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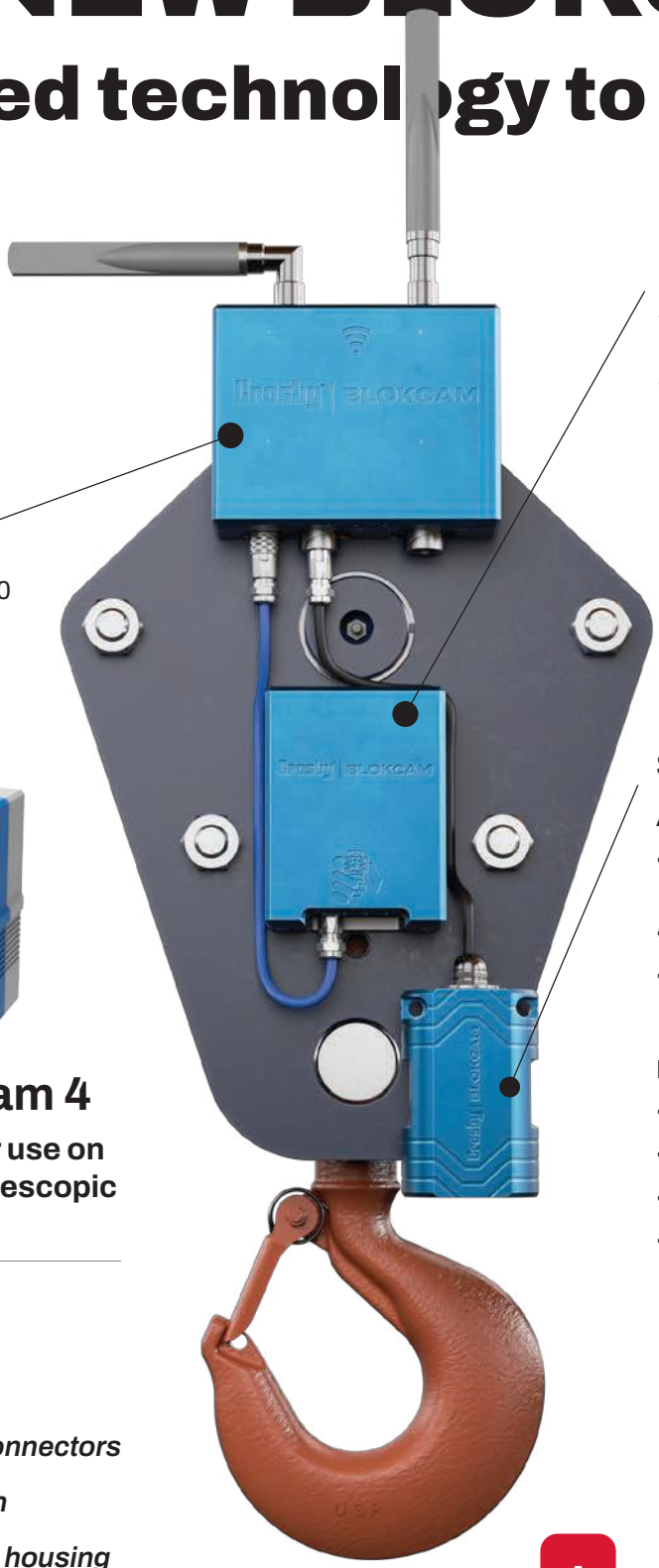

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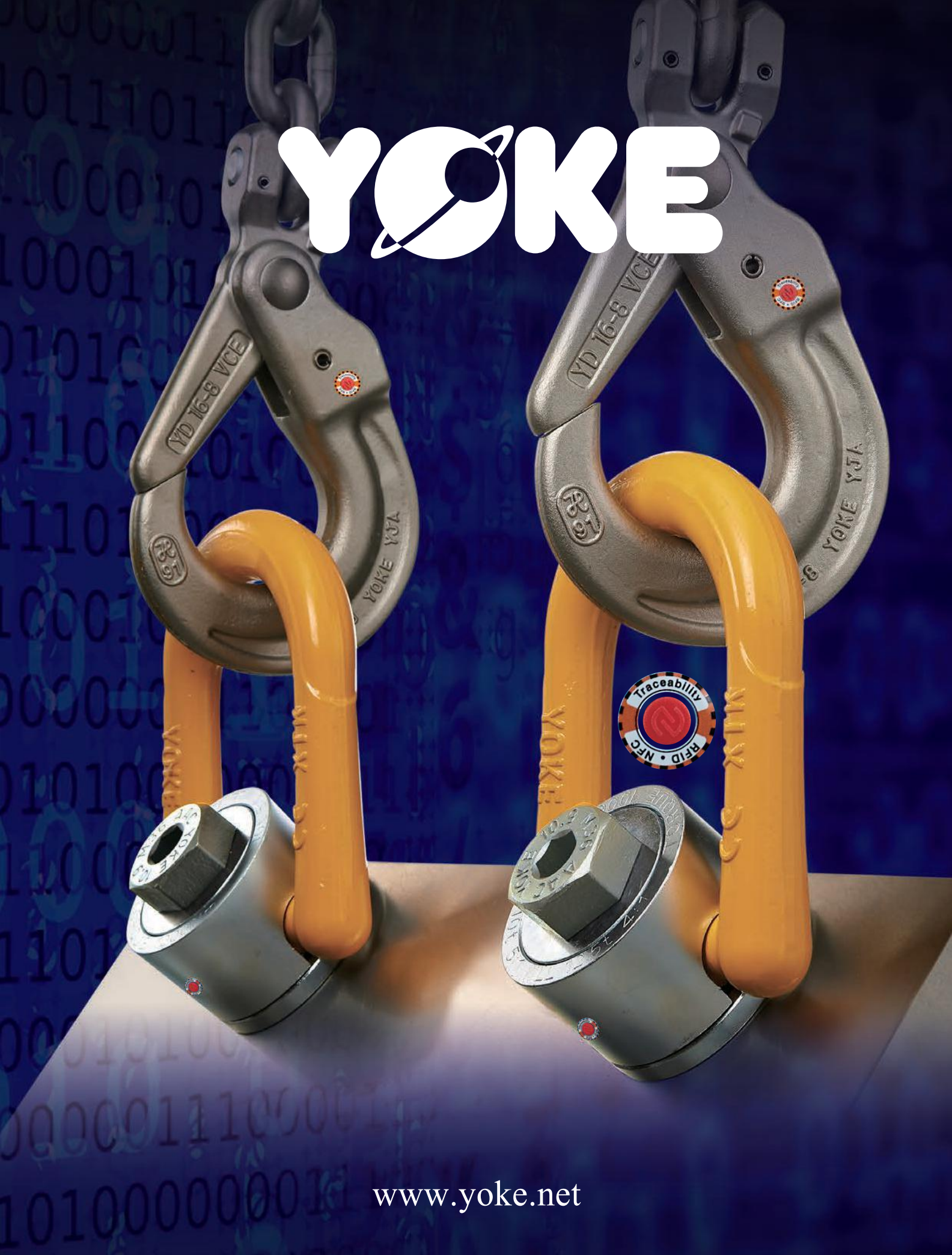
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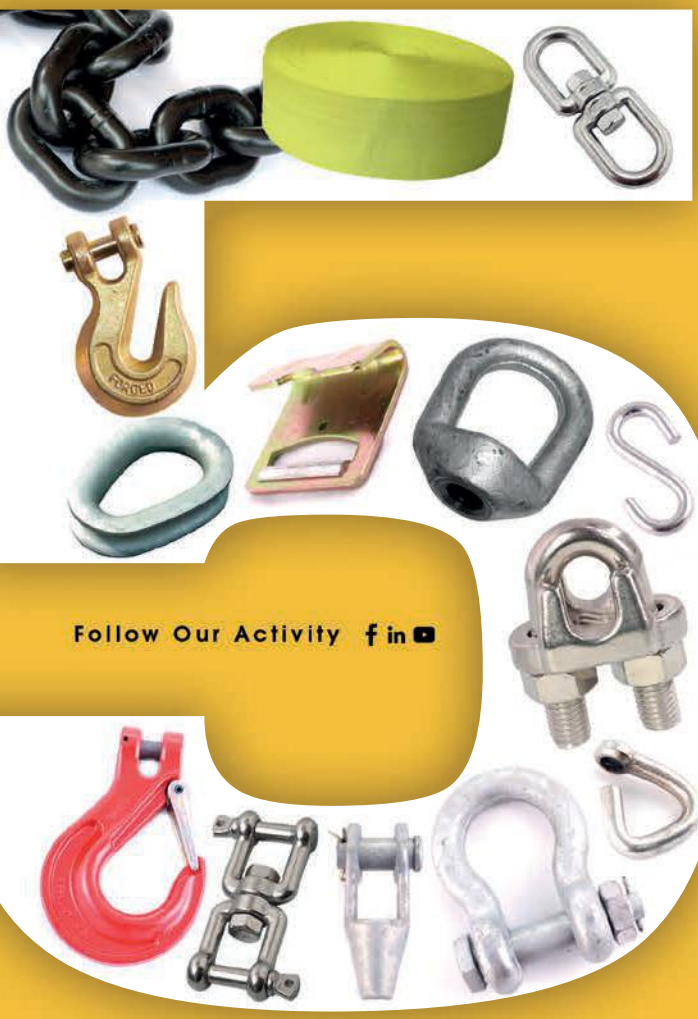

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Cover photo:
A hydraulic crane was parked on the side of a road when a thunderstorm shut down the work at the job. The operator's decision to place it there, exposed to vehicle traffic, proved tragic when struck by a high school kid driving home during the storm.
Photograph courtesy of Dennis O'Rourke

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A Crane's Life: "The Second Hand-Off"

Part 2

by Dennis J. O'Rourke, CSP, Historiographer, Crane Surveyor

The first 'hand-off' occurred when an owner bought a crane and gave it over to maintenance for delivery to the 'Ready-Line' *(Part 1). It is now being given to operators for the second time. Part 1 of the series placed the crane 'on' the Ready Line, making it available for work.*

This next part of A Crane's Life, 'The Second Hand-Off', *indicates a major control shift in a crane's operation. The following sections will describe the long process that begins with the 'daily inspection' and continues until it is once again 'handed off for the third time to the people who rig a load to the crane's hook.' Challenges vary depending on the crane type and the distance to the job site. Sometimes, many people with different skills or from different companies are needed to complete this process successfully, or just one operator facing numerous hazards and exposures.*

For most jobs, nothing shows the transfer of control over a crane's role in production more clearly than who is chosen to operate it! Both an airplane pilot and a crane operator play critical roles, using their skills to operate machines that defy Earth's gravity. The environments they work in are constantly changing. However, there is a clear difference in their 'license-to-operate' procedures. The pilot

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Fig. 1. A skills test for qualifying operators at power utilities.

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Fig. 2. A vertical sling keeps the pole from sliding.

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follows strict federal regulations, while an employer selects the crane operator in an industry that, for the most part, is "self-regulating."

MEET BOB THE OPERATOR

Bob, a mobile crane operator working the night shift for a large petrochemical company, is instructed to retrieve the 28-ton Grove RT from the line and transport it to the tank farm, where it will be parked at transfer station LPG #23. He is experienced and has been employed for 4½ years. On the crane's left side, Roger climbs up the steps, slides into the driver's seat, turns on the ignition switch, and starts the engine.

He allows the engine to warm up for about 8 minutes on a cold night, then checks all gauges to confirm proper operating temperature and pressure. Satisfied with the instrument readings, he raises the front-left hydraulic outrigger jack, which is securely on the ground to prevent the crane from rolling when parked on the line, and lowers the boom from 50° to 10° to travel through the plant. Then he presses the service brake, releases the parking brake, puts the automatic transmission in forward, releases the foot brake, and drives the crane off the blocks placed under the right rear axle when the tire was removed. The crane drops about two feet and stops forward movement — Bob gets a bump on his head, but no other injuries occur.

WHO OPERATES?

Throughout my career, the path to becoming an operator has changed significantly due to advances in equipment, shifts in work processes, and increased hazards. However, for some, it has changed only slightly because the work and cranes remain the same; the challenge for the employer is to match skills with task assignments.

An operator can pursue a formal course curriculum or their employer's OJT (on-the-job training), both of which improve skills and abilities; both methods are used today. All methods begin by explaining how the crane works (knowledge) and how to operate it (a motor skill). The more you practice, the better you get — this process is called experience.

A resume can help you get a job, but to keep it, you must perform well, which can be challenging for some. Most employers want proof that you can operate their crane effectively at their specific site. Some work is so critical, and the consequences of failure so severe, that trial runs are conducted until everyone performs correctly to the owner's satisfaction.

For example, a utility company's line crew that installs power poles faces a challenging task that can lead to accidents and injuries: lifting poles off trucks and standing them upright. This task involves controlling the base to prevent it from sliding uncontrollably and hitting something or someone. To address this, a test course was created to qualify operators and provide them with real-life experience (Fig. 1). The key is to keep a vertical sling at the end of the pole to avoid horizontal pressure that could cause the pole's base to slide. In the photo, the sling is about to push the pole — the operator must rotate left to reestablish a vertical sling.

In Figure 2, the sling is vertical, and the unrestrained base inside the circle remains stationary. To do this, the operator must skillfully coordinate three crane movements: hoisting, booming, and rotating. I realized in 1957 that these challenging maneuvers were also needed when pouring concrete into sea wall forms while working for my family's construction company one summer during high school. Later, I incorporated them into the official testing standards used by many crane training companies today. Skills testing now includes three steps: hitting a target (testing one function and depth perception), moving a load to different radii (two functions), and guiding a load through a zig-zag course (three functions, such as pole flipping or pouring concrete). Different crane controls make these tasks easier.

Today, training programs establish and evaluate a baseline of knowledge and skills necessary for a person to operate a crane and perform tasks such as moving loads using signals. The topics begin with regulations, then move on to daily inspections, and conclude with the location and operation of the control levers. It's clear that the type of crane affects the time needed and the subject matter covered.

On some cranes, it can take a full day to learn how to precisely enter data into the computer and to lower the blocks and boom to the ground for inspection. Getting on a crane is embarrassing when you don't know the proper procedures to start it! Alternatively, you must inform the LMI (load moment indicator) of the hoist in use and its reeving configuration.

The employer evaluates whether a person's credentials meet the requirements for a position, such as: "Let's hire Al's son." This might include a union card, a CCO (Certified Crane Operator) card issued by a private organization, or a state license to operate a crane. Most employers also require an additional step: a demonstration of the person's crane operation skills on the job as a final approval (Fig. 3).

The expertise to perform heavy lifts, two-crane picks, pick-carry-swing, and operate long booms with a radius of 200

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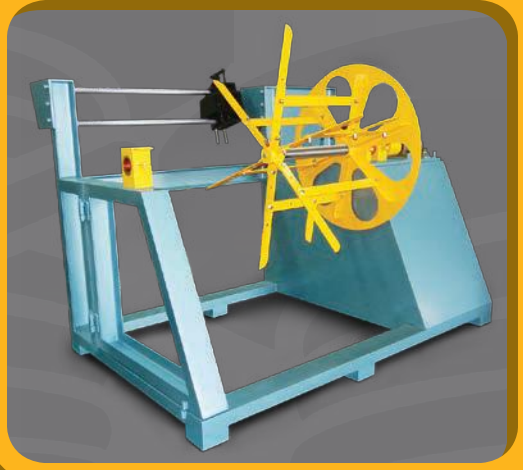

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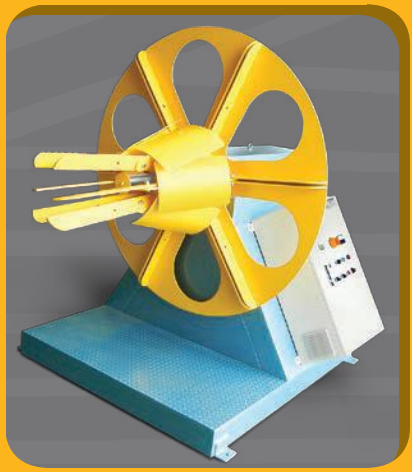

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feet or more requires advanced skill and thorough knowledge of the crane and its response to even the slightest control movement. Some individuals never reach these levels of performance. Just as most golfers never break 80!

INSPECT & TEST

Let me review the connotations of the words *inspect and test* when used before *The Ready Line* in the first part of this series. Modifiers before these verbs gave them specific meanings. There were annual inspections and overload tests. In other words, the people performing these activities were trained to recognize the manufacturer's replacement and performance criteria. They carried tools for repairs or disassembly as needed for inspections, as well as guards or covers for removal when access and adjustments were required.

From the ready line, the verb modifiers are *start up inspection* and *functional* testing. The method involves a *walk-around* start-up and testing of the crane, following a sight, sound, and feel approach. For example, the operator checks for bent or missing parts, listens for grinding or screeching, and feels for smooth, chatter-free movements.

OSHA requires that, when in service, a 'qualified' person conduct a documented monthly wire rope and reeving inspection. ('Qualified' refers to the type of person who performs the monthly inspections.) An operator could be qualified; however, most owners have their maintenance personnel carry out the work. A copy of the most recent monthly inspection report must be placed in the Historical Crane File.

Experienced operators notice subtle changes and are supposed to report them to their supervisors for feedback. However, if the information, no matter its form, is never acted upon, communication breaks down. I've heard operators complain, "They never listen to us." After an accident, you can't always know who to trust — only what's available to review and consider.

The *Walk around inspection*, as recommended by a crane manufacturer, involves performing at least two full cycles of each function during the inspection to ensure proper movement. At that time, the operator is responsible for checking the crane's condition and ensuring it is ready to work; this is his first crucial decision! What is done during this 'daily operator inspection', as OSHA calls it, varies widely depending on work-site restrictions, crane type, and accessibility.

There is no federal requirement for this inspection to be in writing; however, many employers keep a daily checklist in the cab with carbon paper, which operators submit to the office each day. It begins by inspecting the boom, including all attachments, pins, bolts on the structure, hook blocks, and outriggers or crawlers, as well as the wire rope for proper reeving, lubrication, and spooling.

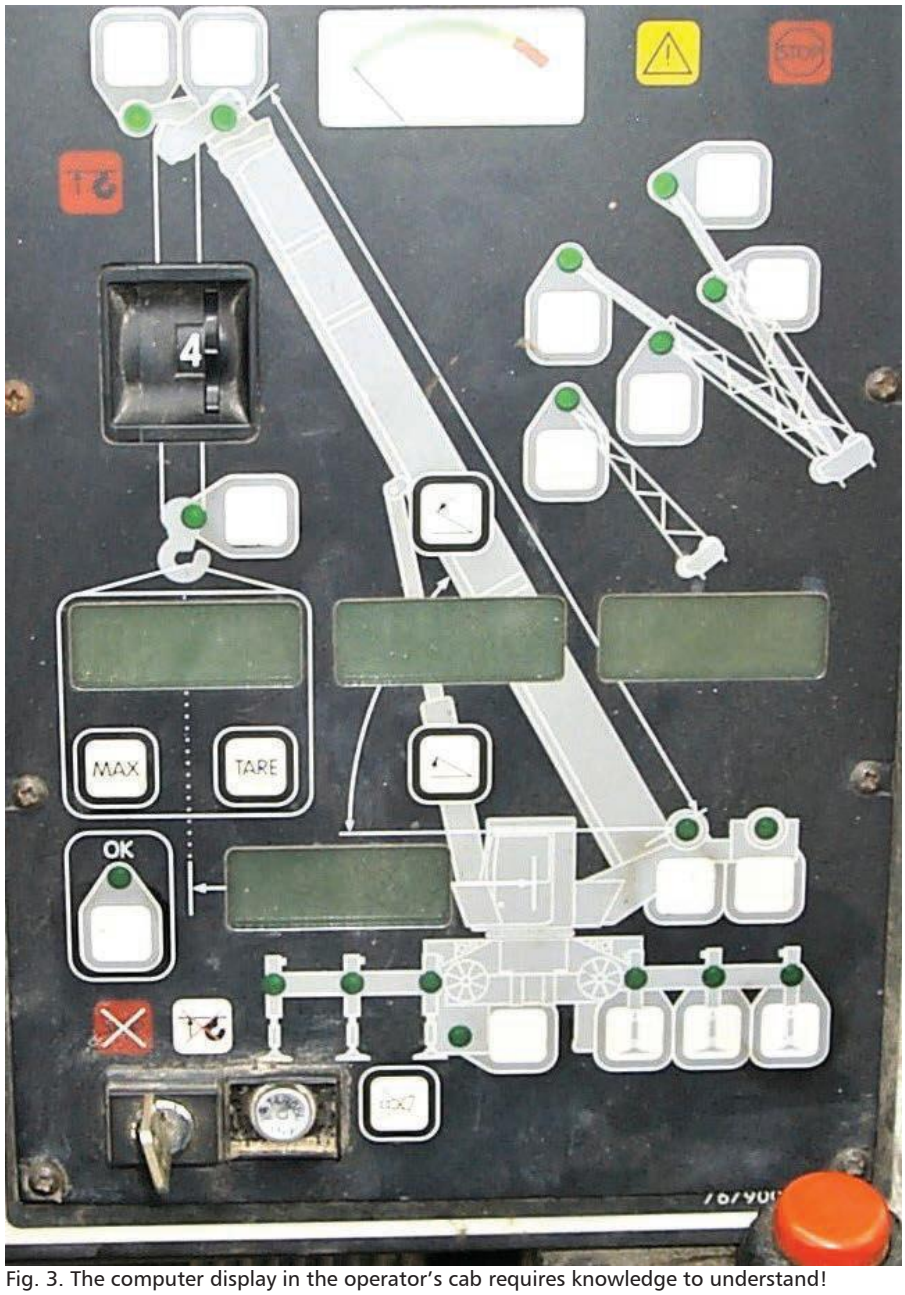

Fig. 3. The computer display in the operator's cab requires knowledge to understand!

START-UP

Earlier, we discussed Bob's inspection techniques before he drove the crane off the axle support blocks. Bob's excuse was that it was dark outside, and I was moving it, not setting it up to operate.

Now, here is Phil, a union operator with seventeen years of experience. He is assigned to a multi-million-dollar warehouse project to operate a 250-ton Manitowoc crawler crane. The crane has a 150-foot main boom and a 100-foot luffing jib. It features a single-part main hoist, a 1,000-pound overhaul ball, and a 15-ton hook. The reeving setup is adequate for installing steel columns and beams (commonly called red iron by operators) for the two-story building.

Cranes configured like this (150-foot boom and luffing jib) pose a wind hazard, and many have blown down during overnight storms. Therefore, they are secured when not in use to prevent wind damage. When Phil arrives for work, he states the crane was secured by sticking the jib's point into the sandy soil at about 45°, which placed the boom tip about 75 feet in the air. Another method is to lay the boom and jib flat on the ground (if the crane's capacity allows),

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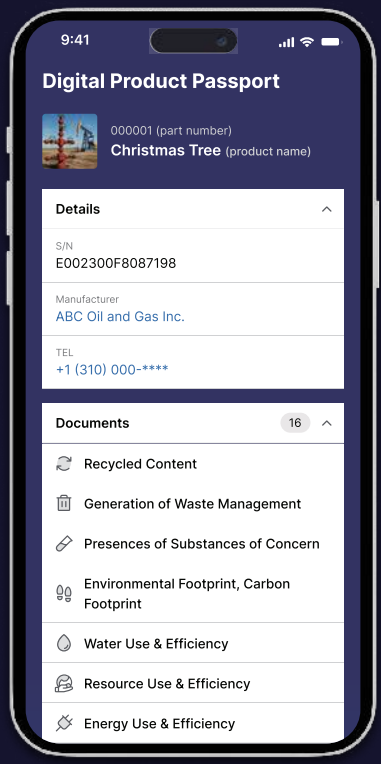

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if there is enough space, and the boom/jib does not interfere with the job traffic.

