

# CHIEF ENGINEER™

MARCH 2024



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Engineer:  
Tony Walsh**

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



**100% TAX DEDUCTIBLE  
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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.

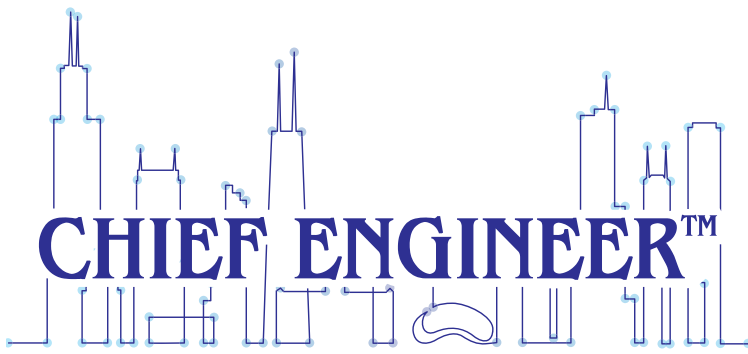
For more information on how these tax incentives might impact the business of your contractors, we would recommend that they contact their tax professionals, as situations differ based on the facts and circumstances for each business. As a general rule, we would not recommend that the Local provide tax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



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## 26 Maximizing Energy Savings Through Optimal Motor Efficiency

We toured the Dreisilker Electric Motors plant to learn how its operation's focus on high standards and precision translate into energy savings for its customers.

## 16 Up & Coming Engineer: Tony Walsh

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## 20 Evaluating the True Cost of Stair Tread Safety for Commercial Property

Del Williams makes a case for durable tread technology versus non-skid adhesive tapes.

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Dear Members,

Many thanks to all of you who came out with your families to participate in this year's annual SkateFest event at the Morgan Park Sports Center. This is always a great family event, bringing together our membership for a leisurely afternoon of skating, gymnastics, pizza and fun. We're grateful to everyone who had a hand in bringing it together, not least our sponsors, Air Comfort and HOH Water Treatment, for their generous support. Thanks also to our Events Committee for their organization of this memorable day out.



This month we look forward to one of the most popular events of the year, our annual St. Patrick's Day meeting at the Irish American Heritage Center at 4626 N. Knox Ave., Chicago, on Wednesday, March 20. Sponsored in part by Chicago Backflow, this event features a corned beef and cabbage dinner, plenty of camaraderie, beer and wine, along with traditional Irish music performed by our very own The Boils. Registration for this event is available now on our newly launched CEAC website at [chiefengineer.org](http://chiefengineer.org).

We are excited and enthusiastic about our new CEAC website, and we think you will be, too. Look forward to a smoother user experience, easier event registration and overall greater functionality to enhance your membership in the organization.

As winter draws to a close and we anticipate the warmer months ahead, it's a good time for us to perform seasonal inspections and maintenance, washing down our cooling towers, checking out our mechanical piping, inspecting our boilers and chillers, as well as our roofing and drainage systems, and having any necessary service performed on them now, avoiding costlier repairs down the line. When you do so, should you need outside help, remember to consult your QuickShopper that was recently distributed. Our Associate Members have been so consistently supportive of our organization, so I urge you to give them your business in kind and give them the support in return that they deserve.

I look forward to seeing all of you at our St. Patrick's Day dinner!

Sincerely,



Doug Kruczek



## ASHRAE, The International Code Council Completes Draft Carbon Emissions Evaluation Standard

ASHRAE and the International Code Council (ICC) have announced the release of the full publication public review draft of a proposed joint standard for the evaluation and documentation of greenhouse gas (GHG) emissions across a building's life cycle.

Proposed ASHRAE/ICC Standard 240P – Quantification of Life Cycle Greenhouse Gas Emissions of Buildings is open for comment from through March 18, 2024. Drafts are posted and comments can be made at [osr.ashrae.org](http://osr.ashrae.org).

Standard 240P will provide a methodology to quantify the embodied and operational GHG emissions associated with buildings and their sites. The standard will also provide minimum requirements for documentation of life cycle GHG emissions.

The standard is intended to support building industry stakeholders, governments and the finance and investment industry in implementing a common platform for measuring, reporting and acting upon the GHG emissions of buildings.

“Standard 240P will play a pivotal role in addressing embodied carbon and significantly impacting the built environment's greenhouse gas (GHG) emissions, particularly within mechanical, electrical and plumbing (MEP) systems,” said 2023-24 ASHRAE President Ginger Scoggins, P.E., Fellow ASHRAE. “We are pleased to collaborate with the International Code Council (ICC) on this standard, recognizing the joint effort's potential to advance effective solutions and contribute to a more sustainable future.”

To review Standard 240P and provide comments, visit [osr.ashrae.org](http://osr.ashrae.org). For all standards related activities including announcements, public review drafts open for comment, call for members and more, sign up for ASHRAE Standards Actions at [ashrae.org/StandardsActions](http://ashrae.org/StandardsActions).

## ASHRAE – Illinois Chapter News

### Learn by Doing With IIT Student Branch

The Student Activities Committee recently teamed up with the IIT Student Chapter of ASHRAE to arrange a technical workshop and facility tour of the fabrication shop and prefabrication process at Premier Mechanical, Inc. Students learned about the idiosyncrasies of different pipe materials and joining methods, as well as the advantages of the prefabrication process, such as precision, safety and environmental impact. Afterward, participants were shown demonstrations of some of the automation tools in the facility, and got to try their hands at sweating copper pipe and welding black steel pipe, with the guidance of union-certified pipefitters.


### YEA to Host Next Learn by Doing Event April 18

The Illinois Chapter YEA is hosting the next Learn by Doing event at Premier Mechanical on April 18, 2024. Interested Young Engineers can register at [tinyurl.com/bdf58vz3](http://tinyurl.com/bdf58vz3)

### Women in ASHRAE Happy Hour on the Riverwalk May 23

Join WIA at the Northman Beer and Cider Garden on the Riverwalk May 23 at 4:30pm. For more information, visit [tinyurl.com/2e7hz6kd](http://tinyurl.com/2e7hz6kd)

### Calling Young Engineers in ASHRAE!

And speaking of subgroups within the Illinois ASHRAE, if you are an ASHRAE member 35 years old or younger (except student members) why not get involved with the Young Engineers in ASHRAE (YEA)? Members host several opportunities to get together with other young professionals to socialize, network, learn and tour interesting project sites. For several years, YEA members have planned and conducted the chapter's excellent Spring Conference. The YEA committee is chaired by Paul Borchert and Kevin Schlotman. Reach them at [YEA@illinoisashrae.org](mailto:YEA@illinoisashrae.org). Find out more about YEA at [illinoisashrae.org/YEA\\_Membership](http://illinoisashrae.org/YEA_Membership) 

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## American Coatings Show & Conference

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The American Coatings Show (ACS) is the leading North American coatings industry event, setting trends for future developments in the industry. Attending the show facilitates immediate business opportunities, access to a complete portfolio of high-grade competitive products, and myriad networking and connection opportunities.


