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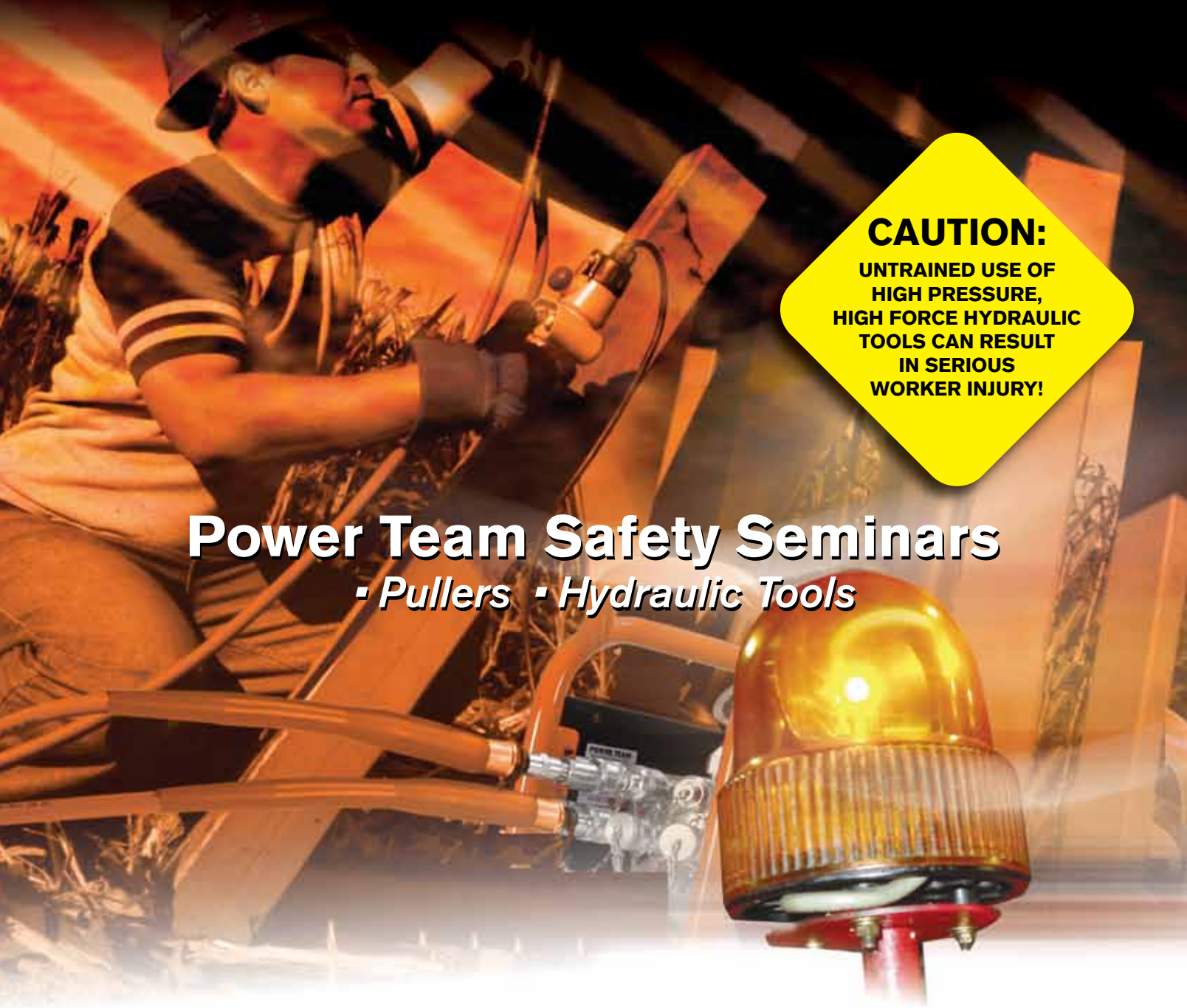

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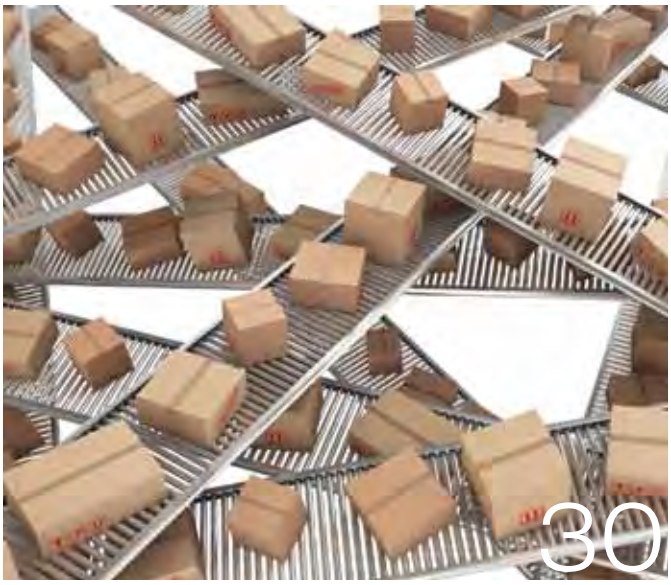

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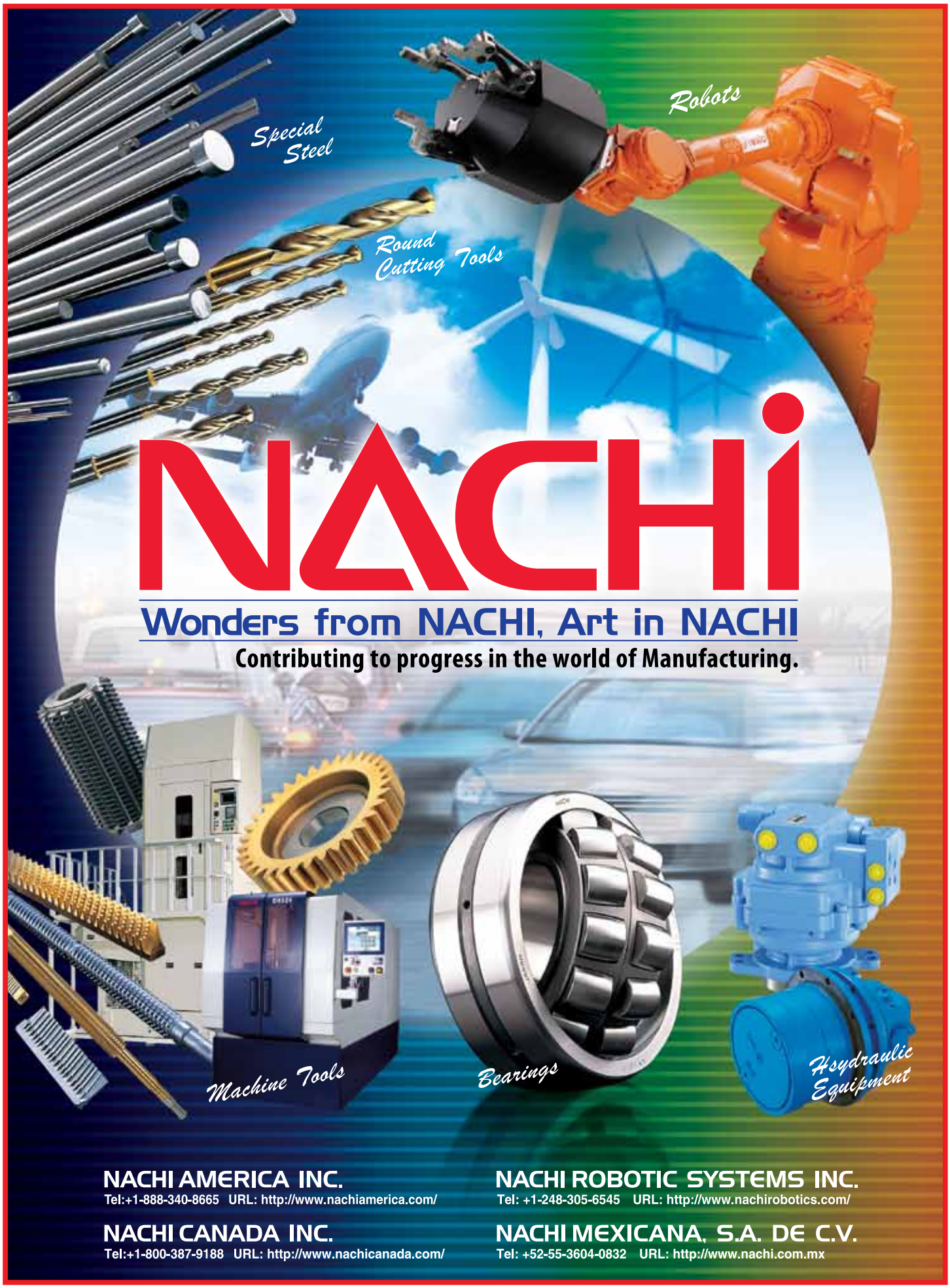

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The Value of Expertise

When I was a kid growing up on a farm in Indiana, it seemed like there was always something that needed fixed. I was what you would call a "regular" at Dannemiller Hardware Store. I loved that store because it was a third generation family-owned store and whenever you dealt with them you always felt like, well . . . family. I would walk in with some part in my hand, and Old Man Dannemiller wouldn't let me get five steps inside the door before he would grab it from my hand and tell me to follow him down the aisles of his store. Before I knew it, he not only found exactly what I needed, but would then go into an extensive dissertation on the proper way to install the part and what not to do to avoid screwing it up. I loved that old man because all that knowledge he imparted to me made me look pretty bright on the farm.

Years later the "big boxes" came to town. First it was Lowe's, then it was Menards, then it was Home Depot. It didn't escape me that the only thing those three companies advertised was their prices. Unfortunately, I never had a good experience in those establishments, as I was confronted with a pimply-faced kid in an orange vest that had no clue as to what the part was I had in my hand. It only took me a few trips into those "big boxes" for me to realize I got a better value from my independent hardware partner, Old Man Dannemiller. I was always a little concerned that the "big boxes" would steamroller over my favorite independent hardware store. But that Old Man Dannemiller was a pretty smart guy. He bought into the True Value hardware cooperative which allowed him to maintain his independence and level the playing field with the big boys at the same time.

JACK L. BAILEY

Much like Old Man Dannemiller, the independent industrial distributor brings something to the table that's a lot more important than price. He brings a life of experience with him to help resolve and fulfill your MRO needs. His passion for this isn't driven by a national headquarters in another state giving him sales quotas. His passion is driven out of a commitment to his customers, his involvement in the community, and maybe a mortgage and college tuition. In short, don't ever underestimate the value of that expertise.

In this issue of the *IDC Industrial Review*, the pages are full of valuable information. This information comes from great industry resources that have a lot of expertise. We hope you enjoy this magazine as our little contribution to the industry. Never hesitate to contact one of our IDC Owners for your MRO needs. They are a passionate, committed bunch of professionals that are anxious to share their expertise with you. Enjoy your summer.

