for everyone.”

Kate Gawlik writes about construction, design and business trends from Lockport, Ill.



Trainee Brian Young works through various tasks to ensure operating parameters, like temperature, pressure and flow, are appropriate.

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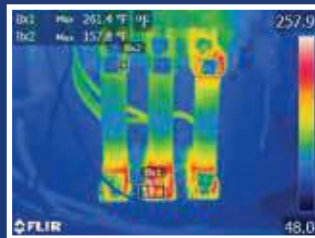


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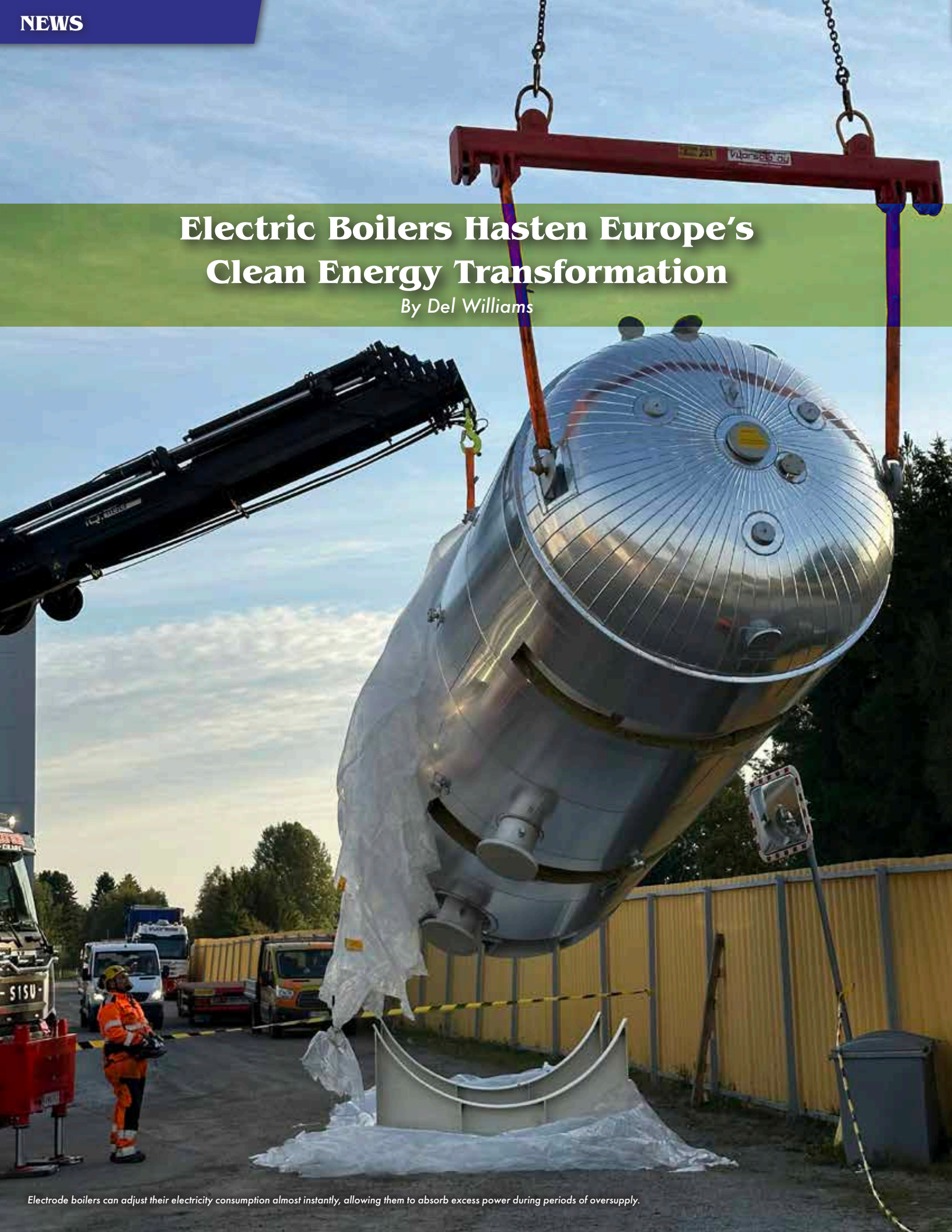
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# Electric Boilers Hasten Europe's Clean Energy Transformation

By Del Williams



*Electrode boilers can adjust their electricity consumption almost instantly, allowing them to absorb excess power during periods of oversupply.*

Across Europe, high-voltage electrode boilers are quietly becoming a key part of the continent's clean energy transition. In countries like Finland, these systems are being deployed to support decarbonization goals, reduce emissions from heating networks, and to help stabilize power grids increasingly powered by variable renewable sources. As the EU advances its Green Deal and REPowerEU initiatives, technologies like high-voltage electrode boilers provide a practical way to convert surplus renewable electricity into useful heat while supporting the shift away from fossil fuels.