Phil states that he walks around the crane, checking components, fluid levels, and the drum rope as he usually does on a crane of this size. He also examines the boom, jib cords, and lattice from ground level. He walks out to the jib's point sheave and hook ball. Then, he raises the boom and jib to working height and performs functional tests. He raises the boom up and down, as well as the luffing jib and main hoist ball. He rotates 150° in both directions and moves to the first lift position. He tests the upper hoist limit switch. Everything looks good!

One hour later, the crane boom, jib, 40-foot beam, and one guy are lying on the ground (Fig. 4). The jib's pad-eye failed at the attachment located on the boom point, causing a recoil that brought down the boom, jib, and load, crashing onto the concrete slab. One man broke his leg, but it could have been much worse.

During the investigation, the topic of inspection was discussed. Phil's explanation of the start-up inspection and the written checklist he created were very helpful in establishing his credibility. It was also discussed whether the *sticking the jib* could have damaged the boom/jib connection, and if the walk-around inspection would have identified it.

Two points became clear to me: first, that a handwritten and signed report is almost always considered genuine. And second, that 'a best you can do' inspection due to the size of the crane is acceptable under the 'reasonable man theory' that guides legal judgment.

If limited start-up inspections are acceptable in some cases, such as for accessibility-related issues, the owner should develop an alternative plan to ensure the crane's operational condition if the operator cannot perform them. Responsible companies are using drones equipped with high-resolution zoom cameras that can detect cracks and send pictures to your handheld device. Additionally, having aerial lifts available on-site for access requires advance planning.

MOVING TO THE JOB

As they say, getting there is half the fun. At large plant sites, the path a self-propelled crane takes is determined by factors such as height, turning restrictions, axle loading, and other important considerations. Some locations have *spotters* walking on each side of the crane to ensure clearance from equipment, overhead piping, and power lines.

At a process plant, a boom tip clipped a gas pipe support, breaking it and causing the line to drop, which led to an explosion and fire, resulting in $34 million in damage to the tank farm — not much fun. The collision marks on bridges on our interstate highways prove how many cranes have struck them. Why is that? The minimum bridge clearance on interstates is 13′6″, but on state or county roads, it can be much lower.

Ground clearance is a concern, especially at railroad crossings. There have been tragic accidents when cranes *bottom out* and get stuck on RR tracks, unfortunately, unable to be moved before an approaching train. In some states, equipment of a certain size and weight must have a permit, and the owner must submit its dimensions and receive approval before transfer to ensure it doesn't exceed height, weight, or width limits. Violations can result in fines of up to $150,000!

IN CLOSING

In this part of *A Crane's Life*, we discussed the second hand-off between maintenance and the operator. They take it from the Ready Line, inspect it, and transport it to the job site. Hazard exposures vary depending on the distance to the work, crane type, and route.

I see a comparison between the work of pilots and crane operators, both of whom are influenced by gravity. When taking off at full throttle in a single-engine plane, a pilot must turn off the carburetor heat, then, after lift-off, *hold right rudder* and keep the nose down to gain airspeed, with flaps at 20°. If the plane's fuselage veers to the left due to propeller rotation, the craft would lose lift and fail to gain altitude.

And, with a crane standing on solid, level support during load testing, the operator must gently press with their left foot on the swing brake, hold the load brake, and carefully nudge the swing lever to slowly rotate the cab to prevent inertial overload. If the swing exceeds limits, the centrifugal force on the load can cause the crane to tip over.

Both activities gave me the same sense of apprehension and awareness that success or failure was entirely in my hands. I only feel confident about succeeding if I am well-trained, the equipment is reliable, the weather is good, and I am experienced with these maneuvers. Wise advice from professionals: operate only within your skill level and the capabilities of your equipment! WRN

Fig. 4. A pad-eye failure may have caused the boom and jib collapse.

DENNIS J. O'ROURKE, CSP, Director of National Crane Services, Inc., retired. He has over 65 years' experience in the industrial, maritime, and construction fields working with heavy equipment and material handling devices. As a safety engineer, he has developed and/or presented hundreds of safety-training programs for all representative elements of government and industry. (dennis@natlcrane.com)

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3D Printing of Hooks: Good Idea?

By Harry S. Poole, Ph. D, QA Manager

Since this article was first published in 2014 (in the now defunct National Safety News*), an update seems necessary. Additive Manufacturing (3D printing) bridges both sides of the production philosophies, "scale vs scope". Early predictions indicated that AI 3D printing might ignite a manufacturing revolution. To some extent, it has, with cost and method serving as the key factors.*

When producing anything, the volume determines how one proceeds, whether a single prototype is *hand-made* (scope) or the items are produced in bulk (scale). As Galbreth's famous quote "cheaper by the dozen" or "we are losing $2 dollars on each item, but we will make it up on volume?" suggests, costs can decrease as units manufactured increase, if there is a market!

To be profitable, large-scale production requires making many uniform items to cover the costs of equipment, tooling, and facilities needed for the process. The 3D *power bed*, fusion method lends itself to making hundreds of intricate parts at a time economically. Meanwhile, **wire arc** additive manufacturing of large four-prong marine hooks is best suited for low-volume specialty items.

I was fascinated when, in 1984, I read in a science magazine that a photo of the Bust of Benjamin Franklin was taken in Cambridge, England, and faxed to a laboratory in Massachusetts. Then it was turned into a 3D CAD file, which was loaded into a **molding printer**, where it began duplicating the Bust of Ben — as a plastic replica, amazing.

I learned about a similar process for making a crane hook, which caught my interest. This process builds an object layer by layer. I thought it was a clever idea for old Ben's head, but for a crane's load hook, I have questions. As someone who has inspected and tested port cranes for about 45 years, I know that the hook supports everything below it, which is undoubtedly critical to safety. (Fig. 1)

Fig. 1. All the impact forces of a moving load must first be absorbed by the hook!

HISTORY OF 3D TECHNOLOGY

So, why is it called 3D printing anyway? If you look at letters being typed on a page under a microscope, you'll see that the letters sit *on top* of the page, not embedded into it. If you print over the same spot with different letters, the area builds up to form a three-dimensional object of a complex shape through the addition of each printed letter, letter by letter.

The **3D Printing** process technology began around 1981 and continues to be performed using these basic steps.

1. SCANNING: using 3D capabilities to create a virtual digital model of a drawing or object by pinpointing digital coordinates along its X, Y, and Z axes. This process produces a digital copy of a solid object stored in a file that can be shared. A CAD file will be generated using a 3D modeling program.

2. DIGITAL SLICING: This digital file is uploaded into a computer with software that converts the data into thousands of thin cross-sectional digital layers. When these layers are stacked, they form a 3D replica. Then, this digital file is sent to an external printer.

3. PRINTING: Processes differ; a computer file then directs the printer's robotic arm to deposit liquid material in the specified pattern on a *product bed*, building from the bottom up, and instantly hardening the material to create a solid layer. The next layer is added, layer by layer, until the object is completed according to

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the digital instructions.

3-D printing originated in a university lab using plastic polymers, requiring highly complex, expensive machines. Consequently, the ideas about how and where to use this new technology spread slowly across industries due to the high costs. The process was not only costly but also utilized relatively weak materials, mainly for creating gadgets.

These steps were originally three separate functions on different machines or even in different countries. Now, all these functions are integrated into one low-cost unit suitable for both private and public experiments. Over the years, three major improvements to the machines have occurred, allowing many people to conduct research using 3D printing. As a result, new ideas and products have emerged. Currently, products ranging from plastics and cement to the hardest steels are used to manufacture structural components or gadgets at or below current prices.

CURRENT PROCESS OF 3D "ADDITIVE MANUFACTURING."

Processes for printing objects today to create 3D images and duplicate items are progressing. Additive Manufacturing (AM) starts with a flat surface and builds the object layer by layer. Developers believe this process of *adding* material more accurately differentiates between taking a picture and producing an object (Ben's head) versus adding material to build an object (a hook). Additive manufacturing uses only the material needed, unlike Subtractive manufacturing, which involves removing excess material from a large casting.

In 2010, ASMT identified seven categories of Additive Manufacturing. First, the **Spray** methods of building up material into objects are still used to create plastic parts and decorative items. Structural concrete components for the construction industry also utilize these spray methods.

Another method begins by spreading a thin layer of powdered metal on a bed. Then, using a laser, it *sinters* (below the melting point) the powder into a solid layer on the bed, and then another layer is applied over that one. The process is repeated until the object is complete. There is a risk that the material may not fully fuse during this "power" process.

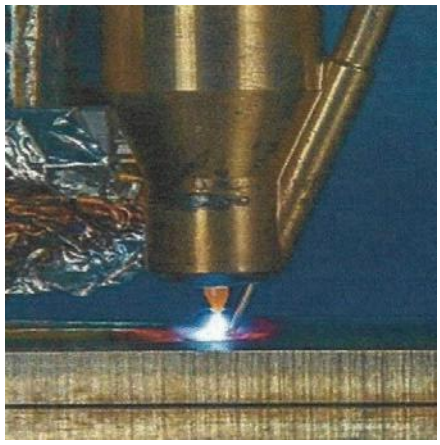

Fig. 2. A fusion-welding plasma nozzle.

Another method, **Fusion Welding** (Fig. 2) involves depositing metal to create 3D shapes by focusing on a plasma beam or a laser to achieve the desired fusion results. Additionally, Wire & Arc, using a GTAW or TIG power source, is a method employed. This latest technique has replaced some casting and, as it also produces stronger objects, is used in manufacturing ship propellers (wheels). Sometimes, in casting objects, 70% of the material is removed (subtractive manufacturing) to form the item, resulting in significant material costs. These savings are a major advantage of this method, as it also produces stronger objects, such as hooks.

The fusion zone and surface can oxidize with certain alloys, requiring additional inert-gas protection. Portable covers can be placed over the work area to seal it off, and the work area can be filled with inert gas to prevent contamination.

Some drawbacks remain with *printing*. The process is not cost-effective for certain items and still cannot compete with mass-produced items (stamping or punching) on the production line. Additionally, the smooth finishes needed for some products are not yet achievable, and the required material variations are unavailable. Still, efforts continue, and the process is improving.

Production records show that Alloy Steel Duplex hooks are primarily produced by casting and machining. In contrast, bowl hooks are mostly forged. Two- and four-prong hooks are difficult to forge and are mainly cast and machined.

The welding plasma method doesn't naturally occur on Earth. It needs an electrical current or a strong magnetic field. In a vacuum, the field strips or adds electrons to an inert gas, putting the molecules in the *ionized* state and creating a plasma of charged particles. When these forces are removed, the *freed* electrons emit light as they return, and the molecule goes back to its normal state. Still, plasma is familiar to us in neon light tubes, the Northern Lights in the sky, plasma TV, or the *free* nitrogen released during a lightning strike.

When welding with a plasma beam (which works like a small rocket engine), the chamber inside the torch creates a vacuum, heating the plasma gas, which then expands. The hot plasma ions rush out of the nozzle and can be precisely directed. Since all this happens inside the nozzle, there is no need for a separate vacuum chamber to produce the plasma state of the inert gas.

CASTING AND FORGING, 'IRON AGE' 1200 BC

The old reliable: iron ore is heated to its flow temperature (about 2850° F). First, it's poured into a mold (casting) and allowed to cool, forming a hard, useful tool. This process contributed to mankind's progress. Iron is relatively brittle, and its performance can vary. Then, the ancients discovered that when the product was *red-hot*, it could be easily hammered into useful shapes like points, wedges, or hooks, wow! By chance, a carbon atom is added to molten iron, forming a metallic bond with the metal and creating carbon steel. The carbon content, which influences toughness, is categorized into mild, medium, and high-carbon steels, each suited to specific applications (Fig. 3).

Adding any other element to carbon steel significantly alters its properties, classifying it as alloy steel. The process of melting ores with different elements has evolved into the science of metallurgy. A key milestone in alloying steel

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Fig. 3 A & B.Open forged 50-ton bowl and 400-ton duplex hooks.

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CELEBRATING 70 YEARS EST. 1954

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was the development of Titanium Steel in the 1940s and 1950s. Without this material, man would not have reached the moon or traveled in space. Since then, improvements have been made, and they will continue to be impressive.

DROP FORGING HOOKS

Forging steel is a process of shaping steel under high compressive forces, often at elevated temperatures, to create strong, durable, and precise components. This metalworking method involves plastically deforming steel through processes like hammering, pressing, or rolling. These methods align the metal's grain structure with the shape of the final part, which improves strength, toughness, and fatigue resistance compared to cast or machined steel.

Aligning the metal's grain flow is crucial with hooks. When in use, the load's compressive force is perpendicular to the grain, which is the best way to resist shock and maintain ductility — bend but don't break!

The forging methods used for hooks today are open-die and closed-die. Most hooks with a capacity of 35 tons or less are closed-die formed in mass-production plants. For capacities above 35 tons, the open-die method is used. Different tools and handling devices shape the metal, guided by skilled "Smiths." The workpiece is deformed (which is a good thing) between a flat or shaped die and repositioned until the desired shape is achieved.

Then, heat-treatment processes such as quenching and tempering improve hardness, toughness, and wear resistance. Finally, the hooks are machined and finished, and the shanks are threaded to produce the final product.

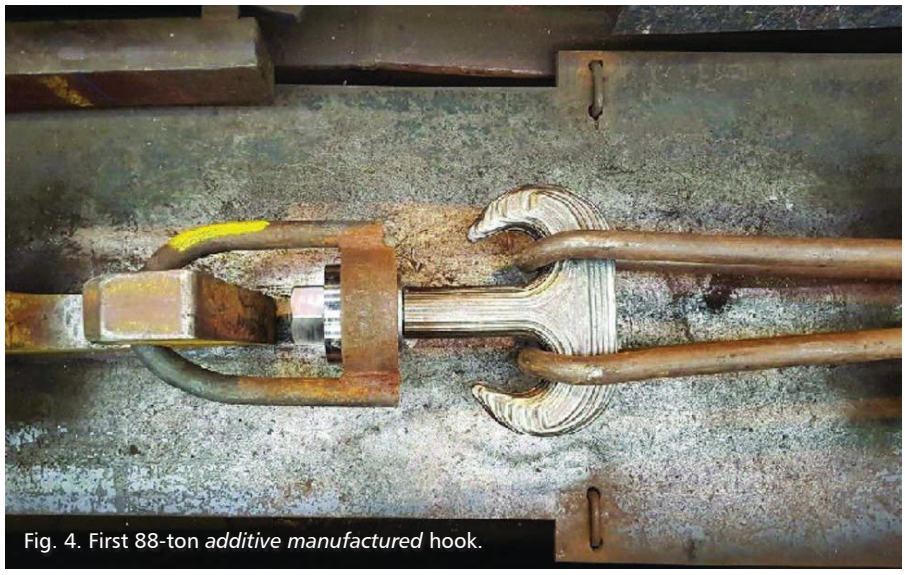

Fig. 4. First 88-ton *additive manufactured* hook.

(Computer-numeric control machining (CNC) ensures dimension accuracy and surface quality. After the hooks are fully manufactured, they are NDE-inspected, tested, hardness checked, and serialized.

ADDITIVE MANUFACTURING OF 1000 TONS + HOOKS

Building up steel thickness through welding, layer by layer, has long been a common practice. In 1926, Allen Baker patented a process for depositing molten metal in layers to add material. We have all seen multi-pass welds on weldments used to achieve the necessary strength in structures. The New WAAM plasma arc process is similar, but with stronger materials and greater versatility, and it is computer-controlled!

WORLD'S FIRST AM DUPLEX HOOK

The Huisman Company in the Netherlands successfully completed the manufacturing and load testing of an 88-ton Duplex Port Crane hook using 3D printing (Fig. 4). This process, called **wire & arc additive manufacturing** (WAAM), employs a wire feed and a plasma arc to produce the midsize hook. The WAAM manufacturing method is somewhat unique. The instructions given to the robot guiding the arc welder are the same as those in steps 1 and 2 above. In step 3, the hook is layered using the Arc and Wire feed welding process, which operates at higher temperatures (10,000° to 20,000°C) than carbon arc or laser welding, allowing the use of stronger materials.

Large Marine, ship-mounted cranes with capacities of up to 10,000 tons require hooks that eight or more 3″ diameter wire rope slings can connect to lift a load. The *additive-manufactured* hook in Figure 5 is designed to respond to the need.

In Figure 6 inset, you can see that the shank of the forged kook slides

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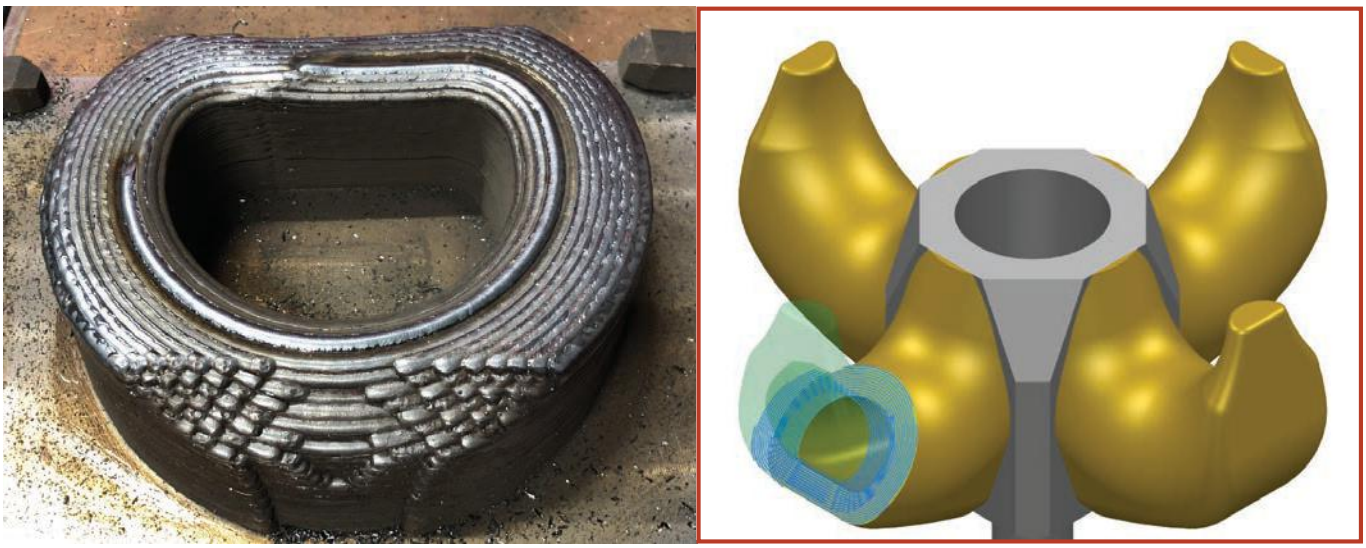

Fig. 5. Left: Cross-section of one prong. Right: Artist's rendering of a quad-prong hook. *Illustrations: Huisman Hook and Joint Petroleum Team of the Netherlands*

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through the four-prong (3D-manufactured) assembly. What failed was the keeper mechanism, which allowed the load tension to pull it off before it reached half its capacity! The back latch that destroyed the crane was caught in a live video.

WHAT'S NEXT?

The Caterpillar Tractor Corp. is currently manufacturing aftermarket parts using the AM method, which are more cost-effective than restarting old production lines that no longer produce the part. One component for which new parts are made is a complex gas turbine nozzle used in their production equipment.

The cost and ease of manufacturing 3D metal parts are decreasing; if widely adopted, this could revolutionize how we mass-produce many products. Livermore National Laboratory announced that it has developed a 3D-printing method for stainless-steel parts that are twice as strong as traditionally manufactured ones.

Markforged, a small startup outside Boston, released the first 3D metal printer for under $100,000. Desktop Metal, also based in Boston, started shipping its first metal prototyping machines in December 2017, which are claimed to be 100 times faster than e-metal printers.

GE, which has long used 3D metal Additive Manufacturing, has a test version of its new metal printer that's fast enough to produce large parts and plans to start selling it in 2018!

Even outer space is an option. NASA has challenged a company to win a $250,000 prize by adapting 3D additive manufacturing techniques for robots on Mars, aiming to develop habitat designs that could eventually host human explorers. On the material side, they say the problem is solved. All we need now is a nozzle that is a little more *forgiving* to spray the material. I guess, "the sky is the limit."

IN CONCLUSION

Drop-forged hooks will remain the standard for construction and land-based cranes for the foreseeable future. The 'pounding' process eliminates voids, creating a consistent, predictable, and continuous-grain structure. This process has demonstrated reliable fatigue performance and predictable failure behavior, supported by extensive field history.

The concern with manufacturing 3D hooks below 400 tons is "if it ain't broke, don't fix it!"

Is the 3D process of achieving 100% adhesion between layers guaranteed? When the crane is in use, the hook will flex during loading or unloading. Will flexing hooks cause the layers to delaminate? What type of NDE method would be appropriate? What visual inspection dimensions are specified? Are the Hook Manufacturer's data sheets available?

The quip, "bigger is always better," isn't true in crane operations, as dramatic accidents in recent years have demonstrated (Fig. 6). This ship crane design was pushed beyond its limits and failed the first test, even when operated by a crew overseen by engineers under ideal conditions with precise load calculations, collapsing halfway through! How would it perform four years later in real-world situations, with an average crew not being overly cautious like the test engineers on the maiden voyage? Building a tool that requires 100% perfect execution all the time isn't typical construction equipment—it's a surgical instrument! The fact that these cranes are manufactured by the world's largest, technologically advanced companies, yet suffer disastrous collapses, leads one to question the path we are taking. ■

Harry H. Poole, Ph.D., earned his Master's and Doctorate degrees from the University of Indiana in chemical engineering and applied technology in 1966. He managed the QA department and was the corporate Level III NDE-qualified person for National Crane Services in the 1980s.

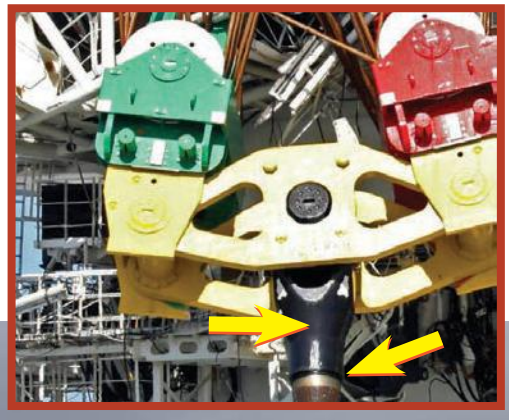

Fig. 6. 5,000-ton hook fails on initial load test on the crane ship Orion. Above insert shows the circled area in question. *Photograph © dannymark | iStockphoto*

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Leave Policies

by Phillip M. Perry

Company leave policies must comply with a growing patchwork of overlapping federal, state and local laws. More cities and counties are adding to the complexity with legislation that mandates leave—sometimes of the paid variety—under an expanding set of conditions. Unintentional violations subject employers to costly litigation and diminished workplace morale.

After sustaining a serious back injury on the job, Andy was faced with surgery and rehabilitation. He applied for time off, provided his employer with the requisite paperwork, and was granted up to 12 weeks of leave under the Family and Medical Leave Act (FMLA).