Jack Bailey
PRESIDENT & CEO, IDC-USA

IDC Industrial Review is published twice per year by IDC-USA. Editorial, design and production services provided by Direct Business Media, LLC, 732 Madison Ave., Fort Atkinson, WI 53538. Program Director: Almeda Myers; Editorial Coordinator: Rich Vurva; Graphic Design: Amy Klawitter, Advertising Sales: Patty O'Mera; Production Manager: Deb Pierce. For editorial, subscription and advertising inquiries, call (866) 214-3223. For further information on any of the products featured in the magazine, contact your local IDC Distributor.

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Automatic Single Point Lubricators with Lockout System Now Available at IDC-USA

Recognized as an industry leader in the manufacture of the world's most innovative automatic single point lubricators, Pulsarlube USA has partnered with IDC-USA adding self-contained automatic single point lubricators to the cooperative's product portfolio.

Pulsarlube's semi-automatic lubricators address the critical needs of machinery users for keeping machinery in top operating condition. These lubricators apply a regular flow of lubricant to hard-to-reach areas and are cost-effective alternatives to fully integrated lube systems. Opportunities for the use of single point lubricators are widespread; since they provide direct lubrication to multiple equipment throughout a plant anywhere manufacturing, processing or material handling operations occur.

Capable of lubricating up to eight lube points (20ft/point) and delivering over 1,000 PSI, Pulsarlube's lubricators are the most powerful automatic lubricators in the world. They're also the only lubricator in the world with a lockout system which prevents unauthorized re-programming and they are equipped with an LCD readout showing 24/7 status of the lubricator. Pulsarlube's grease dispensers apply a precise flow of grease to critical machine parts and are a cost-effective alternative to fully integrated lube systems or manual lubrication.

"Our customers love the Pulsarlube product because of its reliability, user-friendliness, durability, LCD information and great price," states Bill Zavala, sales manager for Pulsarlube.

Pulsarlube M

Pulsarlube ML500 & OL500

Pulsarlube S

Diamond Case Adds Cross Roller Bearings and Track Roller Guides to Product Portfolio

For nearly 20 years, Diamond Case has had a solid reputation for manufacturing high quality linear products, and providing fast turnaround on quote requests and stock or custom order shipments. The company's no-nonsense approach to delivering quality high-performance product, combined with fast turnaround on requests for quotes, helps distributors cut lead times, increase market share and improve profit margins.

Now, IDC Distributors serving companies that manufacture medical testing equipment have a lower cost alternative for cross roller bearings.

Likewise, Diamond Case's new track roller guides provide a cost alternative to profile rail. With a long length travel, high-speed capability and the ability to handle dirty environments, these new track roller guides have a competitive advantage over re-circulating profile rails.

The addition of these products is another example of Diamond Case's commitment to helping IDC Distributors provide high quality products at competitive prices.

Bando Awarded GM Belt Contract

Bando's OEM market share continues to grow with its recent selection as the OEM serpentine belt supplier to the 2010 5.3L Vortec engine, available on GM's most popular light trucks including the Silverado, Tahoe, Suburban, Sierra and Savanna models. In 2010, one in every three vehicles manufactured in North America will be equipped with Bando's Serpentine Belt.

Bando manufactures belts for the world's leading automakers, supplying both OEM and aftermarket applications, all to the same exacting standards of quality. Bando's automotive belts, serpentine, timing and V-belts are engineered to meet the unique requirements of today's high-performance engines for applications that run the gamut from international racing teams to light-duty trucks. The GM 5.3L Vortec engine produces up to 310 hp and 335 lb-ft of torque.

"IDC-USA is proud to partner with this award-winning supplier of the world's largest OEMs," says Almeda Myers, marketing manager of IDC-USA. "A Platinum Supplier to IDC-USA, our distributor-owners have voted Bando as their Supplier of the Year the past 11 years."

IDC-USA is Ready for EPA 2010 Enforcements

IDC-USA recently announced a partnership with MolecuLoc LLC, a reusable spill recovery and mitigation company headquartered in Grovetown, N.H. Following the announcement of the EPA's intent to strictly enforce the laws of hazardous spill clean-ups in industrial businesses banning the use of non-EPA approved products (e.g. kitty litter) for spill containment beginning in 2010, IDC-USA and its distributors are now ready to assist customers through its partnership with MolecuLoc.

MolecuLoc products are complete containment products that leave no residue after clean-up, making them landfill safe (in most states). What's more, the products are also reusable. Compared to clay-based products such as Speedy-Dri, MolecuLoc works five times better.

"Our products will change the way the world deals with hydrocarbons; it's a paradigm shift," explains, Lou Niles, science manager for MolecuLoc. "The used material can be mixed into an asphalt product so that what it has encapsulated will never again be released back into the environment; it provides a total mitigation that will set a new global standard."

> Our products will change the way the world deals with hydrocarbons
>
> — Lou Niles

Left to right: Cave Richardson, Bob Creswell, Greg Creswell and Rob Creswell can offer customers more options since merging their companies in 2009.

The best Customers benefit from a one-stop supplier

BY DAVE WOLFF

The equation for success is simple: 1 + 1 = 3. That's right. When Creswell Industrial Supply and Richardson Electric joined forces in April of 2009, customers not only benefited from the expertise of both companies, but also received the added value of working with a one-stop supplier.

Today, Creswell Richardson, Chattanooga, Tenn., is a leading distributor of bearings, power transmission products, electrical components, automation control devices, packaging equipment and mechanical and electrical engineered solutions.

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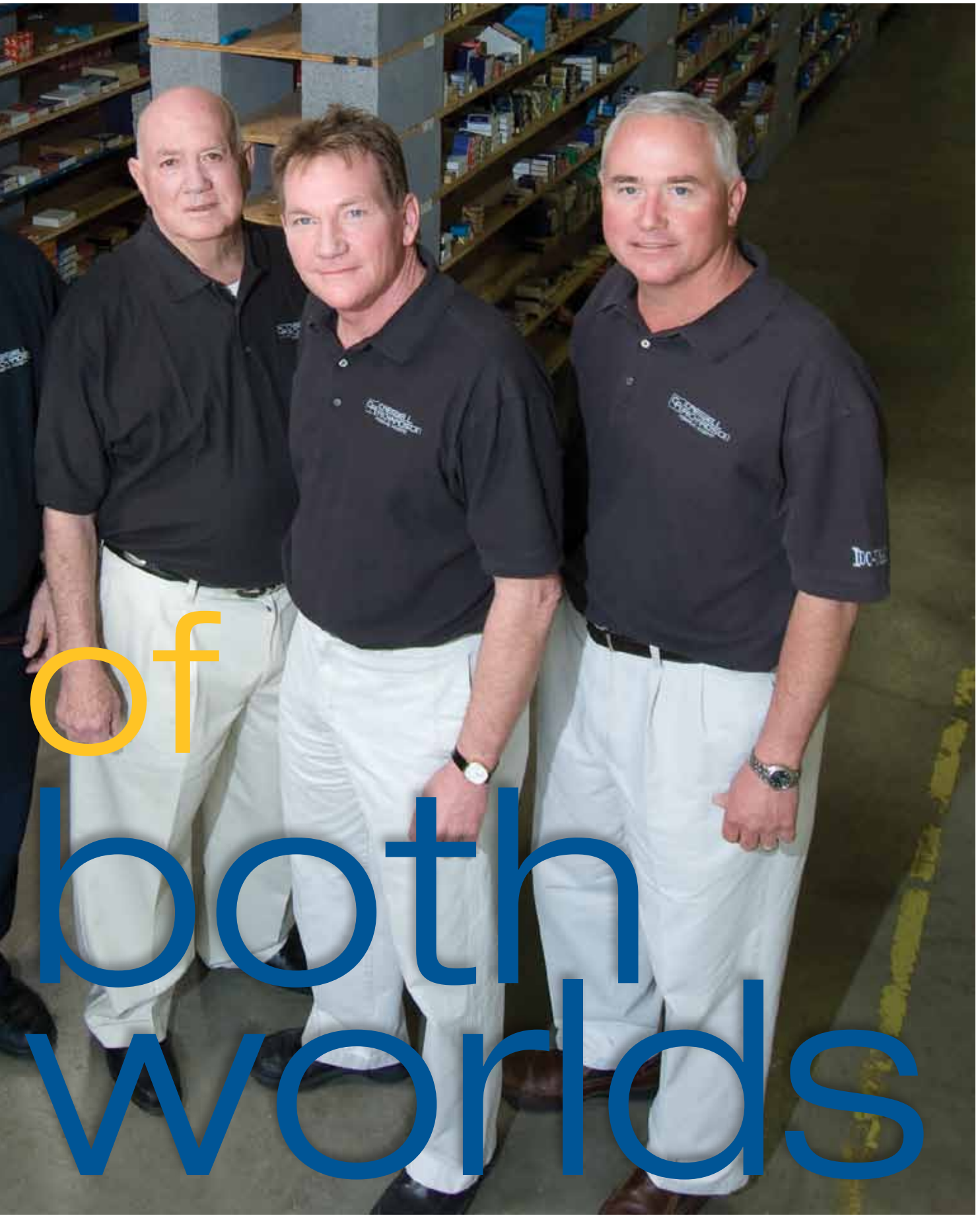

# of both worlds

After the merger of Creswell Industrial Supply and Richardson Electric into Creswell Richardson, the company has a much larger inventory.

"The concept has really taken off," Creswell Richardson president Rob Creswell says. "We're the only supplier in this area that offers engineering, service and parts on one campus. Our customers used to put out purchase orders to several companies; now they only have to issue one. It's much more efficient for them."

"Now they ask us to handle entire projects," he says. "In 15 minutes we can pull everyone together to help a customer. On our campus, we have Tech Craft Automation, a UL508H-certified shop, Creswell ETO Systems, our mechanical and solution provider, and Creswell Richardson. We just got an order from an automotive parts plant that needed a new conveyor line. The project requires control automation, a conveyor system and electrical and mechanical engineering. Before, neither of our companies could have done that without what we've put together."

Merger is a win-win

Here are just a few examples of how customers have benefited from the Creswell Richardson merger.

Volkswagen is preparing to open a huge facility in the area that will build more than 150,000 vehicles a year. A supplier approached Creswell Richardson about a multi-disciplined project with a critical time frame. "We pulled together our mechanical and electrical engineers and the parts, and completed the process," Creswell says. "We were able to do that because of the team we put together."

A large motor manufacturer developed a new application for cooling towers. The project had multiple variables and couldn't fail, so the manufacturer turned to Creswell ETO Systems (Engineered to Order) to provide a turnkey package. ETO made sure the products fit and handled the necessary permitting, among many responsibilities. ETO provided

the customer with the exact level of consultation and services it needed.

Another customer is a county government entity with 48 wastewater stations. The county unit sent a service technician twice a day to check each station to make sure pumps were working and motors weren't running hot. Creswell Richardson developed a panel to measure motor heat and pump volume, and incorporate wireless communication. The device sends a signal to the entity's computer system telling them what's happening. This eliminated the technician time and gives the customer real-time information.