Finland, in particular, has set one of the most advanced climate policies in the region, committing to carbon neutrality by 2035. Part of the European Union since 1995, the country has established interim emission reduction targets of 60 percent by 2030, 80 percent by 2040, and 90–95 percent by 2050, all relative to 1990 levels.

Like other EU members, Finland is striving to take advantage of financial and policy incentives such as the Recovery and Resilience Facility (RRF), a major EU funding program launched after the pandemic to promote electrification, renewable energy deployment, and resilience. The program is allocating approximately €672.5 billion to EU member states, distributed through a combination of grants and loans.

Like all EU member states, Finland must fully implement all RRF-funded initiatives by the program deadline of August 2026.

To meet its ambitious goals on schedule, Finland is directing a significant portion of the approximately €500 million it has already received toward modernizing its energy infrastructure, with a particular emphasis on the deployment of high-efficiency electric boilers.

Modern high-output electrode boilers are CE-marked systems designed to generate steam or hot water using high-voltage electricity, with output capacities reaching up to 60 MW and steam production pressures as high as 32 barg. These systems deliver zero emissions at the point of use, offer full modulation from zero to 100 percent output, and feature flexible configurations — including jet-type and immersed electrode designs — suitable for both new installations and retrofit projects in industrial and district heating applications.

“Electrode boilers are being installed across district heating networks to help decarbonize thermal energy production, offset fossil-fueled heat sources, and absorb excess electricity during periods of high renewable output. Their integration not only supports emissions reduction but also strengthens grid stability, making them a strategic investment in Finland's broader path to carbon neutrality,” says Juha Mäntynen, Vice President of CT Industrial Oy (CTI), a Finland-based CleanTech provider



*In the EU's broader decarbonization effort, high-voltage electrode boilers play a critical role in applications requiring rapid load absorption and grid stabilization.*

specializing in turnkey, zero-emission, high-efficiency energy systems — including high-voltage electrode boilers — for industrial and district heating applications across 19 European countries.

## Grid Stabilization

In the EU's broader decarbonization effort, high-voltage electrode boilers play a critical role in applications requiring rapid load absorption and grid stabilization, according to Mäntynen.

Electrode boilers are particularly important for maintaining grid balance as renewable energy production expands. Because wind and solar generation can fluctuate rapidly, the grid requires technologies that can respond just as quickly. Electrode boilers meet this need by adjusting their electricity consumption almost instantly, allowing them to absorb excess power during periods of oversupply. This makes it easier to integrate variable renewable sources without overloading the grid or wasting clean energy.

This is a key consideration for Finland, given its substantial investments in renewable energy over the past 15 years. By the end of 2023, Finland had approximately 1,600 operational



*Electrode boilers are instrumental in generating revenue by absorbing excess power, enabling rapid, demand-responsive operation that aligns with market conditions.*

wind turbines with a combined capacity of nearly 7,000 megawatts, including over 1,200 MW added that year alone. Wind has become Finland's second-largest electricity source, generating roughly 19.8 terawatt-hours in 2024 — enough to supply 24-25 percent of national electricity demand. The country also makes significant investments in heat recovery, heat pumps (air to heat), offshore wind, solar and nuclear energy.

### **The Reserve Market and Negative Prices**

As renewable energy production grows across Europe, instances of negative electricity pricing are occurring more frequently. This creates a financial opportunity for energy consumers who participate in the reserve market, allowing them to generate revenue by absorbing excess power. Electrode boilers are instrumental in leveraging this trend, enabling rapid, demand-responsive operation that aligns with market conditions.

According to Mäntynen, when wind production exceeds

demand, surplus electricity causes prices to drop sharply — sometimes becoming negative. He explains that a negative electricity price means that electricity producers are paying people to take electricity off the grid, instead of customers paying for electricity.

Companies that participate in reserve markets can earn considerable revenue by consuming excess electricity to balance the grid.

The reserve electricity market — also known as the ancillary services or balancing market — is essential for maintaining grid stability by compensating producers and consumers who can quickly adjust power generation or consumption. This market ensures reliable system frequency and reduces blackout risks by responding to sudden shifts in supply and demand. Technologies like electrode boilers are particularly valuable in this context, as they can rapidly absorb excess electricity or

shut off on demand, making them effective tools for balancing the grid in real time.