So far so good. Then things cratered. At the end of 12 weeks Andy was still experiencing residual pain that would prevent him from performing his normal job duties. But when he asked for additional leave, his employer terminated him.

It was a bad decision that cost Andy's employer significant financial penalties. The reason? The company had overlooked a key fact: Coverage for Andy's condition overlapped with another law—the Americans with Disabilities Act (ADA). And that one required employers to offer reasonable workplace accommodation for employees with conditions that substantially limit major life activities.

A CONFUSION OF LAWS

Our opening story typifies a growing problem: Laws affecting leave policies constitute a confusing matrix of protections that challenges and penalizes even well-intentioned employers.

"The most common error we see regarding leave policies is the failure of employers to take into account the interplay of federal, state and local laws," said James W. Seegers, partner at law firm Baker & Hostetler (bakerlaw.com). "And that comes back to bite them."

Meeting legal requirements is especially challenging because of the number of laws that apply. At the Federal level, the FMLA covers employers with 50 or more employees and the ADA to those with 15 or more. At the state level, the number of jurisdictions that mandate some degree of paid family leave, often for the smallest of employers, has risen from three to 12 and now protect about a third of Americans, according to a recent tally by The Economist.

An upward trend in paid sick leave mandates is also visible at city and county jurisdictions. "Time off policies are very popular with workers, and that's why you are seeing so much more legislative activity," said Edgar Ndjatou, Executive Director of Workplace Fairness (workplacefairness.org). "Employers will have to start getting ready for more of the same."

Two forces are adding fuel to the fire, noted Ndjatou. The first is the growing need among employees to provide care for aging relatives. A second is the tendency for people to look upon leave as a pathway to improved health care. "Many people do not have access to sufficient health insurance. So a lot of them are saying, 'if you're not going to give me the best health insurance, what else are you giving me?' And they look upon time off to take care of medical issues as the next best thing."

STEEP PENALTIES

When laws mandate conflicting protective standards, added Ndjatou, the general rule is that employers must follow whatever provides the greatest benefit or protection. "In practice, this can be complicated, especially for multi-state employers." He suggests mapping out which laws apply to which employees based on work location, and then designing policies that meet or exceed the most protective standard in each jurisdiction.

Noncompliant employers face significant consequences including fines, civil penalties, back pay, interest, and in some cases private lawsuits or government enforcement actions. "Some states impose penalties that are equal to, or triple, the amount of unpaid wages or leave benefits," said Harvey R. Linder, an employment and labor partner at CM Law (cm.law). "Administrative fines can range from $100 to $15,000 per violation, depending on severity and whether the employer is a repeat offender. Furthermore, those fines can be per-employee in the case of a class action suit. In some states, violation of paid leave laws can be a misdemeanor which can lead to jail time for the perpetrator."

The laws of various jurisdictions can pile up. "You can be looking at three times the penalties if an incident violates federal, state and local laws," said Kirkland Wayne Davis, SVP of HR Client Services & Employment General Counsel with Congruity HR (www.congruityhr.com). "Furthermore, an employer who has had a violation is on the radar. Prior offenders are much more likely to incur additional audits or scrutiny."

The costliest cases involve court trials. "Litigation can get very expensive vary fast," said Seegers. Employers can be on the hook for attorney's fees—both for their own counsel and the employee's—as well as back pay and even forward pay if the employee can show the difficulty of getting another job. There is also the potential for emotional distress damages if an employee has been worried about being terminated."

AVOIDING ISSUES

Employers need to take a holistic approach, devoting time and effort into understanding how their workplace policies and procedures interact with federal, state, and local laws.

The task is made more difficult by continual changes in the law that can blindside employers. "Delaware, Maine, Minnesota, Washington state, and Colorado are among the many jurisdictions that have recently expanded the scope of their leave regulations," said Davis. More jurisdictions are adding reporting requirements, expanding rights into areas such as fertility

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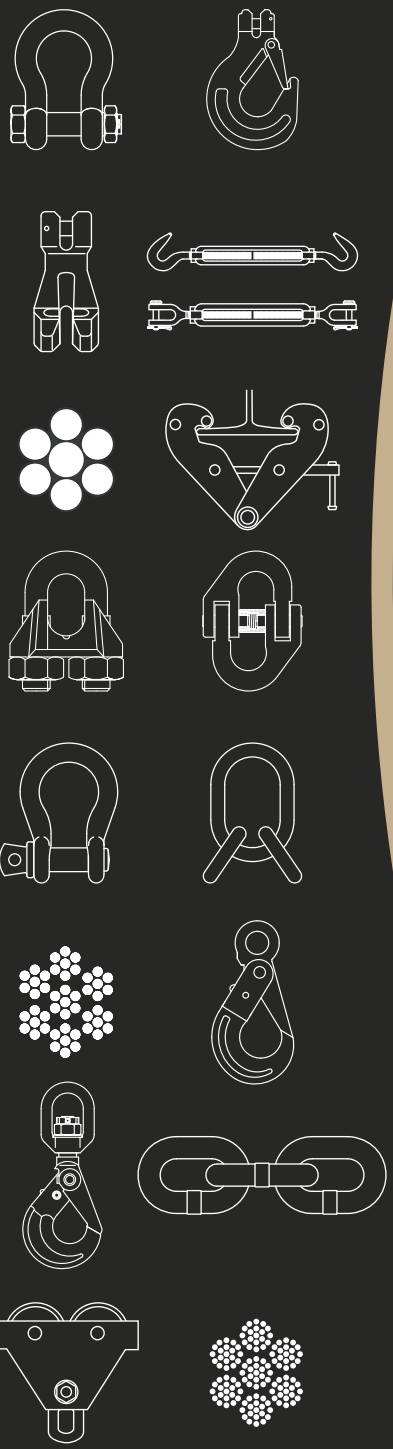

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treatment. Finally, the legal definition of "family member" at the state level is expanding beyond traditional relationships to include siblings, grandparents, parents-in-law, and domestic partners and even close friends.

Attorneys say that employers can stay out of trouble by avoiding the following common errors in policies and procedures:

#1: Untrained supervisors

"Companies need to train their supervisors on how to recognize triggering events when employees put the company on notice about leave," said Dolly Clabault, Subject Matter Expert in HR Resources at J.J. Keller (jjkeller.com). "How the supervisor responds in that moment is critical. They put the company at risk if they do not follow mandated procedures." She recommends annual compliance training to remind forgetful supervisors of the right thing to do.

#2: Discouraging leave

A valued employee requests leave—just when the business is about to start an important project. Frustrating? Yes. Optional? No. "Mixed messages from supervisors, even informal comments such as 'we're really busy right now,' can have a chilling effect on employees who are legally entitled to take leave," said Ndjatou. "The company must treat leave as a normal part of doing business rather than an exception or inconvenience."

 # 3: Inconsistent implementation

One supervisor thinks people should come to work when they're sick. Another disagrees with some legally protected reasons for leave. A third thinks a certain worker has been abusing the system.

No matter. "Leave must be granted to everyone equally, "said Rachel Shaw, an HR consultant (shawhrconsulting.com). Employees share experiences with one another, and inconsistency can not only affect company morale but also lead to legal quagmires. "An employer can get targeted with a lawsuit if one supervisor grants leave liberally, while another makes applicants jump through hoops."

#4: Unintentional discrimination

Employees who have risen to a certain level in the company may well be granted more benefits than beginners. Therein lies the potential for legal problems.

"Inadvertent discrimination can possibly happen if an employer grants a certain level of parental leave for upper-level exempt salaried employees, but not for non-exempt employees," said Linder. "In many cases that can lead to penalties for violation of state laws."

"While it is legal to distinguish between job types in certain situations, an employer cannot structure policies in a way that disproportionately impacts a group that is female or other protected minority," added Linder. "The safest practice is to design leave policies that apply to everyone."

#5: Improper documentation

Another common pitfall is requesting documentation that the law does not permit. "Employers need to understand exactly what proof they can and cannot require and embed those boundaries into their processes," said Ndjatou. The FMLA, for example, is strict about what documentation can be required and when employers can ask for it.

#6: Leave interference

Jake has been home resting for a week. Is he coming along okay? Can he maybe come back to work early? The questions are natural, but the prudent business lets them go largely unanswered. "An employer might be able to get away with a single email or a couple of phone calls over time," noted Seegers. "But at some point, an employee who feels the employer is infringing on their rights may have a cause of action."

#7: Retaliation

Bonus calculations. Performance reviews. Raises. Promotions. What role is played by the employee's prior leave in all of those areas? None. "An employer must not retaliate in any way for leave that the worker has taken during the year," said Seegers. Doing so can provide a cause of action.

#8: "No-fault" policies

Treating all leave as equal can backfire, said Seegers. "Many employers establish 'no fault' policies that say 'If you're absent X number of times, no matter what the cause, that triggers progressive discipline and eventually termination.' They have to understand that they cannot penalize leave protected by law."

#9: Inaccurate tracking of hours

Payroll systems must be set up correctly so that leave is tracked, calculated, and paid with precision. "Years ago, companies could get away with just entering numbers on a spreadsheet," said Clabault. "But now there are so many state and local laws that it can get very complicated." Mistakes can anger workers. "Employees get irritated when they are not paid what they are due and are tempted to turn to the courts for relief."

This is particularly important for fluctuating hour employees, where inadequate record keeping can lead to underpayments and compliance violations.

#10: Use it or lose it arrangements

Policies that call for leave time to expire at the end of the year can create problems. "Use it or lose it policies can end up driving unnecessary leave, which can be costly for employers," said Shaw. "We suggest allowing some leave time rollover, or even some cash out." Employers must follow state and local laws which often address this issue.

#11: Uncompetitive policies

Programs need to be competitive in the marketplace, or employees will be tempted to leave for rival employers. "Many times, a robust leave program can mean the difference between getting or not getting the best talent," said Ndjatou. "Younger workers in particular are putting a premium on work-life balance, and on being able to take time off from work."

#12: Inadequate communication

"Many businesses fail to adequately communicate their leave policies to employees," said Shaw. "The result is a confused workforce, made worse by the high level of stress experienced by anyone who has incurred an injury, come down with an illness, or is suddenly faced with a family caregiving crisis."

Written policies need to be communicated in one or more vehicles. Examples are the company bulletin board, a written handbook, an email broad-

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ARE YOUR LEAVE POLICIES UP TO STANDARDS?

Do your leave policies help prevent expensive lawsuits and support a healthy company culture? Take this quiz. Give yourself 10 points for each "yes" answer. Then total your points.

1. Do your leave policies conform to the latest requirements of federal, state and local laws?
2. Are your supervisors trained on the legalities of leave?
3. Does your company avoid discouraging leave?
4. Are you avoiding unintentional discrimination?
5. Are you requiring only legally sanctioned documentation?
6. Do your advancement practices avoid penalizing leave takers?
7. Does your payroll system accurately track work and leave hours?
8. Have you eliminated "use it or lose it" policies?
9. Have you avoided "no fault" policies that penalize allowable leave?
10. Have you communicated your policies adequately to all employees?

What's your score? Over 80: Congratulations. Your company has made significant progress in establishing effective leave policies. Between 60 and 80: Polish your policies and procedures with the advice in this article. Below 60: Take steps to avoid legal liability and diminished employee morale.

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Below the Hook

Vacuum Cleaner

by Darrin Noe, director of sales and marketing at The Caldwell Group

Mechanical vacuum lifters do not require cables and use physics to safely lift a load. No air or electricity is required, suiting them to a multitude of workstation applications.

The main appeal of vacuum lifting is damage-free handling of thin material, while many users also opt for this type of system when working with heavy or thick, nonferrous material that doesn't work with magnets. Envisage a large, aluminum plate, sheet of copper, or a slab of polished stone. Other examples include brass, bronze, lead and zinc.

There are two main types of hook-suspended vacuum lifter:

1 Powered

2 Mechanical

The vacuum concept has been in the material handling industry since the 1960s, but mechanical tooling is a more recent innovation. There isn't a huge difference from a manufacturing perspective; they 'add' a power pack at the end of the process to make it a powered vacuum. The frame below the power pack is sized for the material and then the pack gets 'plugged' into the top, which includes the lifting eye.

There are some misconceptions over price points in the vacuum market to the point that it is considered a sticky subject by many manufacturers. While it's true that mechanical vacuums require more machining time, the labor costs between both types ends up being similar.

The components are largely the same too, but the mechanical version uses physics — the up/down motion of a hoist — to create a vacuum chamber, whereas the powered hook-mounted version has the power pack described.

BENEFITS OF MECHANICAL VACUUMS

Some hook-suspended versions require power because something must generate the air flow to evacuate the air. The word 'power' is deceiving in this case because people generally think of electricity when they hear that word. Vacuum pumps are often driven by electric motors, but there are other ways to drive a pump or to create a vacuum, such as compressed air, battery, gasoline, or even propane.

The beauty of mechanical vacuum lifters is that they don't require a source to drive a pump, even up to capacities of 5,000 lbs. Of course, it is important to size a mechanical vacuum lifter correctly, with a chamber that isn't too large or too small. Manufacturers prefer to know the minimum and maximum dimensions of the product being lifted and they will then size it accordingly. It isn't really a below-the-hook product sector that's widely customized, so it's more often a case of selecting from a standard range.

Another standout benefit of removing the external hoses or cables associated with hook-suspended equipment, is transportation. Users can carry mechanical lifters around by forklift truck, for example, without worrying about ancillary power equipment getting in the way.

This is especially useful for users that move their lifters around from one workstation to another, which is very common practice with this type of tooling or equipment. At each of those stations, no air or electricity is required so the lifter can get straight to work and be moved on again. While vacuum lifters are commonly found in use with jib or workstation cranes, that doesn't make them strictly an ergonomic tool. They can weigh hundreds or even thousands of pounds and are also found below-the-hook of large overhead bridge cranes and hoists. One might even see them used with forklift trucks. WRN

The vacuum concept has been in the material handling industry since the 1960s, but mechanical tooling is a more recent innovation.

MECHANICAL MISUNDERSTANDING

Despite the physics, mechanical vacuum lifters are not fail-proof. Many people will debate that an electric powered unit is safer because you have a sense of confidence in that the pump is always running. But it's the product being lifted that makes any vacuum lifter efficient. The more porous the material, the harder a vacuum lifter needs to work.

Picture trying to lift flat, smooth metal or glass versus something like cement, wood, or paper. The pump will continuously chug away trying to evacuate the pads and air is being drawn through the product. It's not best practice to do so, but to illustrate the point, with metal or glass, you can unplug the lifter and the product will remain suspended.

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NEWS IN OUR INDUSTRY

Kito Crosby awarded major offshore project for high-capacity Fairlead and Block systems.

Kito Crosby Awarded Major Offshore Project for High-Capacity Fairlead and Block Systems

Kito Crosby has secured a significant offshore contract to design and supply Crosby Fairlead and Horizontal Block systems with a rated capacity of 600 tons, forming a critical part of an 800-tonne riser pull-in package for a new Floating Production Unit (FPU) in the Gulf of America.

The award, granted in Q4 2025, reinforces Kito Crosby's position as a trusted provider of high-capacity load-handling solutions for demanding offshore environments. The project will be executed in close collaboration between Kito Crosby, its business partner MDL (Maritime Development) and the end client, an international energy major.

Why Crosby?

Crosby was selected for its ability to deliver a technically advanced, fatigue-resistant solution tailored to the project's stringent requirements, including space, weight, and interface constraints.

Key differentiators include:

- Proven performance of high-capacity Fairlead and Block systems
- Compact, weight-efficient design supporting topside limitations
- High operational reliability under dynamic offshore loads
- Compliance with offshore standards and customer specifications

Engineering, manufacturing, and delivery will align with the overall FPU construction and installation schedule. The systems are designed for long-term operational integrity and safe handling during critical offshore operations.

Learn more about Kito Crosby at kitocrosby.com.

SEE AD PAGE 3

YOKE Supports South Africa with LEEASA Membership, CPD Provision

YOKE Industrial Corp. is now a validated Continuing Professional Development (CPD) service provider of the Lifting Equipment Engineering Association of South Africa (LEEASA).

YOKE, a LEEASA member, is a renowned supplier of hardware, including Grade 80 and Grade 100 lifting chain fittings; swivel hoist hooks; shackles; angular contact swivels; wire rope clips; and lifting points. LEEASA was formed by like-minded organizations and individuals from the providers and manufacturers, in addition to maintenance, inspection, examination and training sectors of the industry.

Central to LEEASA's purpose is CPD — it awards credits to individual

continued on page 32

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continued from page 30

members who are registered with the Engineering Council of South Africa (ECSA), while participation in LEEASA-validated training and seminars, also earns recognition. The partnership thusly positions YOKE not just as a member, but as a trusted partner, supporting professional growth, compliance, and safety.

Importantly, LEEASA membership alone does not automatically make an organization a validated CPD service provider. To be recognized as a CPD service provider that can issue ECSA-recognized CPD credits, a company must go through a formal verification process under the ECSA CPD framework. CPD activities recognized by LEEASA count towards statutory CPD requirements for maintaining registration. This makes CPD both a legal and professional requirement. Participants are entitled to a single CPD point for every eight hours trained.

Steven Hong, president at YOKE, said: "We continue to focus on the development of Africa; we have enjoyed strong support in the mining and manufacturing industries in South Africa, especially. Not only do we see growth in our traditional markets, but further expansion into sectors such as oil and gas, automotive, and construction.

"On such a trajectory, LEEASA membership—upheld by a commitment to CPD—is essential to ongoing improvement of industry best practices. For companies, engineers, and end users, it has never been more important to keep professional registration up to date, stay compliant, and reduce operational risks."

LEEASA membership is separate to YOKE's membership with the Lifting Equipment Engineers Association (LEEA), which is established across the world as the leading trade association for all those involved in the lifting industry. Notably, YOKE is among a select group of companies that are members of both esteemed organizations.

Hong added: "LEEA operates globally and focuses on international lifting standards, guidance, and training frameworks. LEEASA, on the other hand, is closely aligned with South African legislation, ECSA requirements, and local CPD structures. Together, they provide both global consistency and local relevance. Each serves a distinct but complementary role. Their objectives align around safety, competence, and professionalism."

In addition to rigging hardware, YOKE also offers award-winning SupraNano digital chips, which can be embedded directly into steel or retrofitted to snatch blocks and other products using tags. In fact, YOKE's complete range of lifting and rigging products is now equipped with Digital Product Passports (DPP), as industry conforms to the European Union's Ecodesign for Sustainable Products Regulation (ESPR). Overall, YOKE combines strong technical expertise, international training experience, in-depth product knowledge, structured training materials, and experienced instructors. Training continues to align with both LEEASA and LEEA requirements.

Learn more about YOKE at yoke.net.

SEE ADS PAGES 4 & 13

YOKE Industrial Corp. is now a validated Continuing Professional Development (CPD) service provider of the Lifting Equipment Engineering Association of South Africa (LEEASA). The partnership positions YOKE Industrial Corp. as a trusted partner, supporting professional growth, compliance, and safety.

Talurit, Inc. Announces Major U.S. Expansion: Pennsylvania Capacity Doubled and Louisiana Stocking Hub Launched

Talurit, Inc., the U.S. subsidiary of Talurit Group, is moving forward with a major expansion of its distribution capabilities, doubling warehouse capacity at its Warminster, PA, headquarters and adding a new regional stocking hub in Hammond, LA, through a strategic logistics partnership with Pelican Rope Works Corp.

Talurit, Inc. has doubled warehouse

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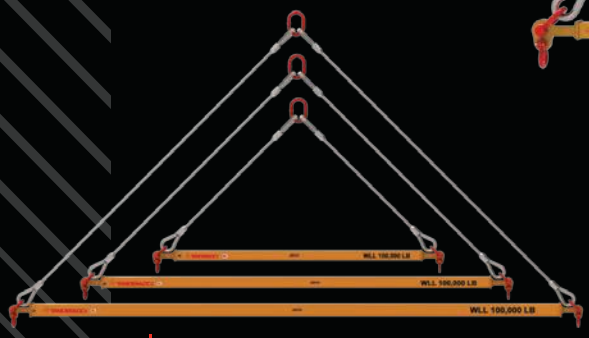

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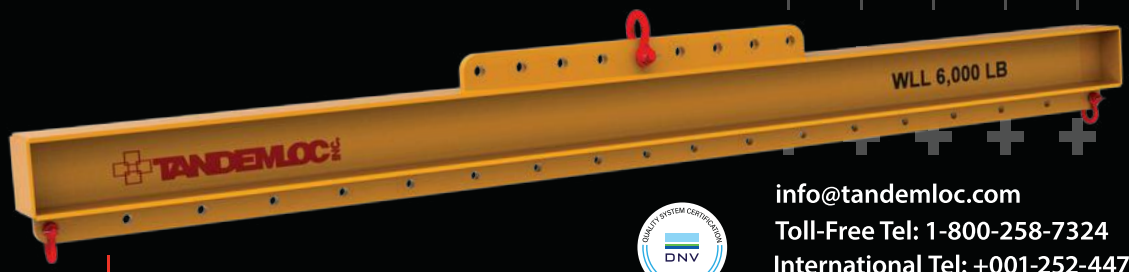

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Talurit's Louisiana warehouse accessed through a strategic logistics partnership with Pelican Rope Works Corp.

continued from page 32

capacity at its headquarters in Warminster, PA, creating additional space to support increased inventory availability and faster order fulfilment. Complementing this investment, Talurit, Inc. is also launching a new 5,000-square-foot regional stocking hub in Hammond, LA, through a strategic logistics partnership with Pelican Rope Works Corp. This allows for larger volumes of fast-moving items and stronger overall inventory availability, enabling improved regional coverage and shorter transit times, particularly for customers across the Southern and Western United States.

Beginning April 1, the Hammond location began stocking a selection of fast-moving products including Flemish Eye sleeves, ferrules and fittings, lifting and safety supplies, wire rope accessories, etc. In addition, Talurit, Inc. is bringing its wholesale safety and lifting supply range into both locations and expanding its offering of wire rope terminations at each site. The expansion reflects Talurit Group's continued growth in North America since Talurit, Inc. was established in 2022, and underlines the Group's long-term commitment to strengthening local service and availability for customers and industrial partners across the region.

"We are really proud and happy about this development. Since establishing Talurit, Inc. only a few years ago, we have seen strong momentum in the U.S. market, and this expansion is a natural next step," says Jason Ruby, General Manager at Talurit, Inc. "By investing in additional capacity in Warminster and adding a strategically located stocking hub in Louisiana, we are reinforcing our promises of dependable availability, responsive service, and shorter lead times where they matter most."

The Louisiana stocking facility in Hammond is positioned to support improved distribution efficiency and reach, strengthening Talurit, Inc.'s ability to serve customers across key U.S. regions with reduced lead times and more dependable access to commonly needed products.