Traditionally, developing relationships with national accounts can be difficult for a local independent distributor. Large "big box" competitors promote the fact they have, for example, 650 locations across the country. However, Creswell Richardson has overcome this hurdle as a distributor-owner of the Independent Distributors Cooperative - USA (IDC-USA), which allows it to provide national coverage without losing local expertise. Creswell says, "If there was a manufacturer with 50 plants across the country, in the past we didn't have that kind of coverage, but through IDC-USA we do." As an example, a national automotive parts manufacturer with a facility in the Chattanooga area was desperate to improve efficiencies. Creswell Richardson spent a couple of months evaluating their processes and procedures. Soon they were able to develop a program for their specific plant that saved 27 percent on product purchases. "We took our proven system and implemented it with that customer," states Creswell. "We organized their storeroom so that when they get down to a minimum of critical pieces a report is generated that tells them to order. Before, when they got to zero there was an emergency, which created downtime and the need for expensive overnight couriers. They have 32 other plants across the country and our plan is to go through each one. We're not offering a packaged 'off-the-shelf' national contract, but rather a customized plan for each location."

Creswell Richardson offers expertise in bearings, power transmission products, electrical components, automation control devices and more.

Long history

Creswell Industrial Supply and Richardson Electric were both founded in the early 1970s. Bob Creswell (Rob's father) was regional manager for a bearing company. Unwilling to transfer several states away, he decided to strike out on his own. "I landed a large account the second year and went from nothing to enough sales to build a business. That gave me a great start," says Bob Creswell.

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A Creswell Richardson technician is shown here assembling a control box before delivery to a customer.

Cave Richardson traveled a similar path. He saw a need for custom control systems, primarily for the carpet industry. He started Richardson Electric and it became a high tech distributor for electrical equipment.

The merger of the two companies was part of Creswell Industrial Supply's goal to double the size of the company every five years.

"After the merger we went from 13 associates to 31. Our growth has been tremendous in the last year. Creswell Industrial Supply sold bearings and power transmission products, which included roller chains, V-belts, reducers and electric motors. Richardson Electric offered electrical supplies, control automation, engineering, switches and parts," reports Rob Creswell. "We always had a great relationship. If our customers asked for something and we didn't have it, we would go to Richardson and buy their products. They did the same thing with us for mechanical products."

"For our customers," he continues, "reducing the number of vendors is important to streamlining processes and becoming more efficient. We saw the merger as a great opportunity to fulfill that need for our customers."

Commitment to quality

Aside from serving national contracts with IDC-USA, locally, Creswell Richardson serves customers within a 75-mile radius of Chattanooga. Markets include textile, food and beverage, utilities, wind generation, quarries and automotive.

"No one in our area does all the things we do," Rob says. "We are the one-stop shop for our customers. However, we have to deliver these services at a very high level. My dad's philosophy is that if a customer needs something, he gets it right away. That means having quality product on the shelves and providing 24/7 service. We have weekly meetings to look at ways to improve our service. When customers need a part, their line is usually down and it's an emergency. They can't afford downtime."

Richardson adds, "Our customers now have a central location for the responsibility of their application. They trust us to build a system that works in their process to make them more productive and profitable."

When you need responsive service, premier products and trained support staff, your local **IDC Distributor** is here to help.

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Employees at your local **IDC Distributor** receive factory training through our vast network of Preferred Suppliers and participate in additional educational offerings from IDC University, our very own educational program where distributor salespeople learn all about the world of bearings, power transmission, material handling and more.

To learn more about how doing business with an IDC Distributor can benefit you, contact your local IDC Distributor today.

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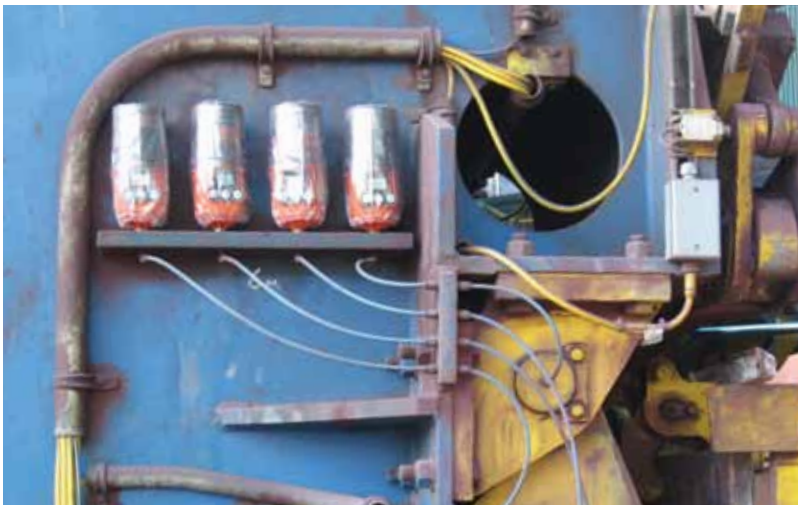


Put your lubrication program on auto pilot

How single point automatic lubricators can take the worry out of lubrication problems

BY BILL ZAVALA

When it comes to bearings, grease is often the lubricant of choice. However, over or under-greasing can cause overheating, lubricant deterioration and eventual bearing wear or failure. To help ensure proper lubrication, the Pulsarlube automatic lubricant dispensing system can be used to manage a precise amount of grease applied to specific lubrication points.

Pulsarlube automatic lubricators

Pulsarlube single point automatic lubricators, which are used in a variety of applications such as lubrication of bearings, fans, chains, electric motors, slides and guide-ways, are among the types of automated grease dispensing systems available in today's industry. They help reduce operating costs and maximize equipment life by providing a precise and controlled supply of lubricant to lubrication points. The Pulsarlube product reduces downtime caused by inadequate bearing lubrication, thus contributing to the uninterrupted operation of plant equipment and improved productivity and profitability.

PHOTOS: PULSARLUBE

As part of an overall lubrication program, automatic lubricators play a key role because without them, it is difficult to implement an easy and cost-effective maintenance plan. Without a maintenance schedule at your plant, problems can arise from:

- Personnel avoiding hard-to-reach or dangerous places
- Shutting down equipment to safely access bearings
- Mixing incompatible greases
- Adding too much or too little grease

The evolution of lubrication technology

Prior to the introduction of automatic lubrication devices, it was necessary to shut down some machinery in order to lubricate it. Pulsarlube automatic lubrication devices reduce this downtime. Single point automatic lubricators, now an important element of a lubrication program, help improve grease-related maintenance practices by replacing manual greasing and, in some cases, more costly central lubrication systems. Because of this, automatic lubricators can be an inexpensive way to maximize a plant's maintenance resources.

Historically, there have been four key lubrication methods used in a manufacturing environment:

1) Run to failure, which is the operation of machines until breakdown. Equipment is subsequently torn down, repaired, lubricated and then rebuilt. This method is costly and inefficient. Not surprisingly, this operation cycle was more common in the past than today.

2) Oil bath and splash, which is either the submergence of all system gears and bearings in an oil sump, or the splashing of components with rotating gears. This enclosed system is cost-effective in the short term. However, contaminants that may get trapped inside the system will decrease the life of the oil and ultimately cause increased maintenance costs.

3) Central lubrication systems, which store lubricant in a reservoir and then continuously pump it to critical equipment components through a complicated system. Although these systems are important for some manufacturing operations, they are not effective for most applications. Central lubrication systems are also expensive to assemble and install.

4)The Pulsarlube single point automatic lubricator, which is designed to dispense lubricant consistently and precisely through a powerful positive displacement pump for up to one to two years depending on the model. It also has the capacity to lubricate up to eight lube points at a maximum of 20 ft. per point, which allows for the lubrication of hard to reach/ hazardous areas. The Pulsarlube product is a simple, accurate and cost-effective method for most applications.

Originally, automatic lubricators simply enabled a facility to operate machinery

CONTINUED ON PAGE 20

and lubricate bearings simultaneously. Today, single point automatic lubricators are widely accepted in the modern manufacturing world and have an expanded role to improve overall maintenance practices, reduce costs, increase efficiency and promote plant safety.

Resistance to change

Even though there is value in implementing automatic lubricators, there is still some resistance in manufacturing circles due to the initial investment required. Ultimately, lubrication-related bearing wear and equipment failure will be a much larger expense. Companies that invest in automatic lubricators to improve preventative maintenance will benefit financially in the long term.

Some companies prefer to stick with "tried and true" lubrication methods and often prefer manual lubricant application. This method requires maintenance personnel to monitor the plant, interact with the machinery through the use of grease guns and other manual lubricators and document the procedure. In these cases, companies may be uncomfortable relinquishing a human's responsibility to a mechanical device.

If a plant is concerned about the reliability of automatic lubricators, the plant should test a lubricating device in less critical applications. Plants can easily conduct a phase progression on equipment that is probably not being lubricated regularly and has perhaps failed, such as fan bearings on a roof, or pump bearings in a basement. This machinery may not be as critical to the plant's production line as other pieces of equipment. Due to the difficulty in accessing these bearings, they may have gone an extended period of time without proper lubrication. A plant will gain a better understanding of the Pulsarlube automatic lubricator's reliability and role in proper grease application through initial testing in less critical areas.

Photographic testimonial

Condition of bearing before trial

Condition of bearing after trial

As part of a lubrication management program, the Pulsarlube automatic lubricator can help a plant ensure that its machinery is receiving proper lubrication, in the right place, at the right time, and in the correct amount. This helps plant efficiency by minimizing the amount of grease being used and maximizing maintenance resource time. Instead of assigning staff with the preventive maintenance task of greasing bearings, the plant can benefit through more active involvement with predictive maintenance work such as oil analysis, thermography and vibration analysis.

Benefits of using a Pulsarlube automatic lubricator

- **Powerful, precise positive displacement pump** - The Pulsarlube M unit delivers a powerful 280 psi average operating pressure, but is capable of delivering an unrivaled 1,160 psi if necessary, through the use of its vertical positive displacement pump, motor/gear set and microprocessor control system. This is one of the key reasons why the innovative Pulsarlube M unit can lubricate up to eight points, offering users tremendous savings compared to lubricators that can only lubricate a single point.

- **Immediate and exact lubrication** - Exact, reliable, lubrication through microprocessor chip-controlled technology.

- **LCD display** - Obtain all information at a glance about

Mechanical lubricator with 4 point divider block

Multi-point use of Pulsar M unit using progressive divider block (up to 8 units)

Can lubricate within 20 feet (max 30 feet with NLG #1 grease)

the status of your lube point (low battery, too much back pressure, number of days before empty, how many days on empty).

- **Lockout mode** - It's the only lubricator with a lockout mode to prevent accidental or unauthorized keyed entry.

- **Cost efficient** - Can lubricate up to eight points (20 ft./point).

- **Increased Uptime and Profitability** - Less downtime and loss of production. According to studies done by renowned lubrication experts around the world, the Pulsarlube M unit reduces bearing failure by more than 85% compared to manual lubrication.

