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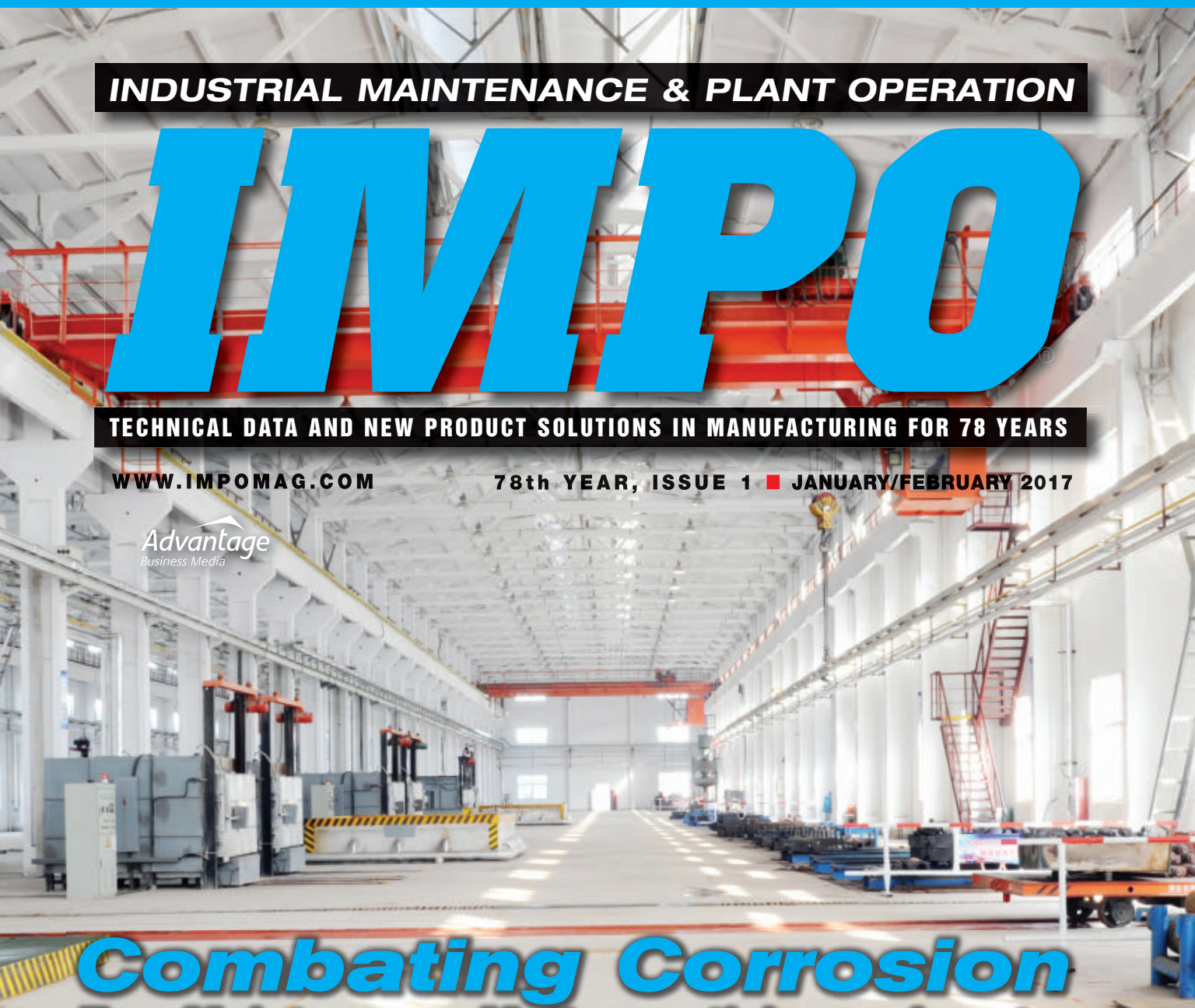

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IMPO (Industrial Maintenance & Plant Operation®) (ISSN #1099-4785, USPS #098-490), is published monthly, except bi-monthly in Jan/Feb, May/Jun, Jul/Aug and Nov/Dec (8 times per year) by Advantage Business Media, 100 Enterprise Drive, Suite 600, Box 912, Rockaway, NJ 07866-0912. No part of this publication may be reproduced in any form without prior written permission of the publisher. Opinions expressed in articles are those of the authors and do not necessarily reflect those of Advantage Business Media.
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Subscriptions are free to qualified individuals. Non-qualified subscription rates per year are: USA $126, Canada, Mexico & Foreign $180, single copy USA $17.50, single copy Canada, Mexico & Foreign $25, prepaid in USA funds drawn on a USA branch bank.

Home Ownership Puts Maintenance In Perspective

As I write this issue's editorial column, I'm also reviewing the 33-page home inspection report of the house my wife and I will own come mid-March. It's our first house, so the whole process is new to us. So many signatures.

It's a 56-year-old home, but for its age, it's in pretty good shape and has essentially everything we were looking for. Still, it's due for some refurbishments now and in the near future. I'm hoping that my role as *IMPO* editor and the plethora of industrial maintenance articles I read on a weekly basis will naturally make me proactive when it comes to home maintenance, especially as we get started.

Mike Hockett, Editor
mike.hockett@advantagemedia.com

The house's furnace is 20 years old, the water heater is 10 years old and the air-conditioner unit is 28 years old — each at or near their expected statistical life expectancy and each a considerable expense. The decision we have to make for each is do we hope for the best and use them until they bite the dust and pay for a new unit then, or do we plan to replace them immediately and avoid being in a situation where we suddenly don't have a working furnace on a freezing Wisconsin winter day?

By now you might be asking why we're getting a home that has these potential problems. Trust me, the house has its charms.

Home maintenance isn't in the same league as industrial, but it's the same sport, and some of the maintenance issues we'll deal with early have correlations to issues regularly dealt with in industrial facilities.

Industrial facilities face these same questions about their capital equipment. As conveyor motors, gears, loading dock door openers, machinery and safety equipment near their life expectancy, maintenance managers have to decide when to pull the trigger on when to replace or upgrade them. Most facilities have the spare equipment needed to replace those items whenever needed — a luxury my wife and I don't have.

Still, we can start planning for the worst. We've already started budgeting to replace those crucial appliances so that when our home warranty expires in October, we can afford to immediately purchase and install at least one of them if they die immediately after. Wish us luck.

This issue's *IMPO* Onsite comes from Abbey Dean, the editor of our sister manufacturing publication, *Manufacturing.net*. Her story (page 8) features automotive technology manufacturer Ficosa and its new Cookeville, TN factory that is dedicated to producing rear-view systems.

We're tackling the topic of corrosion in this issue with two Maintenance Matters contributed articles. One discusses steps to take to protect manufacturing plant components and assets (page 16), while the other focuses specifically on lubrication (page 26).

We are always on the hunt for industrial companies and facilities to visit and feature as an *IMPO* Onsite. If you think your company or its facilities have a story worth telling, let us know and we'd be happy to give it a look.

IMPO
VOL. 78 • NO. 1 • JANUARY/FEBRUARY 2017

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IN BRIEF

MSCI News

The **Metals Service Center Institute (MSCI)** unveiled customized tools available to MSCI members through its partnership with the **National Safety Council (NSC)**. These new resources are part of MSCI's commitment to deliver relevant safety resources for its members. Optimized for the metals industry, the new tools available to MSCI members include access to NSC safety experts, local access to the Council's valuable Advanced Safety Certificate program, access to tools that will help member companies assess their own safety programs and safety professionals against industry competency models approved by the MSCI Safety Committee, and other valuable NSC training and information resources.

Northwood University and the **Federation for Advanced Manufacturing Education (FAME)** have launched the "FAME/Northwood Manufacturing Tour Program," a special partnership between the university and the growing employer education collaborative. The program, a key component of the Advanced Manufacturing Career Pathways and Toyota College Partner programs, is designed to expose Advanced Manufacturing Business (AMB) students to a broad variety of floor operations with many of the best manufacturers in the United States. AMB students must participate in a minimum of five manufacturing tours at different companies. These tours provide attendees with real world exposure and a unique and highly educational experience. Coupled with Toyota's special degree program, this new endeavor is part of the auto manufacturer's plan, in partnership with almost 200 other companies, to craft the strongest possible business-based bachelor's degree for manufacturing. Companies in the "Golden Triangle" of manufacturing, between Louisville, Lexington, KY, and Cincinnati are hosting the initial set of tours. Toyota's North American manufacturing headquarters is located near the center of this triangle in Georgetown, KY.