The dynamic offerings to which attendees can look forward include:

- The American Coatings Conference, which is held concurrently with the exposition, will provide an in-depth comprehensive overview of advancements in coatings formulations, as well as key technological developments. Speak directly to top decision-makers in international coatings development or present your own expertise.
- Live, onstage Product Presentations, which allow you to be among the first to learn about new innovations in the coatings industry

- The Industry Buyers Lounge, which provides a designated area for show participants to set up important meetings.
- The trade show and conference newspaper, the American Coatings Show Daily, published all three days of the show, features daily highlights, interviews with industry experts, exhibitor booth locations, and more.
- In 2024, the ACS will once again feature a Powder Coatings Pavilion.

The ACS also will feature a keynote presentation from Dr. Robert Roop, Senior Vice President and Chief Technology Officer at Axalta Coating Systems. His lecture, Coatings Innovation in the Future: Sustainability and Performance, will explore the shift in coatings innovation focus. He will show how, in the past, innovation was driven primarily by the need for improved performance — durability, cure rates, consumption, etc. — while meeting regulatory compliance. And he will discuss the future of the industry, in which innovation will be heavily focused on improved sustainability, driven by societal demands.

Dr. Roop has served in his current role at Axalta since July 2019, and in various technology leadership roles across Axalta over the preceding 10 years. Prior to those roles he spent 20 years in technology and operations positions at DuPont in various polymer and chemical businesses. Dr. Roop holds a B.S. in Chemical Engineering from West Virginia University and a Ph.D. in Chemical Engineering from Texas A&M University.

An added attraction for the benefit of the industry's future is the ACS Fun Run, sponsored by BYK, which will take place Wednesday, May 1, 2024, from 7:15-8:15am. You can register online or in-person for this event. Cost is \$30, proceeds of which go toward funding student participation in future American Coatings Conferences. 

For more information and to register, visit [american-coatings-show.com](http://american-coatings-show.com)

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## THE NEW CEAC WEBSITE HAS LAUNCHED!



In March, the CEAC board launched the new website and member database. In partnership with our website provider, the Publication and Website committee consisting of Doug Kruzcek, Barbara Hickey, Tom Phillips, Ken Botta, Mike Collins and Mike Badame, worked hard to create a great experience for our members. We are confident this upgrade will provide a better account management experience, allow easy event registration and access and a more seamless flow of information. A special thank you to Leslie Johnson and Alex Boerner for their help testing and ensuring the website was ready for our members.

As is with all technology these days, upgrades come with a change in process or how we view things. The legacy website and database will be sunset. All current members will need to log into their accounts and renew their membership for either their Active or Associate subscriptions under the Join Now tab. New members can create a new account also under the Join Now tab with the Membership drop down.

During the transition, initial registration fees for Active members will be waived. You will just pay your annual dues for 2024. Going forward, your account will renew cyclically from the time of sign up, as opposed to every January like before. Once your profile is created, the magazine will resume shipment to your address on file and you will be able to register for upcoming events! Make sure to sign up in advance to ensure a smooth entry into the events. We can't wait to see you!

While we hope the sign up process is smooth, feel free to reach out with any questions. You can email [info@chiefengineer.org](mailto:info@chiefengineer.org) or call 708-293-1720 for assistance.



# MEET THE TEAM

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**DEBORAH MITCHELL**  
*Project Manager*

As the Project Manager, Deb kept the team on track, making sure we were hitting our milestones. She guided us through the process and ultimately to launch.



**RYAN VANDEHEY**  
*SEO Team Lead*

Ryan's role makes sure the site is technically sound and optimized for search engines. We want our members to find us easily!



**JASON HEIEN**  
*Developer*

Jason really steals the show here! As the mastermind of the site, Jason spent countless hours coding the site to function, not only as a user friendly website, but as a complex database for our members.



**EDYTA SYKALA**  
*Analytics Team Lead*

Much like the efficiency of your buildings, site performance is very important. Edyta and team set up the analytics tracking and reporting for the site. Think of it as a health report on performance.



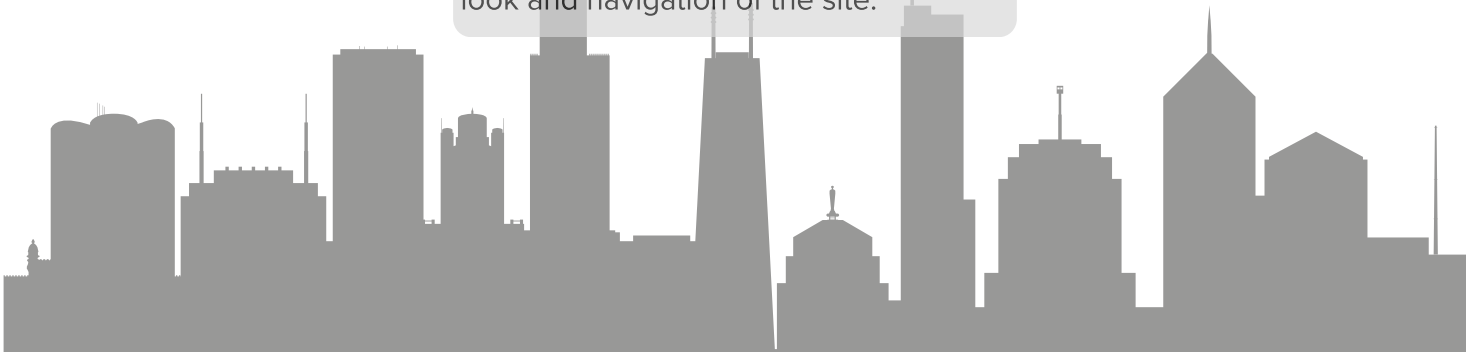
**QUALITY CONTROL TEAM**

Once the site is ready to go, this team does their due diligence to test functionality on all different browsers and mobile devices.



**DUSTIN MCPHATE**  
*Designer*

That fresh and clean look...we owe it all to this guy! Dustin designed the crisp look and navigation of the site.



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Your building's fire sprinkler system must be inspected, tested, and maintained to ensure it will operate properly during a fire.

# INSPECT TO PROTECT

Fire sprinklers provide the greatest fire protection for your building. They control a fire while it's still small and allow occupants to safely escape.

However, just like other systems in your building, it's essential that a fire sprinkler system is inspected, tested, and maintained (ITM), especially since lives and your investment are dependent on it.

Don't let a devastating fire happen in your building. Comply with state requirements by incorporating a regular fire sprinkler system ITM program in your building.

Illinois state code, NFPA 101: Life Safety Code (2015 edition), requires all automatic fire sprinkler systems, standpipe

systems, and fire pumps to follow ITM procedures according to the NFPA 25 standard.

And in accordance with state law (225 ILCS 317/17), **building owners must utilize a fire sprinkler inspector who is employed by a state-licensed fire sprinkler contractor.**

**NEW IN 2024:** All inspectors must be in possession of an individual Fire Sprinkler Inspector license issued by the Illinois Office of the State Fire Marshal. This license ensures that the individual has been vetted by OSFM to have met the necessary qualifications for such work. Do not allow any individual to service your building's fire sprinkler system without the proper state license.



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# Up and Coming Engineer: Tony Walsh It's a Good Time to Be a Chief

By Kate Gawlik

*As part of the job, Tony has operated 60-year-old chillers at historic sites and new York Magnetic Bearing Centrifugal chillers in modern high-rises.*

It is a pinnacle time for many industries, on a variety of issues, as the post-pandemic world is defined. Artificial intelligence (AI) and machine learning (ML) have encapsulated every market. Building owners and developers are reimagining work spaces where hybrid lifestyles are a priority. Chicago is under new leadership with a focus on sustainability codes and energy use while determining what that means for the city's historic structures.