- **Reduced Maintenance Costs**- Significant savings in repair and spare part costs due to fewer parts needed and thereby lowering labor costs as well.

- **Increased Equipment Life** - Increases equipment life by up to 85%.

- **Reduced Lubrication Consumption** - Up to 70% savings in lubricant costs due to the accurate timing and dosing of lubricant.

- **Fixed Cost Savings** - Additional savings in fixed costs since fewer lubrication personnel are needed.

Summary

The innovative Pulsarlube automatic single point lubricator can be an important component to a successful lubrication program. It is a cost-effective way to reduce bearing failure, minimize equipment downtime and contribute to a plant's continuous success.

Bill Zavala is national sales manager for Pulsarlube. Reach him at bill@pulsarlubeusa.com.

Caring for bearings

Starts with surgeon-like replacement techniques, followed by close attention to bearing lubrication and health

BY CLAIR URBAIN

Bearings are the pulse of nearly every piece of equipment in a plant, and the lubrication they need is their lifeblood. Just as living creatures need conscientious care and, at times, corrective surgery to remain healthy, bearings need a commitment to sound maintenance repair practices.

Bearings will fail. That is a fact of life, but the key is identifying whether a failure was premature, and if so, the cause of that failure so future premature failures can be avoided.

Failed bearings – even a small bearing – can shut down a factory line or stop an important production process, says William "Bud" Frabell, senior application engineer at Koyo Corp. USA.

''Bearings have an L10, or estimated life, which is a fairly accurate method of predicting bearing life. Actual bearing life is typically three times its L10 life, but that's in a perfect environment where it is the proper bearing for the job and it is installed and maintained correctly," he says.

"Bearing life depends upon the OEM's approach to equipment design," reports Sid VonFeldt, director of Cooper Bearings' North American Business Unit. "Some OEMs use bearings that will only get the equipment through the warranty period, while others use bearings that will – or could – last a very long time."

Jay Campbell, national sales coordinator at Nachi America Inc. Bearing Division, agrees. "Bearings smaller than 20 mm tend to be commodity bearings, and are often driven by price and the desire to get a piece of equipment through its warranty period. However, when a larger bearing fails, it's a good time to review the application and how the bearing was mounted and maintained to see if there is a way to improve the bearing's life."

In that review process, a different bearing may last longer in the application, says VonFeldt.

"Customers don't always realize they have options that could improve bearing life. For example, we have been able to replace conventional

PHOTO: © MARIA GRITCAI

bearings with split bearings in a cement plant's fan and increased the bearing replacement interval from six months to two years.

"While the bearing may cost three times more than the OEM bearing, it provides tremendous savings in longer service and simpler replacement. Distributors and suppliers can offer great insight on this and can greatly reduce downtime from failed bearings," he says.

Selection

More often, bearings are replaced with like bearings specified by the OEM, and the equipment's parts list and data plate are the first places to look for bearing specifications, the experts advise.

In a worse-case scenario, when the documentation isn't available, start with information found on the failed bearing. Or, you can measure the shaft and housing to try to determine the proper replacement bearing.

Installation

Proper bearing installation is more like surgery than repair. With clearances and tolerances that are measured in microns, these precision parts require gentle handling throughout the installation process.

Prepare the work area to make the repair. Like an operating room, establish a clean area, removing grease, grime and other materials that could contaminate a bearing. Measuring tools, such as micrometers, should be calibrated and double-checked for accuracy before beginning the replacement process.

The measurement process should follow a documented best practice to assure accurate measurements. "Document how measurements should be made. Make sure they are repeatable and are followed," says Frabell.

Before mounting the bearing, you must ensure the shaft and housing dimensions are correct. "The measurements should be taken at three different locations around the shaft and housing – for example, at zero, 60 and 120 degrees. It is also critical that measurements are taken across the shaft and housing in the area where the bearing will be seated. Make sure the measuring tools are calibrated and that there is a master set of measuring tools that can be used to double-check readings," Frabell recommends.

Record your measurements. "This is also a good time to write down all of the information on the bearing's box. You can always get some information off the bearing itself, but the box contains lot numbers and other important information that can help the manufacturer identify problems if the bearing fails prematurely," says Frabell.

"Do not remove a bearing from its packaging until you are ready to install it," recommends Campbell. "When a bearing sits in open air for too long, it can get contaminated by dust or moisture in the air," he says.

The experts also recommend wearing gloves to prevent body oils from contaminating the bearings, which can lead to premature failure. "Don't use fabric gloves unless they are lint-free and clean. They shed fibers that can damage bearings. One recommendation would be to use leather gloves that are only used for handling bearings. When they are not in use, the gloves should be stored in a sealed plastic bag," Frabell says. Rubber or latex gloves may also be used during the handling process, but not recommended after the bearing has been heated, he adds.

For the best interference fit, the experts advise leaving the ball pein hammer in the toolbox. If at all possible, use a pressure fit to slide the bearing onto the shaft or into the housing.

"Having a set best practice for maintenance workers to follow can assure proper bearing installation. The manufacturer will offer some guidelines, but develop your own and document them for specific equipment repairs. It's good information in case the bearing fails prematurely. It gives you a base to understand why it may have failed before its time," says Campbell.

Induction or cone heaters or ovens can be used to expand the bearing for easier installation with less force. "Don't torch a bearing to heat it up. No

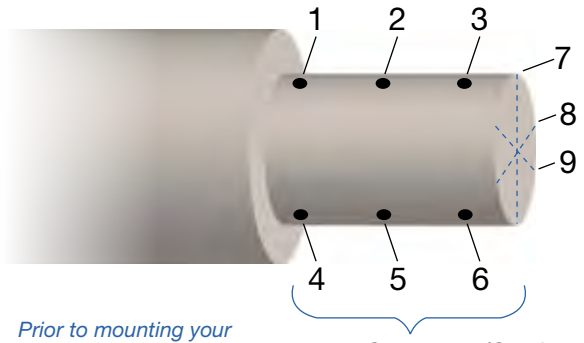
CONTINUED ON PAGE 24

matter how good you think you are, a torch will cause inconsistent heating that WILL shorten bearing life. This is also not a repeatable practice. Most applications do not call for the bearing to be heated to more than 210 degrees F. High temperatures can soften the bearing components. If you are using a sealed bearing, the heat can damage the seal lips," says Frabell.

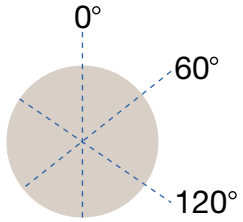
The pressure used to slide a bearing into place should be on the ring that is in contact with the interference fit, the experts advise. An arbor press is the best tool to use to press a bearing into place. If the bearing must be tapped into position, the experts recommend using a plastic tube that closely matches the size and diameter of the bearing's interference ring. Place a cushion block on the tube, then tap the block with a rubber mallet or hammer.

Experienced bearing installers often do the job by feel, but that is not a repeatable method, VonFeldt says. "Many workers believe their arm is a calibrated tool and they can accurately tighten components to the correct spec. That's not true. If a bearing is over tightened, tapered bore adapter-mounted bearings for example, can reduce the bearing's internal clearance too much and cause the bearing to run hot and lead to premature failure."

Recommended measurements



Prior to mounting your bearing, it is important to insure your shaft and housing dimensions are correct. It is recommended that you measure in multiple positions to insure accuracy. Measurements should be taken at three different locations around the shaft and housing, for example, at 0°, 60° and 120°.



Premature bearing failure by the numbers

Koyo USA's Frabell identifies four sources of bearing failure, and puts a fairly accurate estimate on the percentage of time they cause premature bearing failure:

10% Damage before installation. From the moment a bearing rolls off the production line to the second it's installed, it's possible that it can be damaged. "If a bearing is packaged, shipped or stored incorrectly, any vibration, contamination or mishandling can greatly affect its life," he says.

30% Improper installation. Just because a bearing fits doesn't mean it will work. While the shaft and housing size govern the size of the bearing, the type of bearing should be governed by the work it must do. "For example, replacing a motor that's designed to be used in a direct-coupled application won't last in a chain or belt drive application because the bearing used in a direct-coupled motor can't take the drive's downward or heavy radial load. Follow bearing specifications outlined in equipment service manuals," he says.

Bearings will also fail if they are damaged by impacts from hammers or other forces during installation.

50% Improper lubrication. Lubrication is tricky, and companies in cost-down modes will cheap-charlie on lubricant price and often quality, says Frabell. "Don't mix grease types or brands, and make sure those in charge of lubrication understand which grease to use, how much to use and how often," he says. If a bearing is making noise, over-greasing may only exacerbate the problem. Instead, find the root cause of the excessive noise or vibration," he says.

10% Bearing fatigue. Bearings will fail prematurely if the wrong bearing is used in the application or the proper bearing is subjected to improper installation, poor precision, overspeeding or overloading.

Lubrication

Improper lubrication is the leading cause of bearing failure, and often it's from too much attention rather than too little, the experts say.

"When it comes to lubrication, more isn't better," says VonFeldt. "Manufacturers publish the amount, type and frequency of lubrication, based on the bearing and its running speed."

"A bearing running in too much grease is like a person running in the surf in ankle-deep water vs. chest deep water. The more grease in the bearing, the more energy it takes for the bearing to churn through the lubricant. That creates heat and shortens bearing life," says Campbell. The American Bearing Manufacturers Association offers guides for specific bearings' lubrication needs, he adds.

"Often, the person in charge of lubrication is the lowest paid and newest person on staff. The amount, type and frequency of lubrication should be documented and they need to follow the recommendations," says Frabell.

Bearings are very good at self-regulating the amount of grease in them if there is space available to allow grease to be extruded. In some cases, excess grease may flow or get pushed into other components of the equipment. "Motor repair shops often fix motors where excess bearing grease gets pushed into the motor housing and contaminates windings," says Frabell.

Frabell also recommends sticking with one brand and type of grease, based on the bearing manufacturer's recommendations. "I am not a fan of 'Grease of the Month' clubs where the purchasing department buys only on price. Different brands may claim to work in a certain application, but when one brand or type is pumped into a bearing where another type or brand has been used, you may have compatibility issues. A good analogy: I like catsup and I like ice cream, but I don't like them together. The same holds true for different types and brands of grease."

If bearings require different types of grease, maintenance and production personnel must know the difference and use the appropriate grease. "Clearly mark and keep the grease guns separated. Also, it's a good idea to record when bearings are lubricated. It can provide valuable information if the bearing fails prematurely," says Frabell.

Before greasing a bearing, clean the grease gun tip and grease fitting to prevent it from injecting dirt or other contaminants into the bearing.

Predictive maintenance

Many plants use predictive maintenance technologies, but they are only valuable if the readings are taken consistently, says VonFeldt. Infrared and vibration analysis can be helpful, but they need to be done on a regular basis to establish meaningful trend lines. Finally, different bearing types have different 'normal' operating characteristics. "Don't compare different bearings – it's like comparing apples and oranges and isn't helpful in identifying coming problems," he concludes.