NORTHWOOD UNIVERSITY

HOBART INSTITUTE OF WELDING TECHNOLOGY

The **Hobart Institute of Welding Technology (HIWT)** has opened the "Next Generation Welder Learning Facility" on its Troy, OH campus. The completely new 16,000-plus-square-foot building began hosting classes in late October and is an addition to the 13-acre campus that has trained over 100,000 welders. The new facility features three technically advanced state-of-the-art classrooms that seat up to 120 students and contain high-tech audiovisual training aids. The facility also houses a dedicated non-destructive laboratory and classroom for hands-on liquid penetrant and magnetic particle inspection and training. Additionally, the Welder Learning Facility boasts a large welder performance qualification laboratory for destructive testing. The new facility will enhance the student learning experience for welder skill and technical training, as well as qualification testing and certification services.

Inside HIWT's Next Generation Welder Learning Facility in Troy, OH.

GRAINGER®

FOR THE ONES WHO GET IT DONE

Industrial distributor **W.W. Grainger** has found a new appealing way to keep workers aware of safety. Rolled out in January, Grainger created a new workplace safety poster series for OSHA's Top 10 Violations for 2016 inspired by vintage safety poster illustrations of the 1950s and 1960s. OSHA released its most cited violations in late 2016, topping the list was fall protection with OSHA making 6,929 citations during fiscal year 2016, an increase from 2015. Hazard communication and scaffolding came in second and third-most cited violations, respiratory protection fourth and lockout/tagout in fifth. The whimsical, illustrative style and direct copy combine for attention-grabbing posters that address serious safety issues. Grainger intends for the posters to be displayed in the workplace to help keep the most common safety violations top of mind. The posters are available for free at safety.grainger.com.

IMPO ONLINE

Every day, subscribers to our e-newsletters from throughout manufacturing operations and maintenance receive information that includes:

News and notes covering the most prominent players influencing U.S. manufacturing. Here are some of the most viewed stories from the last 30 days.

- Two Dead, Three Injured In Va. Plant Shooting
- Energy Impacts Of Trump's Surprise Presidential Victory
- Analysts Question Trump's Infrastructure Plan
- Workers At Endangered Indiana Plant Feel Forgotten By Trump
- Report: Manufacturing Resignations At Eight-Year High

Blogs from industry experts. Check out some of the most viewed blogs over the last 30 days.

- Is Shoe Manufacturing Making A Return To The U.S?
  – Rachelle Blair-Frasier

- It Won't Be Easy To Bring Back Millions Of Manufacturing Jobs
  – Mark Muro

Topical coverage on key industry trends. Below are some of the most viewed articles and videos over the last 30 days.

- Video: Trump's Carrier Deal Draws Hugely Divided Reactions
- 5 Common Eyewash Myths Debunked
- Grainger Analyzes OSHA's Top 10 Violations List Pt. 1
- Chernobyl Gets New Giant Anti-Leak Cover
- Video: Body Of Water Tank Maintenance Inspector Recovered After 16 Hours
- Grainger's 10 Most Asked Safety Questions: Pt.1

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TOP TWEETS

@Cerasis: Is Shoe #Manufacturing Making A Return To The U.S.? via @IMPOmag bit.ly/2eUuLpp #Mfg

@IMPOmag: Check out this video on how to maintain #safety with conveyor systems dkra.in/yEcX305DkPO

@MFGTalkRadio: The #manufacturing industry is struggling with an image problem. But that's all about to change: bit.ly/2eG51KN via @IMPOmag #mfg

Top Reader Comment:

"Wow, what a refreshing outlook in this world. It is so heartening to hear that there is someone left who believes that people come first, then technology. Thank you."

— IMPO reader "Old Fart" in response to, "Opinion: Why Smart Manufacturing Is A Dumb Idea"

High-Powered LED Work Light

Bayco Products, (Dallas, TX) has announced their new high lumen Bayco model SL-1530 10,000-lumen LED Dual Fixture Work Light on Tripod Stand. The LED work light has dual light fixtures that can be directed independently of each other. The two side-by-side LED fixtures are attached to a base unit that can be removed easily from the tripod stand and placed on the floor for low angle illumination. The included eight-foot tripod stand extends the dual fixtures up to eight feet off the ground. Each work light fixture has a tempered glass lens, and is powder-coated for long wear and durability with a multi-fin heat sink design keeping each fixture cool to the touch. The comfort-grip handles make transporting and positioning a snap, and the center-mounted handle aids in removing, mounting and moving the base unit. The model SL-1530 work light has a 12-foot 18/3 SJTW cord for all-weather use and Bayco stands behind the included one-year limited warranty.

Current-Limiting Circuit Breaker

Industrial automation customers can improve short-circuit protection with a new line of current-limiting, molded-case circuit breakers from **Rockwell Automation** (Milwaukee, WI). The line expands the Allen-Bradley Bulletin 140G molded-case circuit breakers and offers more comprehensive, fast-acting, short-circuit protection. The line expansion protects against overload, short-circuit and ground-fault conditions. The new line of circuit breakers is UL-listed as current limiting and reacts to circuit overloads two to three times faster than standard circuit breakers. In areas where there is a high fault, the current-limiting circuit breaker can reduce the energy let through by more than 50 percent. This current limitation results in less stress and potential damage to downstream components.

Traction Magic

Gaia Enterprises (Southampton, PA) announces its new product, Traction Magic, that provides instant traction for feet and tires on the ice. It works faster than salt or ice melt and better than sand or kitty litter, and it won't damage concrete or harm pets or yard. It turns slippery ice into a surface that feels kind of like rough sandpaper. Traction Magic is also non-corrosive, 100 percent environmentally friendly and animal safe. It will not harm any grass, plants, metal or even new concrete and is perfect to use around machinery or vehicles. Traction Magic complies with OSHA standards for non-slip surfaces.

An aerial view of Ficosa's new 270,000-square-foot manufacturing facility in Cookeville, TN. (Ficosa photo)

Building The Car Of The Future In Tennessee

By Abbey Dean

Automotive technology supplier Ficosa is helping boost the Volunteer State's manufacturing reputation

Start in the Music City — Nashville, TN — and drive east toward Knoxville. If your sense of direction fails, follow the University of Tennessee orange — you're heading straight for football country. Along the way, between rolling foothills dotted with aging tobacco barns, you'll begin to see evidence of the state's tremendous surge in automotive manufacturing activity that's garnered national attention in recent years. Newly constructed plants even flank the highway with either recently completed or ongoing infrastructure projects.

Although this imagery might sound exaggerated, consider the following facts:

- Tennessee has three major automotive assembly plants — specifically Nissan, Volkswagen and General Motors.
- According to the Tennessee Department of Economic and Community Development, transportation is the state's top export. In 2015, automotive exports hit $6 billion, marking a 64 percent increase since 2010.
- There are more than 118,000 automotive workers across the state and automotive operations in 88 of Tennessee's 95 counties.

In 2016, IBM's Global Location Trends Report ranked Tennessee as the top state in the nation for job creation resulting from foreign direct investment. The report said that Tennessee is home to about 920 foreign-based establishments that, combined, invested more than $33 billion in 2015 alone. And, according to the *Memphis Business Journal*, the state was also ranked No. 1 in 2014 and No. 4 in 2013.

Now, about 80 miles outside of Nashville in Cookeville, TN, stands the latest example of how automotive manufacturing is reshaping the state's economic footprint — Ficosa's 270,000-square-foot, state-of-the art facility. *Industrial Maintenance & Plant Operation* attended

the Cookeville plant's dedication ceremony in October 2016 to get an exclusive look at the innovative facility and speak with the Barcelona, Spain-based company's leaders.

From Barcelona, With Love

Ficosa International is a global company that researches, develops and manufactures high-tech vision safety, connectivity and efficiency systems for the automotive industry. Founded in 1949, Ficosa is known worldwide for its rear-view systems (both interior and side mirror) that are used by top global original equipment manufacturers (OEMs).

Primarily, that's exactly what Ficosa's Cookeville plant will be churning out for the company's U.S. market. In fact, Ficosa already produces rear-view systems for a host of automotive manufacturers including Ford, General Motors, Volkswagen, Nissan and Fiat Chrysler.

The plant is also the Tier 1 group's most advanced production center in the U.S. and, perhaps even, worldwide. However, it wasn't the Spanish company's first venture into Tennessee's booming automotive market. About 40 miles east of the new plant sits an older plant that Ficosa shuttered in May 2015 to make way for the Cookeville site. According to Ficosa North America vice president Fred Zicard, opening the new plant meant Ficosa could retain its 400 or so employees too.