The possibilities are palpable, making it a pretty good time to be a chief engineer, or so says Tony Walsh, the Assistant Chief Engineer at Jones Lang LaSalle at 101 North Wacker. For Walsh, the rewards keep piling up with a future that can go in so many directions.

"I've met a lot of great people that have given me an incredible amount of guidance and advice," Walsh says. "I've always enjoyed the fact that in this field, we get to experience a diverse range of equipment and locations. For example, I've had the opportunity to operate 60-year-old chillers in 100-year-old iconic and ornate Broadway theaters, as well as brand-new York Magnetic Bearing Centrifugal chillers in newer and modern state-of-the-art high-rises."

## On the Job

Walsh joined Local 399 about 10 years ago and became a Chief Engineer Association of Chicagoland (CEAC) member five years ago. Like many, Walsh says he is "playing catch-up" in his formal education to advance what his work experience has given him. He is working to complete the Local 399 Facilities Engineering Technology Certificate at Triton College with plans to enroll at the Illinois Institute of Technology next.

As he focuses on his education, Walsh feels the support of CEAC behind him. He hopes new recruits or others thinking about a career as a chief engineer take their education seriously.

"I have found that more often than not, the first place someone looks on your resume is the education section. As someone currently going through it, this is something that can be very difficult to play catch-up on later in life, though still totally worth it," Walsh admits.

During the last several years, Local 399 has built a first-class training facility, as well as partnered with area colleges and technological institutions to provide its members with





*Mentorship from 101 North Wacker Chief Engineer Tim Maloney has allowed Tony to take on various building projects, including a demand-control ventilation strategy for operating the building's main air handlers.*

the programs and seminars needed to succeed. Walsh believes the CEAC goal is to produce highly skilled men and women in the trade while recognizing the emphasis that hiring managers place on college degrees.

Beyond the classroom, on-the-job training came from Walsh's first job with Pat Barry, the Chief Engineer at 1 South Wacker, where one project after another brought new experiences.

"I saw two major lobby and plaza renovations, a total chilled water plant renovation, and a complete retro-commissioning of the building air handlers and BAS programming," Walsh says. "Throughout all these improvements, Pat was sure to heavily involve the entire team, which gave us a real sense of pride for these projects. He also took the time to teach me the ins and outs of the management side of engineering and gave me the encouragement to move up."

Walsh says his good luck continued when he became Assistant Chief at 101 North Wacker, working with Chief Engineer Tim Maloney. Walsh adds, "With his background as an electrician and teacher at the 399 Union Hall, it's incredible what I've been able to learn from Tim in my first year here."

One focus for the 101 North Wacker crew is working on implementing a demand-control ventilation strategy for

operating its main air handlers.

Walsh says, "This is an energy-saving control measure that involves updating our outside air dampers and actuators, updating our BAS programming, and installing new Ebtron airflow measurement stations within the air handlers. We will then be able to reset our outside air intake based more on actual demand, building occupancy and IAQ. This also gives the building the chance for an incentive rebate through the ComEd Energy Efficiency Program."

## On Trend

Like all major cities, Chicago is determining how to get tenants back in leasable spaces. According to a Cushman & Wakefield report, sublease availability was up 32.8 percent in 2023 compared with 2022. The Loop and West Loop take the lion's share of that record-setting statistic,



*Tony Walsh is the Assistant Chief Engineer at Jones Lang LaSalle at 101 North Wacker.*



Tony has two kids, Maura and Ryan, with his wife, Christine.

accounting for 60 percent of available subleases.

The impact on CEAC and its operators can be felt in many ways. This starts with budget constraints, because building owners have limited funds — with fewer tenants and less incoming rent — to make repairs. Walsh notes it's more important now than ever to emphasize preventative and predictive maintenance programs.

"With some equipment dating back as far as 40 years, you can lose your entire budget to unscheduled emergency repairs if you're not diligent," Walsh says.

With fewer tenants in each building, tenant expectations also have shifted with a focus on certain amenities. The proof of this is in Class A office buildings, which are not struggling to attract people, posting a positive net absorption trend over the past few quarters. This is in part to amenities, like green spaces, sustainable traits that focus on occupant health, commuter ease with bike or train access, and debt-free lease terms. Walsh believes that workers expect their offices to be a destination, not just a jobsite, with the chief engineers playing a role in tenant satisfaction and, ultimately, occupancy.

AI, data analytics and ML are some of the reasons why Class A buildings are thriving in a tough market. Energy efficiency in these and other buildings is being improved with BAS software that alert the engineering teams about potential problems and opportunities for improvements.

As these systems improve, chief engineers are eagerly awaiting the latest trends and future possibilities.

Hardworking, fast-learning people like Walsh are ready and waiting, saying, "Really, I'm just excited to see where it all goes." 📧

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

## 7 Questions with Tony Walsh

### WHAT IS YOUR FAVORITE THING ABOUT CHICAGO?

Chicago in the summer is the best. Between the weather, beaches and events, I'd put Chicago up against any major city in the country.

### WHAT IS THE LATEST SHOW YOU BINGED AND LOVED?

I never finished "Peaky Blinders," so my wife and I just completed a total rewatch. And we'll probably do it again when the movie comes out.

### WHAT IS YOUR FAVORITE MEAL?

I could probably eat pizza for breakfast, lunch and dinner.

### WHAT IS YOUR MOST MEMORABLE CONCERT OR EVENT?

I was fortunate enough to attend a few 2005 White Sox playoff games, including game two of the World Series. That was definitely something I'll never forget.

### PEOPLE WOULD BE SURPRISED TO KNOW ...

I've always been a very good cook.

### MY FAVORITE PART ABOUT WORKING IN THE INDUSTRY IS ...

Getting to meet different people across all the different trades.

### WHEN YOU WERE A CHILD, WHAT CAREER DID YOU WANT TO HAVE WHEN YOU GREW UP?

I thought I'd like to be a firefighter. But as I got older, that started to fade and I got more interested in the trades. I didn't have a clear job in mind, I just knew I wanted to work with my hands.



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# Evaluating the True Cost of Stair Tread Safety for Commercial Property

By Del Williams

*After 18 months, the Form-A-Tread stair tread saves the facility the cost of reapplying new non-skid tape every six months.*

For commercial property owners and managers, evaluating the Total Cost of Ownership (TCO) for purchases is critical to acquiring items at the lowest long-term cost. Assessing TCO requires not only understanding the initial purchase cost but also consideration of the operating costs, longevity and remaining value beyond its expected life.

When managing properties, using the industry's best practices and products with an eye on TCO can be a cost-effective way to increase safety as well as reduce maintenance, potential liability, and even commercial insurance rates.

TCO is an even more critical analysis when new products enter the market that disrupt the status quo. After all, it is difficult to evaluate the value of an innovative product that promises to be a much more effective, long-term solution but initially costs more, uses different materials, or is applied differently. For property owners and managers, this is the case when analyzing the TCO of non-skid stair tread striping applied to interior and exterior stairs to prevent slip and fall accidents.