A new era in absorption

BY CLAIR URBAIN

MolecuLoc

cleans up hydrocarbon spills quickly, economically and in an environmentally friendly way.

Spill containment and cleanup headaches just got less severe with the introduction of MolecuLoc, an environmentally friendly absorbent. This highly reusable material actually neutralizes dangerous hydrocarbons in almost all types of spills.

Rob Larson, co-founder, owner and general manager of MolecuLoc, says the material is front-to-back environmentally friendly.

PHOTOS: © DRA_SCHWARTZ | © VLADIMIR BORISOV

"It's a unique product, to say the least," say Larson. It's a totally inert product that offers no hazards, even after it has fully absorbed hydrocarbon materials. It's easy to use, reusable, fast and effective. It also leaves a dry surface behind," he says.

What it is

MolecuLoc is a cationic-rich proprietary blend of amorphous alumina silicate that's formulated to be inert and remain inert even after it absorbs hydrocarbon or bio-based materials. "Its highly uniform molecular structure acts as a molecular sieve that allows its loosely held positive and negative ions to readily bond with hydrocarbon components, breaking them up into simpler and safer compounds," he says. "It will absorb any polymer – even vegetable oil, glycol or battery acid."

The patent-pending production process starts with volcanic-based silica that's mined in a very environmentally conscious way. Once the mineral is extracted in the mining process, the area is reclaimed to its original state.

The actual production process, which is a trade secret, is a completely green process, Larson claims. "When MolecuLoc is applied to a spill, it renders the spilled material to be much more environmentally friendly. The absorbed material is extremely flame retardant, which makes it a very good choice for first response situations," he says.

Advantages over other sorbents

Unlike clay- or cellulose-based absorbents, MolecuLoc can be reused many times – up to 10 times, based on the material's viscosity, says Larson. It has five times the absorbent capacity of clay-based products.

"Once it has totally reached its maximum absorbent ability, disposal doesn't require special

CONTINUED ON PAGE 28

landfill or hazardous waste handling in most states. In fact, we are exploring ways the waste material can be used in asphalt production. From cradle to grave, this material is safe and effective," Larson says.

Although the initial cost of the material is more than conventional absorbent products, the added cost is quickly offset by the product's ability to be reused and neutralize the spill's hazardous properties. "It works particularly well on motor oil, transmission fluids, fuels, greases, coolants, PCB-laced oils, paint, solvents and even animal rendering byproducts," he says. "The only material it can't be used to remediate is hydrofluoric acid, which can dissolve glass- or silica-based materials."

Unlike other sorbents, MolecuLoc does not react with bio-carbons such as bio-diesel or bio-synthetic lubricants. "Other sorbents create spontaneous combustion issues with bio-carbon products, but because MolecuLoc breaks up the hydrocarbon chains, the flashpoint of the contained waste is dramatically reduced," he says. The material absorbs more by weight than conventional clay-based sorbents.

MolecuLoc is easier to use and works faster than other sorbent products

MolecuLoc is also easier to use than other sorbent products, says Larson. "It takes less time to clean up a spill with MolecuLoc, and is cleaner."

Products under development

Although the MolecuLoc sorbent is just beginning to gain a foothold in the market, Larson and his staff are developing additional products that adapt the base material to even more critical spill and hazard containment situations.

"To protect rivers and streams, MolecuLoc is working on a basket-type absorbent that fits within a storm drain and collects contaminants before the water enters the drain. It promises to make it possible to protect storm water from runoff contaminants.

EPA to crack down on spill containment and non-point pollution

MolecuLoc's Rob Larson reports that the Obama administration has placed a high priority on enforcing tighter environmental regulations that were first set out in the Clean Water Act almost two decades ago.

"The EPA has changed dramatically under the Obama administration and it's going to dramatically change the way spills are addressed," Larson says.

"Industry must change to meet these new challenges, and the technology behind MolecuLoc will help them do that. It will take education, a change in attitude and some creativity, but we can make this work," say Larson. He says MolecuLoc will be a tremendously effective product in meeting those tighter requirements.

"We are also developing a biodegradable formulation called BioLoc, which is designed to encapsulate and neutralize bio-hazardous spills including blood, urine, vomit, bodily fluids and septage. BioLoc is safe to use in the home, hospital, funeral home, animal yard, stock yard or other places where biohazards may exist," says Larson. However, unlike MolecuLoc, it is not recommended for reuse.

The latest version in development, BioLoc SS, promises to offer super-absorbency. "This material evaporates moisture away as fast as it absorbs it and shows great promise for areas where septic waste is coming up out of the ground or in biohazard waste situations in hospitals, funeral homes, animal rendering plants or any industrial or agricultural application. It's very dramatic how it absorbs material so quickly," he says.

Finally, researchers are looking at how MolecuLoc can be used in asbestos abatement.

You can follow progress on new product development and announcements at www.moleculoc.com. Contact your local IDC Supplier to schedule a product demo and/or request a sample. Or, contact IDC-USA's Customer Service Team direct at 317-244-9200.

Why is MolecuLoc different?

1) It sorts hydrocarbon molecules and encapsulates the molecules permanently
2) It can be reused up to 10 times (depending on viscosity)
3) It is GREEN
4) It is landfillable in most states (see your state/local enviromental rules)
5) It absorbs up to 20 times its own weight
6) It is a flame retardent
7) It saves you time and money

Eliminating MUDA

BY JOAN ADAMS

In Japanese, the word "Muda" means waste. In today's workplace, reducing and ultimately eliminating all the "muda" from your operations is a critical component to running an efficient, productive business. We're all familiar with "Lean Manufacturing" which means eliminating all the wasted time, effort, space, materials and money in the day-to-day operations of business; or, in other words, removing muda.

Post World War II, Toyota was a struggling car company, having few resources and lacking space, manpower and capital. Toyota didn't have the real estate for long assembly lines, nor money to buy dedicated machines for each operation. Taiichi Ohno, a Toyota engineer at the time, developed a totally new way of thinking, the antithesis of mass production, called "Lean Manufacturing." By eliminating waste, Ohno transformed Toyota into a formidable competitor. Sixty years later, we all know the result. Toyota is now the world's largest automobile manufacturer.

In mass production, it is impossible to "see" wasted effort or poor quality until the end when product passes or fails inspection. In developing Lean, Ohno identified eight types of muda, which occur in all companies:

1. Waiting
2. Inventory
3. Transportation
4. Over-production
5. Over-processing
6. Motion
7. Errors/Defects
8. People

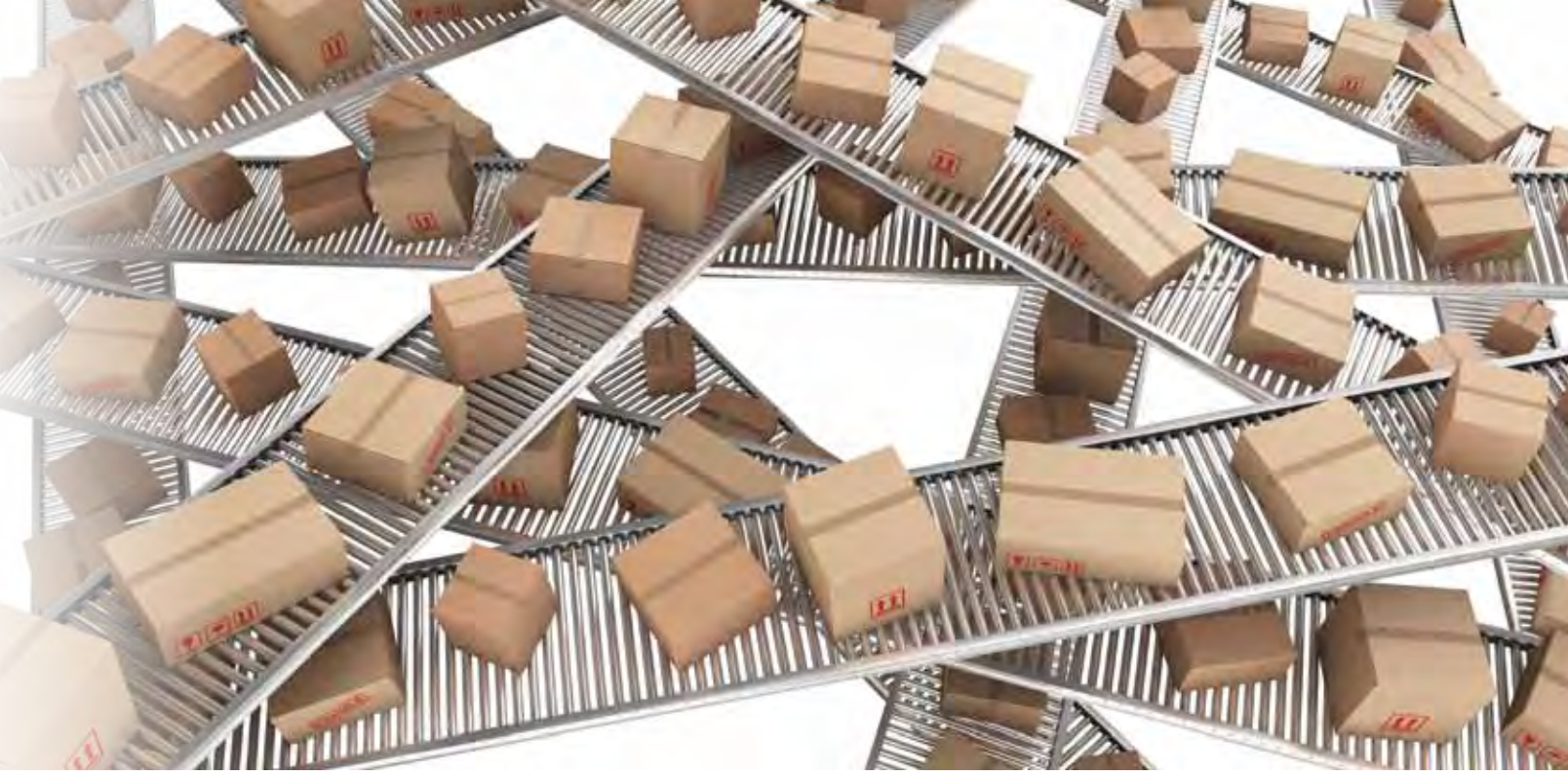
Waiting waste happens everywhere. Just look around, you will see employees "waiting" for something or someone before going forward. They might be waiting for a vendor's call, a manager's approval, verification from the warehouse, a customer's PO, a fax, etc. It is simple: when employees wait, they aren't producing, but they are still costing you money. When employees are waiting, your machinery is idle. Trucks stand still while drivers wait for shipping information; forklifts wait for incoming shipments; computers are idle too, waiting for information. That's a lot of expensive stuff sitting around doing nothing.