"We bought the first Tennessee facility in 2008, but it wasn't serving the company's needs," Zicard said. "But, with the new Cookeville facility, we had the opportunity for new equipment and to design facilities around our process."

Melissa Thiele, an assembly operator, said she worked for years at Ficosa's other Tennessee plant and was grateful to be able to make the switch to Cookeville.

"There was no downtime at the other plant," Thiele noted. "We couldn't keep up with what we needed to do. Now, we have space to fill and grow into."

Zicard said that when working at full capacity, the state-of-the-art facility will be staffed by more than 900 employees who will produce 4.5 million units per year. That means they're in the market to hire around 500 new advanced manufacturing workers.

"We're looking to fill positions practically from top to bottom," Zicard said. "From production and project managers,

An assembly operator at work in one of Ficosa's advanced manufacturing facilities in Cookeville, TN. (Ficosa photo)

technicians and engineers, to human resource specialists, assembly and warehouse workers. There are a lot of opportunities for anyone who has the skills and desire to be a part of building the car of the future. Some of our more successful employees even get the opportunity to live and work in other countries."

All told, Ficosa's total investment in the Cookeville plant comes to a whopping $50 million. However, Ficosa's CEO Javier Pujol and his father, Josep Maria Pujol — the company's chairman — don't seem worried. In fact, quite the opposite. During the dedication ceremony in Cookeville, father and son took turns speaking between Spanish and English. Translating for his pipe-toting father

A look inside a vehicle outfitted with Ficosa's latest high-tech systems in Cookeville, TN. (Credit: Mike Wilson for *Manufacturing.net*)

Inside the Cookeville, TN plant, a tour guide shows off Ficosa's state-of-the-art painting and dying operations. (Credit: Mike Wilson for *Manufacturing.net*)

from Spanish, Pujol described the new plant as a strategic move that would enable future growth into one of the largest automotive markets in the world.

"By opening these new premises we are not only improving the group's efficiency and operational capacity in the region, but also reinforcing our commitment to bring more advanced manufacturing jobs to the U.S. and to help lay the foundation for a more successful manufacturing future in the state of Tennessee," Pujol said.

A look inside Ficosa's already busy new plant in Cookeville, TN. (Credit: Mike Wilson *for Manufacturing.net*)

The CEO also spoke about Ficosa's partnership with Panasonic. The two companies joined forces in 2016 to develop and manufacture integrated technologies that will serve as the basis for the smart, connected driverless car of the future.

"We are boosting a plan to align the industrial strategy of Ficosa with Panasonic in the region of North America, in order to accelerate the launch of new products in the areas of connectivity, efficiency and safety," Pujol said. "This plan allows us to support the growth of the local market and increase our capacity of R&D in mirrors, shifters and new technologies that we are developing together with Panasonic, bringing together our technological capabilities with the know-how in electronics of the Japanese company."

It also must be said that the products Panasonic and Ficosa have developed are extraordinary. Tesla Motors thinks so too, which is why you'll see some of their handiwork in the much-anticipated Model 3 — Tesla's first attempt at an all-electric, mass market vehicle.

While demoing some of Ficosa's latest developments in its rearview mirrors, Adonay Villalonga, an application engineer for Ficosa, called the Cookeville plant "one of the most innovative places in the U.S. for automotive production. When asked why, he noted the obvious "cool factor" of the tech first.

"But it's more than that," Villalonga said. "The real value of the vehicles is the safety gained from them. Consider equipping these mirrors onto police vehicles or what this could be on larger industrial applications."

Order Up

Months before October's plant dedication, Ficosa received its first order that would be produced at the brand new facility. Four contracts from two different American OEMs were rewarded to Ficosa; the order was for 8.9 million units of rear-view mirrors to be delivered over a five-year period. Regarding the enormous order, Ficosa North America CEO Joan Cañellas said, "These new projects for rearview mirrors ensure high production volume and consolidate our business with strategic customers in the North America region, reaffirming our commitment and steady growth in this area."

And steady growth is good news for Tennessee, Ficosa, the city of Cookeville and the automotive manufacturing industry. ***IMPO***

Solutions To Mitigate Arc Flash Hazards

By Antony Parsons

Mitigation is defined as, "to make milder, less severe or less violent." When applied to electrical workplace safety, arc flash mitigation involves taking steps to minimize the level of hazard and/or risk associated with an arc flash event. ANSI Z10-2012, Occupational Health and Safety Management Systems, released a hierarchy of arc flash mitigation controls, as shown in Figure 1.

Personal Protective Equipment (PPE) is often mistakenly viewed as the solution to arc flash hazards. In reality, properly selected PPE does not guarantee freedom from injury. NFPA 70E only makes the claim that injuries sustained during an arc flash event would be reduced and survivable due to mitigating effects of arc-rated PPE.

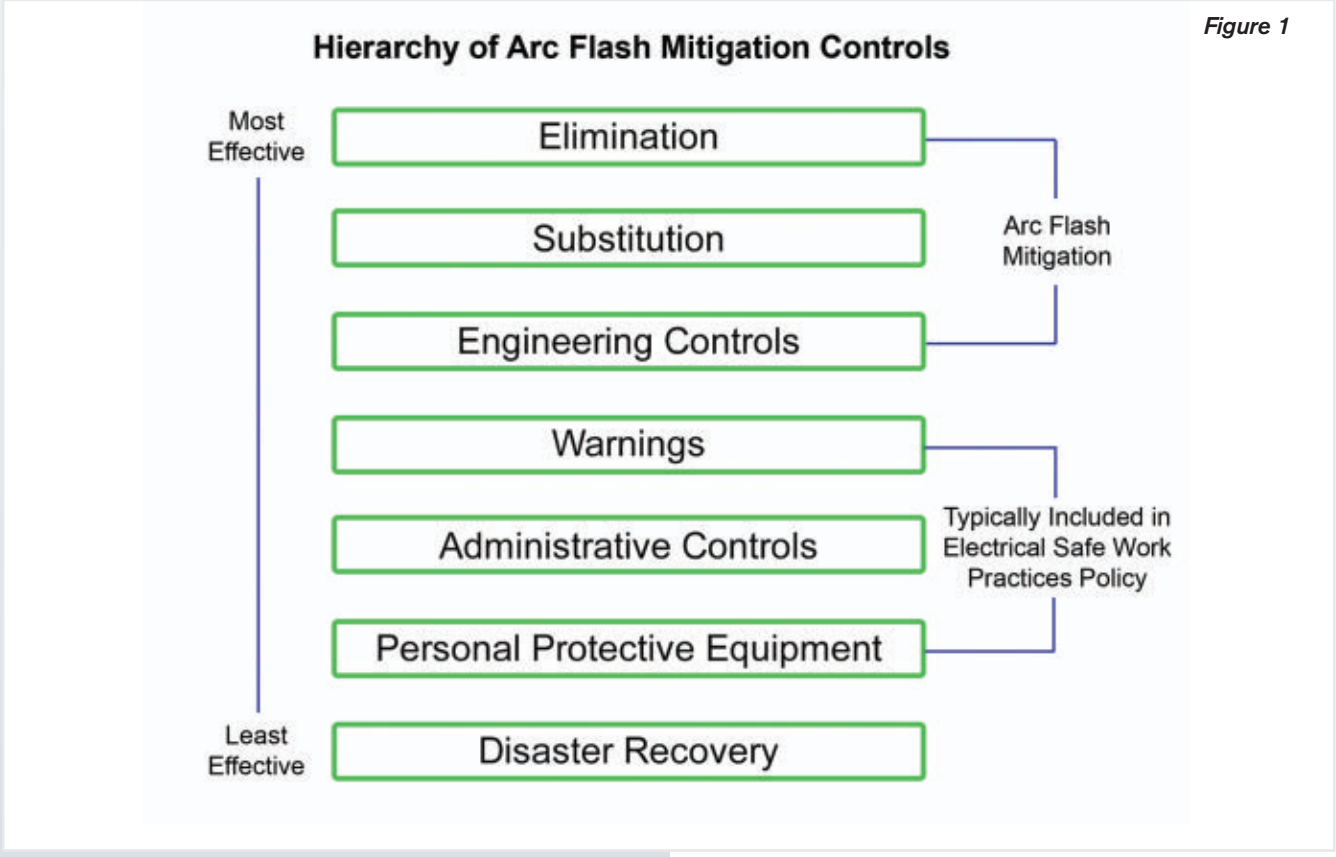
The most effective arc flash safety programs look to incorporate "safety by design," where effective mitigating techniques, including engineering controls, are used to reduce the risk to the worker. The engineering controls covered in this article will reduce risk by either:

1)Reducing the available arc flash energy level, or
2)Reducing the exposure of the worker, so that he/she is not subject to harm.