"For many companies in our industry, delays can create real cost and disruption, so our customers rely on us for speed and reliability alongside quality and expertise," says Will Croy, Technical Sales Representative at Talurit, Inc. "We want to excel further in this area, and by increasing our stock levels, expanding our offering, and positioning fast-moving products

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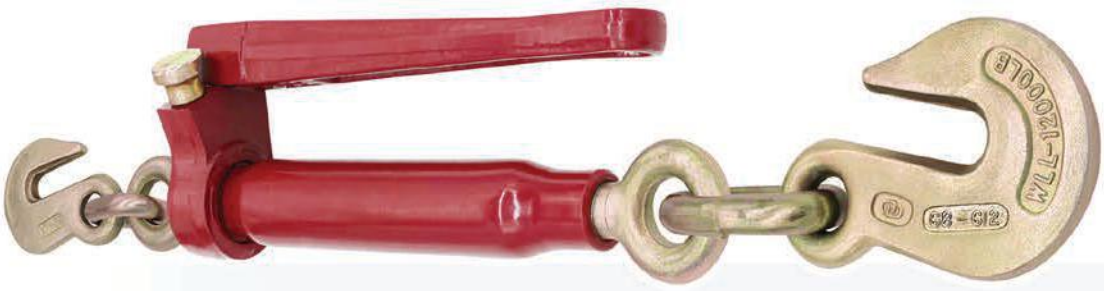

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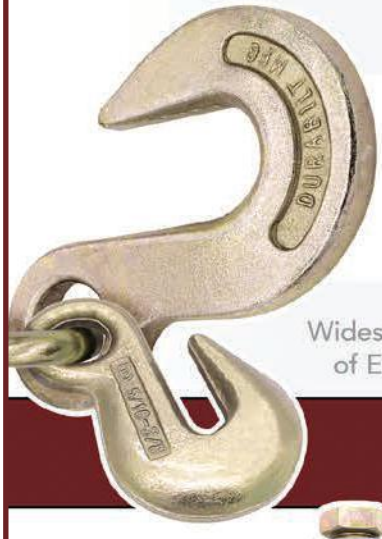

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continued from page 34

closer to the work, we can help reduce customers' downtime and keep their projects moving."

With the expansion, Talurit, Inc. is building a more responsive and resilient supply platform designed to meet evolving customer demand and support future growth across key industrial sectors. The investment reinforces the company's commitment to being a trusted, accessible partner for wire rope, lifting, and safety solutions across the North American market.

For more informatino about Talurit visit talurit.com.

Sahm Splice's solar-powered Bremerhaven headquarters is located on Germany's North Sea coast. The solar panels combine to create 287kWp in total.

Sahm Splice Boosts Sustainability with Solar Power

Sahm Splice has installed solar panels at its Bremerhaven headquarters, saving up to 80t of CO_2 annually, and contributing over a quarter of electrical consumption at the facility on Germany's North Sea coast.

The company provides test beds for non-destructive and destructive testing of steel wire ropes, synthetic ropes, chains, and shackles; and specializes in the mechanical splicing of wire rope. It is a supplier of end terminations and ferrules to the global rigging industry. The range includes ferrules made from aluminium, copper, steel, and stainless steel — all manufactured in-house in Germany and the U.S. It has additional facilities in France and the UK, where solar power has been generated at the Sherburn in Elmet facility in North Yorkshire, England since last August.

The Bremerhaven site is an active manufacturing environment, where numerous metal saws are in constant use, while cleaning machines remove chips from ferrules after cutting processes. Thirty staff and operatives oversee production, which also involves assembly of test beds, swaging presses, and annealing machines. A standard range of swagers is available up to 4,000t capacity, while test beds are custom-made up to 2,500t capacity and more. The mid-sized 1225 wire rope cutting and annealing machine, for example, is utilized for separating wire ropes in 8-40mm diameters, enabling the ends of the rope to be conically tapered.

A total of 652 panels combine to create 287kWp (kilowatt-peak) maximum electrical output. With the operation consuming 185,000kWh (kilowatt-hour) per year, the 211,000kWh

that the company produces allows for 52,000kWh of consumption and the sale of 159,000kWh across a 12-month period. Importantly, it means that 27% of electrical consumption is generated by solar power, saving 72-80t of CO_2 per year; this equates to 30 cars, more than 6,000 trees, or 25 transatlantic flights.

Arne Niemann, managing director at Sahm Splice GmbH, said: "We were principally driven by the sustainability of solar power. The business is very conscious of its carbon footprint; we recycle scrap metal and use LED [light-emitting diode] lighting, which is activated by motion sensors. However, the added benefit is that the investment will be repaid in full within eight years. With solar power now part of everyday operations, we continue to optimize our consumption accordingly."

Sahm Splice's production machines have priority access to solar power, but it is even used to charge a fleet of electric company vehicles. The move to electric cars preceded installation of the solar system but as of this month (April), the company will own five electric automobiles.

For more information about Sahm Splice GmbH visit sahm-splice.com.

RSS Takes Delivery of pewag levo load balancer

Rope and Sling Specialists Ltd. (RSS) has added a 20t capacity pewag levo load balancer to its hire fleet.

The product, rigged below-the-hook of a crane, is suitable for various applications where the object to be hoisted has to be lifted horizontally or at a certain angle. It is frequently used in the construction industry to position steel or concrete structures and bolted connections accurately, tilting and moving profiles in the air rather than on the ground or manually to reduce damage and labor. A shackle and a drop chain are required to attach the balancer to a crane hook.

The load balancer, which weighs 450kg, is currently stocked at the com-

continued on page 40

The pewag levo load balancer is suitable when the load has to be lifted horizontally or at a certain angle and is available for hire nationwide.

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pany's Rotherham depot, but it is available for hire nationwide. The innovative product provides remote-controlled tilting and rotation for safer load handling. It is an alternative to the more traditional method of using chain hoists or adjustable slings, both of which are more labor intensive and result in personnel having to be in contact with the load, or at least part of it.

Stephen Littler, regional manager at RSS, said: "The levo load balancer delivers smooth, pinpoint load control, outperforming electric equivalents. The balancer has a free wheel function to enable the load to find its 'level'. From there, the brake is applied to enable the user to adjust the chains via the hydraulically driven sprocket. Additional slings can be added and attached to the self-locking hooks at the ends of the chain to increase the overall leg length, or if further adjustment is required longer chains can be fitted."

The load balancer has accurate valve control, and the power required to manage heavy imbalances. Hydraulics reduce energy use and maintain full performance where electric motors falter. The integrated floodlight provides clear, hands-free illumination for safe and efficient work during nighttime or low-light conditions.

Interest is expected for a multitude of end-user applications, including those in infrastructure, machinery removal/installation, mechanical operations, crane rental, and facade or glass fitting. With the radio control, users can hang the object to be lifted horizontally or at a slight angle to simplify installation. In the renewables sector, for example, the product can be used to accurately position subframes and solar panels during large-scale park installations. It has also been used for precise positioning of wind turbine blades and components.

RSS offers a comprehensive portfolio of material handling products and training, in addition to live365 digitalization and compliance technology. It supplies blocks, shackles, hooks, slings, harnesses, and other rigging gear — all covered by periodic Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) examinations — to some of the UK's most notable large-scale infrastructure projects and blue chip firms. It supplies the levo load balancer in a wooden carry case.

For rental opportunities contact stephen.littler@rssgroup.co.uk.

Ben-Mor Acquires Titan Supply — A Step Forward for Western Canada

Effective March 2, 2026, Ben-Mor has officially acquired Titan Supply, one of Alberta's most respected and established names in the rigging industry.

This is more than an acquisition. It is a natural evolution of a shared vision and a clear commitment to long-term partnership. Together, they are building a stronger, more capable organization; one that remains focused on service excellence, operational reliability, and sustainable growth.

Their motto: "We are here to grow. We are here to partner. And we are here to stay."

With four strategic locations across Alberta, Titan Supply has built an outstanding reputation over more than five decades as the trusted source for lifting, digging, and hauling solutions. From its roots in ground-engaging tools to its expansion into complementary rigging businesses, Titan has evolved to meet the needs of its customers and industry.

As a long-standing partner and customer of Ben-Mor, Titan Supply was already closely aligned with their products, quality standards, and customer-

first philosophy, creating a natural fit and ensuring a smooth and efficient integration.

This acquisition significantly strengthens Ben-Mor's presence in Western Canada as the largest player within our industry. More importantly, it solidifies a bright and sustainable future for its customers throughout Western Canada.

By combining Titan Supply's strong local relationships and expertise with Ben-Mor's manufacturing capabilities, inventory depth, and national footprint, we are expanding service capacity, increasing responsiveness, and enhancing supply reliability.

Customers can expect:

- Greater product availability
- Expanded technical expertise
- Stronger local support
- Continued commitment to safety, performance, and partnership

Ben-Mor acquires Titan Supply, strengthening its presence in Western Canada with four strategic locations across Alberta.

This milestone reflects Ben-Mor's long-term vision: structured growth, strategic investment, and meaningful partnerships that create lasting value.

This transition has been completed with full respect for the existing teams, shared values, and long-standing business relationships that have made Titan Supply successful. Their priority remains operational continuity, transparent communication, and delivering a seamless, positive experience for all partners and customers.

For any questions regarding this acquisition, you can reach out to either Melanie Frappier, Chief Executive Officer: mfrappier@ben-mor.com, or Mandy Masters, Director of Sales & Marketing: mmasters@ben-mor.com.

Ben-Mor is excited about this next chapter and looks forward to building an even stronger future together.

Learn more at www.ben-mor.com.

ALL Getting 10 New Shuttlelift® Carry Deck Cranes

As an authorized dealer, new units are for sale in Ohio

ALL Erection & Crane Rental, flagship branch of the ALL Family of Companies

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and an authorized Shuttlelift dealer for Ohio, announces a new purchase of 10 Shuttlelift® carry deck cranes. The package, arriving in Q2 and Q3 of this year, includes five 20-ton SCD20 models and five 25-ton SCD25 models.

"Many of these new units are bound for our rental fleet," Josh Bacci, Ohio sales manager for ALL, explained. "They're also for sale in Ohio. Customers who are interested in one of these — or any other new Shuttlelift carry deck — can contact us for sales assistance." ALL is also able to sell used Shuttlelift units from any of its U.S. branches, not just Ohio.

Known for delivering power and flexibility in a compact package, Shuttlelift carry decks are highly maneuverable and ideal for both indoor and outdoor projects. Their spacious load decks provide ample room for material handling, and they can also pick and carry without using the deck, within appropriate load limits.

"The 20- to 25-ton capacity has been a sweet spot for us in carry decks," said Bacci. "They're in demand for work at refineries and industrial plants as well as in maintenance and construction applications."

Bacci says Shuttlelift makes the only carry decks with a pivoting boom nose. Able to be mechanically offset in multiple positions, it lowers the boom nose head height by up to two feet, depending on model. This offset increases ground clearance for transporting a large load through low clearances. These units also have Shuttlelift's multi-mode steering, including crab steering in which all four wheels turn. This enables the crane to get closer with greater efficiency.

For more information on purchasing a

ALL getting 10 new Shuttlelift® carry deck cranes.

Shuttlelift carry deck crane from ALL, visit allcrane.com/buy/all-equipment-for-sale/search/carry-deck-cranes.

Unirope Celebrates 20 Years in Western Canada

Unirope Limited's Edmonton, Alberta facility has passed the 20-year milestone, making it the Mississauga, Ontario-headquartered company's second oldest location.

Unirope is a specialist in the manufacture, distribution, testing, certification, and inspection of high-performance wire rope and rigging products. It has three facilities — the third is in Montreal, Québec — which combine to deliver a service nationwide and to select customers in the U.S. and Europe.

Justin Brown, president at Unirope, said: "From the start, our goal was simple: when a customer needs something, we have it and can deliver it right away. Alberta customers expect straight talk, reliable service, and real results. That's how business is done here — and we respect that. Our team in Edmonton operates with that same mindset: no excuses, just solutions. We've built long-term relationships because customers know they can count on us when it matters most.

"The team is exceptional — highly skilled, hands-on professionals who understand the realities of Western industry. They take pride in their work and know their customers personally. That local knowledge and experience make all the difference. They don't just supply products; they help solve problems."

The checkpoint represents a celebratory convergence, with this year marking the 70th anniversary of headquarters, while Montreal also reaches two decades since inauguration in 2027. The legacy is built on early realization that Alberta is the heart of Canada's heavy industry. Whether it's oil and gas, construction, or mining — lifting and rigging are essential for keeping these industries moving.

Brown added: "Edmonton is a cornerstone of our Canadian operation. It exemplifies our long-term commitment to Western Canada both geographically and strategically. The branch is quick, capable, and customer focused. It shows what can be accomplished when investing in local people, local skills, and long-term relationships.

"Our goal was to be more than just

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In Edmonton, Alberta, Unirope manufactures Slingmax Rigging Solutions® Twin-Path® and Helix® slings and supplies other engineered rigging solutions.

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a supplier shipping product from afar. We wanted to be present locally. We wanted to employ Albertans, directly support projects, and respond promptly to customer needs. Opening in Edmonton allowed us to accomplish exactly that. Alberta has many capable suppliers of standard rigging products, like web slings. But we concentrate on engineered solutions and specialized products that go beyond the traditional. We invest in technology, manufacturing capability, and technical expertise so we can support complex lifts, higher capacities, and performance-driven applications. That is what defines this branch. Not commodity rigging, but solutions built to meet demanding industrial applications."

The foundations in Edmonton are thusly set in stone. Unirope remains driven by quality and responsiveness. What has evolved is the scope and sophistication of what the company does. Edmonton has grown from being a high-performance wire rope supplier into a center for advanced lifting technologies. Today, it manufactures Slingmax Rigging Solutions® Twin-Path® and Helix® slings and supplies other engineered rigging solutions, utilizing the most modern roundsling machine in the company's fleet.

"The new equipment has improved both speed and precision," enthused Brown, "Allowing us to meet demand more efficiently, while maintaining the highest quality standards. It also strengthens our ability to serve customers who value locally manufactured, high-performance rigging solutions."

RSS Adds LEEA-Accredited Overhead Travelling Crane Course

Rope and Sling Specialists Ltd. (RSS) has added a new overhead crane course to its Lifting Equipment Engineers Association (LEEA) Accredited Training Scheme (ATS) portfolio.

The two-day course, Overhead Travelling Crane (Operating and Slinging), is now part of the RSS Training Academy, and was given for the first time this past month (March). It is open to up to four students.

RSS offers a comprehensive portfolio of lifting and rigging products and training, in addition to live365 digitalization and compliance technology. It supplies blocks, shackles, hooks, slings, harnesses, and other rigging gear — all covered by periodic Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) examinations — to some of the UK's most notable large-scale infrastructure projects and blue chip firms.

It is a longstanding member of LEEA's ATS, which offers end user training

delivered by member companies, giving assurance of good-quality training, instructors, and facilities. LEEA ATS status is only granted to companies that demonstrate high-quality course design and materials; qualified and experienced trainers; and excellent facilities and learning environment.

Overhead Travelling Crane (Operating and Slinging) is targeted at crane operators or prospective operators who will be responsible for using overhead travelling cranes, in addition to slingers or riggers who need formal training in safe slinging and load control as part of lifting operations. Likely candidates include supervisors, forepersons or team leaders responsible for people operating cranes or carrying out slinging tasks.

Andy Hawkins, training manager at RSS, said: "It is always an important endorsement of courseware to be given [LEEA] ATS status. This is a relatively broad course, but one that is of immediate benefit to those looking to operate an overhead gantry crane safely and efficiently. It is also open to safety officers or managers who need competence in crane safety and regulations, and anyone with operational responsibilities in lifting operations where overhead cranes are used."

The RSS Training Academy's Overhead Travelling Crane (Operating and Slinging) course is part of the LEEA Accredited Training Scheme (ATS).

In addition to LOLER, other central themes of the course include Provision and Use of Work Equipment Regulations 1998 (PUWER) and The Health and Safety at Work etc Act 1974. Candidates will also learn how to identify the types and functions of overhead gantry cranes; carry out pre-use inspections of lifting accessories and equipment; safely sling loads using appropriate lifting accessories; understand and use hand signals and communication methods effectively; and identify and mitigate risks associated with lifting operations.

Hawkins added: "The course is delivered in-person only and limited to four candidates; fewer attendees mean less crowding around live lifting gear and overhead cranes, lowering risk of injury during practice lifts. It also allows instructors to manage site safety briefings and control risks effectively. We continue to combine quality, accredited content with practical tools and digital support that helps trainees and compa-

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nies improve safety and competence."

Overhead Travelling Crane (Operating and Slinging) becomes the RSS Training Academy's seventh course and fourth with LEEA ATS status. The academy was recently rebranded to closer align course content and delivery with industry feedback and the findings of the LEEA State of the Lifting Industry Report.

For more information about RSS go to ropeandsling.co.uk.

Steel Imports Up 4.6% in January 2026 vs. December 2025

Finished Import Market Share YTD at 15%

Based on Final Census Bureau data, the American Iron and Steel Institute (AISI) recently reported that the U.S. imported a total of 1,650,000 net tons (NT) of steel in January 2026, including 1,249,000 net tons (NT) of finished steel (up 4.6% and 7.7%, respectively, vs. December 2025). Total and finished steel imports are down 46.3% and 45.9%, respectively, vs. January 2025. Over the 12-month period February 2025 to January 2026, total and finished steel imports are down 19.0% and 23.1%, respectively, vs. the prior 12-month period. Finished steel import market share was an estimated 15% in January 2026.

Key steel products with a significant import increase in January compared to December are reinforcing bars (up 76%), sheet and strip all other metallic coated (up 52%), cold rolled sheets (up 47%), hot rolled sheets (up 28%) and oil country goods (up 25%). A product with a significant increase in imports over the 12-month period February 2025 to January 2026 compared to the previous 12-month period was tin plate (up 13%).

In January, the largest suppliers were South Korea (285,000 NT, up 71% vs. December), Mexico (235,000 NT, up 72%), Canada (218,000 NT, down 7%), Brazil (177,000 NT, down 31%) and Taiwan (73,000 NT, up 87%). Over the 12-month period February 2025 to January 2026, the largest suppliers were Canada (4,094,000 NT, down 38% vs, compared to the previous 12-months), Brazil (3,717,000 NT, down 20%), South Korea (2,621,000 NT, down 11%), Mexico

U.S. IMPORTS OF FINISHED STEEL MILL PRODUCTS
3 MONTHS ROLLING AVERAGE
(thousands of net tons)

Steel Mill Product	Final 3 Mos. Rolling Avg. Jan. '26 - Nov. '25	Final 3 Mos. Rolling Avg. Oct. '25 - Aug. '25	Current 3 Months vs. 3 Months Prior % Change
Sheets & Strip Galv. Hot Dipped	104	134	-22.3%
Oil Country Goods	96	132	-27.3%
Structural Shapes Heavy	87	56	56.1%
Tin Plate	87	92	-5.9%
Line Pipe	79	83	-4.3%
Sheets Cold Rolled	77	89	-13.1%
Wire Rods	72	91	-21.7%
Bars - Reinforcing	68	43	57.6%
Standard Pipe	58	63	-6.6%
Sheets Hot Rolled	57	89	-35.8%
Plates in Coils	53	61	-14.2%
Wire Drawn	42	51	-18.8%
Sheets & Strip All Other Met. Ctd.	41	50	-17.8%
Bars - Hot Rolled	40	47	-14.7%
Mechanical Tubing	39	40	-1.4%
Plates Cut Lengths	27	39	-30.0%
All Other	137	148	-7.5%
TOTAL Finished Imports	1,165	1,308	-11.0%

(2,586,000 NT, down 28%) and Taiwan (1,081,000 NT, up 4%). The chart at left shows steel imports estimated finished steel import market share in recent months.

In contrast, AISI reported that for the full year 2025 steel shipments were 91,158,528 up 5.1 percent from the 86,698,917 shipped for full year 2024. Shipments were revised to reflect category consolidations and additional updates.

Reprinted from the American Iron and Steel Institute, www.steel.org.

CM Labs Simulations and GlobalSim Unite Through Strategic Acquisition to Strengthen the Future of Workforce Development

Together, the simulation-based training leaders advance a shared mission to elevate operator productivity, safety, and workforce readiness worldwide.

CM Labs Simulations, a leader in simulation-based training for heavy equipment operations, announced today that it has acquired GlobalSim, a Utah-based developer of advanced training simulators.

This joining of forces reflects a shared vision for the future of simulation-based training and reinforces CM Labs' position as one of the most trusted and innovative providers in the industry. By integrating GlobalSim's deep market knowledge with CM Labs technology and expertise, customers gain access to a comprehensive suite of next-generation simulation-based training products that increase workforce readiness, safety and productivity, and lower training costs.

CM Labs also broadens its US presence with the addition of GlobalSim's Salt Lake City, Utah location, which offers expanded manufacturing resources to reinforce its commitment to excellence when serving and supporting clients.

"This is a natural evolution for two organizations that have decades of proven safety, precision, and performance outcomes in port operations," said Robert Weldon, CEO of CM Labs. "CM Labs and GlobalSim are uniting to deliver unmatched quality, value and support to our port customers worldwide."

Brad Ball, VP of Sales & Marketing for GlobalSim, added: "GlobalSim and CM Labs have pushed each other to innovate for nearly two decades. Joining forces allows us to combine the very best technology, engineering talent, and industry expertise from both organizations. Our teams share a commitment to excellence, and together we will deliver training systems that lead the simulation industry for many years to come."

To learn more about CM Labs port line of business and offerings, visit cm-labs.com/en/industries/ports/.

Middle East Crisis: A Note on Price Pressures

Here we have inspirational words, of both positivity and caution, offered this past March 13, 2026 shortly after the recent military events started overseas – Ed.

As continuing conflict in the Middle East sends prices upward, Dr Ross Moloney, CEO of LEEA (Lifting Equipment Engineers Association) argues that quality must always be valued over short-term expediency.

While the immediate impact of war

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is the tragic loss of lives, the economic consequences of the current conflict in the Middle East are rippling across the world as businesses face significant operational and financial challenges. An effective shut down of the Strait of Hormuz and attacks in the Red Sea are causing rising prices and a squeeze on supplies of essential petrochemicals used as raw ingredients by lifting equipment manufacturers.

Sometimes, the reasons behind increasing prices are not always readily apparent, the current situation in the Middle East, however, is creating a very real market shock that is sending prices upwards and making orders now harder, if even possible, to place.

Lifting equipment is a tight, small margin sector and in a time of shortages there is a temptation to 'go cheap' in the face of price increases and low availability. However, seeing this as an opportunity to find a cheaper supplier would be a significant mis-step.

If something is too good, or rather too cheap, to be true, then it usually is. The lessons of ignoring this old adage when it came to sourcing PPE during the Covid crisis still reverberate today. The cheap option is rarely the long term, high quality one. Producing compliant, trusted, long term solutions is valuable—and with that value comes a fair price.

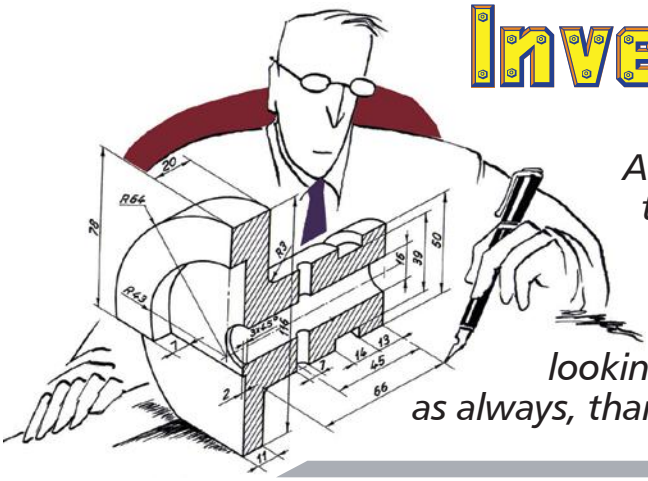
Your high quality manufacturing partners are under pressure—stick with them and they will stand by you.

So, during a time of short supply and high prices, we urge caution when it comes to leaving behind well-developed trading relationships. Your high quality manufacturing partners are under pressure—stick with them and they will stand by you.