Inventory waste is huge. In the distribution world, this waste comes from overbuying and overstocking materials. Inventory costs money and you are not going to see a return on that money for quite a while, maybe never. Inventory becomes obsolete. Money tied up in excess inventory could've been used for more important things. Inventory takes up warehouse space, which also costs money. Excess inventory blocking aisle ways is a safety hazard. Inventory is the lifeblood of a distributor. However, most warehouses suffer from way too much. More is not better, more is muda.

Transportation waste is also big in most distribution houses. Prove it to yourself - map the travels of a particular product through your warehouse from the moment it arrives to the instant it is shipped. It goes many, many more places than from truck to shelf, to pick & pack, to ship. Try the same exercise with the paper flow through your office. Paper (information) is handled, transported, copied many more times than needed.

Over-production waste is the simple act of getting ahead of yourself. Getting ahead always sounds like a good idea, but in reality if you order material in

PHOTO: © ZENTILIA



anticipation of a customer's actions – and you get it wrong – you could get stuck with a lot of inventory. When picking and packing before knowing the customer's requirement you risk getting it wrong, having to put it all away, wasting time and effort.

Over-processing waste is a stealthy kind of muda. A perfect example of over-processing is providing more value than the customer wants, needs, or (this is the key) is willing to pay for. Many customers only need weekly delivery. Why go to the expense, effort and scheduling, to deliver orders to them any more frequently? They are not going to pay for it and you are wasting resources doing it.

Motion waste is the human equivalent of transportation waste. Any time employees go looking for something, time and effort is being wasted. Ask yourself how many times a day do people look for parts, tools, information or another person? They look busy, but they are not adding any value. This kind of activity is pure muda.

Errors/Defects are more than pure waste. This waste occurs in two ways: informational errors and material defects. Bad information can cause packing, delivery and billing errors, which are time-consuming nightmares to correct. Defective materials must be returned or thrown out. Damaged product or obsolete materials risk being accidentally shipped to a customer. They don't just waste materials and people's time, they make the customer mad – making it the worst kind of waste.

People: The waste of people is the hardest to grasp. Are you fully utilizing all your employees' skills, experience and talents? Your employees have a lot of experience in specific industries, materials and companies – yet managers often don't know about it or how to use it. Your warehouse workers know all sorts of things about your vendors, truckers and customers. Yet, typically they are viewed as "worker bees."

The Goal of Lean

The goal of Lean is to reduce waste throughout your company, freeing up all kinds of resources. For the next month, focus on the "Eight Wastes" and start identifying the muda that is all around you.

Joan S. Adams has consulted for industrial clients for more than 20 years. She headed DITT, the consultancy arm of the French National Utility, Electricité de France, and was a managing consultant at ATKearney. Later, she started Pierian, a consultancy that brings sustained and measurable success through operational excellence, customer focus and competitive market strategy. She has engineering degrees from the UW-Madison and MIT, and an MBA from Wharton. E-mail her at adams@pierian.net.


ADAMS

MANUFACTURING PRIDE

Much has been written in the national press about the loss of manufacturing jobs in the U.S. over the past decades. While it's true that productivity gains have decreased the number of American manufacturing jobs, manufacturing continues to play a vital role in the U.S. economy.

CONSIDER THESE FACTS:

The U.S. is the world's largest manufacturing economy, producing 22 percent of world manufactured products. China is second at 13 percent and Japan is third at 11 percent.

U.S. manufacturing produces $1.6 trillion of value each year, or 11.5 percent of U.S. Gross Domestic Product (GDP).

Nearly 12 million Americans work directly in manufacturing – about 10 percent of the overall workforce.

In 2008, the average U.S. manufacturing worker earned $71,623 annually, including pay and benefits. The average non-manufacturing worker earned $57,064 annually.

U.S. manufacturing workers are the most productive in the world – 50 percent more productive than workers in the next 11 leading manufacturing economies.

U.S. manufacturers perform half (49%) of all research and development (R&D) in the nation – or roughly equal to the combined R&D activities of the rest of the private sector, universities and colleges, the federal government, non-profits and federally-funded R&D centers.

IDC Industrial Review would like to salute all of those proud Americans who continue to work in manufacturing jobs or play a vital support role to U.S. manufacturers.

Source: National Association of Manufacturers, Facts About Modern Manufacturing, 8th Edition.

Making the impossible POSSIBLE

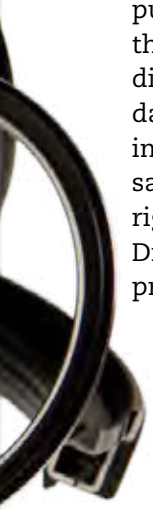
DICHTOMATIK

In the real world, manufacturers don't always have the luxury of time. Deadlines sometimes require people to accomplish the seemingly impossible.

For example, IDC Supplier Dichtomatik had a recent opportunity to work with a local distributor to redesign a shaft seal for a national pump manufacturer. The project was daunting: replace a mechanical face seal with a radial lip seal, reduce unit cost by a minimum of 50%, deliver prototypes in less than 45 days, and be production-ready in 60 days.

It typically takes 120 days to move from design to production for an engineered seal. Dichtomatik's design engineers visited the end-user along with the distributor to study the application and develop an initial design with the pump manufacturer's engineering team. The design was quickly finalized and submitted to the pump manufacturer for preliminary approval, authorizing prototypes from a production-size platen to expedite production parts.

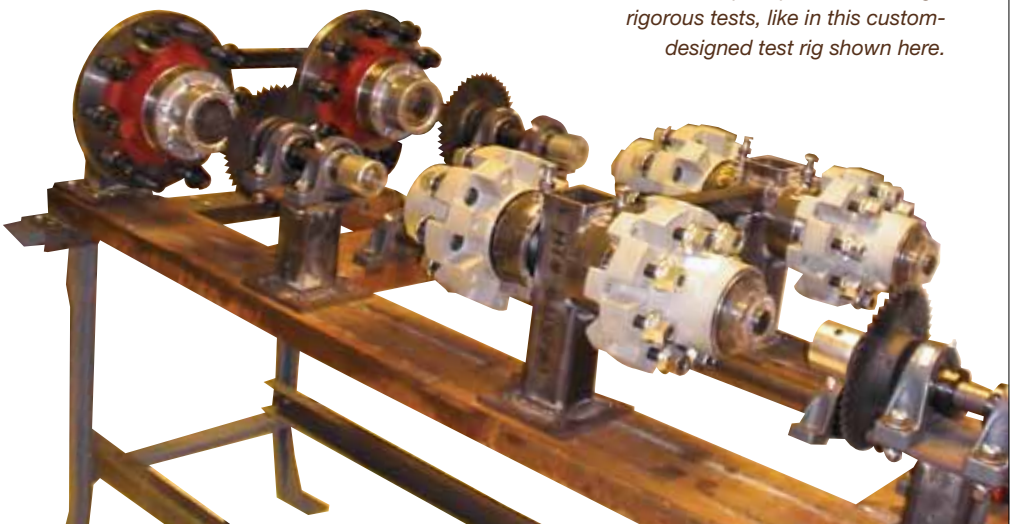
The manufacturer received samples in 35 days. After two



days of intense testing, the pump manufacturer recognized the need for some minor dimensional changes. By day 41, with design changes implemented, the second samples installed in the test rig performed flawlessly. Dichtomatik delivered a production order of 2,000 radial lip seals to the pump manufacturer for an Alpha production run. The seals have been in field operation for more than six months, with monthly orders shipping to the local distributor from Dichtomatik's Shakopee, Minn., facility to meet a "just-in-time" production schedule. And yes, Dichtomatik also met the 50% cost reduction target!

At about the same time, Dichtomatik received an opportunity with another distributor to make rotary shaft seal design recommendations to a national gear box manufacturer. The objective was to significantly extend seal life, allowing the OEM's new gear box design to be marketed as a "premium" product line. Dichtomatik's engineers visited with the OEM's engineering team, reviewed the application, offered design recommendations and built several test rigs, utilizing a new gear box in the Shakopee test lab, to cycle-test existing seals and Dichtomatik's recommended seal. The testing was rigorous in comparison to most seal tests. For example, the shafts were side-loaded to simulate worse-case conditions. After several months of testing, the Dichtomatik seal design proved vastly superior to the existing seals in extended seal life and reliability.

Whether it's same-day shipment from state-of-the-art distribution centers in Shakopee, Minn., or Houston, Texas; or design / testing capabilities from expert engineering staff; or custom packaging / labeling to meet customer requirements; Dichtomatik's goal is to be the IDC Distributor's partner by adding value that solves problems on the plant floor. For more information about seals from Dichtomatik (the German term for "automatic seal"), contact your local IDC Distributor.



Dichtomatik puts products through rigorous tests, like in this custom-designed test rig shown here.

SYNERGY SOLVES production problem

RENOLD JEFFERY

Synergy occurs when "the whole is greater than the sum of its parts." When it comes to IDC-USA, its distributors, and its preferred suppliers, that definition is absolutely true.

When Bearings and Drives Unlimited (BDU), Souderton, Pa., became an IDC distributor-owner, the company did not do business with Renold Jeffrey. BDU sold chain products, but none with the problem-solving capabilities offered by Renold Jeffrey chain.

A major manufacturer of industrial string came to BDU with a difficult situation. Its major production lines operated with rewind stands running 24 hours a day, seven days a week and the chain used for driving these machines lasted only eight months. Over the course of the eight months the chain was in operation, multiple chain adjustments would have to be made, slowing production and adding to maintenance cost. Eventually the chain would elongate to the point where it would jump the sprocket teeth,

jam the machine and cause damaged product and extensive downtime.

BDU called on its new supplier, Renold Jeffrey, for a joint call to evaluate the situation and provide a solution. Each machine was equipped with eight separate drives using #50 roller chain and another three drives using #60. The solution: Renold Jeffrey's problem-solving Synergy chain, which guarantees up to four times the wear life of any chain product on the market. The chain features a specially formed bushing, which operates along with a coated pin and hardened roller to provide smooth running and improved fatigue and wear performance. BDU originally provided chain in 10-foot box quantities but now can provide the string manufacturer 100-foot reels to eliminate waste.

Renold Synergy chain has been running in the operation for over 10 months, and there have been no adjustments needed on the chain. The company recently ordered enough chain to convert two more machines.

IDC-USA brought together a distributor and manufacturer to provide value to the customer. Combining the power of BDU, Renold Jeffrey and IDC-USA to improve productivity and cost savings for the end-user proves the definition of "synergy." Get more information about Renold Jeffrey's Synergy chain from your local IDC Distributor.

How does a PM PROGRAM help eliminate component failures?

BY MIKE POLLAND

In answering the question posed in the headline, we must first define what PM stands for. According to Life Cycle Engineering's Rx Definitions, this could have one of many meanings. It could refer to periodic maintenance, planned maintenance, predictive maintenance (although normally abbreviated as PdM) and preventive maintenance. Despite the definition of each and how they differ, they all relate to asset care. A properly cared-for asset will net much higher utilization at a much lower total cost of ownership. This is accomplished by establishing a program that mitigates or eliminates failure.