Solution Group 1: Reduce Arc Flash Energy Levels

The Role Of The Circuit Breaker Or Fuse In Lowering Arc Flash Energy Levels: Why is a circuit breaker or fuse always considered in arc flash analysis? Because arcing time is the key determining factor for arc flash energy. Per the equations in IEEE 1584-2002, arc flash incident energy varies linearly with time. If the duration of the arcing fault doubles, the available energy

Figure 1



doubles — half the duration and the energy is cut in half. Since incident energy is proportional to arcing time, the proper selection of faster-acting overcurrent protective devices is a powerful mitigation strategy.

OCPD Coordination Study: An Over-Current Protective Device (OCPD) coordination study optimizes the protective device setting for reliability and arc flash protection. While an OCPD study is not a requirement of an arc flash analysis, it is recommended to have this study completed as a component of an arc flash analysis.

The OCPD coordination study will determine if minor adjustments in circuit breaker (or other over-current protective device) settings can lower incident energy levels. However, settings must be chosen to properly protect equipment while also allowing for normal load currents and routine temporary overcurrents (e.g., motor starting current) to flow without causing a trip.

Specialized Relaying — Optical Technology: Quickly clearing faults is a key to arc flash mitigation. Circuit breaker or relay settings near the source of power may have significant time delays to allow for coordination of downstream devices. A relatively new way to address this issue is to use relays that detect the presence of arcing faults by looking for the flash of light associated with the arcing fault in addition to the characteristic current flow.

However, for an arcing fault to be detected, both the high current and a burst of light must exist. When both conditions are present, an optical relay can operate very quickly to clear the fault. This typically occurs through the operation of an overcurrent protective device. Alternatively, an optical relay can activate a shorting switch that creates a bolted fault that clears the arc more quickly than a circuit breaker could operate. Optical relays can also be used as the protective relay in a virtual main configuration.

Virtual Main Arc Flash Mitigation System: Switchgear and switchboards can be subjected to dangerous levels of arc flash incident energy when fed directly from a power transformer. The addition of a virtual main system reduces the arc flash energy on the entire switchgear, including the main incoming section. A digital relay and overcurrent sensing is added to the low-voltage side of the service transformer. It is designed to trip an existing upstream fault breaking device, often a medium-voltage circuit breaker or other vacuum interrupter. This mitigation solution could also incorporate other technologies, such as:

- A maintenance selector switch, which temporarily lowers the instantaneous short circuit current setting. The maintenance setting lowers the available arc flash incident energy and temporarily forfeits selective coordination

- Zone-selective interlocking with downstream branch circuit breakers in the switchgear eliminates the need for the maintenance selector switch. Arc flash energies can be permanently reduced with zone-selective interlocking

Solution Group 2: Remove Workers From Harm's Way

De-energizing equipment does not absolve the facility from the responsibility of performing an arc flash analysis or providing the necessary personal protective equipment (PPE). The following arc flash mitigation solutions remove a worker from the location of, or place a barrier between, the workers and exposed energized parts.

Infrared Viewing Windows: Having infrared (IR) windows installed in electrical equipment panels enables IR scans to be performed without exposing the worker to hazardous energy. Transparent to infrared rays, IR windows allow hot spots to be registered by a thermographic camera. They also facilitate permanent access for inspection of electrical components without disturbing operations.

Online Temperature Monitoring: Online temperature monitoring, via wireless sensors installed during a planned outage, provides continual access to critical connection points, where traditional thermography cannot be used. This technology evaluates the equipment's current condition without exposing workers to energized parts, since equipment covers do not have to be removed.

Remote Racking System: A remote racking system (RRS) allows circuit breaker racking operations to be performed via a control panel located away from the cell, removing the operator from manual contact with the circuit breaker. If the operator controlling the RRS is located outside the arc flash boundary, the need for PPE is eliminated.

Conclusion

Electrical hazards are a significant safety and financial risk for electrical workers and their employers. OSHA mandates that work on electrical equipment must be performed in a manner that does not expose the worker to undue risk of injury. Complying with the safe work practices dictated by NFPA 70E and implementing arc flash mitigation strategies through engineering controls will enhance workplace safety for employees and reduce the financial risk for your company. **IMPO**

Antony Parsons, Ph.D., P.E. is a technical consultant in Schneider Electric's Power Systems Engineering group. He is responsible for providing power system analysis, troubleshooting and design consulting services for Schneider Electric's customers, as well as engineering support for Schneider Electric's field services operations.

Energy Efficient Forced Draft Coolers

EVAPCO, Inc. (Taneytown, MD) announced the launch of the eco-LSWE and eco-LRWB series of closed circuit coolers. They feature both EVAPCO's Ellipti-fin spirally-finned coil and CROSSCOOL internal tube enhancement. Ideal for indoor applications, confined layouts, low height and low-sound requirements, both models can replace existing forced draft equipment of the same box size and fan motor horsepower and provide up to an additional 30 percent in evaporative thermal capacity. Due to this significant increase in capacity, the footprint, height and horsepower can all be reduced for the same load. The finned Ellipti-fin coil allows for dry operation at significantly higher ambient conditions, saving water when only the fans are required for sensible cooling. The eco-LSWE and eco-LRWB satisfy a wide range of versatile applications. The centrifugal fans operate at very low sound levels, which makes both units the preferred design for installations with external static pressure where noise is a concern. The eco-LRWB also satisfies even the strictest of height requirements in a unitary, compact design.

REDSTICK Box Level

Milwaukee Tool (Milwaukee, WI) announces REDSTICK box levels. Designed with an All-Metal Backbone that reinforces the box level frame and new-to-world, SHARPSITE Vial Technology, REDSTICK Box Levels are the most durable and easy to read layout solution for professional tradesmen — delivering precision accuracy within 0.029 degrees. All magnetic models include amplified rare-earth magnets which provide maximum holding power in common metal applications. Precision milled measuring surfaces on the top and bottom guarantee accuracy in all working positions. For users who require a smaller profile box level, Milwaukee also introduced REDSTICK Compact Levels. Built on a compact box level frame, the levels are designed for tight access use or jobsite installation applications with smaller working surfaces. All new REDSTICK Levels are designed to meet the needs on the jobsite and backed by a Limited Lifetime Warranty.

Don't Let Corrosion Eat Away Your Plant Assets

By Julie Holmquist

Wise corrosion prevention strategies help industrial plants avoid unnecessary failure, maintenance and replacement costs in the long run. Many simple steps can be taken to protect basic plant components and assets, such as electrical boxes and equipment, metal and reinforced concrete structures and equipment or finished goods in storage or shipment. Using corrosion protection products that incorporate Vapor Phase Corrosion Inhibitor (VpCI) technology offers unique advantages such as increased effectiveness, easier application and greater environmental and user friendliness to corrosion protection efforts.

Electrical Controls

Every plant has electrical control boxes, wire-ways and electronics. With the increase in automation, the number of electrical controls and electronics in a plant has skyrocketed. Power boxes, switching equipment, communication systems and remote electronics all play an important role in the functioning of a plant. In addition to the multiple electrical panels for basic plant electricity, each piece of automated machinery has its own control box. Control boxes can range in the hundreds to thousands depending on plant size. Corrosion in these areas can lead to outages, equipment failure and cumulative repair costs. This is an area of corrosion protection that is easily overlooked but can be controlled by very simple preventive maintenance steps. The nominal cost of doing so far offsets the cost of service calls or replacement.

Corrosion prevention can be as basic as sticking a small cup (emitter) filled with VpCI powder inside a control cabinet. The powder inside an emitter vaporizes and disperses to fill the enclosed space until equilibrium is reached. VpCI molecules then adsorb on metal surfaces to form a protective monomolecular barrier that guards against the ingress of moisture, oxygen and other corrosive substances. If one VpCI molecule becomes dislodged, other VpCI molecules in the enclosed atmosphere are attracted to the exposed metal surface to fill in the gap. Taking this simple step can save the many headaches that would arise with the start of a little corrosion on electrical connections and wires.

Cortec VpCI-111 emitters filled with VpCI powder can easily be stuck inside an electrical cabinet or control box for corrosion protection.

Another effective method of corrosion protection is the use of VpCI spray. This is a good choice for electrical and electronic components such as circuit boards and electrical contacts. The spray seals the environment and can be combined with a UV tracer to ensure that coating is complete. Some sprays can also protect components from fungus and dendrite growth.