“Under favorable conditions, an electric boiler can pay for itself within a year or less. For example, last year the average price paid for reserve market electricity consumption was three thousand (3000) euros per megawatt-hour. A 50-megawatt boiler operating for one hour could earn approximately 150,000 euros,” Mäntynen says.

## Thermal Power and District Heating

Thermal power and district heating are also critical to Europe’s energy infrastructure, supplying consistent heat to millions of homes and businesses while supporting grid reliability. These systems play a key role in energy security, especially in colder regions and during peak demand periods.

Finland operates one of the most advanced district heating networks globally, spanning over 16,000 kilometers of underground insulated piping and serving approximately half the population, particularly in urban areas. The system distributes hot water — typically heated between 65°C and 115°C, depending on outdoor temperatures — and returns it at 40°C to 60°C, with minimal heat loss of just 8-9 percent.

While the network historically relied on coal, peat and wood chips, it is now undergoing a major transition toward renewable and low-carbon energy sources. Many cities are phasing out biomass-fired plants in favor of modern technologies such as electrode boilers.

Relatively cheap electricity prices and taxation benefits have made Finland an attractive location for large data centers operated by companies like Google and Microsoft. Data centers produce a large amount of waste heat from cooling processors, and this waste energy has been used to heat cities in Finland.

“Heat pumps generate base energy from data centers, while electrode boilers increase the district heating water temperature to reach the required temperature level for city needs,” Mäntynen says.

To accelerate deployment, CTI has teamed up with Acme Engineering to expand electrode boiler implementation across Finland and other European markets.

Acme’s products are distinguished by their wide range of designs and technical flexibility. The portfolio includes the jet boiler, capable of handling higher pressures with zero to 100-percent modulating capacity, and the immersed electrode boiler, which can be configured for either hot water or steam applications. Additionally, the OEM offers a horizontal hot water boiler design that is particularly well-suited for retrofit

projects. A variety of voltage options are available to meet different regional requirements.

Today, CTI partners with Acme to provide high-voltage electrode boilers to the European market under the ACME-CTI brand. CTI manufactures and delivers electrode electric boilers for steam and hot water production, serving both the energy and process industries. These systems are based on proven electrode boiler technology developed by ACME and are CE marked in compliance with standards established by the European classification society. Boiler design and production meet the requirements of EN 13445 and EN 12593. CTI oversees the complete delivery process of the electric boiler system, from initial planning through installation with ongoing support also available.

Together, CTI and Acme form a highly nimble and technically capable partnership, offering customized solutions, rapid modifications to existing equipment, and a high degree of responsiveness to customer requirements.

“Acme is a small, agile company, allowing it to quote, make decisions, and adapt to customer needs much faster than larger, more bureaucratic boiler manufacturers,” Mäntynen says.

As demand for clean energy solutions ramps up, a significant milestone was achieved when CTI successfully lifted the first European ACME-CTI electrode boiler in September 2024. In June 2025, operating in Jepua, the 10 MW jet-type electrode boiler will soon generate 28 barg of steam for heating applications in industrial processes. The delivery scope includes also the demineralized water system, feed water system, and blowdown system, with automation integrated into the customer’s existing boiler setup, all turnkey delivered.

Even more recently, CTI installed a 15 MW electric boiler and feed water tank in the industrial area in Honkajoki. A new 15 MW electric boiler was also installed in connection with the Vatajankoski biomass boiler plant, which will increase the production of inexpensive and non-combustible steam.

The high-voltage electrode boiler manufactured by CTI will produce steam for use by Vatajankoski Oy. In the future, it will also be possible to store energy produced by an electric boiler in a heat accumulator, which will later be installed next to the plant. Heat from the accumulator will also be supplied to the Honkajoki Oy (producer for high-quality renewable raw materials for animal nutrition, biofuels and fertilizers).

Currently, CTI is heavily engaged in the process industry sector, which is expected to be a major area of future growth for electrode boiler applications. At present, CTI has nine turnkey projects underway.




Modern high-output electrode boilers like those from Acme Engineering deliver zero emissions at the point of use, offer full modulation from zero to 100-percent output, and feature flexible configurations.

A notable recent development includes the signing of an additional order for two 50-megawatt boilers. These boilers are intended for a project in the city of Kajaani, located in central Finland. Originally, the plan was to supply heat solely for the city's district heating network. However, a new customer requirement emerged for a different temperature level than the city network typically demands.

CTI responded with an innovative proposal: using a single set of boilers to deliver two different thermal outputs without doubling the boiler capacity. By modifying the design to produce hotter water and then distributing it separately at two different temperature levels, CTI created a solution that met both needs simultaneously.