PHOTO: © KEMAL BAS

Periodic maintenance is the cyclical maintenance action or component replacement carried out at known regular intervals. Usually intrusive, they are often based on repair history and regulated by current inspection results. Periodic maintenance includes inspecting, testing, partial dismantling, replacing consumables or complete equipment items, lubricating, cleaning, and other work short of overhaul or renovation. This usually requires equipment to be scheduled out of service and may be done at intermediate intervals, usually ranging from monthly to annually.

Planned maintenance, by virtue of cost, importance, extensive labor and materials required, is planned to ensure, that, when scheduled, it can be completed with the least interruption to operations and the most efficient use of maintenance resources.

Predictive maintenance is the use of instruments and analysis to determine equipment condition in order to predict failure before it takes place so corrective maintenance can be done in a planned and scheduled fashion. Examples include vibration analysis, oil analysis, thermography, airborne ultrasonics, non-destructive testing (NDT), motor current signature analysis, trending of process parameters, etc.

Preventive maintenance is time-, or cycle-based actions, performed to prevent system functional failure. This proactive maintenance type generally includes scheduled restoration and scheduled discard tasks.

To ensure proper asset care, we must first understand our asset's place in the functional hierarchy and its critical purpose relating to production process or value stream. This will also yield our lowest maintainable component. We now have the linkage to work orders, bills of material and reliability analytics.

Once this is established, we then must understand the risk of the failures related to this component to determine the type of analysis we will use for developing our control plan to mitigate or eliminate these failures. This may direct us to a traditional Reliability-Centered Maintenance approach, a simplified failure modes-and-effects analysis, to follow the manufacturer's recommended maintenance, or to take no action since the component does not warrant any maintenance strategy due to a low risk ranking. In the event a hidden failure mode is identified for a critical component, a redesign would be required.

Once predominant failure modes are identified, controls must be put in place in the form of tasks. The preventive maintenance tasks must then be developed in the Task or Asset Activity module of the enterprise asset management (EAM) system so that a work order can be generated, planned and scheduled.

In order to be effective, this task must meet the following:

1) based on a predominant failure mode
2) comprehensive
3) organized
4) repeatable
5) value-added
6) proper interval
7) valid duration

There also should be a method to identify the skill level and acceptance criteria necessary to accomplish the task.

Finally, a business process must exist to provide feedback on the condition of the component, actual duration to accomplish and reliability analytics in place to validate all of the above.

Mike Polland is the director of Life Cycle Engineering's Asset Management Services. A Certified Maintenance and Reliability Professional (CMRP), Polland has more than 25 years of engineering and maintenance experience. He specializes in reliability processes and systems engineering with an emphasis on defect detection and elimination through root cause analysis and risk based inspections. His approach to risk-based asset management and the elimination of limiting factors for clients provides greatly enhanced asset utilization at a much lower total cost of ownership. Polland is also a facilitator with the Life Cycle Institute, where he uses high-impact learning techniques to teach courses including Asset Maintenance Plans and Predictive Maintenance Technologies. To learn more, visit www.LCE.com or call (843) 744-7110.


POLLAND

The power of asking "Why?"

How this one little question makes employees think and grow

BY LEE FROSCHHEISER

A boss sits down to have a meeting with his employees. They've fallen short of a goal, and so the boss asks: "What happened? What approach did you use? How did you attempt to meet your goal?" One by one, the employees give him a litany of reasons, all of them centered on situations, experiences and the steps they took in attempting to reach the goal.

They've failed to make the mark, no doubt, but even after this discussion, the reason for their shortfall is still unclear. That's because despite all the questioning, the boss hasn't gotten to the real issue. He's failed to ask the most important question: "Why didn't you achieve the goal?"

This scenario plays out all the time in companies, fostering a never-ending cycle where people are stuck in a place of great misunderstanding. Asking situation-type questions prevents the boss from understanding the real issue. It also keeps employees from doing the necessary brainwork required to uncover it. The result are answers that amount to fluff.

Leaders should focus on "why" people do what they do versus "what" they do. Asking the powerful question "Why" forces people to think deep. They can then peel back the layers of excuses and get to the root cause of the problem. For example, if employees have failed to meet a goal and are asked "why" questions rather than "what" or "how" questions, they might give responses like, "I didn't prioritize my time." So the boss must then go farther and ask, "Why didn't you prioritize your time?" When the employees say they have too much on their plate, the boss, once again, must ask "Why?" The final answer: These employees are given many tasks from their boss and cannot distinguish between what is and what isn't a priority. With the real problem revealed, the boss can now take appropriate action, perhaps setting up time to help them prioritize their many tasks.

The challenge of "Why?"

Why don't company leaders ask this powerful question more often? Probing deep can be scary for a boss. It smells of confrontation and hints of accusation. Yet asking "why" doesn't have to be confrontational or insinuate blame, depending on how the "why" question is asked, the tone of voice used, the way it's introduced, etc.

Many bosses are also accustomed to being the go-to person for answers. They're used to giving direction and opinion. It makes them feel valued, important and reinforces their position of authority. Also, some bosses prefer to deliver the answers because they think it will save precious time. Unfortunately, when bosses routinely dish out the answers, they become enablers of that dysfunctional cycle, which is actually a huge time-waster.

PHOTO: © SZE KIT POON

Employees regularly seek out the boss for the solution rather than being problem-solvers. This prevents the ability to develop real solutions, stifles employee growth and ultimately limits company productivity.

The best bosses and company leaders are those who understand that asking "why" is a highly productive teaching method. And teaching — rather than preaching — and challenging people to think is what stimulates discovery, solutions and growth. So the goal of any leader is to become a great teacher and develop the necessary skills. This includes not only asking "why" but then also giving employees an appropriate amount of time to determine the real answer. That could be as simple as waiting a few minutes for a response in a meeting, or perhaps sending everyone off to think about the issue, research the reason for the problem, and return at a later time with an answer.

Great bosses also teach by holding their employees accountable for not just the problem's answer but also its solution. When the employees are used to going to the boss for answers and direction, they actually transfer the ownership of the problem from themselves to the boss. Consequently, they can then blame the boss for the goal's shortcomings and failure. It's no longer their fault because they didn't provide the solution – the boss did. Assigning employees with the task of uncovering the reason for their missed goal or creating a viable solution to a problem or challenge puts the responsibility back where it ultimately belongs.

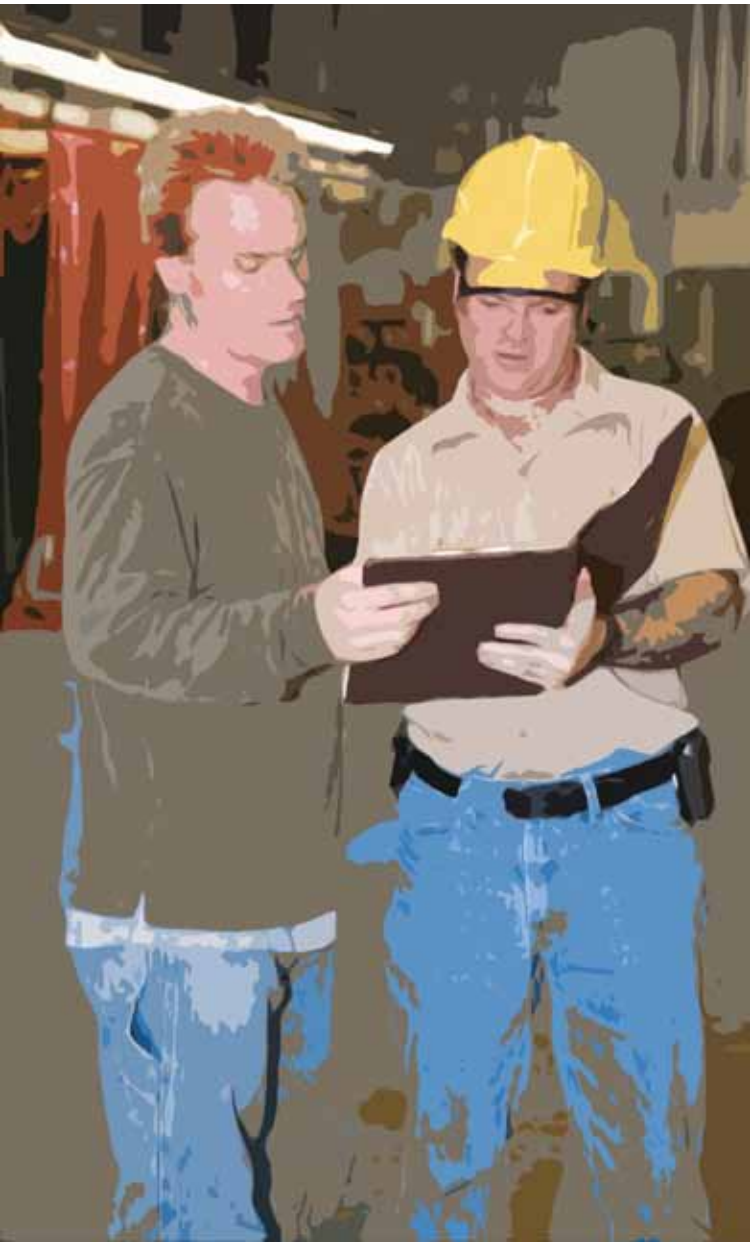
Becoming the great teacher

So when it comes to teaching, how do bosses start? They must ask more questions in general. To get people to open up, it's OK to lead with a few situational questions, such as, "What was the biggest challenge?" But don't spend a lot of time here; quickly move on to the meatier "why" questions and get to the root of the problem. Once the issue is clear, employees commonly ask bosses for the solution, and this is the opportunity for leaders to push back and pose that same question to the ones who are asking it. It's the employees who need to find the solution, articulate how it will be done, why it's the remedy of choice and the appropriate new goal(s) that must be set to reach it.

Lee Froschheiser, president and CEO of Management Actions Programs (MAP), is co-author of the best-selling book, "Vital Factors, The Secret to Transforming Your Business – And Your Life." His consulting firm specializes in implementing the MAP Vital Factor System, which creates goal alignment and uses accountability to drive company results. For more information call (888) 834-3040 or visit www.MapConsulting.com.


Froschheiser

Selling maintenance to management



BY TOR IDHAMMAR

People in maintenance often complain about how hard it is to "sell maintenance to top management." There are several things we can improve upon when we talk to top management. This article offers suggestions on how maintenance folks can get their message across to top management.

The problem statement is wrong

For people in maintenance, the word "maintenance" should mean something more than repairs. However, for people with less experience, maintenance often means just repairing stuff and, hopefully, doing so on an expedient basis.

The product of maintenance work is not repairs or service to operations. The product of any effective maintenance department is equipment reliability. Do you see the difference? If reliability is the product of a maintenance department, repairs will be done in a planned and scheduled fashion with great attention to detail. Shafts will be aligned to one-thousandth of an inch, we will balance equipment to 1.0 G, lubricants will be filtered to 3 microns, etc. If the product is repair and service, it can be done in any fashion.

Advice 1: Change the problem statement to "How do we sell equipment reliability to top management?"