Most of our members are SMEs and family owned businesses that have nurtured lifelong trading relationships. Above all they uphold the gold standard that underpins the LEEA logo. Price reflects their quality, their processes, their people and their paperwork. This is not only about value but it's about reliability, best practice and, crucially, safety.

LEEA is an association dedicated to supporting our members and a trade body to support end users in the market place. We hope that a cessation of the conflict comes soon and that our innovative and agile LEEA members will play their part in contributing to the Lifting Industry's vital role in keeping the global economy moving.

To learn more about the Lifting Equipment Engineers Association go to leeaint.com. ■



Inventor's Corner

by William Fischer

After a difficult winter, it's nice to feel mild temperatures and see melting snow. Here in the northeast, we've had enough snow to last a while. It will be nice to get out of the house finally. I hope all of our readers are looking forward to a great spring and summer, and as always, thank you for your interest in our publication.

Wire loop hoist point anchor

Pat. 12,498,016 U.S. class 1/1 Int. class F16G11/02
Inventor: Marco Sanchez Lopez, St. Gallan, CH.
Assignee: Hilti Aktiengesellschaft, Schaan, LI.

This patent presents a hoist point anchor including a base where the base has a contact surface for contacting a flat ceiling and where the base has a plurality of anchor holes emerging at the contact surface for receiving a plurality of respective anchor bolts for anchoring the base to the flat ceiling. A wire rope forms a wire rope loop for attaching a hook where the wire rope loop is attached to the base. The base passes through the wire rope loop.

Figures 1-4 show an example of an inventive hoist point anchor. The hoist point anchor comprises a cruciform base **10** comprising a node portion **17** and four mounting arms **18**, each of which projects from the node portion **17**. The base **10** has a flat contact surface **11** intended to be placed adjacent to a flat ceiling **1**. The contact surface **11** consists of four separate sub-surfaces, wherein one of these sub-surfaces is arranged on each mounting arm **18**. In each of the mounting arms **18**, in particular in an end portion of the respective mounting arm remote from the node portion **17**, is provided a through anchor hole **19**. The anchor holes **19** are intended to receive anchor bolts **9** for anchoring the base **10** to the ceiling **1**. Each anchor hole **19** originates from and is surrounded by a sub-surface of the contact surface **11**. Thus, the contact surface **11** is located remote from the node portion **17**. The base **10** preferably consists of cast metal, which might additionally be coated. In particular, the base **10** is monolithic.

The hoist point anchor moreover comprises a wire rope **20** having a first end region **21** and a second end region **22**. The

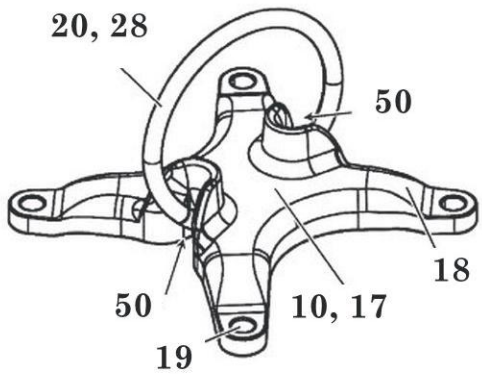


Figure 1: Isometric view of a hoist point anchor.

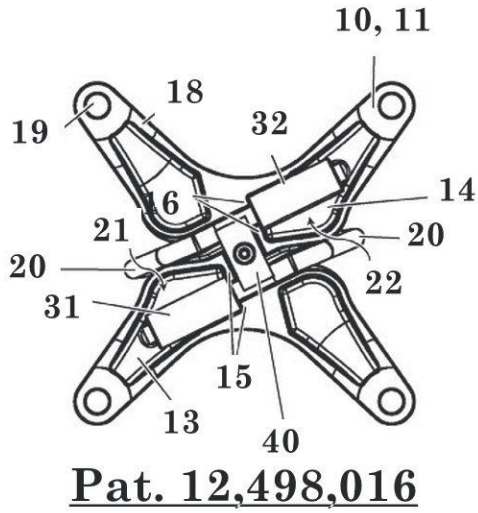


Figure 2: Top view of the hoist point anchor of Figure 1.

wire rope **20** is disposed in the form of a wire rope loop **28**, which is wrapped around the base **10**, in particular around its node portion **17**, i.e., the base **10**, in particular its node portion **17**, passes through the wire rope loop **28**. The wire rope loop **28** has a slack portion, which projects from the base **10** at the underside of the base **10**, i.e., at the side of the base **10** opposite the contact surface **11**, and this slack portion forms an eye for attaching a hook. In the present embodiment, the legs of the wire rope loop **28** (i.e., the end regions **21** and **22** of the wire rope **20**) overlap in side view along the axis of the wire rope loop **28**, but this is an example only.

The first end region **21** of the wire rope **20** and the second end region **22** of the wire rope **20**, respectively, point into opposite directions. Both the first end region **21** of the wire rope **20** and the second end region **22** of the wire rope **20** are disposed parallel to the contact surface **11**. The first end region **21** of the wire rope **20** and the second end region **22** of the wire rope **20** are also parallel to one another.

The first end region **21** of the wire rope **20** is disposed in a first ferrule **31** and connected thereto, and the second end region **22** of the wire rope **20** is disposed in a second ferrule **32** and connected thereto, wherein the connection to the ferrules **31**, **32** can for example be a swaged connection.

The base **10** comprises a first ferrule receptacle **13**, in which the first ferrule **31** and the first end region **21** of the wire rope **20** are disposed, as well as a second ferrule receptacle **14**, in which the second ferrule **32** and the second end

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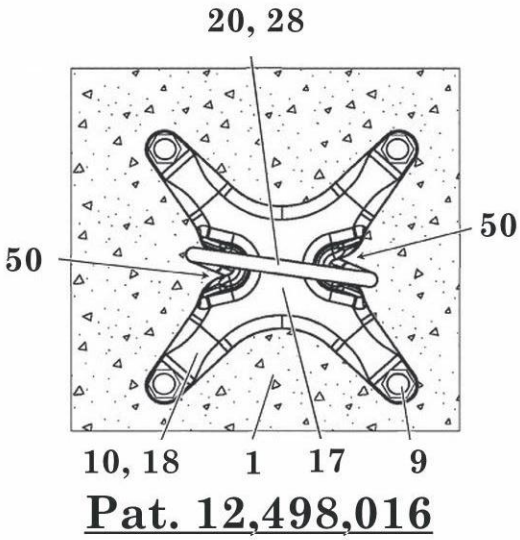


Figure 3: Bottom view of the hoist point anchor of figure 1, and a ceiling to which the hoist point anchor is anchored through anchor bolts.

region **22** of the wire rope **20** are disposed. Both ferrule receptacles **13**, **14** are open towards the flat ceiling **1** to which the base **10** is attached.

The first ferrule receptacle **13** is laterally delimited by a first fork **15**, through which the wire rope **20** passes. The first fork **15** is wider than the wire rope **20** but narrower than the first ferrule **31**. The first fork **15** thus forms a counter bearing which secures the first ferrule **31** and therefore the first end region **21** of the wire rope **20** to the base **10**. In analogy, the second ferrule receptacle **14** is laterally delimited by a second fork **16**, through which the wire rope **20** passes. The second fork **16** is wider than the wire rope **20** but narrower than the second ferrule **32**. The second fork **16** thus forms a counter bearing which secures the second ferrule **32** and therefore the second end region **22** of the wire rope **20** to the base **10**. A separate bolted fixing plate **40** secures the wire rope **20** in the forks **15**, **16**.

The base **10** has two thimble grooves **50**, in which the wire rope **20** is disposed. The thimble grooves **50** guide and laterally support the wire rope **20**. In particular, the thimble grooves **50** form a constriction in the base **10**, in particular in the node portion **17** thereof. The thimble grooves **50** constitutes an integrated thimble for stabilizing the wire rope loop **28**.

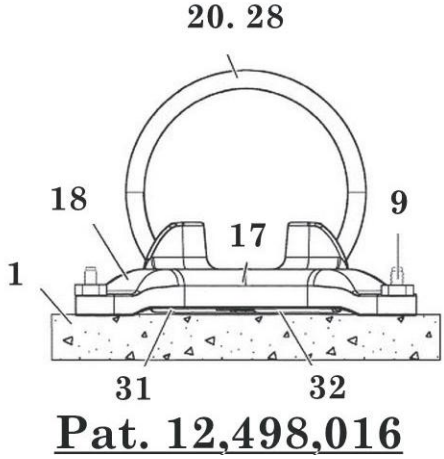


Figure 4: Side view of the hoist point anchor of figure 1, and of a ceiling to which the hoist point anchor is anchored through anchor bolts.

Self-hoisting crane and method of mounting and operating such crane

Pat. 12,503,343 U.S. class 1/1 Int. class B66C23/20
Inventor: Simon Hedegaard, Aalborg SV, DK.
Assignee: Liftra IP APS, Aalborg SV, DK.

This patent presents a self-hoisting crane and method of mounting and operating such crane. The self-hoisting crane is adapted to be hoisted from ground to a nacelle or a tower of a wind turbine by operation of a cable winch arranged at ground and is adapted to be operated in its mounted position on the nacelle or on the tower by operation of the same cable winch. The cable extends from a hook block, out through a pedestal of the crane, from the nacelle or from the tower and to the cable winch at the ground. The self-hoisting crane is provided with a cable crawler having at least one motor driven traction sheave adapted to, during operation of the self-hoisting crane, transfer a pulling force to the cable through friction. The cable crawler is shiftable between an active state in which the traction sheave may transfer a pulling force to the cable and a passive state in which the traction sheave may transfer no pulling force to the cable.

When a self-hoisting crane is operated in its mounted position on a nacelle or on a tower of a wind turbine, the weight of the cables extending from the hook block and downward to the cable winch arranged at the ground may pose a chal-

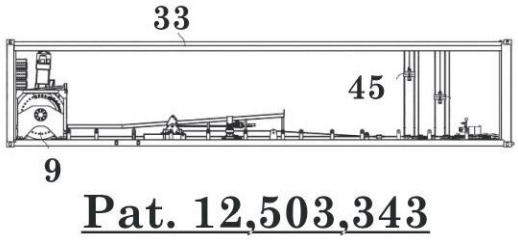


Figure 5: Side view of a container for use with a self-hoisting crane.

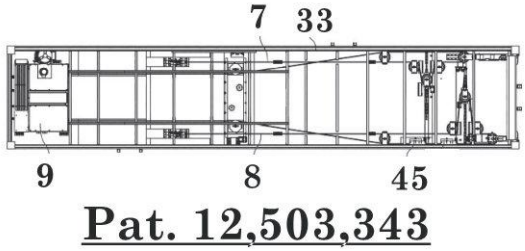


Figure 6: Top view of the container of Figure 5.

lenge when the hook block has to be lowered or lifted without any external load attached. This is because the weight of the hook block and the weight of the part of the cables extending from the tip of the boom arm to the hook block may not be enough to counteract the weight of the cables extending from the hook block and downward to the cable winch arranged at the ground. The result may be that the cables run backwards or that it is not possible to lower the hook block. In order to overcome this challenge, it is known to provide ballast weights on the hook block so that it may counteract the weight of the cables extending from the hook block to the cable winch arranged at the ground. However, by using such ballast weights, the weight of the ballast weights is detracted from the load that may be lifted by the self-hoisting crane.

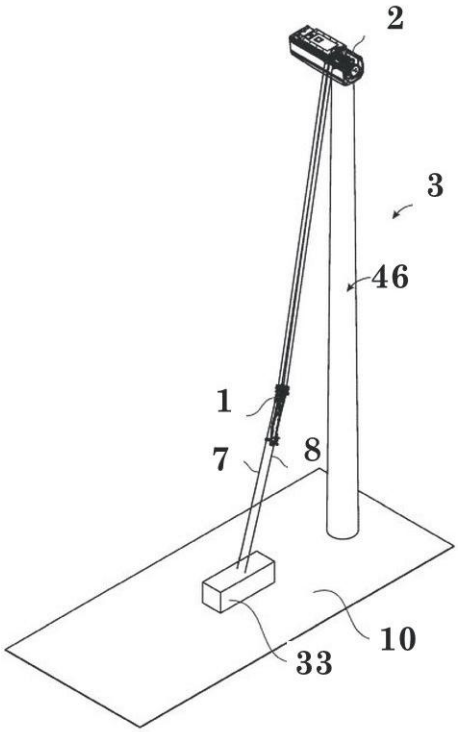
The problem of the weight of the cables extending from the hook block and downward to the cable winch arranged at the ground increases with increasing height of wind turbines to be serviced, which currently reaches about 200 metres. Fur-

thermore, demands for an increased working load limit of the self-hoisting crane itself requires strengthening of the structure of the components of the crane which may typically lead to a heavier crane. However, when the self-hoisting crane, during installation, is hoisted to the top of a wind turbine, the strength of the cables which are used limits the allowed maximum weight of the self-hoisting crane including hook block and possible ballast weights. In order to compensate for a larger weight of the components of the self-hoisting crane, it may therefore be necessary to reduce the weight of the hook block and/or operate without ballast weights on the hook block. In this situation, the problem of the weight of the cables extending from the hook block to the cable winch at the ground has been even further increased. This is because the weight of the hook block and the weight of the part of the cables extending from the tip of the boom arm to the hook block may not be enough to counteract the weight of the cables extending from the hook block and downward to the cable winch arranged at the ground.

The object of the present invention is to prevent or eliminate the above-mentioned problem that the at least one cable runs backwards or that it is not possible to lower the hook block when no external load is carried by the hook block.

In view of this object, the self-hoisting crane is provided with a cable crawler having at least one motor driven traction sheave adapted to, during operation of the self-hoisting crane in its mounted position on the nacelle or on the tower, transfer a pulling force to at least one cable through friction, and the cable crawler is shiftable between an active state in which the traction sheave may transfer a pulling force or may transfer at least a substantial pulling force to at least one cable and a passive state in which the traction sheave may transfer no pulling force or at least substantially no pulling force to at least one cable.

In this way, when the hook block has to be lowered or lifted without any external load attached, the motor driven traction sheave of the cable crawler may transfer a suitable pulling force to the at least one cable through friction, whereby the weight of the cables extending from the hook block and downward to the cable winch may be counteracted. Thereby, it may always be possible to lower the hook block independently of the weight of the hook block and the length of the at least one cable extending from the hook block to the cable winch. Because the cable crawler is shiftable from its active state in which the traction sheave may transfer a pulling force to the at least one cable to its passive state in which the traction sheave may transfer no pulling force to the at least one cable, the cable crawler may not interfere with the operation of the self-hoisting crane when an external load is lifted by the hook block. That means that the cable crawler may be prevented from providing an unwanted braking force to the cable during the lifting operation.



Pat. 12,503,343

Figure 7: perspective view of a wind turbine during lifting of a self-hoisting crane to the nacelle by means of a cable winch in a container as illustrated in Figures 5 and 6.

The first and second cables **7**, **8** extend from the hook block **6**, out through the pedestal **4**, from the nacelle **2** and to a cable winch **9** arranged at the ground **10**. The cable winch **9** is arranged in a container **33** for transporting the self-hoisting crane **1**, as seen in *Figures 5 and 6*.

As seen in *Figure 7*, the self-hoisting crane **1** is adapted to be hoisted from the ground **10** to the nacelle **2** or to preferably a top part of the tower **46** by operation of the cable winch **9** in the container **33** arranged at the ground. Furthermore, as illustrated in *Figure 8*, and the self-hoisting crane **1** is adapted to be operated in its mounted position on the nacelle **2** or on the tower **46** by operation of the cable winch **9** arranged at the ground **10**.

Figure 8 shows an embodiment of a self-hoisting crane **1** according to the present invention, mounted on a nacelle **2** of

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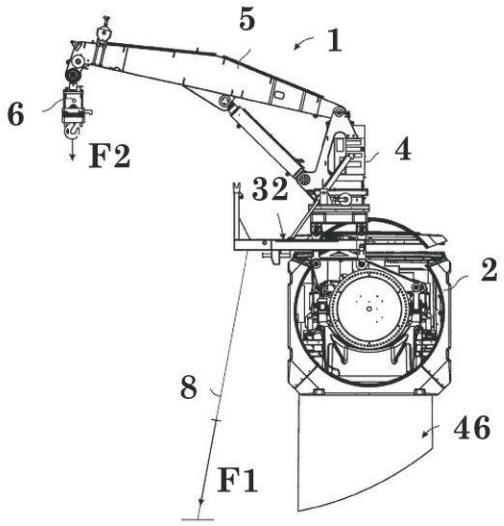


Pat. 12,503,343

Figure 8: Side view of a self-hoisting crane mounted on the nacelle of the wind turbine of Figure 7.

a wind turbine **3**. The self-hoisting crane includes a pedestal **4**, a boom arm **5**, a hook block **6** and a first and a second cable **7**, **8** or wire rope adapted to lift or lower the hook block **6** in relation to the boom arm **5** for operation of the self-hoisting crane in its mounted position on the nacelle **2**. In a well-known manner, the pedestal **4** is mounted in a mounting position on a crane base **32** arranged on the nacelle **2**. Although in the illustrated embodiments, the crane base **32** is arranged on the nacelle **2** of the wind turbine **3**, in other not shown embodiments, the crane base **32** may be mounted on the tower **46** of the wind turbine **3** rather than on the nacelle **2** of the wind turbine. In such case, the crane base **32** may by means of a not shown clamping mechanism be mounted for instance on a top part of the tower **46** in order for the self-hoisting crane **1** to be used for instance during mounting of the nacelle **2** on the tower **46**.

Apparatus, system and methods for moving a load between a floating vessel and a submerged position

Pat. 12,509,189 U.S. class 1/1 Int. class B66C13/02
Inventor: Mydland Einar, Kristiansand, NO.
Assignee: Grant Prideco Inc., Houston, TX.

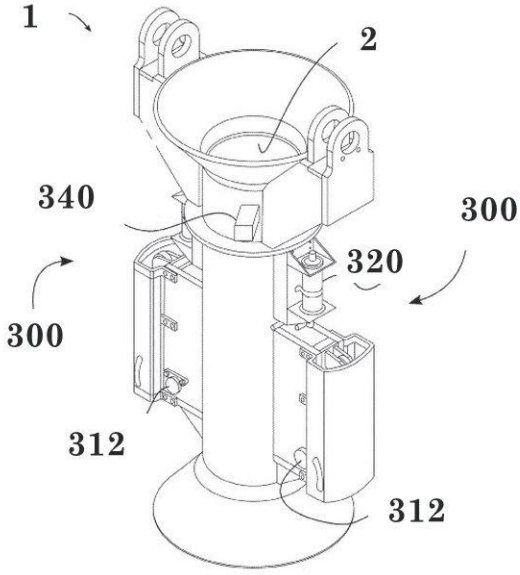
This patent describes an apparatus for suspending a connector provided on a first elongated hoisting member during a subsea hoisting operation. The apparatus includes a mechanism for holding the connector, in which, when the mechanism is subjected to a hydrostatic pressure above a threshold pressure, the mechanism is changeable to a configuration for moving past the connector while the apparatus is raised. Also described are a system and methods for moving a load between a floating vessel and a submerged position.

Figures 9 and *10* show an apparatus embodiment **1** according to the present disclosure, the apparatus **1** being shown from a perspective view and from a cross-sectional view, respectively. The orientation of the apparatus **1** in relation to the page is in alignment with the preferred orientation of use, in which the top portion of the apparatus **1** is the closest portion to the surface of the seawater and the bottom portion of the apparatus **1** is the closest portion to the seabed **20**. Also, some details of the apparatus **1** have been simplified or omitted from the figures for illustrative purposes.

The apparatus **1** in *Figures 9* and *10* include a channel **2** suitable for enclosing a portion of a first elongated hoisting member **100** while the latter is being used for suspending a load **102** from a floating vessel **10** (*Figures 11* and *12*). The channel **2** has a tubular shape and it crosses the apparatus **1** along a vertical axis (shown in *Figure 10* as a vertical dashed line). Arranging the first elongated hoisting member **100** through the channel **2** results in the apparatus **1** becoming restricted to only be able to move along the first elongated hoisting member **100**.

The apparatus embodiment **1** shown in *Figures 9* and *10* also includes four parts at the top that are suitable for connecting a second elongated hoisting member **200** (*Figures 11* and *12*) to suspend the apparatus **1** from a floating vessel **10**. Each of the four parts projects upwards and includes a transversal circular hole for fastening the connection with the second elongated hoisting member **200**. The skilled person will be able to develop many alternative solutions for connecting the second elongated hoisting member **200** to the apparatus **1**.

Thus, the apparatus **1** may be used in a subsea hoisting operation in which a first elongated hoisting member **100**, such as a fiber rope **100**, is used for suspending the load **102** and a second elongated hoisting member **200**, such as a steel wire



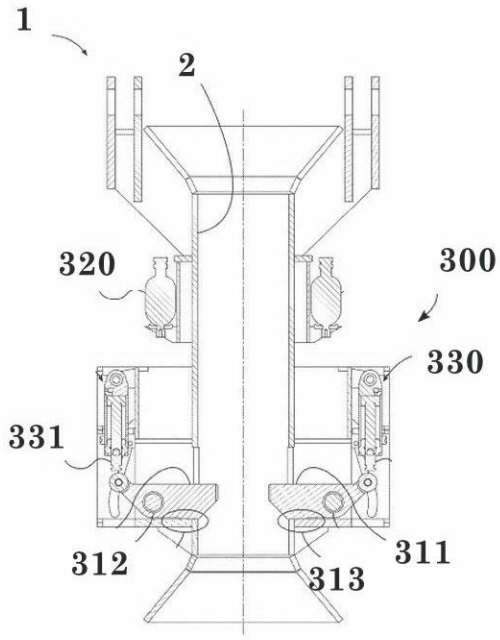
Pat. 12,509,189

Figure 9: Perspective view of an apparatus for moving a load.

rope **200**, is used for suspending the apparatus **1**. With the first elongated hoisting member **100** arranged through the channel **2**, the apparatus **1** can be raised or lowered to a position along the first elongated hoisting member **100** by making the second elongated hoisting member **200** shorter or longer.

The apparatus **1** includes a mechanism **300** for holding a connector **101** provided on the first elongated hoisting member **100**. The mechanism **300** is more easily observed in *Figure 10*, as most of the components of the mechanism **300** are not visible in the perspective view shown in *Figure 9*.

The mechanism **300** includes two latches **311** for holding a connector **101** within the channel **2**. The latches **311** are rotatable around pivots **312** and the latches' rotations intersect with the interior of the channel **2** so that a connector **101** may be held within the channel **2**. The mechanism **300** also includes a stopper **313** for each latch **311**, each stopper



Pat. 12,509,189

Figure 10: Cross sectional view of the apparatus embodiment shown in Figure 9.

313 being arranged in relation to the respective latch pivot **312** so that the rotation of the respective latch **311** is stoppable at a position in which the connector **101** is holdable by the latch **311**. In *Figure 10*, the stop positions of the latches **311** can be observed as being horizontal in relation to the orientation of the page and pointing towards the interior of the channel **2**.

In the embodiment shown in *Figures 9* and *10*, the latches **311** are positioned opposite to each other around the central axis of the channel **2**. Other apparatus embodiments **1** may include a different number of latches **311**. For example, the skilled person may develop an apparatus embodiment **1** with a single latch **311** that is suitable for holding a connector **101** within the channel **2** without requiring any other latch **311**. Other apparatus **1** embodiments may include three or more latches **311** positioned around the central axis of the channel **2**.