The European market for decarbonization technologies remains resilient, driven by sustained municipal investment in clean energy infrastructure aligned with long-term carbon reduction mandates. As demand continues to rise, high-voltage

electrode boilers are poised to play a pivotal role by converting surplus renewable electricity into heat, supporting grid stability and emissions reduction efforts, and creating energy ecosystems that are agile during fuel price fluctuations. 

For more info, contact:

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Watts' new Single-Stage Total PFAS Reduction Filtration System is certified to reduce 99.5 percent of total PFAS and a wide range of other contaminants.

## Watts Launches New Single-Stage Total PFAS Reduction Filtration System

Watts has launched its new Single-Stage Total PFAS Reduction Filtration System. Designed for easy connection to most existing kitchen and bathroom faucets, this system offers plumbing contractors a practical way to meet growing customer demand for reliable water filtration.

Unlike many filters that target only PFOA and PFOS, this advanced system is certified to reduce 99.5 percent of Total PFAS — a broader category of per- and polyfluoroalkyl substances. In addition to PFAS, the system also reduces lead, cysts, asbestos, microplastics, chlorine taste and odors, and sediment, offering comprehensive protection in a compact, easy-to-install design.

The Watts Single-Stage Total PFAS Reduction Filtration System addresses this need with a high-flow rate of 2.5 gallons per minute and a high-capacity 0.5-micron carbon block filter rated for 3,200 gallons. The cartridge is designed for simple replacement every six months, and the system's user-friendly design eliminates the need for a separate faucet during installation.

Additionally, the system's replacement cartridge is compatible with Watts' existing Single-Stage Lead Reduction System, allowing current users to upgrade to Total PFAS protection without changing the entire unit. 

To learn more, visit [watts.com/TotalPFAS](http://watts.com/TotalPFAS).



## Bosch Debuts Next-Gen Tools and Accessories Built to Power Productivity on Jobsite

Bosch Power Tools recently announced a new round of product additions to its growing 18V cordless and accessory portfolio with new tools and solutions engineered for power, versatility and efficiency across a wide range of jobsite tasks. From nailing and drilling to grinding and layout work, these toolbox essentials are designed for tradespeople who demand performance and reliability in every application.

The brand continues to invest in the North American market, prioritizing the development of products that directly address the evolving needs of tradespeople across construction, mechanical and industrial sectors. By expanding its 18V cordless system and delivering purpose-built accessories, Bosch Power Tools provides dependable, high-performance solutions that empower professionals each day.

With a strong focus on ergonomic design, advanced safety features and faster tool and accessory changes, the brand remains committed to making work seamless to overcome challenges on the jobsite. With that mission in mind, Bosch Power Tools is delivering products that are built for the task and made to last.

The expansion of cordless products and accessories includes

### 18V 14 In. Dry Cut Saw (GCD18V-14)

- Precision Line Laser – Acts as a guide for more precise cuts
- Toolless Adjustable Vice Stop with Miter Angle – For easy setup and versatile cuts from 0 to 45-degrees left
- Overload Indicator Light – Delivers real-time feedback on tool status and potential overloads through a highly visible LED light on the handle

### 18V Brushless 16-Gauge 7/16 In. Medium Crown Stapler (GTH18V-50M)

- Easy Depth Adjustment – With an ergonomic thumb wheel for quick, stepless changes
- Intuitive User Interface – Allows for quick toggling between single and bump-fire modes
- Tool-Free Jam Clearing – Helps to quickly remove stuck staples

### 18V ½ In. Brushless Hammer Drill/Driver (GSB18V-65) – Available in a Bare Tool (GSB18V-65N) and Kit (GSB18V-65B12)

- Switchable Kickback Control – Reduces the risk of a sudden rotational torque reaction in a bind-up scenario, with the option to deactivate
- Rapid Mode Selector – Swiftly shifts between hammering, drilling and driving modes without the need to adjust the clutch
- Dual LED Work Lights – Illuminates the working area for better visibility



Bosch's new 18V tool and accessory lineup delivers the precision and versatility professionals need to tackle demanding cutting, drilling, and mixing with confidence on any jobsite. (PRNewfoto/Bosch Power Tools)

### **18V Brushless Impact Driver (GDR18V-215) – Available in a Bare Tool (GDR18V-215N) and Kit (GDR18V-215B12)**

- Two Speed/Torque Settings – For greater control over power output
- ¼ In. Quick-Change Hex Driver – For quick, secure bit installation
- Powerful, Brushless Motor – Delivers a max of 1,900 In.-Lbs. of torque and up to 3,300 impacts per minute for professional power