Although simple in concept, the application and maintenance of safety stair tread striping is particularly challenging in outdoor or high-use settings. The traditional choice — non-skid adhesive tape — can peel or wear away in a short time so must be replaced frequently. However, new innovative 100-percent epoxy-based material containing embedded nonskid aggregate are now available that promise to last much longer, requiring minimal reapplication.

To evaluate the TCO of both options, building owners and managers can apply a specific formula used for capital equipment, with slight variations for stair treads:  $TCO = \text{initial cost (I)} + \text{maintenance costs over 5 years (M)} + \text{estimated downtime (D)} - \text{remaining value after 5 years of depreciation (R)}$ .

## Initial Cost (I)

When choosing among alternatives in a purchasing decision, property owners often look at the initial purchase price. However, they should also consider the long-term cost of ownership.

In the case of non-skid adhesive tapes, the initial cost is approximately \$1.50 per linear foot. In typical indoor conditions, non-skid tape generally lasts only about six months before requiring removal and reapplication. At this rate, using the tape costs about \$3 per linear foot per year or \$15 per linear foot over five years.

On exterior stairs or ramps, the expected life of traction tape is only three months but can be considerably shorter particularly in areas exposed to chemicals, moisture, high-temperatures, or high traffic. With a three-month lifespan, tape costs approximately \$6 per linear foot per year or \$30 per linear foot over five years.

Compare tape to a more durable option: a 100-percent epoxy-based material that creates a superior tread with an initial cost of \$4.50 a linear foot. Designers created the

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material to last at least five years in most outdoor applications and many more years in indoor applications. The product from Form-A-Tread Company achieves a strong bond to a wide range of stair tread surfaces and contains embedded nonskid aggregate to increase traction.

While the durable tread initially costs more than non-skid tape, it takes just 18 months to reach the break-even point for indoor use. After 18 months, the Form-A-Tread stair tread saves the facility the cost of reapplying new non-skid tape every six months. For outdoor applications, the material savings is \$25.50 over the same period of time.

## Maintenance (M)

Non-skid tape is difficult to maintain, can become unsightly, and must be frequently inspected and replaced. Since tape cannot be repaired, it must be replaced if damaged. The remaining tape and residual adhesive must be thoroughly removed from the surface before the new tape is applied.

Peeling tape can also pose a trip hazard. Tape often peels off in a short time because it does not bond well, especially to common surfaces like concrete, stone, and masonry. The surface non-skid grit layer can also become ineffective and quickly compromised, especially in hi traffic locations.

Because non-skid tape is not very durable it is primarily used on interior stairs. In outdoor applications, it may only last for as little as a week or less in harsh conditions or consistent exposure to sun, rain, snow, ice melt chemicals, power washing and other cleaning methods.

"In my experience, non-skid tape comes off repeatedly," Gani Bajraktari, Senior Property Manager at New York-based Bajraktari Realty Management Corp., says. "It is a temporary solution, so you are wasting your time, energy and effort every time you reapply it."

Maintenance cost should also include the manager's time as well as the labor required for frequent inspection and reapplication of the traction tape. In addition, purchasing and inventory costs accrue when the tape must be continually replaced and kept available for use.

Today, a 100-percent solids epoxy paste that contains embedded slip resistant aggregate is a more cost effective and long-term stair safety tread solution. These materials create a tread with consistent, superior traction and safety for at least five years, even outdoors, with essentially no maintenance. They also resist UV, moisture, chemicals, ice melt, temperature extremes, aggressive cleaning, and pedestrian and vehicle traffic.

Because the nonskid aggregate is held in suspension within the formula and is not just adhered to the surface, as with traction tape, it does not wear away. The hardness of the formula (75 Shore D) enhances the abrasion-resistant, so the overall tread is much less susceptible to damage compared to traction tape. Unlike tape, if the epoxy material were to

be damaged, by an ice chopper for example, it is easily repairable. If damaged, just clean the surface, and reapply. The formula adheres to itself, which is a nice added feature. Overall, this innovative formula removes the cost associated with frequent inspection and replacement, and significantly lowers the total cost of ownership.

According to Bajraktari, he first used the Form-A-Tread to improve the safety and footing of outdoor stairs in residential projects that could become slippery when wet. "It held up amazingly well to the sun's UV and outdoor weather. Seven years later it still looks as good as the day we applied it."

## Downtime (D)

The evaluation of TCO includes consideration of any downtime due to equipment failure.

In the case of stair treads, the equivalent of "downtime" is when the safety tread loses adhesion, starts to peel off, is damaged, or the surface traction is worn away.

The reality is that in many cases stair tread replacement does not occur immediately, or even for some time if not discovered or facility personnel are busy elsewhere. This can effectively mean the facility is not following its own safety protocols.

Stairtread "downtime" can have serious financial consequences if slip and fall accident occurs, leading to litigation, liability, workers' compensation claims, and rising insurance rates. A long-term solution that doesn't require constant replacement minimizes any potential downtime, provides a consistent and predictable level of safety, and can reduce the potential for such claims.

According to Bajraktari, the epoxy product not only improved safety and eliminated the need for frequent re-application, but also had a more aesthetic look over time due to the lack of visible wear. He has found the approach surprisingly cost-effective in reducing maintenance, potential liability, and commercial insurance rates. In his experience, the cost to apply the product proved more cost-effective than dealing with additional claims and insurance costs.

## Remaining Value After 5 Years (R)

Even with depreciation, capital equipment often retains some value after five years. In a similar way, more durable solutions like 100-percent solids epoxy pastes with embedded aggregate often still have value far beyond five years.

These epoxy pastes are formulated to create a permanent mechanical bond. Not only does an epoxy paste adhere to the stair tread surface, but it also flows into the microscopic cracks and crevices of concrete or other porous substrates and mechanically bonds. The formula has also shown to have excellent adhesion to smooth surfaces like tile, and steel or aluminum diamond plate.

The bond is so strong that a chisel or angle grinder is required to remove the stair tread line, an advantage in high-traffic

areas. Since the aggregate is embedded throughout the entire epoxy paste and not just on the surface, as the epoxy paste wears over time new aggregate is continually exposed to provide renewed traction.

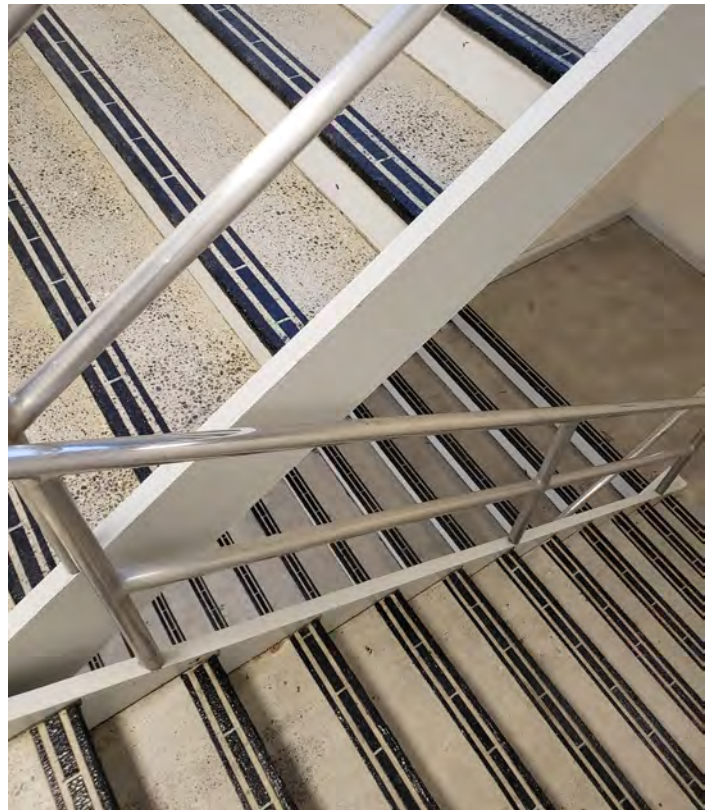
“Instead of temporary applications, it is much more effective to solve the problem the first time with a product like Form-A-Tread and be done with it. The footing is amazing, and you feel more secure going up and down the stairs,” says Bajraktari.