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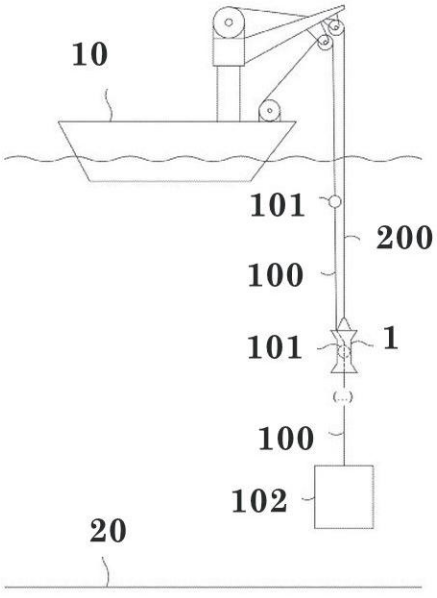
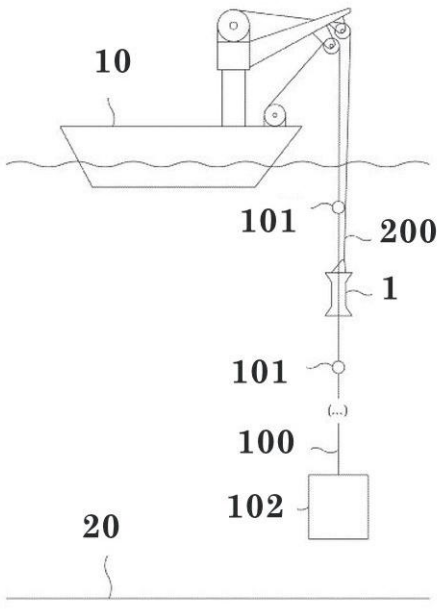


Pat. 12,509,189

Figure 11: First schematic elevation view of a situation in which a subsea hoisting operation is being carried out using a system embodiment operating in one mode of suspension.



Pat. 12,509,189

Figure 12: Second schematic elevation view of a situation in which a subsea hoisting operation is being carried out using a system embodiment operating in another mode of suspension.

continued from previous page

When the apparatus **1** is raised or lowered by the second elongated hoisting member **200**, the first elongated hoisting member **100** and any connector **101** fixed to it will be passed through the channel **2**. It can be observed that, when a connector **101** is passed through the channel **2** from the bottom to the top of the apparatus **1**, the latches **311** will be pushed by the connector **101** to rotate upward and away from the central axis of the channel **2**. On the other hand, when the connector **101** is passed through the channel **2** from the top to the bottom of the apparatus **1**, the latches **311** will be pushed by the connector **101** towards the stoppers **313**. The stoppers **313** will block the latches **311** from rotating further and this will cause the connector **101** to be obstructed from continuing passing downward through the channel **2**. This mechanical obstruction results in the connector **101** being held by the apparatus **1**.

The mechanism **300** also includes hydraulic cylinders **330** for controllably rotating the latches **311** and allow any connector **101** to be passed through the channel **2** in a downward movement in relation to the apparatus **1** without getting caught by the latches **311**. The hydraulic cylinders **330** are arranged so that a piston rod **331** of the hydraulic cylinders **330** actuates on a portion of the respective latch **311** and causes the latter to rotate. In *Figure 10*, it can be observed that the actuation of the hydraulic cylinders **330** will cause the latches **311** to rotate upwards in relation to the orientation of the page and away from the central axis of the channel **2** (shown as a vertical dashed line in *Figure 10*). This creates the necessary clearance within the channel **2** for a connector **101** provided on the fibre rope **100** to be able to be passed through the channel **2** in a downward movement in relation to the apparatus **1** without being held by the mechanism **300**.

Device and method for detecting elevator rope elongation and elevator

Pat. 12,509,328 U.S. class 1/1 Int. class B66B7/12
Inventor: Wang Wei, Shanghai, CN.
Assignee: Otis Elevator Co., Farmington, CT.

This patent presents a device and method for detecting elevator rope elongation, and an elevator. An elevator rope is connected to a rope head device and an operating device in an elevator, and the device for detecting elevator rope elongation includes: one and more brackets connected to an elastic reset member in the rope head device, a coupling member connected to at least one of the brackets and configured to be driven into a trigger position by at least one bracket when the displacement of the elastic reset member exceeds a threshold value due to reduction of compression amount, and a trigger connected to the coupling member and configured to be triggered to generate a trigger signal when the coupling member is driven into the trigger position.

In *Figures 13-16*, a general situation is schematically illustrated wherein an embodiment of a device for detecting elevator rope elongation according to the present disclosure is installed in an elevator. Specifically, in the given example, the device for detecting elevator rope elongation **10** may be installed and connected to the rope head device **20** in the elevator, so as to be used to detect the actual elongation condition of the elevator rope during operation.

In order to simplify the drawings, elevator ropes are not illustrated in the drawings. However, it should be noted that the present disclosure does not make any limitation for such elevator ropes, which may be used in practical application in any feasible form such as steel wire rope, steel belt and the like, through which it is used to connect with the operating device, such as elevator car, counterweight, etc. in the elevator, so as to provide the latter with traction force output from power equipment, such as traction machine and the like. Typically, parts such as pulley assembly **30** and the like may be used to connect the elevator ropes with the rope head device **20**, which may generally be arranged in the machine room located, for example, at the top of the elevator, which may include rope head plate **21**, elastic reset members **22**, such as compression springs and the like, and connecting rod **23**. The specific composition of these components, their respective structural construction and quantity may be different in different elevator equipment, allowing for flexible configuration.

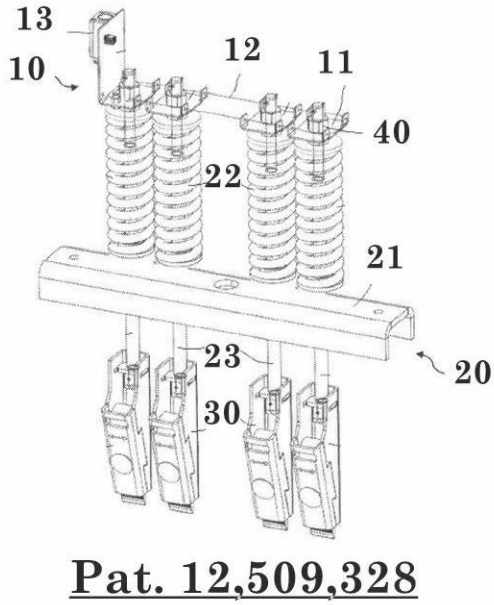


Figure 13: Perspective structural diagram of an embodiment of a device for detecting elevator rope elongation installed in an elevator example.

Since the elevator ropes have to bear the weight or load of the operating device (such as personnel, animals, goods and the like currently carried in the elevator car) during use, and have to withstand a relatively large traction force, there is a possibility of slackening or even breaking after being used for a certain period of time. For example, by using the device for detecting elevator rope elongation **10** as shown in *Figure 13*, the current elongation condition of the elevator rope may be accurately and reliably detected, and the elevator ropes that have slackened beyond expectation may be found in time, so as to effectively avoid further unexpected safety accidents.

Referring to *Figures 13-16* in combination, the device for detecting elevator rope elongation **10** may include brackets **11**, a coupling member **12** and a trigger **13**. One or more brackets **11** may be provided according to the actual situ-

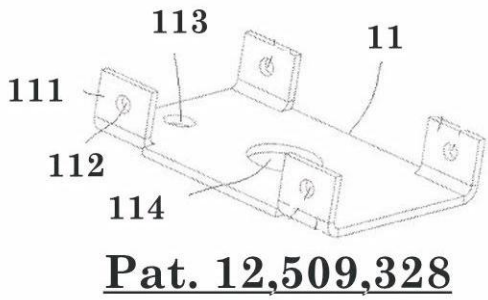


Figure 14: Perspective structural diagram of a bracket in the embodiment shown in Figure 13.

ation. For example, a separate bracket may be configured for each elastic reset member **22** according to the specific quantity of elastic reset members **22** in the rope head device **20**, or a relatively large bracket may be configured together with several elastic reset members **22** therein. In addition, any two different brackets may be the same or different in terms of structural construction, use of materials, etc.

The bracket **11** may be connected to the elastic reset members **22** in the rope head device **20** by any feasible connection means, for example by providing an installing hole **114** in the bracket **11** and then passing the bracket **11** through the end of the connecting rod **23** via the installing hole **114** and securing it to the connecting rod **23** by means of an attachment **40** then resting against one end of the elastic reset members **22**, the elastic reset members **22** is also sleeved on the connecting rod **23** and another end thereof rests against the rope head plate.

Since the elastic reset members **22** will be compressed under the action of the force transmitted via the elevator rope and the intermediate parts such as the pulley assembly **30** and the connecting rod **23**, and during the use of the elevator, with the dynamic change of the elevator traction force carried by the elevator ropes, it will lead to a corresponding change of the compression amount of the elastic reset members **22**, thus the bracket **11** connected to the elastic reset members **22** may be driven to carry out displacement move-

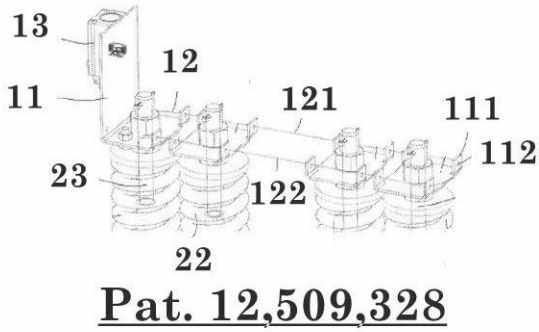


Figure 15: Partial perspective structural diagram of the embodiment shown in Figure 13.

ment with it, the change amount of this displacement movement corresponds to the current actual elongation condition of the elevator rope. For example, when the elevator rope has reached a certain extent of slack, it will cause the force acting on the elastic reset members **22** to become smaller and make the compression amount of the elastic reset members **22** become smaller accordingly, and further cause the elastic reset members **22** to drive the connected bracket **11** to produce displacement movement together. By detecting the above displacement movement change via the device for detecting elevator rope elongation **10**, the real elongation condition of the elevator rope at this time can be obtained.

As shown in *Figures 13, 15* and *16*, the coupling member **12** may be arranged in connection with the bracket **11**, so as to be used to detect the displacement movement changes described above, i.e., to detect the elongation condition of the elevator rope. As described above, the coupling member **12** may be configured so that when the elastic reset members **22** are displaced for reduced compression and the displacement exceeds a threshold value (the threshold value may be set flexibly according to the specific application requirements, for example, it may be related to the requirements for test sensitivity in different occasions and other aspects), the coupling member **12** is driven into the trigger position

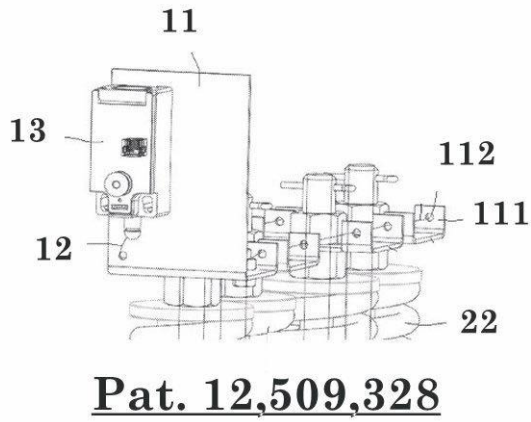


Figure 16: Another partial perspective structure diagram of the embodiment shown in Figure 13.

following the bracket **11**. At this time, the trigger **13** may be further triggered to generate a trigger signal. For example, the trigger **13** may generate the trigger signal in a very convenient way by means of, e.g., a switch component (such as a resettable switch component). According to the actual layout and use requirements of different applications and other considerations, the trigger **13** may be separately provided on one bracket **11** or multiple triggers **13** may be provided on multiple brackets **11** at the same time, so as to better meet various application requirements.

Once the above trigger signal is generated, it may indicate that the current elongation rate of the elevator rope has exceeded the preset situation (i.e. the slackness of the elevator rope does not meet the expectation any more), and therefore, corresponding processing measures need to be taken, such as braking or reducing the speed of the operating device, displaying a safety warning in the elevator management system, sending safety warnings to relevant personnel (such as maintenance personnel, management personnel, etc.), inspecting or replacing operation to the elevator ropes, etc., so as to avoid unexpected equipment damage, personal injury and other accidents.

In practical applications, the above trigger signals may be optionally transmitted directly to the control device in the elevator (such as elevator controller and the like), so that the latter may take corresponding processing measures upon receiving the trigger signal so as to ensure the safety of the system. It should be understood that the above trigger signal may be generated based on a mechanical trigger action, but thereafter it may be transformed into an electrical signal through any feasible processing method and then transmitted to the control device in the elevator for subsequent analysis and processing.

With continued reference to *Figures 13, 15* and *16*, in the device for detecting elevator rope elongation **10**, the coupling member **12** may employ the form of wire rope and the like, which may specifically be made of metal material, composite material or combinations thereof. As an exemplary illustration, one, two or more holes **112** may be provided in the bracket **11** as required. For example, one or more protrusions **111** may be provided on the bracket **11** and the holes **112** may be arranged therein, so as to form various feasible arrangements for detecting the elevator rope elongation condition after passing the coupling member **12** through one, some or all of the holes **112**.

For example, the ends of the coupling member **12** may be fixed on any two of these brackets **11** respectively, or both ends of the coupling member **12** may be fixed on one of these

continued on next page

continued from previous page

brackets at the same time, for example by fixing the end of the coupling member **12** to the fixing part **113** optionally arranged on one or some of the brackets **11**. For example, the fixing part **113** may employ the form of holes, protrusions, buckles and the like. For another example, the coupling member **12** may be passed through the holes **112** located on some protrusions **111**, so as to form an extension section with a certain length that meets the specific application requirements, such as forming a circuit with a single loop, two loops or multiple loops, and may form a closed or non-closed structure. By employing the above arrangement in series, it is advantageous to form the integrity test of several elevator ropes and timely find the possible existing problems in some elevator ropes.

As an optional situation, for example, as shown in *Figure 15*, the coupling member **12** may be arranged to form two sections substantially parallel to each other, i.e., the first section **121** and the second section **122** schematically indicated in the figure, which may be arranged on either side of the elastic reset members **22** to form a loop layout. In this way, it will help to improve the detection range of the device for detecting elevator rope elongation, so as to detect the displacement changes of the elastic reset members **22** more quickly, fully and accurately, which will be very helpful in achieving relatively higher detection sensitivity of elevator rope elongation.

Vibration damping device for elevator rope and elevator apparatus

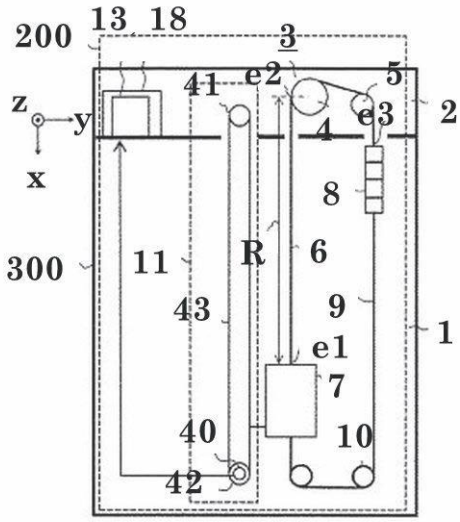
Pat. 12,522,471 U.S. class 1/1 Int. class B66B7/12
Inventor: Daisuke Nakazawa, Tokyo, JP.
Assignee: Mitsubishi Electric Co., Tokyo, JP.

The vibration damping device for an elevator rope includes: an actuator, which is placed in a hoistway, and is configured to generate a forced displacement in response to a drive input and apply a force generated by the forced displacement to an elevator rope; a lateral vibration measuring unit configured to measure a lateral vibration generated in the elevator rope and output the measured lateral vibration as lateral vibration information; a lateral vibration estimation unit configured to estimate a lateral vibration of the elevator rope at a position of the actuator based on the lateral vibration information and output the lateral vibration as an estimated lateral vibration; and an actuator drive unit configured to output the drive input to the actuator to drive the actuator so that the forced displacement has a phase reverse to a phase of the estimated lateral vibration output from the lateral vibration estimation unit.

Figures 17-19 are schematic views of an elevator apparatus according to a first embodiment of the present invention. In *Figures 17* and *18*, an x-axis, a y-axis, and a z-axis in a 3-axis orthogonal coordinate system are illustrated. The x-axis is set in parallel to a portion of a vibration damping range **R** of main ropes **6**, and a vertically downward direction thereof is a positive direction of the x-axis. Both of *Figures 17* and *18* are illustrations of an elevator apparatus **200**.

To simplify the illustration, a car position measuring unit **11** is illustrated in *Figure 17*, and a lateral vibration measuring unit **12** and an actuator **14** are illustrated in *Figure 18*. The lateral vibration measuring unit **12** and the actuator **14** are not illustrated. Moreover, in *Figure 18*, the car position measuring unit **11** is not illustrated. In *Figure 19*, two schematic views of the elevator apparatus are illustrated, and arrangement of a building **300**, a hoistway **1**, and a machine room **2** is illustrated.

Components illustrated in *Figures 17–19* are included in the elevator apparatus **200**, except for the building **300** and



Pat. 12,522,471

Figure 17: First schematic view of an elevator apparatus.

also the hoistway **1** and the machine room **2** being parts of the building **300**. Moreover, a vibration damping device **100** for an elevator rope is a part of the elevator apparatus **200**. In *Figure 17*, a state in which a lateral vibration is not generated in the main ropes **6** is schematically illustrated.

In *Figure 17*, the hoistway **1** through which a car **7** moves up and down is illustrated. The machine room **2** is provided above the hoistway **1**. A hoisting machine **3** and a deflector sheave **5** are placed in the machine room **2**. The hoisting machine **3** includes a driving sheave **4**, a hoisting-machine motor (not shown), and a hoisting-machine brake (not shown). The hoisting-machine motor rotates the driving sheave **4**. The hoisting-machine brake brakes the rotation of the driving sheave **4**.

A plurality of main ropes **6** which are suspension bodies are wound around the driving sheave **4** and the deflector sheave **5**. The car **7** is connected to a first end portion **e1** of each of the main ropes **6**. A boundary between a portion of the main rope **6** in contact with the driving sheave **4** and a portion of the main rope **6** in non-contact with the driving sheave **4** is defined as a contact point **e2**. That is, a portion of the main rope **6** located closest to the car **7** among portions of the main rope **6** in contact with the driving sheave **4** is the contact point **e2**.

A second end portion **e3** of the main rope **6** is connected to a counterweight **8**. The vibration damping device **100** for an elevator rope according to the first embodiment suppresses a lateral vibration generated between the first end portion **e1**, which serves as a fixed end, and the contact point **e2**. A portion between the first end portion **e1** and the contact point **e2** of the main rope **6** is defined as the vibration damping range **R**. The vibration damping range **R** is illustrated only in *Figure 17*.

Here, since the plurality of main ropes **6** are placed side by side, the first end portion **e1**, the contact point **e2**, the second end portion **e3**, and the vibration damping range **R** represent positions of the plurality of main ropes **6** in the x-axis direction or a range of the plurality of main ropes **6** in the x-axis direction.

In the elevator apparatus **200** illustrated in *Figures 17* and *18*, the car **7** and the counterweight **8** are suspended by the main ropes **6** in a 1:1 roping system inside of the hoistway **1**. The hoisting machine **3** rotates the driving sheave **4**, thereby lifting and lowering the car **7** and the counterweight **8**. The 1:1 roping system is illustrated as an example in the elevator

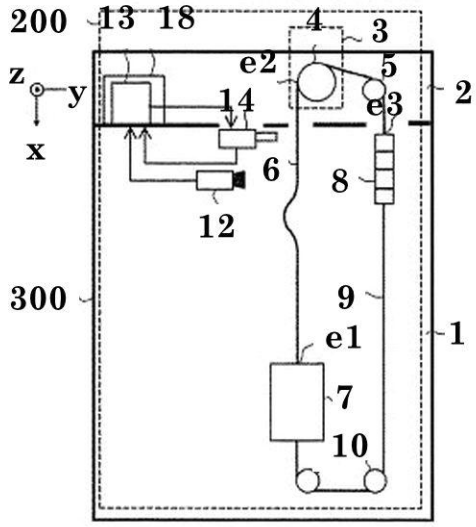
apparatus according to the first embodiment. However, the vibration damping device for an elevator rope according to the present invention is also applicable to an elevator apparatus having another roping system such as a 2:1 roping system.

In the inside of the hoistway **1**, there are placed a pair of car guiderails (not shown) configured to guide the lifting and lowering of the car **7** and a pair of counterweight guiderails (not shown) configured to guide the lifting and lowering of the counterweight **8**. The car **7** and the counterweight **8** are connected to each other by a compensation rope **9**. Compensating sheaves **10** are provided in a bottom portion of the hoistway **1**. The compensation rope **9** is wound around the compensating sheaves **10**.

The car position measuring unit **11** configured to measure a position of the car **7** in the x-axis direction is described. Here, the position in the x-axis direction is a position coordinate on the x-axis, and for example, may be defined as an x-coordinate of a reference point provided in the car **7**. The car position measuring unit **11** includes a main body **40**, a pulley **41**, a pulley **42**, and a wire rope **43**. The pulley **41** and the pulley **42** are provided in an upper portion and a lower portion of the hoistway **1**, respectively. The main body **40** is provided in the pulley **42**. The main body **40** can also be provided in the pulley **42**.

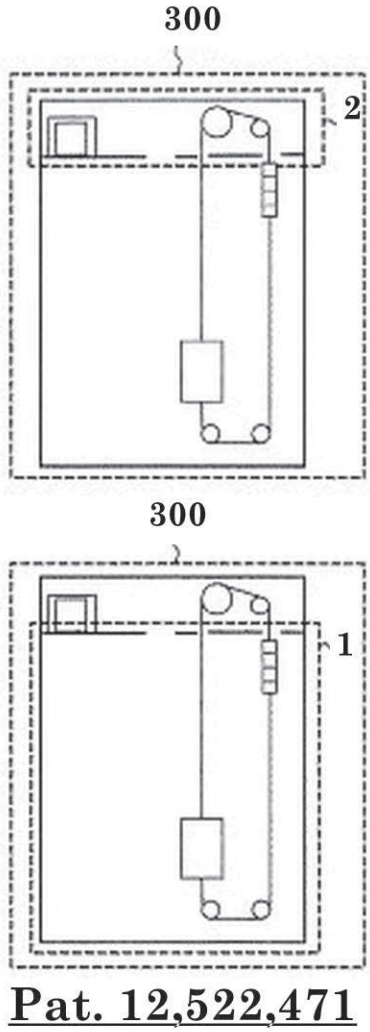
The endless (annular) wire rope **43** is wound around the pulley **41** and the pulley **42**. The wire rope **43** is fixed to a sidewall of the car **7**. As the car **7** travels, the wire rope **43** moves together with the car **7**, and the pulley **41** and the pulley **42** rotate.

The main body **40** of the car position measuring unit **11** is a sensor such as an encoder configured to measure a rotation amount and a rotation direction of the pulley **42**. The car position measuring unit **11** outputs the measured position of the car as car position information **104** to a computation control device **13**. A variety of instruments (not shown) related to the travel of the car **7** are placed inside the hoistway **1**, and the various instruments are controlled by a control panel **18**. The control panel **18** includes the computation control device **13**.



Pat. 12,522,471

Figure 18: Second schematic view of an elevator apparatus.



Pat. 12,522,471

Figure 19: Third schematic view of an elevator apparatus.