### **18V Brushless ½ In. Mid Torque Impact Wrench (GDS18V-350)**

- Outstanding Power-to-Size Ratio – Delivers up to 258 Ft.-Lbs. of fastening torque and 410 Ft.-Lbs. of max breakaway torque
- Variable-Speed Power Output – Control max torque and speed with three settings
- Auto Bolt Release – Stops rotation when the bolt is loosened to prevent accidental dropping bolts and nuts during removal

### **18V Brushless High Torque Mixer (GRW18V-160)**

Variable Speed Wheel – Tailors the speed to the application for more controlled mixing

Soft-Start Technology – Helps prevent splashing at startup

Kickback Control – Helps protect against unexpected movement when mixing tough materials

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For more information on the new Bosch Power Tools products, visit the Press Room at [pressroom.boschtools.com](http://pressroom.boschtools.com) or connect with Bosch Power Tools on Facebook and Instagram.  



## Cisco: A Major Infrastructure Shift Is Underway — AI Could Double the Strain or Solve It

Cisco recently released a new global study revealing a major architectural shift underway across enterprise networks. As AI assistants, agents and data-driven workloads reshape how work gets done, they're creating faster, more dynamic, more latency-sensitive and more complex network traffic.

Combined with the ubiquity of connected devices, 24/7 uptime demands, and intensifying security threats, these shifts are driving infrastructure to adapt and evolve. The result: IT leaders are changing how they think about the network: what it is, what it enables, and how it protects the organization. The network they build today will decide the business they become tomorrow.

### Six signals that an architectural shift is underway:

- 1. The network has become a strategic priority:** 97 percent say a modernized network is critical to rolling out AI, IoT and cloud. 91 percent of IT leaders plan to increase the share of their overall IT budget allocated to networking.
- 2. Secure networking is mission critical:** 98 percent say secure networking is important to their operations and growth; 61 percent say it's critical. 94 percent believe an improved network will enhance their cybersecurity posture.
- 3. AI intensifies demand for resilient networks:** 95 percent of IT leaders say a resilient network is critical, at a time when 77 percent faced major outages — driven largely by congestion, cyberattacks and misconfigurations — adding up to \$160B globally from just one severe disruption per business, per year.
- 4. Leaders look to AI to grow revenue:** 55 percent of IT leaders say a modernized network's greatest impact on revenue will come from deploying AI tools that automate and tailor customer journeys — enabling faster, more personalized experiences that can strengthen loyalty and drive growth.


- 5. AI is reshaping computing infrastructure:** 71 percent say their data centers can't yet meet today's AI demands, and 88 percent plan to expand capacity — on-prem, in the cloud, or both.
- 6. Leaders want to make networks smarter:** 98 percent say autonomous, AI-powered networks are essential to future growth — yet only 41 percent have deployed the intelligent capabilities — like segmentation, visibility and control — to make their network adaptive.

"AI is changing everything — and infrastructure is at the heart of that reinvention. The network has powered every wave of digital transformation, accelerating the convergence of IoT, cloud, hybrid work, and defending against rising security threats," said Chintan Patel, CTO and Vice President Solutions Engineering, Cisco EMEA. "IT leaders know the network they build today will shape the business they become tomorrow. Those who act now will be the ones who lead in the AI era."

### The Network is the Value: Modern Infrastructure Unlocking Growth and Savings

IT leaders are already delivering financial value from today's networks — largely by improving customer experiences (55 percent), boosting efficiency (52 percent) and enabling innovation (51 percent). But much of that value is at risk if it comes from infrastructure that hasn't been designed for AI or real-time scale. To unlock the full growth and savings they expect, leaders have identified critical gaps they must close: siloed or partially integrated systems (58 percent), incomplete deployments (51 percent), and reliance on manual oversight (48 percent). Smarter, more secure, more adaptive networks are the business case for investment. Nearly 9 in 10 (89 percent) say improved networks will directly drive revenue, and almost everyone (93 percent) expects meaningful cost savings — driven by smarter operations, fewer outages and lower energy use.

### The C-suite is Turning to IT Leaders and Partners to Lead the Architectural Shift

Cisco's recent research shows CEOs are aligned with IT leaders on the importance of infrastructure in the AI era. 97 percent are expanding the use of AI, and 78 percent rely on their CIO or CTO for investment decisions. But they also recognize the risk: 74 percent say outdated infrastructure is already holding back growth. As enterprise networks undergo a major architectural shift, the C-suite is backing their tech leaders to lead from the network — and 96 percent believe trusted partnerships will be critical to success. 