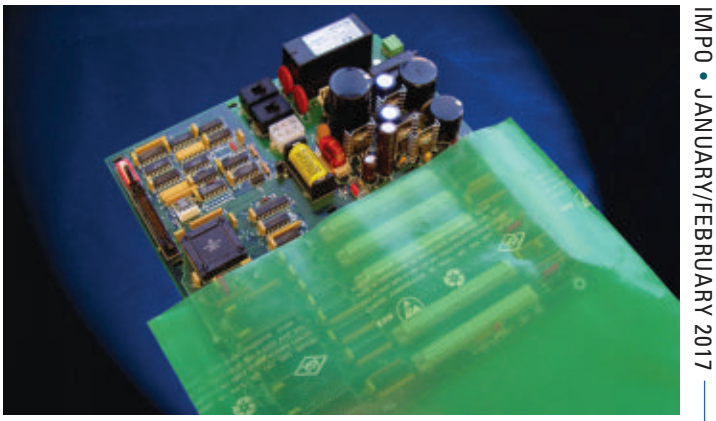
Protecting Structural Metal And Reinforced Concrete

Corrosion inhibiting coatings can be used to protect structural metal from corrosion and are especially useful for tank protection. Coatings that contain nano-sized VpCIs have an added dimension of protection because they protect against micro-corrosion. Their small VpCI particles fill in the gaps that are left by traditional sacrificial corrosion inhibitors and provide a measure of protection against "creepage" corrosion (corrosion that spreads from a point of coating damage).

On areas where corrosion has already begun, it is recommended that a water-based passivating rust primer be applied. This type of primer is especially good for areas, such as tank interiors, where

VpCI coatings are a good strategy for protecting against corrosion on structural metal or tanks.

Cortec VpCI-146 Creped is just one of many VpCI papers available for protection of finished goods in storage or shipment.



VpCI film can be combined with static dissipative properties for corrosion protection of electronic goods.

it is difficult to perform good surface preparation. Instead of struggling to remove rust that has already started, this type of primer penetrates the rust and turns it into a hydrophobic passive layer that can be top-coated with a water- or solvent-based coating. For submerged areas, combining this primer with a high solids moisture cure urethane is especially recommended.

Reinforced concrete surfaces such as floors, walls, pillars and loading docks can benefit from the protection of migrating corrosion inhibitors. These can be combined with repair mortars, coatings and sealers. When applied, migrating corrosion inhibitors travel through concrete pores to reach the metal surfaces of embedded rebar, where they are attracted and form a monomolecular barrier. This adsorbed layer protects rebar from corrosive elements such as air, moisture and chlorides and can significantly extend the service life of a concrete structure. A good rule of thumb is to reseal and treat reinforced concrete structures every 10 years.

Simple And Effective Packaging Strategies For Storage, Shipment

Ensuring that finished goods are protected from corrosion during shipment is critical to protecting a company's bottom line and securing the customers' confidence. A very simple way to do this is to use VpCI packaging — papers that are coated with VpCI or films that have VpCI directly embedded. Many versatile packaging options are available, whether VpCI papers for wrapping and interleaving; VpCI linerboard and packing boxes; VpCI film for shrouding, shrink wrapping and bagging; and VpCI bubble wrap for extra padding and static dissipation. VpCI packaging materials like these eliminate the time-consuming task of greasing and un-greasing finished goods to guard against corrosion. Many of the materials can be combined with additional protective qualities — such as fire retardants or extra moisture and grease resistance. VpCI shrink wrap film works well for protecting backup plant equipment, or equipment temporarily offline. VpCI-impregnated foam pads can be inserted in lay-up packaging for additional protection.

Another advantage to using VpCI protection is that such products and methods are often more environmentally friendly than traditional corrosion inhibitors. VpCI technology is highly effective and often overrides the needs for dangerous chemicals such as nitrites to be included in the product makeup. VpCI methods typically cut down on the amount of materials needed as well, and many VpCI products can be recycled or disposed without special permits.

Taking a look at these basic areas of corrosion prevention is an important step toward protecting your plant against the unnecessary corrosion costs and losses that come with everyday exposure to oxygen, moisture or other contaminants. Using current corrosion protection technology that is easier to apply and remove is an excellent option of which to take advantage. A little corrosion prevention goes a long way toward extending plant service life and lowering costs. It is an excellent alternative to letting corrosion eat away plant assets. ***IMPO***

Julie Holmquist is the marketing content writer at Cortec Corporation, a provider of VpCI and MCI corrosion control technologies.

VpCI film can be shrink-wrapped around large pieces of equipment to protect them from corrosion while not in use.

New Generation Actuators Look To Go Pneumatic Without Springs

By George Wang and Jack Dovenbarger

Pneumatic actuator designs have virtually remained unchanged for the better half of the past century. A valve actuator compresses an internal spring when the actuator moves the flow control element away from its starting position (open or closed) and then uses the energy stored in the spring to move the flow control element back toward its starting position. As the piston/rack drives a pinion, it also compresses a series of springs. Upon loss of compressed air, the springs return the piston to its selected fail position.

Unfortunately, spring return actuators are not cost effective, as actuators must be sized to overcome the spring tension and to the required torque of the valve and system. This requires the actuator to be oversized, which increases the cost of the actuator. With the addition of the spring assembly, costs can be anywhere from 30 to 80 percent higher than the standard double-acting actuator assembly. Springs are also subject to corrosion from atmospheric conditions and degradation from constant compression.

Many industry experts and end users are aware of an alternative to the use of springs to accomplish the fail-safe mode of operation. This is achieved with the use of external air reservoirs to store compressed air needed to supply the required force to fail the valve to the fail-safe position. Applications for such fail-safe setup can be observed in applications for actuating large emergency shutdown valves. Air reservoirs have traditionally been supplied as an added piece of equipment which requires custom brackets and mounting hardware. External reservoirs require ASME code certified tanks that are mounted to the actuator assembly. These reservoirs not only add to the size and cost of the system but also require a considerable amount of external tubing. These considerations add to the overall footprint which limits the usefulness and cost efficiencies.

Over time, durability, safety, efficiency and cost all become factors in which end users and industry experts must contend and compromise. This is becoming more evident in a global economy that thrives on efficiency and technology advances.

Today's Actuators

Today, new generation actuators need a cost effective and space conservative design to supply enough pressurized operating medium to perform the fail-safe action, without the use of springs or external reservoirs. The ultimate design would be to integrate the reservoir into the pneumatic actuator housing to provide the necessary stored energy. With the proper pilot assembly, the reservoir would be constantly pressurized and available to perform the fail-safe operation during a power failure or a catastrophic air failure. These features have been designed, built and field tested as seen below. This reservoir is internal to the actuator and is sized to allow for the fail-safe operation. With the reservoir internal to the actuator, springs are not required, therefore reducing the size, weight and footprint of the actuator. The fail-safe operation is accomplished by utilizing a properly ported solenoid valve or pilot assembly. Both of these will pressurize the reservoir during normal operation with full operating pressure. At the loss of power or catastrophic air loss, enough air is maintained in the reservoir to fail the valve in the pre-selected fail position.

Singular actuator body with an integral air reservoir and vane compartment.

Some of the benefits of utilizing a pneumatic actuator without springs are:

- Actuator size reduced as a result of not having to overcome the spring torque
- Reduced actuator weight by virtue of smaller actuator and lack of a required spring pack
- No spring corrosion or degradation over time which leads to longer actuator durability
- Safer, as there is no need to replace or adjust springs
- Overall dimensions of actuator reduced due to reduced size and elimination of springs
- Reduced inventory and operating costs as the same actuator and

New generation fail-safe actuator without the use of springs for better durability, safety, efficiency and cost. New generation actuators fit where rack and pinions can't.

Vane actuator's one moving part results in increased lifespan over linear-to-rotary designs.

solenoid package can be used for double-acting or fail-safe
- Reduced operating costs by utilizing smaller actuator due to not having to overcome spring torque
- Reduced corrosion as no environmental air is ever introduced into actuator
- NEMA 4, explosion proof and low voltage version available for all pneumatic fail-safe actuator design, whereas it is significantly more cost prohibitive for electrical actuators. Emergency shutdown valves are primarily associated with the petroleum and petro-chemical industries although other industries may also require this type of protection system. These two industries, as well as others, will require explosion proof actuator assemblies
- Reduced maintenance costs

Already, the biggest beneficiaries to this platform are vane actuators, which inherently have an inability of incorporating springs internal to the actuator body. Whereas alternatives such as rack and pinion, cylinder, diaphragm or scotch yoke designs can install springs internal to the actuator body. Traditionally, vane actuators are an excellent choice for durability, safety and efficiency as a result of vane actuators creating pure rotary force, as opposed to rack and pinions which convert linear force generated by a piston transferred into rotary torque through the small radius of the shaft. However, when the requirement for springs come into play, traditional vane actuators are not cost competitive to its alternatives; with this new platform, vane actuators can now be offered at costs less than the traditional spring return actuator.