Next, *Figure 18* is described. A description of the components of the elevator apparatus **200** described in *Figure 17* is omitted. A situation in which a lateral vibration is generated in each of the main ropes **6** of *Figure 18* is schematically illustrated.

In *Figure 18*, the lateral vibration measuring unit **12** configured to measure a lateral vibration is illustrated. The lateral vibration measuring unit **12** is placed in the hoistway **1**. It can also be said that the lateral vibration measuring unit **12** is placed in the building **300**. The lateral vibration measuring unit **12** is a rope lateral vibration sensor, and is a non-contact displacement sensor. The lateral vibration measuring unit **12** may be provided on the car **7** or in the machine room.

The lateral vibration measuring unit **12** measures the lateral vibration of the main rope **6**. More specifically, the lateral vibration measuring unit **12** measures a displacement of the main rope **6**, which is caused by the lateral vibration, at least at one point within the vibration damping range **R** of the main rope **6**. A direction of the displacement of the main rope **6** is a direction parallel to a yz plane of *Figure 17*. The lateral vibration measuring unit **12** outputs the measured lateral vibration as lateral vibration information **101**. ■

YOKE Super Point for Automatic Load Alignment

YOKE Industrial Corp. has increased global stock of its Model 8-251 Super Point, which is used to automatically align with the load to keep equipment and operators safe. The product is available from 0.3t to 40t capacity.

The bolted Super Point is central to a range of lifting and rigging hardware that includes Grade 80 and Grade 100 lifting chain fittings; swivel hoist hooks; shackles; angular contact swivels; wire rope clips; and lifting points. The product, with a metric thread, features a ball-bearing design, which allows the lifting point to rotate freely and ensures safe lifting; the lifting point rotates 360° and tilts 230°.

In the field, loads shift, angles change, and side forces are frequent occurrences. The Model 8-251 Super Point automatically aligns with the load, keeping bolts and equipment safe. It is easy to attach and remove due to its forged hexagon shaped body. The component is manufactured from forged alloy steel, quenched and tempered for strength and durability.

Steven Hong, president at YOKE, said: "While the ball-bearing feature is ingenious from an engineering standpoint, its value is in enhanced safety. It keeps the lift smooth and reduces wear, which are clear benefits in a multitude of applications at the point of use. In an ideal world, all lifts would be perfectly vertical but in reality this is often not the case — that's why the Model 8-251 Super Point is worth having in every rigging store."

A lifting point connects the lifting means and the load, during lifting and rotation. Lifting points are commonly ringbolts or eyebolts that the sling is attached to using hooks, shackles, or other connection elements. When working with computer numerical control (CNC) machines, moulds and precision-engineered steelwork, these products are often integral to safety and productivity.

Importantly, Model 8-251 Super Points are fitted with SupraNano digital chips and equipped with a Digital Product Passport (DPP), as industry conforms to the European Union's Ecodesign for Sustainable Products Regulation (ESPR). Practically that means that each product's information, inspection reports, and usage history can be tracked — making maintenance and examination easier.

Other key product features include testing in accordance with EN1677-1 and EN1677-4 and certification by DGUV GS-OA-15-04, while all YOKE lifting points meet or exceed the requirements of ASME B30.26. Load-rated parts are 100% magnaflux crack detected and proof tested to 2.5 times the working load limit (WLL). The product is fatigue rated to 20,000 cycles at 1.5 times the WLL.

Learn more about YOKE at yoke.net.

SEE ADS PAGES 4 & 13

YOKE Industrial Corp.'s bolted Model 8-251 Super Point automatically aligns with the load and rotates 360° and tilts 230°.

The 7,000-lb. capacity powered vacuum lifter from Caldwell handles laser cut plate steel and has 10 rectangle pads instead of the round pads on standard models.

Kennedy Wire Rope Supplies Caldwell Vacuum Lifter

A 7,000-lb. capacity powered vacuum lifter has been provided by Kennedy Wire Rope & Sling for use below-the-hook of a 30t capacity overhead crane to handle laser cut plate steel.

The end user presented a requirement for damage-free lifting of various skeletons, which were precision laser cut items. The Model F lifter was manufactured by The Caldwell Group Inc. and delivered with a 330 UniVac Powerpack. Such power packs can be added at the end of the manufacturing process; the frame below the power pack is sized for the material and then the pack gets plugged into the top, which includes the lifting eye.

Rockford, Illinois-based Caldwell provides a variety of electric, mechanical, shop air and battery powered vacuum lifters for handling non-ferrous material that doesn't work with magnets. In this instance, five crossarms and 10 pads were added to handle longer, wider, and heavier materials than standard models. Special rectangle pads were preferred to standard round alternatives. Certain pads can be disengaged for smaller lifts when all are not necessary.

Cameron Frederick, account manager at Kennedy Wire Rope, said: "We supply many standard and customized products from the Caldwell portfolio; in the case of vacuum lifters, they most frequently fall into the latter category. In other words, from the pad layout to power configuration, every detail is engineered around the application so the equipment performs exactly as it should. We considered lifting magnets, and a mechanical vacuum solution, but ultimately the powered version was the best option."

Hugo Gutierrez, technical sales representative at Caldwell, said: "Cameron and the team were great to work with on this project; we collaborated to create a vacuum lifter that met the criteria of the end user. For example, we added a transformer to achieve both 115V and 460V power. Another interesting feature was X-style parking stands, so the pads don't have to sit on the floor when the unit is not in service. The high capacity requested required us to include a turnbuckle sling connecting the main beam to the powerpack to avoid deflection."

Gutierrez added: "If you're considering vacuum lifting, the first step is to understand a customer's specific application. From there, we can walk through configuration options, functionality features, and motor preferences to ensure the right fit."

Kennedy delivered training to operatives and will oversee maintenance requirements as they arise. Caldwell's wider product offering includes a full line of below-the-hook lifters, construction lifters, mill duty lifters, Renfroe clamps, and RUD lifting points. Many of these products are provided to the point of use by Kennedy Wire Rope & Sling.

The Caldwell Group, Inc., is a manufacturer of below-the-hook lifting devices, with locations in Rockford, IL, and Beloit, WI. Founded by Leslie M. Caldwell in 1954, the company builds Caldwell lifters and Renfroe lifting clamps in their Rockford facility, while partnering with the RUD Group of Germany to distribute lifting points to US and Canadian markets. Customers choose Caldwell for lifting beams, coil grabs, sheet lifters, fork truck accessories, construction lifters, jib/gantry cranes, load rotators, lifting clamps, lifting points, ROV hooks, in

continued on page 61

How Does Temperature Affect Steel Chains and Components?

courtesy of All Material Handling

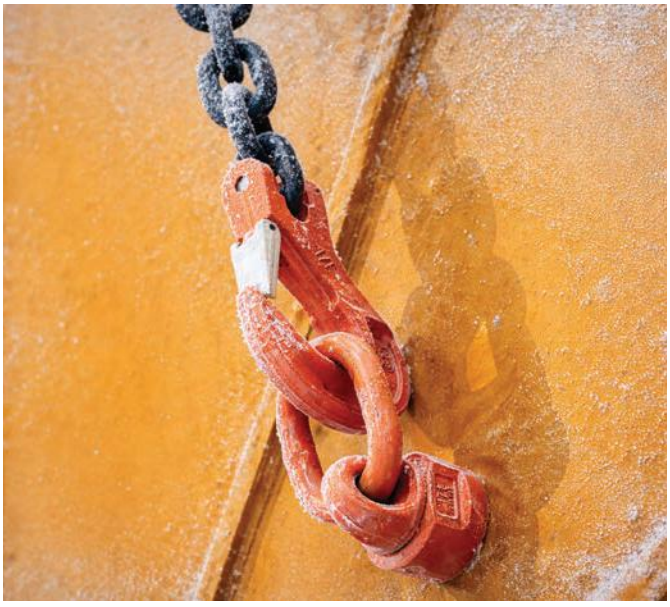
Temperature significantly affects the performance and safety of steel chains and lifting components but is often overlooked compared with visible issues like wear or corrosion.

Both high and low temperatures influence the mechanical properties of steel, affecting Working Load Limit (WLL), service life, and reliability. Manufacturer guidelines should always be followed when equipment is used outside normal conditions.

Alloy steel lifting chains and fittings, such as AMH's Gray Classic and CARTEC Grade 100 components, are heat-treated to achieve a balance of strength, hardness, and toughness. When exposed to high temperatures, steel gradually softens, reducing strength and hardness and requiring reductions in WLL. Prolonged exposure to excessive heat can also cause permanent metallurgical changes that cannot be reversed by cooling.

Industry standards, including ASME B30.9 and OSHA 1910.184, state that lifting components should not be used above 400°F (204°C) or below −40°F (−40°C) without reducing their WLL. Manufacturers should be consulted before using chain slings at or below −40°F. Chain slings may still be used above 400°F, but rated load reductions must be applied.

Some components are designed for extended temperature capability. AMH Gray Classic fittings can be used up to 720°F without WLL reduction and remain suitable down to −40°F. Drak Master Links and CARTEC Grade 100 fittings maintain full WLL between −40°F and 400°F. Above 400°F, a 10% WLL reduction is recommended from 400°F to 570°F and 25% from 570°F to 720°F. Operations above 720°F are generally prohibited due to the risk of severe material degradation. CARTEC hooks also feature a powder-coated finish that changes color when exposed to excessive heat, providing a visual indication of overheating.



Cold environments present different challenges. Lower temperatures can increase steel strength but reduce ductility and increase the risk of brittle fracture, especially under shock loading. AMH chain and fittings perform reliably down to −40°F; use below this temperature requires further evaluation.

Temperature effects are often invisible but cumulative. Following manufacturer guidelines and selecting high-quality lifting components helps ensure safe, reliable lifting operations. Whenever engaging in overhead lifting operations, always get professional advice from a lifting expert before starting the lift. Follow the manufacturer's guidelines and select high-quality products from a reliable supplier such as AMH.

"At AMH, we take pride in delivering reliable lifting solutions with a personal touch," said Peter Brettner, President of AMH. "When customers contact us, they speak directly with knowledgeable, service-driven representatives who understand their applications and respond quickly."

For more information, contact AMH at 877-543-8264 or email sales@allmaterialhandling.com.

SEE AD PAGE 59

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addition to custom-built, one-of-a-kind solutions to any lifting or material handling situation.

Learn more about The Caldwell Group at caldwellinc.com.

SEE AD ON PAGE 19

Talurit Group Launches New Talurit® 600T Single-Pillar Swager for Efficient, Reliable and Safe Production

Talurit Group continues to strengthen its premium swager portfolio with the launch of the Talurit® 600T 1VS — a next-generation, medium-range swager designed for efficient production, ergonomic handling, and long-term reliability. Maximum swaging force is 600 tonnes (6,000 kN), bringing capacity up to size 40 for aluminium T-Ferrules and up to 1½″ for Flemish Eye Sleeves. Built around Talurit's rigid single-pillar design, the 600T 1VS provides open access to the swaging area, making it easier to handle heavy wire rope assemblies while supporting safer and more comfortable operation.

Developed as a versatile solution for medium-sized wire ropes, the 600T 1VS comes generously equipped as standard, combining advanced hydraulics with variable speed control and a smart operating system. Operators can fine-tune performance for maximum swaging efficiency via an intuitive 10″ touch screen, enabling quick adjustments to force, speed, and return distance.

The 600T 1VS is constructed from a single solid block for exceptional strength, long service life, and minimal maintenance. Its standard guided D-sized die holder is designed to absorb eccentric forces common in operations where sleeves, terminals, or end stops are repeatedly turned and swaged, helping minimize wear and supporting durability over time. A larger-than-typical die holder for its machine size also enables compatibility with a wider range of die sets and supports larger ferrule sizes in swaging operations.

Operator experience is further enhanced through practical details built into the standard configuration. For example, the silencing package reduces noise levels during operation to ~70 dB(A) and when not swaging the working environment is improved by lowering the noise level to only 50 dB(A) through the automatic sound level control. Variable speed functionality allows for higher average speed for longer before reaching full force, resulting in faster cycle times and improved repeatability.

Frank Ziegenbein, Head of Sales at Talurit GmbH, comments: "Customers in the medium-range segment value capacity, accessibility, and productivity. With the 600T 1VS we're bringing premium features into a powerful yet compact machine that's designed to reliably perform day after day."

Jonathan Gabrielsson, Technical Sales Engineer at Talurit AB, comments: "The new single-pillar 600T is yet another great example of our engineers at their best. The team has put real focus into performance, usability, and long-term reliability, and it's a product I'm proud to present to customers who need dependable and efficient swaging."

Talurit® swagers have been engineered and manufactured in Sweden for decades, building a reputation for safety, reliability, and efficiency across global industries. With the 600T 1VS, Talurit Group continues to refine proven designs with new technology to improve productivity, user experience, and operational safety for generations to come.

Learn more at www.talurit.com/p/swagers/600t-1vs-swager/.

Talurit Group launches new Talurit® 600T single-pillar swager.

CODIPRO Launches The LSR: A Lifting Ring with Patented Integrated Screwing that Redefines the Standards of Assembly

CODIPRO announces the launch of the LSR (Lateral Swivel Ring), a new swivel lifting ring incorporating a patented screwing system developed by its R&D department. With this innovation, the Luxembourg-based manufacturer takes a significant step forward in enhancing the safety and efficiency of industrial lifting operations.

A field-based observation: Too many steps, too many risks

In many industrial environments, mounting a lifting ring still requires additional accessories or specific tools. These extra steps increase intervention time, multiply handling operations, and introduce potential sources of error — errors that may ultimately

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Lateral Swivel Ring from CODIPRO.

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engage the liability of the manufacturer or operator. Each additional manipulation represents another variable in environments where safety must allow no margin for approximation. The LSR was developed in direct response to this field reality.

An integrated screwing system, signed CODIPRO

The LSR features a patent-protected integrated screwing system that enables fast and easy mounting without additional accessories. By incorporating the screwing function directly into the core of the lifting ring, CODIPRO transforms the mounting procedure into a single, controlled, and intuitive action. This innovation significantly reduces the risk of mounting errors, accelerates on-site operations, and enhances overall intervention safety.

Far from being a minor improvement, the LSR represents a genuine functional evolution — optimizing both productivity and regulatory compliance. In an environment where safety standards are becoming increasingly stringent and industrial accountability is under growing scrutiny, this simplification becomes a strategic advantage.

Safety, traceability and sustainable performance

Beyond its major mechanical innovation, the LSR fully reflects the high standards that characterize the entire CODIPRO range. Each ring features clear regulatory-compliant markings and individual traceability via the CODITRACER digital platform.

This digital traceability guarantees product authenticity and provides immediate access to technical documentation. In a market where transparency and reliability are decisive criteria, these elements reinforce user confidence and enhance the perceived value of the product.

Driving technological leadership

With the LSR, CODIPRO is not merely expanding its product range. The company reinforces its ability to anticipate market needs and set new benchmarks in the field of swivel lifting rings. This patented innovation reflects a clear strategic vision: simplify use while raising safety standards. Based in Luxembourg, CODIPRO is an international manufacturer of swivel lifting rings. Recognized for its technical expertise and its capacity to develop both standard and custom solutions for demanding industrial sectors, the company continues, with the LSR, to shape the future standards of lifting technology.

To find out more about CODIPRO go to codipro.net.

Made Just for Women: Brass Knuckle® Ladies Fit Eye Protection

Feminine, fitted, and serious about keeping women safe

Brass Knuckle®, a leading manufacturer of personal protective equipment (PPE) including eyewear, gloves, and ergonomic support, is helping support the women shaping the future of construction with safety eyewear designed for performance, comfort, and style. Across the Brass Knuckle® lineup, workers can find options that deliver the protection required on demanding jobsites along with features and aesthetics that reflect personal preference. Among them are Ladies Fit styles that build on Brass Knuckle's broader portfolio of safety eyewear.

Designed to deliver dependable protection without compromising comfort, Brass Knuckle Ladies Fit eyewear is built for the realities of construction and other physically demanding work environments. These styles help protect against debris, fog, UV rays, and moisture, while offering a fit intended to better suit a range of wearers on the jobsite.

Brass Knuckle® Dawn (BKFIX-3080) combines refined design with gritty jobsite performance. The precision-shaped lens highlights the cheekbone, complemented by clear frost temples designed to flatter a wide range of face shapes. Subtle sunrise-pink details at the temple tips and nosepiece add a polished aesthetic. ANSI-rated for durability, Dawn is rugged, lightweight, and intentionally designed to fit women comfortably. Standard anti-fog coating, along with resistance to abrasion, chemicals, and UV rays, ensures dependable protection and all-day wearability.

Brass Knuckle® Pink Grasshopper (BKDST-1010PN) is engineered to help block out dust and debris without sacrificing comfort or versatility. A soft EVA foam dust gasket with integrated air-flow channels seals the space between the frame and face, while remaining breathable. The gasket is removable, allowing for quick conversion to a standard safety glass. Fully dielectric construction eliminates metal components for enhanced safety. Super-flex temples contour comfortably to the face in a sporty, European-inspired profile, and Brass Knuckle's BK-Anti-FOG coating meets or exceeds the toughest anti-fog performance standards.


Brass Knuckle® Ladies Fit Eye Protection.

Brass Knuckle is proud to offer safety eyewear that helps meet the needs of today's construction workforce, with options that combine protection, comfort, and style.

For more about Brass Knuckle products, visit brassknuckleprotection.com/. ■

DENNY'S crane and rigging notes

Craning, 1954 to 2022 – and Loved It!

Dennis J O'Rourke, CSP, OSHA Crane Surveyor
(dennis@natlcrane.com)

The designs of hoisting equipment we use today date back to the 1500s. I started in 1954 as a teenager in Florida, still in high school. I helped maintain my family's sea wall construction equipment part-time on weekends. Mostly, I assisted my brother and uncle with a Bucyrus Erie 15-B crawler crane, an Allis-Chalmers Dozer, and a Chevy five-ton flatbed truck and trailer. We moved this equipment from one job site to another near the waterways in New Smyrna and Daytona Beach. I learned what this equipment was used for — building a sea wall — and how vital it was to our well-being. I was proud of them and treated each like a pet.

This background helped me secure a job as a crane mechanic's helper at the Space Center in Port Canaveral. As I had done before, I studied extensively the Washington Star Portal crane I was assigned to and responsible for. In the past, it was common to see affectionate names on trucks and cranes like *Big Blue*. I didn't think of the Portal crane as a pet since it wasn't mine, but I did nickname it *Tote*. During the three years I worked on *Tote*, it passed the Navy P-300 annual crane inspections and certifications with no issues. Nowadays, I notice people no longer name cranes; they are usually identified by numbers like 16000, XCMG400, LS-248H5, etc.

In the 60s, we used the word "safety" at Cape Canaveral to refer to **pad safety**, **fire safety**, or **missile safety** tests. Still, I don't remember anyone talking about **crane safety**. A person either used a crane correctly for a job or incorrectly, which could lead to an incident. You knew what a crane could do and prepared it accordingly.

Fig. 1. A 2024 Manitowoc 32000 heavy lift crawler crane.

Fig. 2. Dennis O'Rourke and a 1949 Garwood truck crane.

From 1958 to 1966, while working for Pan American, we operated about 40 cranes, with roughly 55 operators and 18 heavy equipment maintenance mechanics working around the clock. To my knowledge, there were two major crane accidents during that period. One involved a collapsed outrigger beam, and the other was a booming failure, with no fatalities. The operators and the cranes were certified and tested under the Navy's P-300 (now P-306/307) standards. Just as many are today under OSHA/ASME.

What has changed now that we average 48 deaths and 245 accidents a year across the country? Well, a lot — cranes have become "monsters." Crews review complex assembly plans, test numerous safety devices, hold meetings, and use computer printouts, all while needing perfect weather, to make a single lift.

Comparing modern cranes to those from the 1960s, when one person could understand all of a crane's components, highlights the many changes that have happened. This development has led to personnel shortages. In today's operating environment, is there enough expertise and motivation to keep cranes working properly?

Modular manufacturing methods and estimating a building's footprint land cost in square *inches* have led owners to shorten construction times and build taller structures to maximize profits. The new processes require cranes to handle heavier loads, buildings to rise higher, and the distance between the operator's controls and the load to increase.

A crane is now significantly more complex and relies on dependable, automated electronic safety systems. It is built from modern materials that must be handled, maintained, and assembled with utmost accuracy. The crew members need to be properly motivated, trained, and coordinated to ensure a successful lift.

Are we approaching the practical limits of hoisting methods developed in the 1500s? How high is too high — how much is too much? Like Dorothy in *The Wizard of Oz* told her pet — "Toto, I've a feeling we're not in Kansas anymore" — how true! WRN

Photographs courtesy of Dennis J. O'Rourke

PEOPLE IN THE NEWS

Caldwell Welcomes Individuals to Manufacturer's Rep Agencies

Rockford, Illinois-based The Caldwell Group Inc. has expanded sales coverage in the Mideast/ Midwest and Florida via two additions to their manufacturer's representative pool.

Mark Ganote, will work with Gimel Martinez and Tim Diehr at W.H. Humphrey, covering Indiana, Kentucky, Michigan, New York, Ohio, West Virginia, and Western Pennsylvania for Caldwell. Tyler Schaney has joined Covering Force Sales and reps Ben Blasio and Ryan Chambless, overseeing Florida.

Ganote has spent 27 years working in crane sales and service roles and can offer a perspective from all sides of the industry. Schaney is new to the lifting and rigging network, but has a strong connection to the territory as a recent University of Central Florida graduate. Both will focus on all Caldwell products, including below-the-hook lifters, construction lifters, and mill duty lifters; plus, Renfroe clamps, and RUD lifting points.

Mark Ganote

Tyler Schaney

W.H. Humphrey's Ganote said: "When I hear mention of Caldwell lifters, Renfroe clamps, and RUD lifting points, I immediately think of the products' reliability. It is an offering that is central to a portfolio of crane-related tools and services. I'm looking forward to bringing new customers to the conversation."

Covering Force Sales' Schaney said: "Tech and emerging industries are the focus of any degree program today, mine included. It's exciting to be part of lifting and rigging because it's a world that's constantly evolving and encompasses both."

Jeff Ferchen, director of business development at Caldwell, said: "Our manufacturer's representatives are a key component of our supply chain — and W.H. Humphrey and Covering Force Sales are primary examples of businesses that can help us deliver the best possible product knowledge and exceptional service to our customers.

"While our inside sales team can take calls and generate quotes, our outside sales team, a mix of Caldwell employees and manufacturer's reps, provides boots on the ground focused on end markets. They're able to showcase their product expertise, differentiate Caldwell brands versus our competition, and focus on training distributors or end customers on the proper use and inspection of our products to ASME standards. They are frequently called in to talk to end users and help facilitate larger projects, and I know Mark and Tyler will be central to those functions moving forward. We wholeheartedly welcome them to our ever-growing network."

Learn more at www.caldwellinc.com.

SEE AD ON PAGE 19

Luke Vandercar Joins Ben-Mor

The team at Ben-Mor is proud to announce the appointment of Luke Vandercar as Director of Sales – USA. This is an important milestone in the continued expansion of Ben-Mor's presence in the U.S. market.

Luke Vandercar

Luke brings over 20 years of experience in the wire rope and cable assembly industries. Known for his technical expertise and customer-focused approach, he has built strong relationships across distribution, OEM, and industrial sectors. With a background in Mechanical Engineering, Luke brings a solutions-driven mindset that will help customers optimize lifting, rigging, and securement applications.