Discover more of the key findings from Cisco's Networking Research at [tinyurl.com/yc6zeyrb](https://tinyurl.com/yc6zeyrb)



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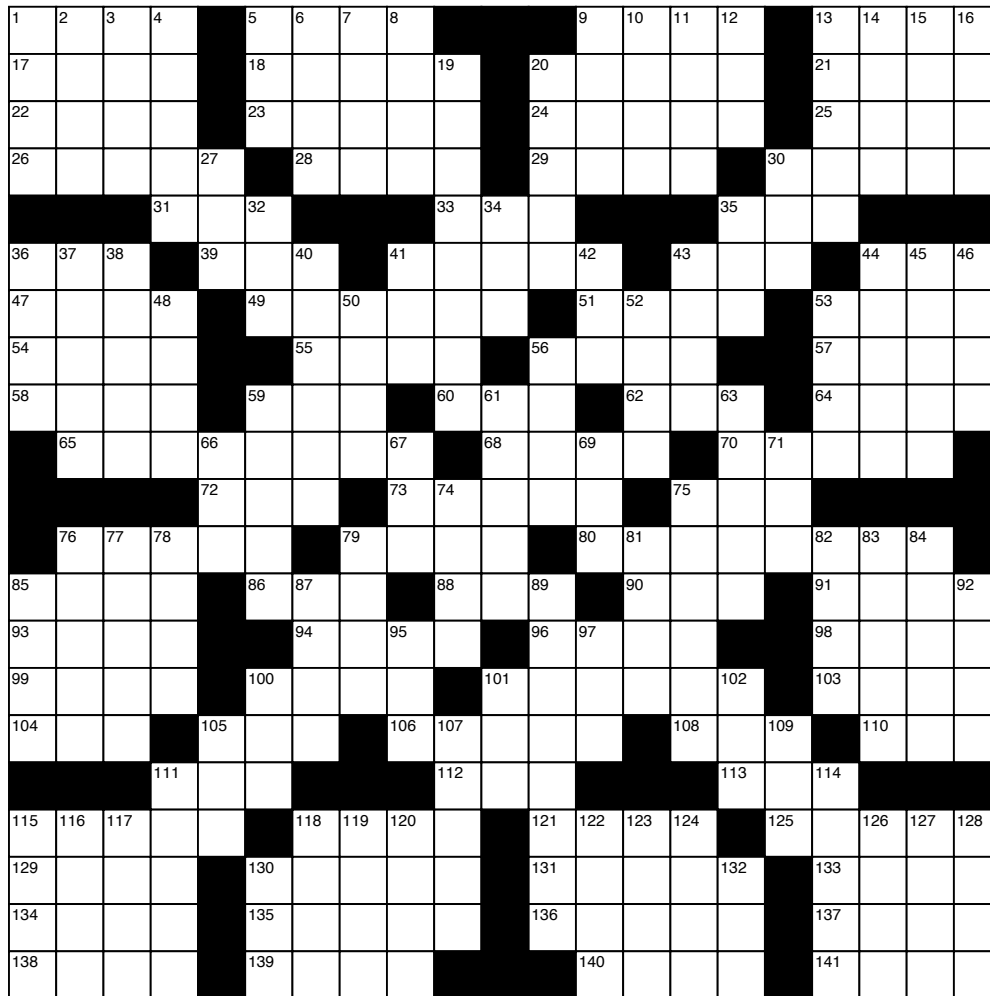
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## ACROSS

- 1 Small fruit seeds
- 5 Stair
- 9 Dart
- 13 Middle East dweller
- 17 Realm
- 18 Cowboy show
- 20 Shale
- 21 South of the border crazy
- 22 Distort
- 23 Forefinger
- 24 Unbeliever
- 25 Pine
- 26 Firework
- 28 GS
- 29 Sleep
- 30 Harnesses
- 31 Physician
- 33 Two
- 35 Wager
- 36 American Football Conference (abbr.)
- 39 Imitate
- 41 Large eastern religion
- 43 Central Intelligence Agency
- 44 Morse code "T"
- 47 Roman iv
- 49 Hug upon greeting
- 51 Business wear
- 53 Airy
- 54 European monetary unit
- 55 Morsel
- 56 Dalai \_\_\_
- 57 Snip