The introduction of the pneumatic fail-safe actuator without the use of springs, external reservoirs and an emergency backup operating medium has significantly changed the pneumatic fail-safe industry. This technology is in line with the global trend towards advancement in durability, safety, efficiency and cost of pneumatic actuators. **IMPO**

Prior to founding Easytork, George Wang was part of a group that founded Taiwan Ball Valve, one of the larger ball valve manufacturers in Taiwan that was eventually sold to Tyco in 2002. Along with his original group, they created and patented the design for Easytork. Jack Dovenbarger is a sales manager for Easytork. He has held senior management positions with several nationally known valve and actuator manufacturers, with positions ranging from sales and national sales manager to vice president of product development.

Five Steps To A Successful Material Handling CMMS Implementation

Upgrade maintenance operations with improved efficiency, quality and reduced overhead

By Scott Turner

Today's distribution, manufacturing and post and parcel operations depend on automation to keep product flowing reliably and efficiently. Industry research expects 10 to 15 percent annual growth in adoption of automation over the next three to five years, with overall adoption levels approaching 80 percent by 2019. With so many operations relying on automation, proactive system maintenance plays a critical role in avoiding unplanned downtime and maximizing profits, asset performance, equipment longevity and return on system investment.

Predictive maintenance requires capturing all of the relevant data and the interpretive expertise to put it to proactive use. Today's computerized maintenance management software (CMMS) is an essential tool designed to do just that — manage data collection, analysis, planning and execution for an informed preventive lifecycle maintenance program.

However, these benefits assume an effective and fully developed implementation. Results can quickly sour and the CMMS can become unusable if ill-equipped operations attempt the implementation in-house or use a vendor unfamiliar with their industry. Collecting on the promise of a CMMS requires an experienced, trusted partner armed with a deep pool of reliable data and an understanding of client business goals.

Avoid Unfulfilled Potential

The market offers several competitive CMMS platforms, with similarly robust capabilities and features to build, manage and execute strategic maintenance programs. The differentiation comes from the CMMS vendor's industry experience and implementation support to set a program up for success and translate potential improvements and safeguards into concrete results.

Unsuccessful implementations are usually not a result of inherent software deficiencies, but due to other factors, like dirty data, deficient management framework and poor vendor support. These limit the effectiveness of individual CMMS installations and further issues such as a lack of scalability and standardization, add unnecessary complexity to multi-site implementations.

Here are five key factors to ensuring a successful material handling CMMS installation:

No. 1. Sufficient Amounts Of Accurate Data

A CMMS application is only as effective as its data quality allows it to be. It can take five to seven years for a single site to accumulate sufficient amounts of data to set benchmarks and provide an informed foundation for strategic maintenance. Missing assets, incomplete procedures or outdated spare parts information sacrifice data set size and accuracy, greatly reducing program effectiveness.

Choosing a vendor with experience monitoring and managing material handling systems provides access to the right data and the experience necessary to put it to productive use. Utilizing a CMMS vendor with relevant material handling experience provides the added value of gaining access to years' worth of relevant industry-specific data from multiple implementations, including information from both its own systems and equipment from other manufacturers. At start-up, the CMMS provider sets up a standardized framework to handle local data collection and analysis, providing a scalable foundation for comparison and data sharing across multiple sites.

No. 2. Expertise And Processes To Extract The Most Value From Data

Business intelligence-driven process improvements drive the ongoing benefit of an effective CMMS implementation. The path to success requires extensive data input with proper organization and workflow. A new installation starts with importing data from existing database libraries and can require the creation of more than 200 different assets in the software, including root cause analysis, mean time to failure and measurement thresholds to trigger actions. Multi-site implementations add an extra layer of complexity

Today's computerized maintenance management software (CMMS) is an essential tool designed to manage data collection, analysis, planning and execution for an informed preventive lifecycle maintenance program.

due to the importance of a scalable, consistent framework to enable comparisons and data sharing between facilities. This places a premium on standardization and repeatability with performance indicators, equipment and process nomenclature.

After setting up the environment to effectively analyze data, the CMMS plays an active role managing and executing maintenance functions, automatically scheduling work orders as key performance indicators hit preset measurement thresholds. But the CMMS is not simply a management tool to commission work. It leaves no part of the maintenance process unassisted, with up-to-date spare parts pricing and a full suite of features to help both management and technicians work more efficiently, with automated phone or email alerts based on predetermined asset conditions.

The CMMS assigns tasks based on individual expertise and location within the facility, and prevents technicians from switching between different technology platforms by hosting product manuals, preventive maintenance procedures and OSHA compliance metrics all in one place. This allows technicians to work without delays or interruptions, allowing operations to save money on overtime expenses, decrease cost per repair, reduce paperwork and use fewer contractors. The software also future-proofs itself by cataloguing consistent process improvement, automatically updating compliance modules, procedures and work orders with best practices gleaned from other sites throughout the vendor's installation network.

No. 3. Support From A Vendor With Experience Specific To The Industry

The proliferation of capable CMMS platforms is a testament to the tool's value in nearly any application with automated equipment. While several suppliers offer robust software across several industries, they lack the specialized material handling expertise and ongoing support to help end users make the most of their investment.

The difference between using a generalist software vendor and a true material handling partner is the value of specialization. Some suppliers may be learning the industry on the job as they attempt to assist a customer, resulting in slower, less-effective and more expensive support. This is similar to buying a car from a specialized dealer with experience supporting that specific make and model, as opposed to buying the same model from a dealer

Entire Installation Base Strengthened By Multi-Site Sharing

A major benefit of a fully developed CMMS is the ability to learn from issues at other sites in the vendor's installation base. Sharing multi-site information combined with the continued support offered by dedicated CMMS administrators means the review of new and historical data to give advice and direction for ongoing improvement. The CMMS automatically puts these updates into action by issuing work orders to other installation sites to circumvent the same issue on similar systems or equipment. This capability leads to updates of everything from faulty light grids to conveyor motors as a preventive measure to correct issues before they result in a major outage.

For example, unsuitable breakers in a system control panel did not cause a major server issue at a customer site, but it did complicate system restarts following power outages. After extensive research, the local maintenance team identified the circuit breaker with the incorrect trip characteristic. Knowing that this issue could be present in other similar systems, the operation worked with its CMMS administrators to issue a network-wide alert, complete with corresponding work orders to inspect and correct the same issue at other locations. Thanks to the CMMS program cataloging and sharing this information across multiple sites, the customer saved hundreds of man-hours of labor that could have been lost due to repetitive research and troubleshooting.

with no experience maintaining and supporting similar cars.

A premier material handling CMMS partner has a high-level of familiarity with warehouse automation processes, order fulfillment systems and business requirements that allows them to plan for and respond to the nuances of manufacturing and retail distribution operations. This includes industry standardized reporting with expert support, implementation and maintenance scheduling around peak season requirements, and close integration with parts ordering systems to ensure sufficient inventory for routine maintenance and any unplanned outage.

No. 4. A Thorough Implementation With Speed To Match

Updating processes and implementing new systems requires careful planning and consideration to enhance, not disrupt, operations. This starts with establishing shared expectations between customer and vendor, with a clear implementation plan that accounts for customer scheduling demands, such as uptime requirements and seasonal peaks. Experienced material handling CMMS providers typically take two months to complete an installation following receipt of necessary documentation and approval from the customer.

In addition to efficient and timely installation, a quality implementation lays the foundation for sustainable success. It preserves maintenance best practices by scheduling services at proper intervals to keep systems healthy and avoid conflicting with peaks, while also providing detailed work order instructions that include the latest state and federal safety procedures to promote consistent, common work standards. CMMS can even connect with a client's enterprise resource planning (ERP) system, with the ability to feed human resources modules with staff performance reporting.

No. 5. Customer Involvement Is Key

When purchasing any tool to enhance business processes, end users must also invest the time and attention necessary to produce maximum results. CMMS customers must be engaged with the vendor throughout the process, from design and installation to training and ongoing evaluation. This involvement enables a neatly structured program to accommodate site-specific criteria and enable the cleanest handover following implementation, with well-informed staff empowered to use their system to its full potential. Following handover, regular dialogue between vendor and customer informs future updates to the program to enhance data analysis, maintenance procedures and more.