“As far as durability, I expect the stair treads to last for at least 10 years or more in indoor applications,” he adds.

Although it is natural for commercial property owners and managers to seek solutions with the lowest initial cost, considering the TCO is a much more cost-effective alternative. Given this, the properties can achieve significant long-term savings and increased safety by looking beyond short-term choices like non-skid tape in favor of much more durable options like epoxy paste stair tread that does not require continual replacement. ■■

For more information: Call 610-994-2138, email [info@rgfmaterials.com](mailto:info@rgfmaterials.com) or visit [form-a-tread.com](http://form-a-tread.com).

Del Williams is a technical writer based in Torrance, California.



The application and maintenance of safety stair tread striping is particularly challenging in outdoor or high-use settings.



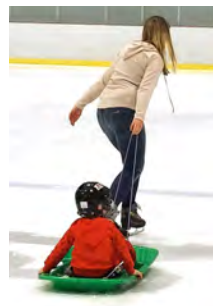
# UPCOMING EVENTS

<p><b>APRIL 17</b>  <b>General Meeting</b>                  4:00PM - 7:00 PM                  190 N. LaSalle                  The Stacks &amp; Library  <i>Open to all members</i></p>	<p><b>MAY 1</b>  <b>Vendor Appreciation</b>                  5:00PM - 7:00 PM                  Morgan Arts Complex  <i>Associate Members</i></p>	<p><b>MAY 15</b>  <b>General Meeting</b>                  4:00PM - 7:00 PM                  Local 399 Back Lot  <i>Open to all members</i></p>	<p><b>JUNE 8</b>  <b>Special Event</b>                  5:40 Deck Access                  7:10PM Game                  Guaranteed Rate Field                  White Sox Fan Deck  <i>Open to all members</i></p>
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Thanks to everyone who came out to the annual Skatefest event this past month. This family-centered event is one of the favorite events we put on each year, and we're grateful to everyone who participated and made it possible, including our Events Planning Committee and all the personnel at Morgan Park Sports Center, and especially our sponsoring organizations, Air Comfort and H-O-H Water Technology, without whom the event could not have been possible.

This month we meet at the Irish American Heritage Center (4626 N. Knox Ave., Chicago) on Wednesday, March 20, for our celebrated St. Patrick's Day dinner and event. Registration is open, so don't miss out on one of the most-anticipated CEAC events of the year.

As always, the CEAC has event sponsorship opportunities available for upcoming events. If your organization is looking to elevate its profile by sponsoring a CEAC meeting or event, please reach out at [events@chiefengineer.org](mailto:events@chiefengineer.org). 







# Maximizing Energy Savings Through Optimal Motor Efficiency

By Karl J. Paloucek



Working on winding a motor for the Willis Tower.



*Dreisilker Electric Motors serves Chicagoland and the rest of the nation from its facility in Glen Ellyn, Ill.*

Energy savings and efficiency are always on the mind of any conscientious Chief Engineer, as are cost-effective ways to achieve them. This month, we went out to Glen Ellyn to meet up with the folks from Dreisilker Electric Motors to learn how they approach motor repair, and to see what impact that approach can have on long-term energy savings for the properties overseen by our members. We met with Michael Dreisilker, Senior Account Executive, Matt Dreisilker, Vice President of Engineering, and Zac Zych, Vice President of Sales, to tour their facility and to discuss energy-saving strategies that are integral to the work they do.

Dreisilker maintains a reputation for working on specialized motors across a broad spectrum of industries, and has done so for nearly seven decades, since current President Leo Dreisilker's father, Henry, established the business in 1955, providing complete motor solutions to the Chicagoland area and nationwide, and growing from a 750-sq. ft. facility with three employees to the 73,000-sq. ft. sales and repair center with 120-plus employees today.

### **A Process of High Standards and Precision**

At the heart of Dreisilker's growth is a business and work ethic that emphasizes great and meticulous care in the process of motor maintenance and repair. Matt Dreisilker articulates how that process differs from many of their competitors. "One of the biggest differentiators between us and 90-plus-percent of the world is how we remove and strip our windings," he says. "To be able to remove these windings, what 90-plus-percent

of the world does, is they just burn and incinerate it off. That makes it easy for them to pull it out with just hand pliers. But what it's doing is, they're roasting it at 700-800°F, and even sometimes the insulation catches fire in the burnout ovens. But the core of steel that holds the motor windings actually absorbs and gets current induced from the coils in the stator — that's where a lot of your energy loss goes into your motor. ... When your motor is burned out, as we call the burnout process, after it's repaired, you have a motor that will use more electricity. You make it less efficient [via] that process than our process. Our process has zero damage to the motor."

Matt provides us with an example, for clarity: "I just did a calculation on a 20-horsepower motor for a customer that has a plastic induction motor, and their core loss was at about 9 watts per pound. So their stator lamination stack — I calculated the dimensions and how much it weighs. This was, like, 54 lbs. of electrical steel. So if you multiply that out, and convert watts to horsepower, it's losing .86 horsepower just in the laminations. Most 20-horsepower motors should be around 3 watts-per-pound of loss. But that's why electrical motors are some of the most efficient machines, because they're trying to lose as little energy as possible in that core. That's all energy and heat wasted in your motor."

Another massive benefit of bypassing the burnout oven process is relative expediency. "We get in a lot of emergency jobs," Michael says. "The customer's losing big dollars. We can have a motor stripped in a matter of a few hours. We've got to clean



Dreisilker maintains a full machine shop so that roughly 95 percent of all repair work can be done in-house, significantly cutting down repair times for customers.

them out and everything, and all that, but the other process, burnout oven process, what they do is they have a huge oven, they have to turn on the oven, get it up to ... 700°F [then bake for] at least eight hours. Then it's got to cool down. So you've got 24 hours wasted. We are already well into the winding process before they're even touching it."

The burnout process is also much dirtier and environmentally pollutant than the process used at Dreisilker. Where most shops employing the burnout process may vent their ovens directly to the outside, allowing smoke filled with contaminants to go where it will, the process employed at Dreisilker is comparatively green.

Core loss testing is a vital procedure that Dreisilker offers that can make the difference between a newly re-wound motor lasting just a few weeks or for many years. "We've had some motors come in that had been previously repaired [elsewhere] that show signs of internal damage," Michael Dreisilker says. "And what we'll do is hook up the core loss tester, we'll take an infrared picture, and we'll send it to the customer and say, 'Hey, your motor — look at the hotspots. If we re-wind a motor and don't address these issues, your motor's not going to last. It's going to burn out very, very quickly.' It's another quality step that we take to make sure we don't re-wind something and it's not going to last. Because that's the worst-case scenario."