- 58 Legal document
- 59 Cousin
- 60 Body of water
- 62 Curtsy
- 64 Formal "you"
- 65 Spanish estate
- 68 Taboo
- 70 Plate armor
- 72 Scrap
- 73 Type of flower
- 75 Build up
- 76 Attack
- 79 German "Mrs."
- 80 Exclusive
- 85 U.S. President
- 86 Encounter
- 88 Tear
- 90 Advertisements
- 91 Frat
- 93 Small pipe
- 94 Radar echo
- 96 Jacob's son
- 98 Console
- 99 Poky
- 100 Cologne (Gr.)
- 101 Christian opposites
- 103 Dam
- 104 Morning moisture
- 105 Goof
- 106 Commander of "Deep Space Nine"
- 108 Empty space
- 110 Supersonic transport
- 111 Nada
- 112 Travel term
- 113 Legume

- 115 Bustling
- 118 Tropical island
- 121 Witch's concoction
- 125 Adolescents
- 129 Adolescent
- 130 Smithy
- 131 Baited
- 133 Revile
- 134 Asian country
- 135 Defeats
- 136 Author Dickinson
- 137 Island
- 138 Marshy
- 139 Raggedy Ann's friend
- 140 Peter, for short
- 141 Looked

## DOWN

- 1 Animal feet
- 2 Asian country
- 3 South American nation
- 4 Flavorful
- 5 \_\_\_ Lanka
- 6 Loads
- 7 Whirl
- 8 Rind
- 9 Eye infection
- 10 Pros opposites
- 11 Section
- 12 Winter mo.
- 13 Distribute
- 14 Crow
- 15 Teen disease
- 16 Marshes
- 19 Rusts

- 20 Fish
- 27 Scarf
- 30 Yes
- 32 Certified public accountant
- 34 Card game
- 35 Halter part
- 36 Some (2 wds.)
- 37 4-H (spelled out)
- 38 Pope's governing organization
- 40 Decreasing
- 41 Panama
- 42 North American nation
- 43 See ya!
- 44 Headquarters of British India
- 45 Constellation
- 46 Hoopla
- 48 Reserve Officers Training Corps.
- 50 Peel
- 52 Convex shape
- 53 Acting (abbr.)
- 56 Country in SE Asia
- 59 Poet
- 61 Boredom
- 63 Root beer brand
- 66 Wrath
- 67 Spr.. month
- 69 Big Apple (abbr.)
- 71 Flightless bird
- 74 Retired persons association (abbr.)
- 75 \_\_\_ and abetting
- 76 Greek government

- 77 Arm joint
- 78 Alter
- 79 Descended ungracefully
- 81 Rock
- 82 Type of tea
- 83 Kills
- 84 Chaff
- 85 Posttraumatic stress disorder
- 87 Black
- 89 Pacified easily
- 92 Vegetable
- 95 Business abbr.
- 97 Pride
- 100 Kids cereal brand
- 101 Pressure unit
- 102 Tree gum
- 105 Title of respect
- 107 Crawling vines
- 109 Ferret
- 111 Coward
- 114 Eagle's nest
- 115 Speck
- 116 Partial
- 117 Shred
- 118 Something in orbit
- 119 Waterless
- 120 Unattractive
- 122 Tush
- 123 Canal
- 124 Weal
- 126 Simple
- 127 African river
- 128 Luge
- 130 Farming club (abr.)
- 132 Imbue

**June 2025 SOLUTION**

Solution:

B	A	S	K		S	O	D		S	T	M			U	S	D	A			
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I	T	S		K	U	R	A	L	T		C	H	A	N	C	E		K	E	Y
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		S	I	N		T	E	X	T		O	N	C	E		U	T	E		
A	H	A		A	I	D		I	O	U	E	R	A		U	N	O			
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E	N	V	O	Y			S	R	I		A	R	E			N	I	C	E	R
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WE ALSO FACE MANY DANGERS.

SOME LETHAL.

BUT WHEN WE FINALLY ARRIVE... TUBBY CAN GET OFF AND I CAN GET SOME REST.