Conclusion

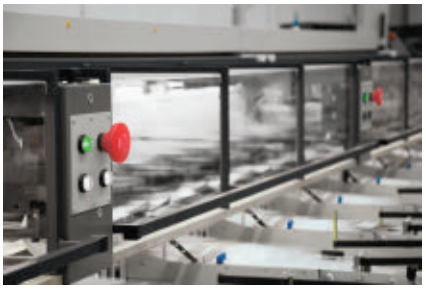
Properly implementing a CMMS offers more efficient, better-quality maintenance operations structured to accommodate site-specific and enterprise-wide requirements, all with reduced management overhead from a single, centralized portal. However, translating these benefits from potential to reality requires an engaged customer and a reputable partner armed with industry-specific experience and data. **IMPO**

Scott Turner is CMMS development manager for Intelligrated.

Five Common Pitfalls Of Unsuccessful CMMS Installations

1. **Lack of vendor support**
2. **Lack of training**
3. **Lack of clearly defined objectives**
4. **Lack of communication with technicians**
5. **Lack of maintenance best practices**

Emergency Stop Switches



EAO (Shelton, CT) announces its Series 45 Emergency Stop Switches (E-Stops). The E-Stops provide operational safety to the end user while helping to protect machinery, equipment and control systems from damage in the event of malfunctions. The Series 45 E-Stops meet all necessary global specifications of machinery and are designed to perform reliably over a wide range of switched currents. They can be customized with plastic or metal actuators in different shapes and sizes, feature optional illumination and can be paired with accessories such as industry recognized legend plates, sealed enclosures, and protective shrouds. E-Stops are also available with key, twist or pull-to-release actions. The actuators are impact, vibration and shock resistant and are sealed to meet IP69K requirements. They offer an extremely long service life of up 300,000 switching cycles and are UL, CSA, CCC and ROHS approved.

New Door For Combustible Dust Areas

Rite-Hite (Milwaukee, WI) announced the new high-speed door, the LiteSpeed HZ, which has a Class II, Division 2 listing from UL, carrying a Group Code G and Temperature Code 6. The listing means it can safely operate in facilities where combustible dusts (such as flour, grain, wood, plastic or chemicals) are not normally in the air, but can be present. All electrical components are enclosed in a UL Type 4X (NEMA) or DustTight enclosure. Its roll-up design means a small physical footprint in the workplace and operating speeds of up to 65 inches per second. Using available safety presence sensors, personnel working near the door are likely to avoid a collision. However, if the LiteSpeed is bumped or impacted, the TRUE Auto Re-feed will automatically reconfigure the door back on its tracks. In addition to its ability to function well in clean environments, the LiteSpeed HZ also comes with an array of safety features such as the bottom has soft breakaway, an optional full-width vision panel allows workers to see what's on the other side of the door and a reversing slack sensor can reverse the door's course if an obstruction is sensed.

Surge Protective Devices

Power management company **Eaton** (Cleveland, OH) announced its new SPC Series surge protective device that provides flexible, configurable surge protection for commercial and light industrial applications, enabling facility-wide protection to improve business continuity. The new devices feature a compact design that can be configured to protect most electrical applications, including service entrances, distribution panelboards and point-of-use applications, as well as other critical use cases. Key features of the new SPC Series devices include: Thermally protected metal oxide varistor (MOV) technology, 20 kA nominal discharge current (In) rating, 50-200 kA per phase peak surge current capacity ratings, configure-to-order with eight custom feature combinations, corrosion-resistant NEMA 4X enclosure with mounting feet, 200 kA short-circuit current rating (SCCR), factory prewired with 36 inches of 10 AWG wire, no user-serviceable parts or items requiring periodic maintenance and five-year warranty that can be extended to 10 years with product registration.

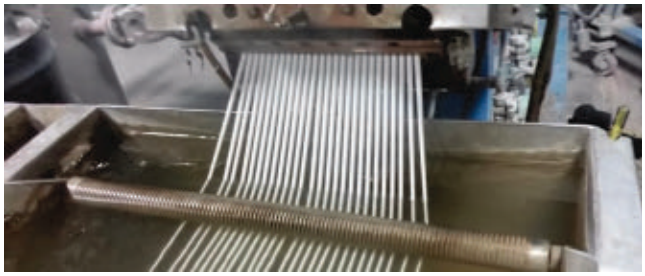
Horizontal Machine Center

Methods Machine Tools Inc. (Sudbury, MA) has announced the addition of the KIWA-Japan Triple H40 Horizontal Machining Center with a Column Traverse Structure to its current KIWA line. The Triple H40 has the ability to support flexible mounting of various fixtures and rotary tables based on the application. The stationary table design enables long work pieces to be clamped firmly to the table, eliminating the back and forth action of moving parts with special guarding and allowing machining access to either ends of long work pieces. The Triple H40 machining area is 43.3-inches by 23.6-inches by 31.5-inches. The work table stays stationary and the X/Y/Z Axis ballscrews and roller guides are behind the X/Y Axis way covers. The Triple H40 also features a new armless Automatic Tool Changer (ATC), mounted on the top of the machine to save space, which allows the spindle to directly change tools with the magazine, eliminating the need for a tool change arm.

Emergency Shower

HEMCO (Independence, MO) introduces Emergency Shower/Decontamination Booths. The booths are fully assembled and ready for installation to water supply and waste systems. The shower is molded one piece seamless of chemical resistant fiberglass and is equipped with a pull rod activated shower and push handle eye/face wash for immediately drenching of personnel that have been exposed to hazardous chemicals. Shower is equipped with frosted front strip curtains, interior grab bars, raised deck grating and bottom or rear drain outlet and is compliant with A.N.S.I. and O.S.H.A. requirements.

Chemical Purging Compound



ASACLEAN (Parsippany, NJ) introduces a line of purging chemical purging compounds to complement its existing, evolving set of mechanical compounds. ASACLEAN's N Series of heat-activated chemical purging compounds excel in a wide range of plastics manufacturing applications, including injection molding, extrusion, blow molding and extrusion blown film. The rapid foaming action when activated by heat is sturdy, yet flowing, and allows chemical compounds to scour difficult-to-access nooks and crannies in machines where thorough purges between runs are highly necessary. Another advantage is particle size: in its melted state, N Series chemical purges are sub-micron, making for quick, easy displacement with a supplementary carrier resin.

Red Heat Abrasive Belts

Norton Saint-Gobain (Worcester, MA) introduces the Norton Red Heat R983 product line of abrasive belts and discs that provides optimum resistance to wear with sharp cutting capabilities of a ceramic grain that defies premature dulling and ensures fast, efficient cutting. The Red Heat products feature a "supersize" grinding aid lubricant that saves significant time changing over from slower-grinding, fast-wearing discs and belts. Red Heat decreases production time and cuts up to 40 percent faster than competitive products, increasing profitability. Designed for grinding and polishing of Inconel, stainless steel, carbon steel and other metals, the Red Heat R983 suite of products includes flap discs and quick-change discs that are ideal for a broad range of applications in markets such as welding, MRO, transportation and aerospace. Red Heat also comprises a line of belts extremely well-suited for MRO, medical, aerospace, foundry, welding and transportation. Due to the enhanced grain/bond adhesion, Red Heat products require less pressure that produces reduced operator fatigue, a cooler cut and quality finishes. Red Heat's unique weave of Norton's new fiery-red Y-Plus weight and an engineered backing creates a greater surface area, allowing more adhesion points for maximum grain retention and less grain shed and edge wear, so belts and discs last longer and won't split, rip or stretch. Red Heat has also been designed to be more environmentally-stable with all performance-inhibiting dies and higher formaldehyde levels removed.

Smart Bin System

Apex (Mason, OH) introduces the new smart bin system ACTYLUS 8100 which enables operations with assembly and compact manufacturing cells to ensure bin supplies never run out. The devices are compact, at one shelf (14.5 inches) and two shelves high (22 inches), respectively and are ideal for use in benchtop and wall mount applications, including assembly cells and individual workstations. ACTYLUS Smart Bin Systems automate Kanban and the vendor managed inventory (VMI) process eliminating the need for manual bin scanning. It also virtually eliminates stockouts and rush shipments.

36 Watt Remote Controlled LED Light

Larson Electronics, (Kemp, TX) a manufacturer and supplier of industrial grade lighting equipment, has announced the release of the TPM-GL20004-16CC LED light tower. The tower contains one LED light head that produces 2,520 lumens while using 36 watts of power. The LED light head on this telescoping pole is operated with a single wireless remote control that rotates the light a full 370 degrees horizontally and moves it vertically 170 degrees. The beam on this spotlight is 900 feet long by 70 feet wide. An additional flood lens is available as an accessory to diffuse the light beam, providing a wider spread of light for close work activities. The temporary fixed mount aluminum light pole extends from four to nine feet and includes a mounting bracket with four pre-drilled holes. The pole mount features a pneumatic braking system that prevents the pole from suddenly collapsing, which aids in safety and security. This tower is equipped with a 16-foot coil cord terminated in an optional cigarette plug, battery clamps, or ring terminals to allow operators to connect to a low voltage power source. The easy deployment of this light tower makes it ideal as an emergency response scene light for first responders to downed lines, main breaks or accidents.