They also just upped their standards to reflect the vast improvements in core laminations. "Before, anything under 6 watts per pound was acceptable with no hotspots," Matt Dreisilker says. "But just because there are so many more newer, efficient materials, anything above 4.5 watts per pound needs approval from our winding supervisor, or my review, just because it can cause the motor to overheat so bad."

Precision and high standards are germane to the work done at Dreisilker. Computer-automated machines are employed to wind coils to precisely the same length, ensuring a zero-to 1-percent imbalance between phases at best, versus the three percent or so that might be more typical in the industry. And for all round-wire windings, inverter-grade wire is used to

accommodate the proliferation of VFDs that have become so commonplace today.

Precision and standards are also at the heart of why Dreisilker maintains its own full machine shop onsite. "We have almost 95-plus-percent capability to repair all of our motors, because if we have to outsource, we lose time and quality," Matt explains. "The only things we don't do is make special gears, Babbitt bearings or chrome baths. Otherwise, we have welding, new shafts, sleeving, electroplating, and all types of stuff to make new and repair."

And of course, everything that comes into the Dreisilker shop that rotates gets balanced in-house, for precision as well as for energy savings. "For balancing, we follow a standard called ISO 1940-1," Matt says. "Based on the weight and the speed of your rotor, it sets specific tolerance levels. Like, for example, most motors are rated for G 2.5. We'll set that tolerance. Then we keep balancing and balancing, until we can't really balance it any more. So we're exceeding those ratings by a lot. That's going to extend the life of your bearing by years."

### **A Long History of Energy Savings**

Meticulous care and craftsmanship comprise large dimensions of Dreisilker's ethic, but they're not the whole story where energy savings are concerned. Energy savings have always been at the heart of the company's growth strategy, and are an integral part of its dynamic in the market, as VP of Sales Zac Zych was keen to tell us.

"When I first came on board, I was working with a guy named Dick Geiken, and we were working with energy-saving motors," Zych recalls. "There was the standard-efficiency and premium-efficients were starting to come out. We were going through and showing the energy savings by going from standard efficiency to premium efficient — that was our first project. Then VFDs came along. The savings on a fan, like say from inlet guide vanes, when the motor's running full-speed and you're just choking off the air flow with the vanes. You put a VFD on there, lock those vanes open, and you run that VFD-and-motor combo at 80 percent to maintain your static



Some of the most skilled personnel at Dreisilker work in the winding department.



Cutting the winding head from a large engine using a circular saw.



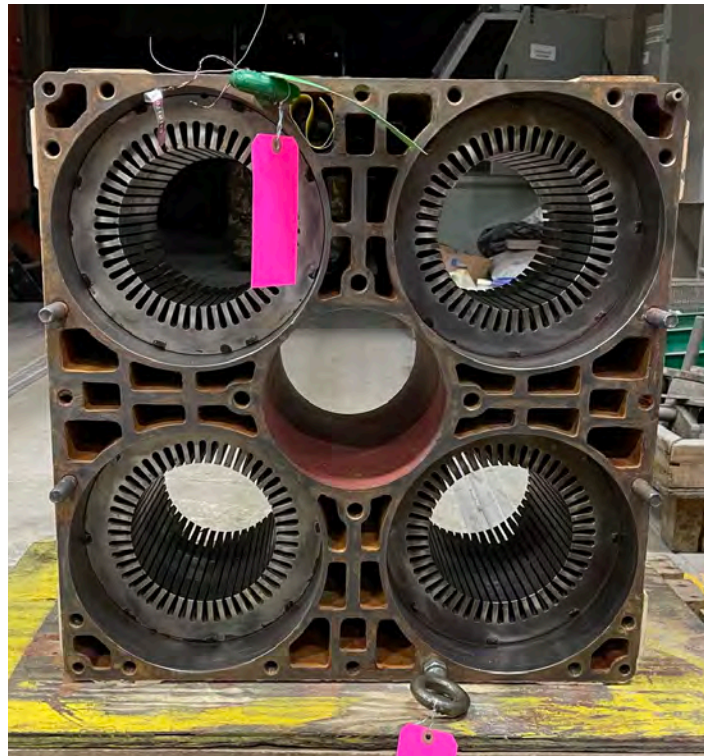
Damaged laminations will require proper repair to prevent rapid burnout of the motor after re-winding.



Once the winding head has been removed, the process of stripping really begins, placing a stator over a flame of roughly 400° F.



After warming, winding can be stripped out and removed manually — with much cleaner results than offered by burnout ovens.



The stripping and cleaning process at Dreisilker helps to preserve the core steel laminations prior to re-winding.



A liquid-cooled motor with hand-soldered cooling pipes — in a burnout oven, the cooling system would melt completely away.



Computer-automated winding machines like this one guarantee uniform coil length for proper phase balancing.

pressure? You cut your kilowatt savings in half, which is 50 percent, so we were going around doing that.

"Then ComEd came on board, and they were giving rebates per horsepower," he continues. "If you were putting drives and retrofitting old, antiquated physical control — bypass valves, inlet guide vanes, bypass dampers, all that stuff [you would be issued a rebate]. We were working with a lot of mechanical contractors on doing the upgrades. A lot of it had to do with rooftop units. That kind of exploded because ComEd was giving [rebates] per horsepower.

"So we sold a product. And by the way, when you got that installed. We'd come out and we'd give it our blessing. We'd go ahead and do your programming, check your wiring. Then you've got an extra year warranty. That's how we did it. ... As time went on, that's kind of our marketing strategy, was to say, hey, anyone can sell you a VFD, but we sell you the VFD plus the support. And then we went through that way. And the energy savings just kept going on and on with that. We probably saved end users millions of dollars in kilowatt consumption, if you add it all up throughout the years." 📺

## Just One More Thing ...

As our visit wound down, Michael didn't want to leave out an aspect of energy efficiency that might easily have been overlooked, and that's V-belts — specifically, Optibelt V-belts. He knows well that there are a good many facilities citywide that could benefit from a transition to V-belts. "There's so much old stuff in the city, it's incredible," he says. "After COVID funds came into Chicago Public Schools, they did a lot of HVAC work. They still have air handler units running on leather belts. A lot of them — a lot of them. It's amazing. From the '30s and '40s."

When contractors call for a belt upgrade from flat belts to V-belts, Dreisilker brings its full-service A-game out on location. "We measure the diameter, come up with the ratios, [specify] this diameter pulley, this horsepower rating, this many belts. They have computer software that you enter in all the data of that drive — the fan diameter, motor diameter, pulley, shaft-center distance, horsepower, RPM, and they can come up with the most efficient replacement pulleys. So sometimes they could go from 10-groove pulleys, 6-, 7-, 8-groove pulleys, to sometimes 4-groove — or 3-groove, with a higher horsepower-rated V-belt. And again, it can save electricity. Not only save on the cost of the replacement pulleys and belts, but also, you can get a little bit more energy efficiency out of a drive like that."



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# New Danfoss BOCK® CO2 Compressor Offers Larger Capacity with Strong Performance

The newest Danfoss BOCK compressor, the HGX56 CO2 T, provides an optimized design solution for industrial and commercial refrigeration, including cold storage and ice sports facilities, as well as for large industrial heat pumps. With the 6-cylinder capacity, customers can reduce the number of compressors in their system, resulting in lower system complexity and investment costs.