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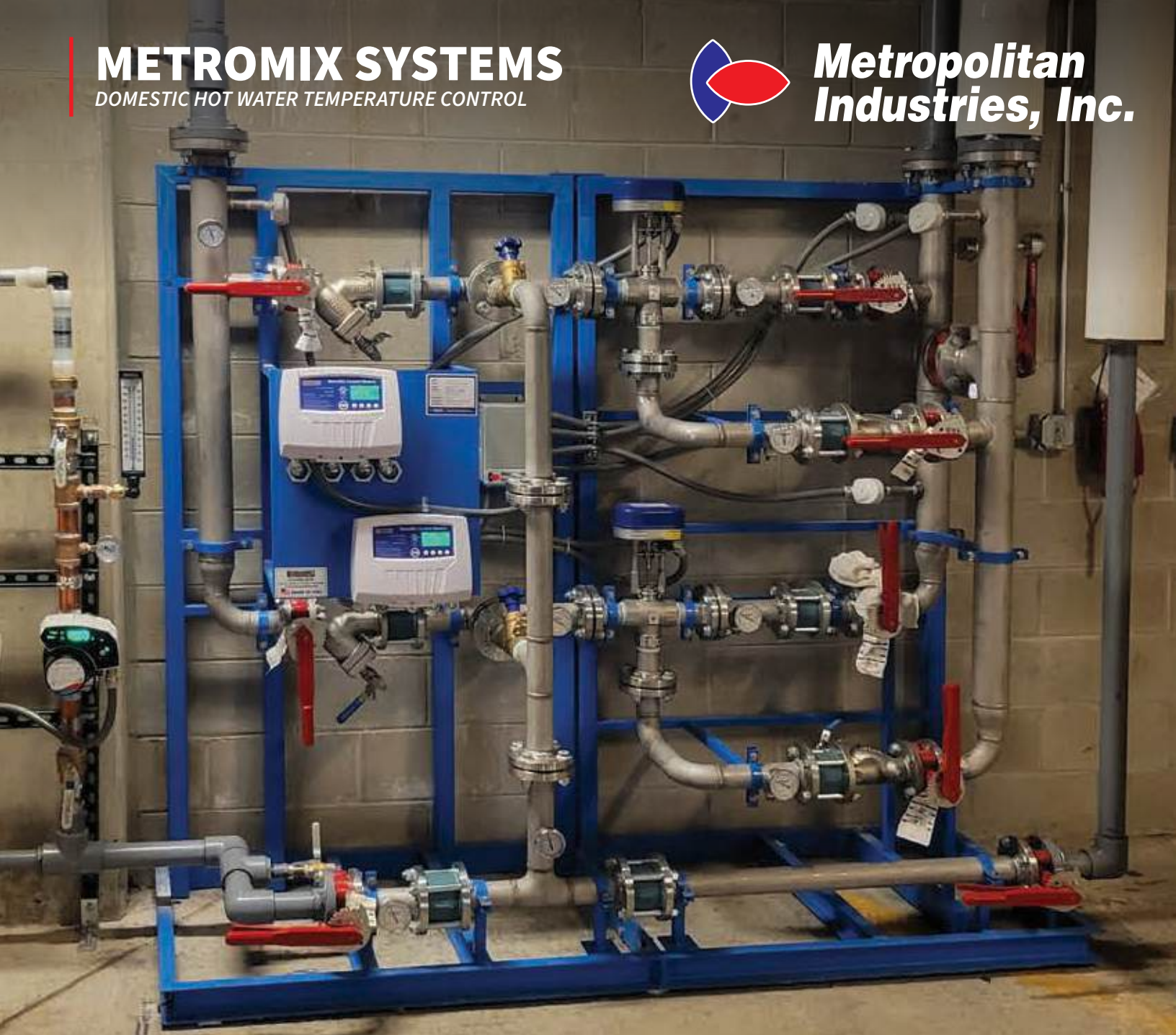
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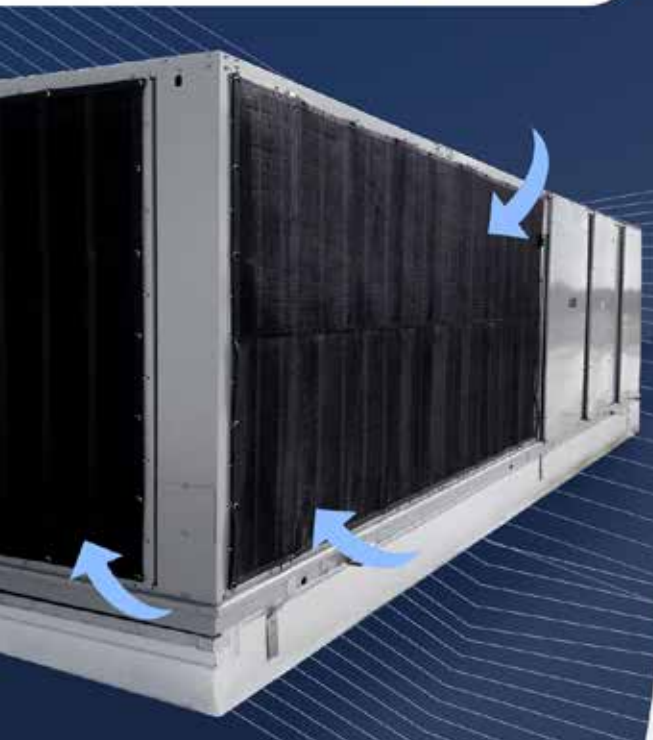
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