Belt Type Mini-Skimmer

Wayne Products (Broomall, PA) releases the Mini-Skimmer R.S., a belt-type oil skimmer that collects more than a quart of oil per hour despite its tiny housing that measures just 3-inch by 3-inch by 2.75-inch. Designed as an easy-to-use solution for small machine shops, Mini-Skimmer R.S. skims unwanted tramp oils from coolants, but can rest easily with the flip of a switch once its job is complete. Mini-Skimmer R.S. is the smallest of Wayne Products' family of oil skimming products. It is the only oil skimmer on the market with an on/off switch, allowing users to easily monitor its activity, and is lightweight and small for seamless transportation between machines. The design of Mini-Skimmer R.S. emphasizes ease of use, knowing that smaller machine shops sometimes need a small, simple product that is portable, yet effective. Mini-Skimmer R.S. comes with the company's industry-standard, stretch-resistant, fiberglass-reinforced cogged belt but has a liquid tight housing made of anodized aluminum and a motor with the highest torque for a skimmer of its size. It is also shipped completely assembled — just plug it in and flip the switch.

Lubrication Can Prevent Corrosion, Saving Downtime And Money

By Chris Kniestedt

Proper lubrication through preventative, predictive maintenance will provide a range of benefits to ensure reliability of machinery parts and equipment. Among these advantages is the prevention and control of corrosion to help ensure surfaces are protected from caustic and harmful substances, including water and rust.

Corrosion is one of the most negative influences on equipment. It can be produced by moisture, certain substances and through oxidation. Insufficient corrosion control will lead to the degradation of the most important attributes of machinery, including the strength of its surfaces and overall appearance. Left unchecked, corrosion can create pitted, irregular surfaces and cause subsequent breakdown and downtime of equipment.

Practice Makes Perfect

Long- and short-term corrosion control can be achieved through a variety of tactics and methods, including using lubrication as a boundary to shield and protect the surface of machinery and preserve its integrity over time. The right oil, grease or aerosol will help mitigate oxidation and rust in many types of key equipment, including reducers, motors, compressors, bearings and hydraulic power units.

A chain will fail or perform improperly if excessive carbon and deposits are allowed to develop and build over time.

The view inside a roller chain on a conveyor.

Inside The Facility — Chain

One of the most common pieces of equipment found in plants are chains for both drives and conveyors. They are susceptible to fatigue, overload, misalignment and premature stretching, but corrosion and contamination build-up is arguably the most serious problem. A chain will fail or perform improperly if excessive carbon and deposits are allowed to develop and build over time.

Lubricating chains properly means finding and pinpointing the correct lubricant for the application. From conveyors to bakery ovens, not all chains should be protected by lubrication in the same way. But, when lubrication is done properly, chain life can be increased exponentially.

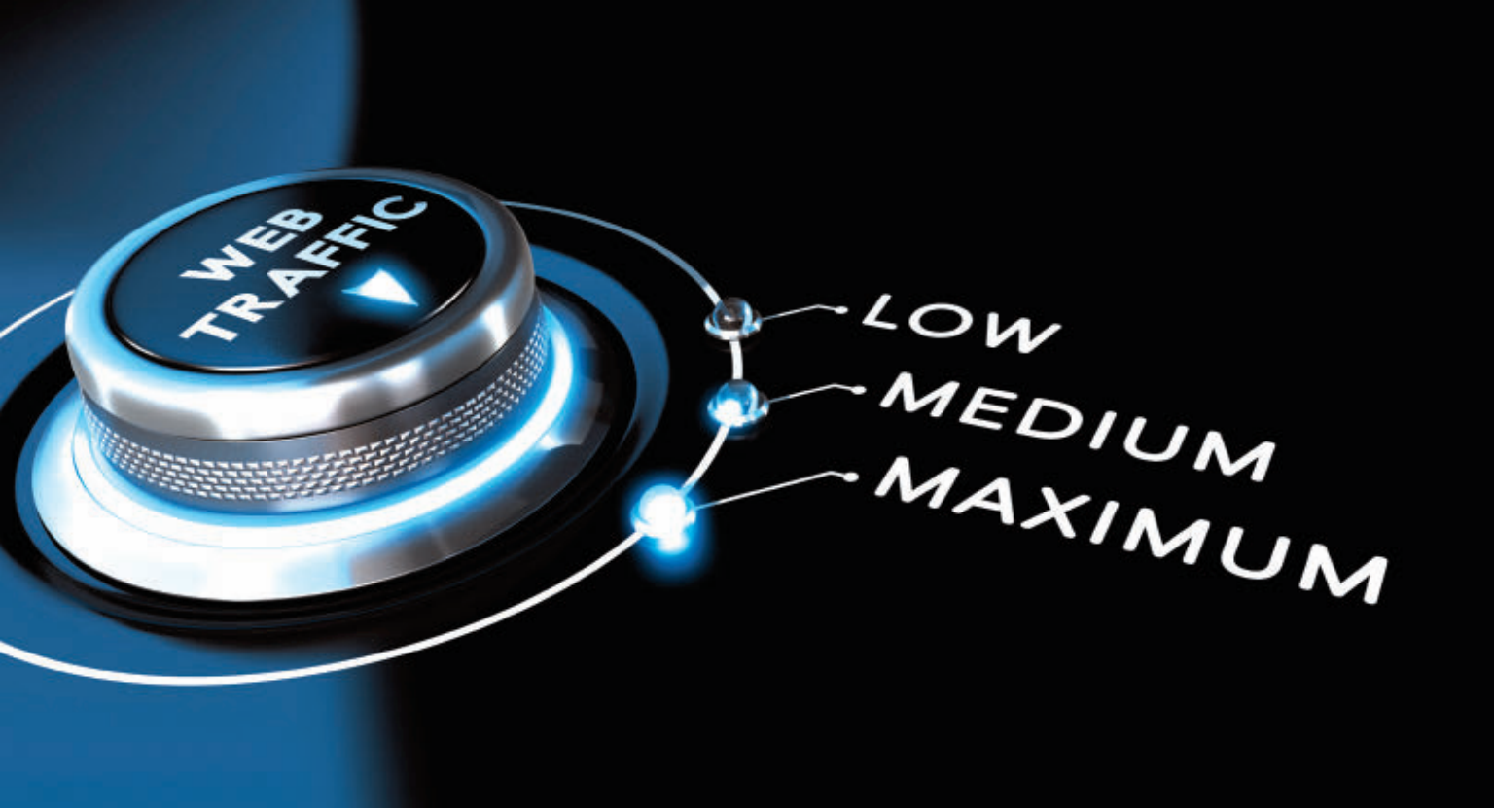
For example, when lubricating roller chain on a conveyor, you would generally in most applications want to use a low to medium viscosity oil that has the ability to penetrate the pins and bushings from the inside. Depending upon your environment and temperature, your lubricant choice must be able to handle the specific conditions by maintaining a boundary film. This means your oil could be petroleum or even synthetic, based on the circumstances. If the roller chain is in a high washdown situation, an oil that can withstand excessive water over time is critical to the success of the operation.

Alternately, inside a bakery oven, the chain can be exposed to as much as 700 degrees Fahrenheit. Average petroleum-based mineral oils are not capable of handling this elevated level of heat. In many cases, a strong type of synthetic oil called an ester will help to protect, preserve and maintain a clean lubricated surface of the chain, negating the buildup of carbon and other contaminates. Ester-based synthetics are unique in their chemical composition and specially designed to provide stability and resist thinning at elevated temperatures.

Long-Term Prevention

Averting and preventing corrosion through lubrication is an important and critical part of a successful preventative maintenance program. It will lead to long-term equipment and machinery health, cost savings and decreased downtime. To achieve this in your facility, it is vital to adhere to OEM recommendations and consult a lubrication engineer or specialist to pinpoint the correct lubricant for the application. Not all lubricants are formulated the same way and they are designed to perform differently based on specific needs and applications. Successful corrosion control can be achieved by making the right decision with the proper lubricant. **IMPO**

Chris Kniestedt is a lubrication specialist for the San Francisco Division of Birmingham, AL-based Motion Industries, Inc.



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