With the approaching HFC phasedown and transition to natural refrigerants, the HGX56 CO2 T transcritical compressor range is designed for demanding conditions with natural refrigerant R744 in commercial and industrial applications. The expansion to 6-cylinder capacity allows for a wider spread and faster uptake of large CO2 heat pumps and industrial refrigeration systems. Additional benefits of the increased capacity — up to 135 kW for cooling and 360 kW for heating — include greater efficiency and reliability, along with low noise and vibration, a compact and lightweight design, and a minimal oil carry-over rate.

As a result, the HGX56 is an attractive alternative to compressors using HFC or HFO refrigerants or ammonia and provides the same optimal performance at full and partial loads.



Danfoss's BOCK HGX56 CO2 T transcritical 6-cylinder compressor is ideal for industrial refrigeration and large-capacity heat pumps.

"The BOCK HGX56 CO2 T compressor provides an ideal solution for industrial and commercial customers looking to increase efficiency at lower cost and reduces system complexity," said Vikas Anand, vice president of Danfoss Climate Solutions sales in North America. "We are looking forward to helping our industrial and commercial customers make the transition to natural refrigerants while raising the bar on efficiency and the ability to prolong the service life of the application via fully serviceable design." ■■

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## Honeywell Transforms Building Management with First-of-Its-Kind Technology

Honeywell recently launched Advance Control for Buildings, a groundbreaking platform marking one of the company's most substantial leaps in building controls innovation to date.

Designed to automate building management and provide the foundation for a building's energy efficiency strategy, Advance Control combines the latest technologies with decades of innovation and domain expertise. Automation and machine learning fuel a streamlined operation system featuring built-in cybersecurity and technology to deliver faster network speeds that, in an industry first, uses existing wiring. This announcement further supports Honeywell's recently announced plans to realign its business with three compelling megatrends, including automation and energy transition.

"Today, buildings are facing mounting pressures around safety, operational efficiency and energy efficiency. By pushing the boundaries of technological advancement, Advance Control not only helps building managers optimize their building operations to meet these pressures, but also champions innovation," said Steve Kenny, Vice President and General Manager, Honeywell Building Management Systems. "Automation breaks down operational barriers to give building managers more control over the efficiency of their buildings, ultimately helping improve the occupant experience while advancing energy management goals."


As part of this rollout, Honeywell recently announced strategic alliances with two semiconductor leaders, NXP® Semiconductors N.V. and Analog Devices, Inc. (ADI) to streamline the transition to intelligent edge processing. With NXP, Honeywell seeks to elevate machine learning and autonomous decision-making for enhanced energy

management and convenience, as well as enhanced security within and beyond the building. The joint efforts with ADI aim to deliver more efficiency and increased intelligence through digital connectivity and advanced signal conversion across many industrial applications.

"As the building automation market demands greater digital connectivity and security enabling data driven efficiencies, ADI has invested in new technologies meeting these needs while also offering flexibility for future upgrades," Diarmuid McSwiney, Managing Director, Industrial Connectivity and Control at ADI, said. "Our single-pair Ethernet (T1L) enables the possibility of reusing a building's existing wiring, helping to reduce installation time, cost and waste. ADI is pleased to work with Honeywell to bring this new technology to building management systems for the first time in Advance Control for Buildings."

"Security resilience is increasingly required for networked control systems," said Rafael Sotomayor, Executive Vice President and General Manager, Secure Connected Edge, NXP Semiconductors. "Honeywell's Advance Control for Buildings platform leverages NXP processors that efficiently combine machine learning with advanced security technologies to protect sensitive building automation infrastructure."

According to the U.N. Environment Programme, buildings account for 37 percent of global CO2 emissions, resulting in increasing pressure to identify and reduce energy use. At the same time, the lack of skilled labor makes it difficult for building owners to find technicians to upkeep and modernize spaces.

"Real estate and facilities leaders are placing top priority on optimizing building operations," said Sandy Rogers, a principal analyst with Verdantix, a research and advisory firm. "Organizations require greater visibility and automated control across their building portfolios, and they will increasingly look to digital innovations such as AI and machine learning for added intelligence." 

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# Pumps and Other Movers

**ACROSS**

- 1 **Pump to removes water**
- 5 **Pump to inflates bike tires**
- 8 Tightwad
- 13 South southeast
- 16 At sea
- 17 Lingerie
- 18 Loved
- 20 Grain
- 21 Information magazine
- 23 Collect
- 24 Pot
- 25 Supersonic transport
- 26 Number of notes in an octave
- 28 Baltic State
- 30 Assert
- 32 Also
- 33 Bitty
- 34 Spanish dessert
- 35 Smallest
- 38 Eye infection
- 41 Afresh
- 44 Escudo
- 45 Land unit
- 46 Healing plant
- 47 Lodge
- 48 Firm
- 50 Mr. Donahue
- 51 \_\_\_ fide
- 52 Outlined
- 53 Sporty car brand
- 55 Clod
- 56 Music player
- 58 Used cars
- 60 Ties down
- 64 National capital
- 68 Zig's partner
- 71 Hallway
- 72 Skip
- 75 Consumer
- 76 Economics abrv.
- 78 Goes \_\_\_ (without a date)

1	2	3	4		5	6	7		8	9	10	11	12		13	14	15	
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106					107										109			
110						111					112				113			

www.CrosswordWeaver.com

- 79 Pounds per square inch
- 80 Sanction
- 81 Agenda
- 82 Rio de Janeiro
- 83 Smart person
- 85 **Device that moves air**
- 86 Parachute's nickname
- 87 Oodles
- 88 **Portable fan used in windows**
- 90 Bashful
- 91 Boo
- 92 Prime time TV show
- 95 Fervent
- 97 Panama
- 98 Environmental protection agency (abbr)
- 99 Iodine compound
- 101 Anyone
- 106 Beg
- 107 Makes used to
- 108 Kine
- 109 Stray
- 110 Ball holder
- 111 Fat
- 112 Popeye's yes
- 113 Sledge

**DOWN**

- 1 \_\_\_ Francisco
- 2 Avail
- 3 Kitten's cry
- 4 Impart (2 wds.)
- 5 To incite
- 6 Anger
- 7 Scan
- 8 Larva
- 9 Potato state
- 10 Arrange
- 11 Sea eagle
- 12 Spool

- 13 Curio
- 14 Dress
- 15 Volcano
- 19 Pump
- 22 West
- 27 Its own
- 29 Oolong
- 30 NE French region
- 31 **Drops below atmospheric pressure**
- 34 Associated with fetus
- 35 Lick
- 36 Reverberate
- 37 Opera solo
- 38 Gap
- 39 Tint
- 40 Many months
- 42 Vane
- 43 West
- 46 Abdominal
- muscles (abbr.)
- 49 Unit
- 52 Actress Day
- 54 Picnic visitor
- 57 Airport abbr.
- 59 Fill completely
- 61 Houston's baseball team
- 62 Pleats
- 63 Sego lilies' bulbs
- 65 East
- 66 Deprive
- 67 Creative work
- 68 Breeze
- 69 Organization concerned with civil liberties (abbr.)
- 70 Kid's mom (animal)
- 72 Licensed practical nurse