It starts with the maintenance budget

A process industry company that my firm worked with set its maintenance budget at $14 million. It was $14.5 million the previous year. The maintenance budget was decided with little or no information on

PHOTO: © LISA F. YOUNG

the actual need of maintenance in the plant. The company figured that the cost of maintenance should improve over time and, therefore, go down. It was determined that $14 million was the right number. The maintenance manager hadn't provided a different suggestion, nor did he have an (official) opinion about the new budget.

In my opinion, every maintenance manager should have a five-year plan where all big and costly maintenance jobs are listed and, hopefully, spread somewhat evenly over the years. He or she should present this plan to plant and corporate managers. If reliability is managed well, the maintenance budget varies from year to year – sometimes up, sometimes down – but the general trend is down because we work on reliability improvements.

Each year, a detailed maintenance budget should be built based on the needs of the plant. A realistic and trustworthy budget must be estimated starting from scratch (zero-based budgeting).

Advice 2: Build a five-year maintenance budget/plan that contains all major maintenance jobs that you know of and build a budget each year from scratch to present to management.

Be specific

If you talk to someone less knowledgeable on any subject, make sure you are specific. That way, people can understand and believe your reasoning. A maintenance supervisor I know wanted operations to inspect and clean motors. He argued that motors will last longer if they are maintained correctly. Operations agreed but didn't do anything to counter the usual excuses people use when they don't want to do something. The argument maintenance presented was correct but unspecific.

Instead, our firm helped the supervisor put together a 10-year plan for a typical motor vs. a good motor for the operations and mill managers. We discussed costs for a specific motor of importance over 10 years. Together, we came up with the estimate found in Table 1.

The example was specific, and we did it for several motors in the plant. Management understood the full extent of the request to clean and inspect motors, and did so because it was specific. The costs associated with doing nothing were compelling.

Advice 3: Be specific in your arguments in order to put a scale to benefits and costs.

TABLE 1: A 10-YEAR BUSINESS PLAN FOR A TYPICAL MOTOR VS. A GOOD MOTOR

	MOTOR TODAY	IMPROVED MOTOR
Task	Unplanned/ Unscheduled Corrective Work (Costs)	Preventive Maintenance Planned/Scheduled Work (Costs)
Lubricate	$120	$0 (precision seals installed at purchase)
Cleaning	$0	$1,800
Repair Labor	$4,000	$240
Planning	$0	$100
Inspection	$0	$1,800
Rewind	$20,000	$2,500 (including new seals)
Lost Production	$60,000	$0
Total	$84,120	$6,440

What's reliability worth to your plant?

If you are going to present a case to improve reliability, you need to talk in simple financial terms, and you need to have the courage to make a commitment to the potential results. Your machine, area, line or plant should have a financial number on downtime cost. Once there is a number for downtime cost, the number can be used when estimating downtime savings (maintenance language) to dollars (management language).

In many plants, the downtime cost is situational to production at that time, which makes the calculation a bit cumbersome. However, it can usually be accomplished.

Advice 4: Since the product of maintenance is reliability, you must know what your product is worth. Calculate the cost of downtime.

Tor Idhammar is a vice president and partner at IDCON, a maintenance management consulting and training company. Contact him at (800) 849-2041 or e-mail info@idcon.com.

Cleveland Gear introduces new shaft mount reducers

Cleveland Gear Company offers a new line of shaft mount reducers and accessories (tapered bushing kits, belt guards, torque arms, motor mounts and backstop assemblies). With eight CGSM sizes (2-9), input hp from 1/3 to 125, and output rpm from 4-6 up to 188-125, these drives serve a variety of material handling applications. Shaft mount reducers are suitable for AGMA Class I, II or III service for motor horsepowers up to 125 with standard ratios of 15:1 and 25:1. Twin tapered bushing kits are perfectly sized for CGSM reducers, as well as other manufacturers' shaft mount drives, with bore diameters from 1 5/16 inches to 4 15/16 inches. The kits ensure fast and easy installation and support on both sides of the reducer. Bushing kits include fastening bolts and a full-length key.

Koyo's Hybrid-Ceramic Bearings designed for demanding applications

Koyo's Hybrid-Ceramic Ball Bearings' unique design features make them ideal for a wide array of extreme applications where high temperatures, high speeds, or stray electric currents may be present. They eliminate electric arcing or fluting by insulating the bearing. Longer life results in reduced maintenance and downtime. Lower operating temperatures result in longer grease life.

SPX upgrades the PG30 Series gasoline pump

The Power Team brand of SPX Hydraulic Technologies introduced an upgraded version of the PG30 Series gasoline pump. The PG303 and PG304 pumps are powered by a 4-cycle, 2 hp Honda engine, giving them the lowest weight to horsepower ratio of all gasoline-driven pumps. Gasoline-powered pumps are ideal for remote locations where electricity or compressed air are unavailable. The PG30 Series pumps work well with single- or double-acting cylinders up to 75 tons at pressures to 10,000 psi. Available with a pop-off style relief valve for crimping applications.

Dichtomatik TCM brand AO series rotary shaft seals for dusty environments

The AO design is a two-part seal consisting of the stationary sealing element fitted within the bore and the metal sleeve mounted on the pump shaft. The sleeve rotates inside the sealed element, forming the sealing interface, eliminating shaft surface wear and allowing a less critical shaft surface finish. One-piece seal designs form the sealing interface around the shaft and require a finer surface finish. The AO design can accommodate shafts up to nine inches in diameter and surface speeds up to 10 ft./sec. The sealing element is available in nitrile, Viton, or graphite-impregnated Viton. Metal sleeve and spring are available in carbon steel or stainless.

Smith Bearing offers stainless steel cam followers

In extreme applications where bearings are being subjected to high-temperature or corrosive environments, alternative materials or special platings must be considered. Smith Bearing manufactures needle roller bearings in a wide variety of high-temperature and corrosive-resistant exotic alloys including 440 C stainless steel. Corrosion-resistant plating is effective when using bearings in corrosive environments. Non-bearing surfaces, such as inner races and end washers, are cadmium-plated to resist corrosion. The outer races of the bearings are typically hard-chrome plated to resist wear, as well as corrosion.

CRC offers Quick Dry Moly Lube

CRC introduced Quick Dry Moly Lube, a dry film lubricant fortified with Molybdenum Disulfide that reduces friction, extends equipment life and improves overall operating performance. Its deep penetrating action fills pores of metal surfaces to provide a smooth, dirt repelling barrier that protects surfaces from pressure and friction. Quick Dry Moly Lube bonds instantly to metal surfaces. It withstands extreme pressures and temperatures up to 650 degrees F, as well as water and chemical attack. Use it as a general maintenance lubricant on gaskets, transfer belts and conveyor belts; as an assembly lube on motors, plant machinery and handling equipment; as a release agent for rubber moldings; and as a general lubricant for high-temperature, low-load, or high-rpm slides, rollers, wheels, gears, chains and hoists.

Isostatic's General Bearing Products Catalog includes metric sizes

Isostatic's comprehensive general catalog lists stock bearing product sizes in both inch and metric. Metric sizes are offered covering Oilube powdered metal bearings, as well as TU self-lubricating bearings. Full specifications are provided for the various bearing products and design parameters such as lubrication, clearances, loads, speeds, etc.

Cooper Bearings introduced new 100 Series bearings

Cooper Bearings added a new bearing series to its standard product range. Produced as a result of requests for more speed and a reduced size, the new 100 Series is now the fastest-running and most compact standard bearing Cooper manufactures. It provides up to 90% of the capacity of its big brother, the 01 Series bearing. The bearings can be assembled around the shaft, so there is no need to design the shaft and other parts to get the bearings in, simplifying design and reducing cost. They can be replaced without dismantling equipment located on either side, reducing downtime. Ease of inspection makes it possible to get maximum life.

Renold Syno clean-running chains

Renold Syno clean-running chains require no additional lubrication. Small-pitch Syno chain, available in ANSI 40 through 100 and BS 06B through 24B, is for sanitary applications or when contamination from lubrication must not occur. Both the lubricant within the sintered steel bushing and the coating on the roller are food-industry approved. Syno large-pitch chain, available in ANSI 120 through 200 and BS 28B through 40B, takes on heavier loads with a highly durable and wear-resistant polymer developed specifically for Renold. The polymer sleeve between the pin and bushing, combined with the polymer roller, allow it to operate completely lube free.

Bando's Power King Cog and Power Ace Cog

Increase energy efficiency substantially over standard wrapped construction V-belts. Under certain conditions, up to 6% savings can be realized. By providing a better grip on sheave sidewalls, the raw-edge cogged belts minimize slipping which translates to less friction loss, resulting in cooler running drives. Cogged construction belts can also run on smaller diameter, lighter sheaves, which can reduce bearing loads.

Jason Industrial introduces Industrial Water Hose Assemblies

Jason Industrial Inc. introduced the new Series 4130 Industrial Water Hose Assemblies. These assemblies feature a weather and UV-resistant SBR tube and cover. Working pressure is 150 psi. Each length is coupled with rod brass fittings secured to the hose with a ferrule that has been rolled crimped. The M x F fittings have garden hose threads (GHT) with a washer included with the female end. The cover is ribbed to give better grip when the hose is wet and reduces the friction when the hose is being dragged.

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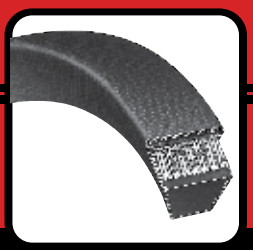

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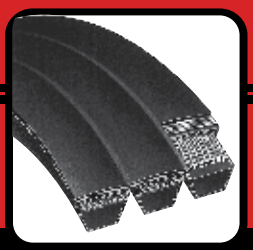

Power King® Power Ace® Combo

Rib Ace®

Power Max®

Power King® Cog

Power Ace® Cog

Double V

Duraflex GL®

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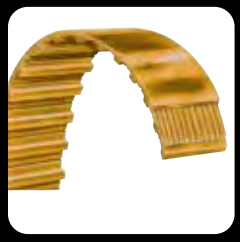
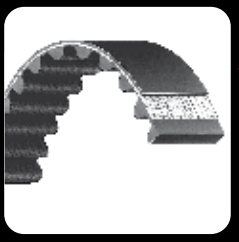
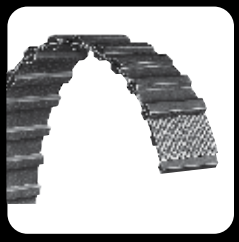


Synchro-Link® Polyurethane

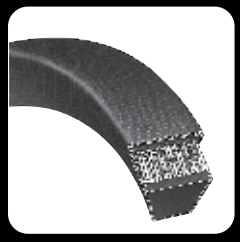


Synchro-Link® High Torque

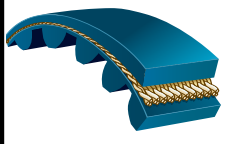


Synchro-Link® Double Sided Rubber

Synchro-Link® Double Sided Polyurethane



Metric V-Belts



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