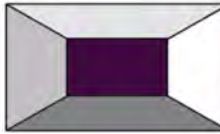
- 73 Compass point
- 74 Type of brakes on large vehicles
- 77 Compass point
- 84 Period
- 86 Edam
- 87 Soda pop containers
- 89 Roman thirteen
- 90 Not front or back
- 91 Pig meat
- 92 Marrow
- 93 Recess
- 94 Taboo
- 95 **Pump that cools the Flames**
- 96 Young Women's Christian Association
- 97 Julia Ward \_\_\_\_, Battle Hymn of the Republic
- 100 Knight
- 102 Heavy freight barge
- 103 Volume (abbr.)
- 104 First woman
- 105 Crimson

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E	A	T	S	Y	E	S	W	H	Y							
P	U	B	S	I	S	L	E	T	N	B	A	F	I	J	I	
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L	O	O	P	M	I	N	I	P	A	U	L	E	G	G	S	
O	P	R	A	H	L	T	D	S	H	R	I	M	P			
T	E	D	I	U	M	B	R	O	G	A	N					
N	E	E	D	E	D	I	V	Y	S	C	O	N	E			
A	B	E	T	N	O	V	A	N	E	A	T	H	V	A	C	
S	T	M	S	L	I	M	C	A	M	E	E	L	K			
P	U	M	P	A	L	L	P	U	L	S	E	P	R	O	S	
A	H	A	M	O	B	H	A	N	G							
B	A	N	D	I	T	O	A	S	I	S	C	A	Y			
E	M	U	R	A	B	B	I	T	K	E	L	L	O	G	G	S
T	O	E	S	N	E	E	Z	E	I	R	E	F	A	N	S	
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# Chicago's Premier Fueling Solution

FOR STAND BY GENERATORS



When your building loses power, don't rely on the mythical luck of crossed fingers and hope that the power turns back on... Bell Fuel's "Fuel Assurance Program" gives operators of emergency generators the benefit of guaranteed timely deliveries. If your facility were to lose power, you have certainty of supply throughout the outage.

## OUR PROMISE TO YOU

**Our FUEL ASSURANCE PROGRAM sets us apart as the industry leader in this time-sensitive business.**

A 6 hour guaranteed delivery in an emergency and the additional benefit of Bell's Premium D-2<sup>®</sup> generator diesel fuel. As a proven and documented "Premium" fuel, Bell's Premium D-2<sup>®</sup> is the most qualified fuel to use in occasional use engines such as those powering stand-by generators.

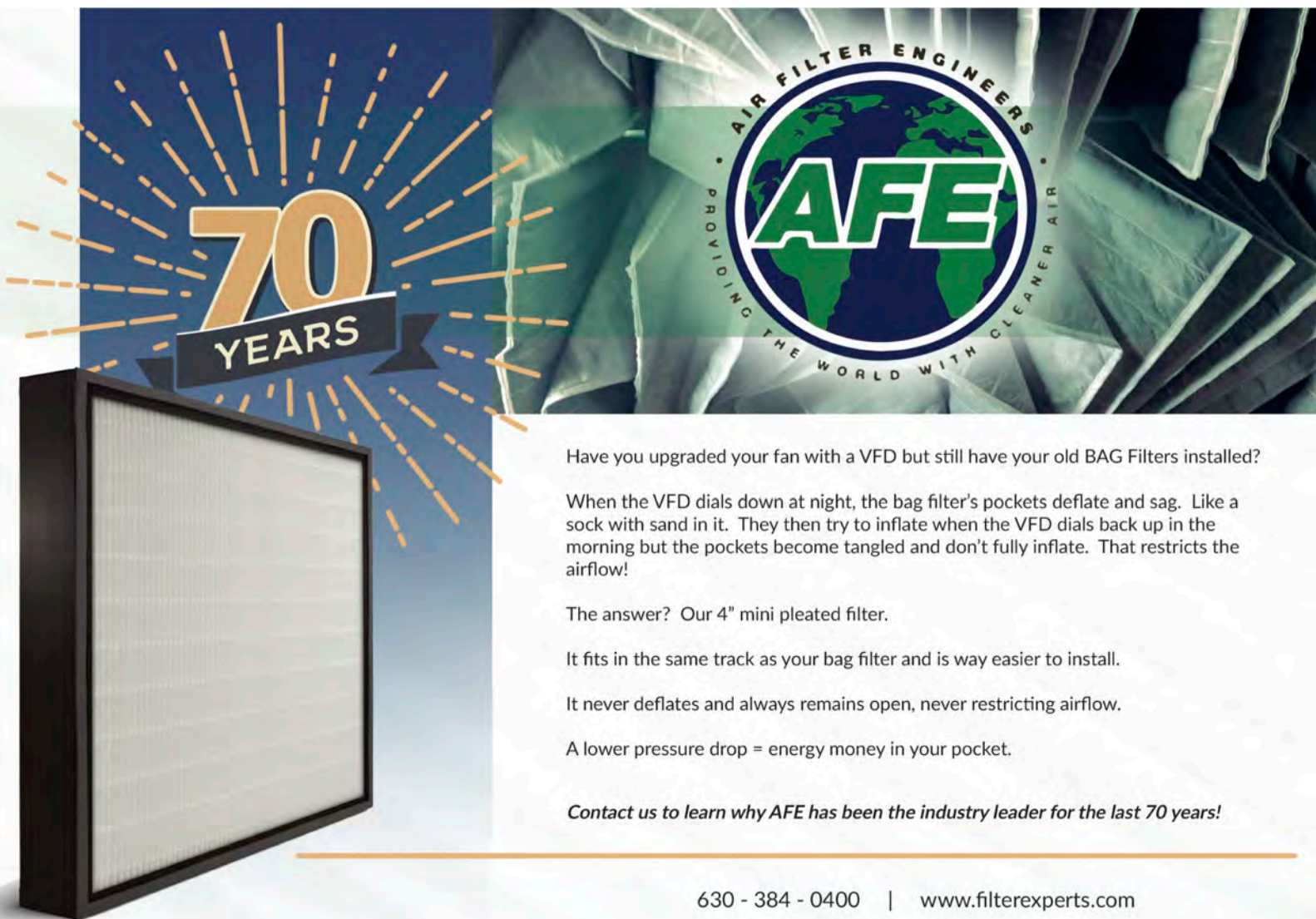
**PREMIUM D-2 GENERATOR FUEL | FUEL TESTING**

We've put a century into our experience to help solve your fueling needs.



Call **800.244.0148** to schedule a no cost fuel analysis!  
**Bellfuels.com**





**70 YEARS**

**AIR FILTER ENGINEERS**  
**AFE**  
PROVIDING THE WORLD WITH CLEANER AIR

Have you upgraded your fan with a VFD but still have your old BAG Filters installed?

When the VFD dials down at night, the bag filter's pockets deflate and sag. Like a sock with sand in it. They then try to inflate when the VFD dials back up in the morning but the pockets become tangled and don't fully inflate. That restricts the airflow!

The answer? Our 4" mini pleated filter.

It fits in the same track as your bag filter and is way easier to install.

It never deflates and always remains open, never restricting airflow.

A lower pressure drop = energy money in your pocket.

*Contact us to learn why AFE has been the industry leader for the last 70 years!*