In his new role, Luke will focus on developing new markets while strengthening service and support for our existing U.S. customers. He will lead growth across the full range of Ben-Mor's product offerings, including: Wire Rope & Cable Assemblies, Crane cable and Outrigger Pads, High Performance Round Slings, Rigging & Industrial Hardware, Lifting Slings, and Securement Solutions.

"Expanding our presence in the United States is a key part of Ben-Mor's long-term growth strategy. Luke's leadership, industry knowledge, and customer focus will help us strengthen relationships and accelerate our momentum across North America." – Melanie Frappier, CEO, Ben-Mor. Luke will operate in a hybrid role, working from the field, from home, and from our warehouse location in Bensenville, Illinois. This strategic positioning reinforces Ben-Mor's commitment to improving service levels, inventory availability, and lead times throughout the United States.

The Ben-Mor objective is clear: to better serve current American part-

continued on next page

continued from previous page

ners while building strong new relationships across key markets.

Luke can be reached at 219-727-3020 or by email at lvandercar@ben-mor.com.

Learn more at www.ben-mor.com.

SEAA Names 2026 Legacy Builders and Recognizes 25 Women in Steel Strong Women in Construction Campaign

Last week, the Steel Erectors Association of America (SEAA) recognized 25 women as part of its Steel Strong Women in Construction campaign. Nominations came from across the industry, with this year's honorees representing the full spectrum of roles in which women are making an impact in steel construction, from ironworkers in the field to business owners leading their companies.

"Now in its second year, our Steel Strong Women in Construction campaign saw nearly a 50% increase in nominations, reflecting growing engagement and impact," said Pete Gum, Executive Director. "The initiative was created to elevate the perspectives of women in our niche of construction and to support the annual Women in Construction Week hosted by the National Association of Women in Construction."

Meet the 2026 Legacy Builders

The 2026 Legacy Builders represent decades of impact across the steel construction landscape—from the jobsite to the executive office. They were selected for their outstanding professional achievements, leadership or mentorship, community involvement, and personal character. These seven

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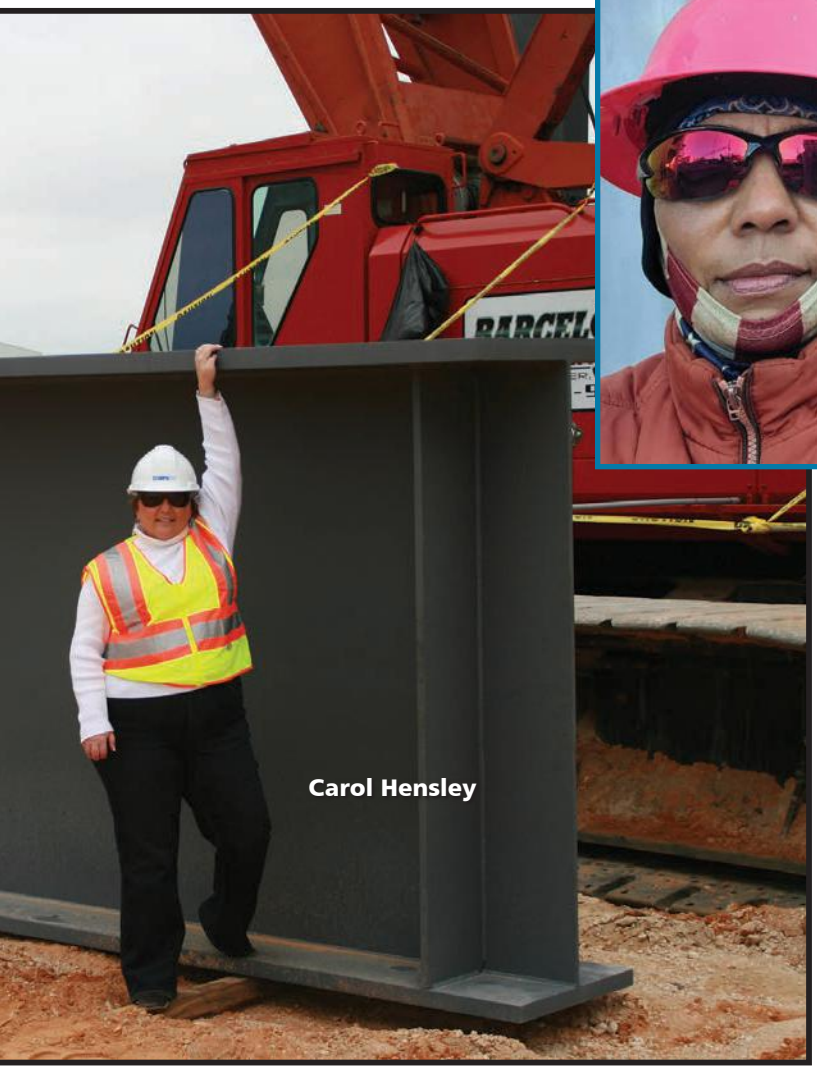
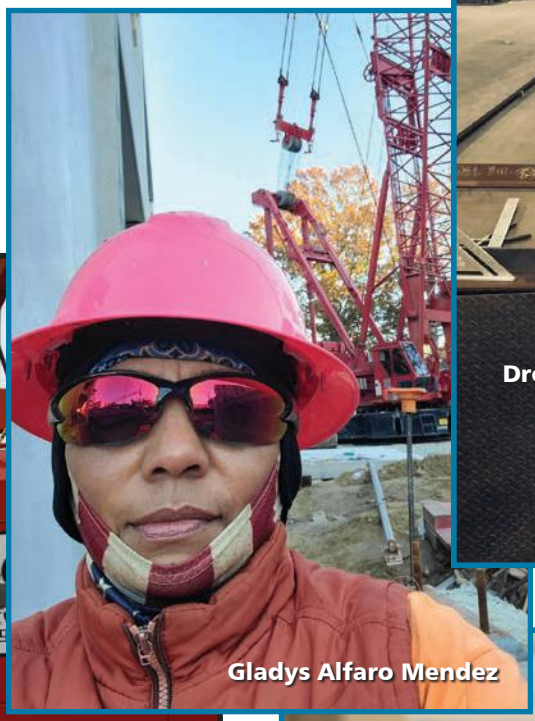
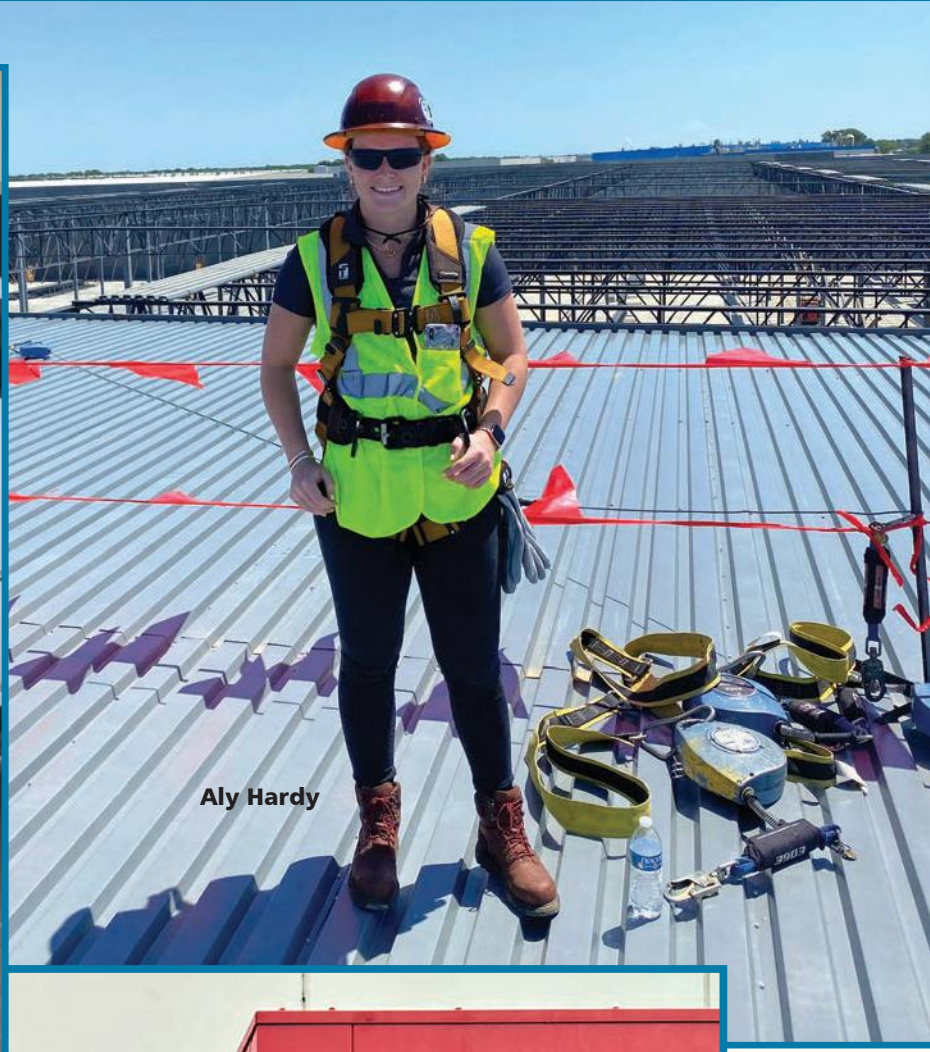




Patti Davis


Aly Hardy

Beverly Dolin

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women were highlighted on SEAA's social media channels during the first week of March.

Carol Hensley, a 43-year industry veteran, helped guide Cooper Steel's evolution into Design-Build delivery. Beverly Dolin's 37-year rise from secretary to regional sales manager reflects a career defined by grit and determination.

Patti Davis co-founded Ropac in 1985 and led it to become the first AISC-certified steel erector in Alabama. Julia Kunlo built a safety firm grounded in steady leadership and deep field experience.

On the iron, Gladys Alfaro Mendez advanced from general laborer to a highly skilled ironworker over 21 years, earning a reputation for safety, reliability, and mentoring the next generation.

Representing the next generation of excellence, Aly Hardy managed more than 150 projects last year while driving innovation within her company, and Drew Crone became the first woman in her company's history to earn SAW/TH D1.5 bridge certification for fracture-critical welds

"Together, these women embody the skill, resilience, and forward-thinking leadership shaping the future of steel construction," said Jack Nix, President of SEAA and COO of Shelby Erectors.

All nominees will be recognized during SEAA's 2026 Convention & Trade Show, May 5-8, in Kansas City, Missouri. Videos of the 2026 Legacy Builders can be viewed on SEAA's YouTube Channel. See below for the full list of 2026 Steel Strong Women in Construction.

2026 Steel Strong Women in Construction *Legacy Builders

The Trades:

- Harlie Crist, Hoisting Engineer, Barton Malow
- Mary Young, Journeyman Ironworker, Derr & Gruenewald Construction Company
- Drew Crone, QC Inspector, Lexicon, Inc.*
- Gladys Alfaro Mendez, Ironworker, L.R. Willson & Sons*
- Desiree Keirstead, Structural Fabricator & Welder, Master Steel

The Managers:

- Meagan Herrington, Office Administrator, Black Cat, LLC
- Aly Hardy, Project Manager, Gardner-Watson Decking, Inc.*
- Kate Ouellette, Sales & Marketing Manager, GWY
- Shanteria Bond, Sales Manager, The Herrick Steel Company
- Beverly Dolin, Regional Manager, West Coast, Nelson Stud Welding*
- Courtney Powderly, Office Administrator Manager, Shaw Welding
- Bailey Lacky, Quality Assurance and Safety Manager, TRC Fabrication LLC & Intermountain Erectors, Inc.
- Jenna Attanasio, Project Engineer, Walsh Group

The Executives:

- Carol Hensley, VP Business Development, Cooper Steel*
- Angie Dobbins, Controller, Group Steel Erectors
- Emily Keith, Director of Analytics, Lexicon, Inc.
- Janell Schmidt, Chief Human Resources Officer, Lexicon, Inc.
- Natalia Osorio, Vice President, Skyline Decking Corp.
- Leslie Everson, Senior Construction Tech Manager, Walsh Group
- Katy Williams, Vice President, Williams Enterprises of Georgia

The Owners:

- Julia Kunlo, President, Evolution Safety Resources*
- Michelle Smith, CEO, IDS
- Dawn Davis, President & Owner, Lowers Welding & Fabrications, Inc.
- Patti Davis, Owner, Ropac*
- Tara Garner, Owner & Photographer, Under Construction Photography

Learn more about the Steel Erectors Association of America at seaa.net. ■

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Legend: IFC = BC = Back Cover; Inside Front Cover; IBC = Inside Back Cover; CS = Center Spread

WORD SEARCH

by Jay Stringham

Find the words hidden vertically, horizontally, diagonally & backwards throughout the puzzle grid

X	M	O	U	G	L	S	D	X	P	I	X	G	O	Y	Q	C
T	Y	H	N	I	E	K	E	T	N	H	N	R	R	E	T	I
P	M	O	O	E	D	V	W	S	Z	I	I	O	Z	E	M	X
T	R	E	Z	O	I	U	P	A	R	O	T	A	R	U	E	Z
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X	A	I	I	H	C	S	T	Y	E	E	H	B	R	V	O	R
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C	X	E	X	S	G	N	I	K	R	A	B	S	B	T	X	U

Word list:

CASTING
CODIPRO
DUPLEX
FORGING
GRAPPLES
HOOKS
INSPECTION
LEEASA
ADDITIVE
MANUFACTURING
MECHANICAL
OFFSHORE
ORION
SHUTTLELIFT
SUPPLIERS
DIRECTORY
VACUUM

LEAVE POLICIES

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cast, or an Internet web page.

FOSTERING VALUES

A well designed and implemented leave program will protect a company from costly litigation while building a productive workforce. Employers need to develop policies defined enough to reduce employee and supervisor confusion, but flexible enough to incorporate constant changes in federal, state and local laws.

Leave policies that do all the above convince employees that their company values them, cares about them, and wants them tWo enjoy a degree of work life balance. "Poorly designed leave policies can harm a company," said Shaw. "But policies that foster a positive working environment can be huge culture builders." WRN

PHILLIP M. PERRY is an award-winning freelance writer based in New York City. His byline has appeared over 3,000 times in the nation's business press. He can be reached at https://www.linkedin.com/in/phillipmperry/

CROSSWORD

by Myles Mellor

Answers on our website: wireropenews.com/crossword-puzzle/

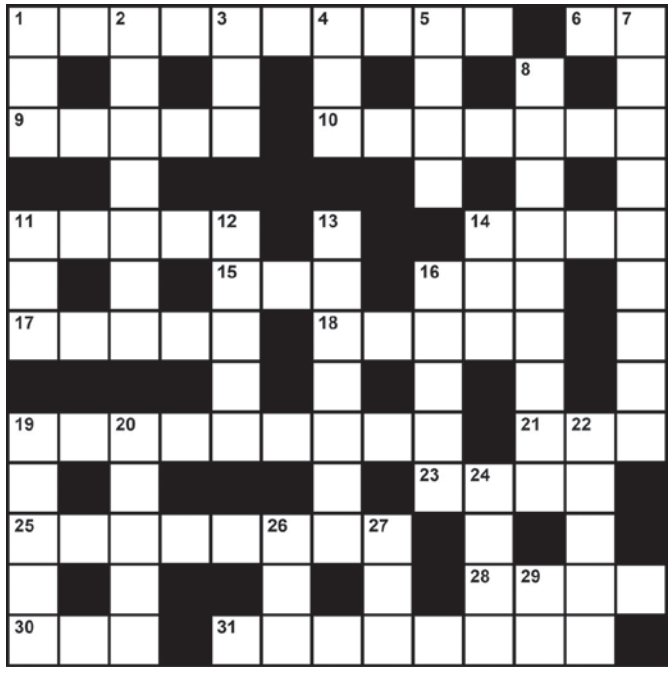
Hints are often found in recent issues of Wire Rope News!

Across

1 Process of raising or lowering a load on a boom
6 Time period, for short
9 Independent subassembly of wheels or tracks mounted on a frame, designed to distribute weight across multiple axles
10 Examine to check effectiveness and safety, 2 words
11 Lift with a mechanical device
14 System of high-tension cables by which electrical power is distributed
15 Remote terminal unit. abbr.
16 ___ Paulo, Brazilian city
17 Belief system
18 Drops
19 Addition to a boom, e.g.
21 Outdated
23 Demographic of individuals born between 1981 and 1996, 2 words
25 Critical parts for guiding cables, reducing friction and preventing wear
28 Coffee dispensers
30 Expected at or planned for at a certain time
31 Type of crane often found on barges or water vehicles

Down

1 Give a nickname to
2 Use of specialized tools to lift, move, or relocate equipment
3 Frozen surface in winter
4 Set of tools or equipment
5 Bird's home
7 Maximum load which a crane is designed to handle safely, 2 words
8 Metal deterioration
11 Concealed
12 Railway transport
13 Vertical movement of a crane's boom to raise or lower it
14 Informal word for a girl
16 Hoisting device
19 Receded, as a tide
20 Make fun of a person in a playful way
22 Situated
24 Prefix with lateral
26 Pro football org, abbr.
27 Briny expanse
29 Hospital worker, for short



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POSITION AVAILABLE

Inside/Outside Sales Position: Kulkoni Inc., a wholesale supplier of import and domestic wire rope and rigging supplies, has an open full time sales position. Preferred applicants should have a min. of 3-5 years of rigging/industrial sales experience. Bachelors degree is preferred with strong verbal and written communication skills. Location is in Houston, TX. Some travel required. Be part of a growing industry-leading company. Work in a collaborative and supportive team environment. We offer full benefits including medical dental, FSA/HSA and 401k savings plans.

For further details or submitting resumes send communications to HR@Kulkoni.com.

Remote/outside sales management position available for an experienced wire rope sales person. Landmann Wire Rope is WHOLESALE only, but will consider all applicants from the rigging/industrial/crane sectors of the wire rope industry. Salary plus commission, 100% paid health insurance, 401k after 1 year of employment. Please email a resume' to chris@landmannwire.com and we can schedule a phone call to discuss further.

OUTSIDE SALES: We here at ALL MATERIAL HANDLING INC, Chicago, IL are growing rapidly and have therefore an opening for an experienced sales person of rigging products. Prior knowledge of hoist and material handling products along with alloy chain rigging is preferred. The position can be full time or part time. We offer paid time off, a 401(k) plan and health insurance.

If you are interested in making a difference as a member of a dynamic and highly motivated team of a privately held company that supplies to and services the rigging community, please send your resume to hr@allmaterialhandling.com.

INSIDE SALES: We here at ALL MATERIAL HANDLING INC, Chicago, IL are growing rapidly and have therefore an opening for an experienced sales person of rigging products. Prior knowledge of hoist and material handling products along with alloy chain rigging is preferred. This position will be a mixture of inbound and outbound phone sales & customer service. The position can be full time or part time. We offer paid time off, a 401(k) plan and health insurance.

If you are interested in making a difference as a member of a dynamic and highly motivated team of a privately held company that supplies to and services the rigging community, please send your resume to hr@allmaterialhandling.com.

HOIST PRODUCT MANAGER: We here at ALL MATERIAL HANDLING INC, Chicago, IL are growing rapidly and have therefore an opening for an experienced engineer / product manager with focus on chain hoists. The position can be full time or part time.

If you are interested in making a difference as an employee or sub-contractor at a dynamic and highly motivated team of a privately held company that supplies to and services the rigging community please send your resume to hr@allmaterialhandling.com.

We are searching for a strong, reliable distribution center manager for our warehouse in Tampa, FL. A minimum of five years of management of a warehouse/distribution center experience is required. Please send your resumes to veronica@elitesalesinc.com.

Outside Sales position covering Industrial, Construction, Mining, and Entertainment customers & prospects in Nevada. No overnight travel required, salary plus commission, and benefits. Slings, Rigging, Ropes, Hoisting, and Fall Protection knowledge are preferred. Branch in Las Vegas, NV. 3-5 year Industrial sales experience required.

Send resume to: Dana.bartholomew@silverstatewirerope.net

WE ARE HIRING!

Job description: Suncor Stainless, Inc., located in the Plymouth Industrial Park, has an immediate opening for a Shipping and Receiving Clerk.

Hours of operation are Monday through Friday, 8:00AM to 4:30PM.

Basic shipping skills preferred but will train. Our manufacturing facility is a safe and comfortable environment that is heated and cooled and provides an efficient workspace with Wi-Fi accessibility.

JOB DUTIES:

- Pick products, inspect and check accuracy.
- Pack and prepare orders for shipment.
- Arrange shipping with couriers.
- Inspect all received packages for damages.
- Receive the products following Standard Operating Procedures (SOPs).
- Coordinate with Quality Control department for product evaluation.
- Warehouse equipment includes but not limited to: Wave/Forklift/Pallet Jack.
- Use Computers/Scanners/Bar Coded ID.

REQUIRED SKILLS:

- Excellent communication skills
- Positive attitude with the ability to work well in a team.
- Ability to work with handheld barcode reader.
- Basic computer skills.
- Ability to lift up to 75lbs and stand for extended periods of time.

REQUIRED EXPERIENCE:

- Minimum one (1) year experience in Shipping and/or Receiving.
- Minimum High School Diploma.
- Must have reliable transportation.
- Must be punctual and reliable with attendance.

Benefits include medical, dental, vision, 401k plan, short term disability, holidays and paid time off.

All job offers are contingent on successfully passing a pre-employment drug screening and background check.

Job Type: Full-time
Pay: From $18.00 per hour
Benefits:

- 401(k)
- 401(k) matching
- Dental insurance
- Employee assistance program
- Health insurance
- Life insurance
- Paid time off
- Retirement plan
- Vision insurance

Schedule:

- 8 hour shift

Ability to Commute:

- Plymouth, MA 02360 (Required)

Work Location: In person.

Northeast BRANCH MANAGER – INDUSTRIAL: We are a nationwide company with 17 sales offices located in the United States. We are industrial distributors and fabricators specializing in lifting and rigging products. Currently, we have an immediate opening for a General Manager with strong leadership qualities and organizational skills.

The General Manager ensures that all operations/sales are carried out in a timely, financially sound manner consistent with the Company's goals and quality standards.

Responsibilities include:

- Provide leadership in the sales growth including new business development activities.
- Analyze monthly financial performance indicators and make the necessary adjustments to ensure profitability of the branch.
- Identify, analyze, and recommend strategic plans to generate increased customer satisfaction, sales and financial growth.
- Provide management oversight to the warehouse staff regarding the tactical operating needs in support of the goal to maximize efficiencies, increase quality and exercise safety procedures.
- Provide direction for the recruitment, selection, orientation, development and retention of a high caliber staff; ensures that well qualified individuals are hired and properly trained to carry out the organization's mission.
- Support sales office by managing inventory levels, processing quotes and sales orders on a daily basis.

Job Requirements:

- Experience with the elevator, wire rope, chain and rigging industries is a Must.
- A basic understanding of business accounting principles.
- Working knowledge of Microsoft Office, Excel and Word.
- Ability to hire, train & mentor staff.

What we Offer:

- Competitive salary with Bonus opportunity.
- Medical, Vision, Short-term Disability and Life Insurance.
- Paid Holidays and Paid Time Off.
- 401K and Profit Sharing.
- Career Advancement opportunities.

Send your resume to benefits@alpindustries.com.

Technical Sales Manager/Product Specialist – Chain & Wire Rope

Growing chain and wire rope industrial supplier and rigging shop in Worcester, MA is seeking a Technical Sales Manager/Product Specialist to help run a 95+ year company that has many opportunities to grow. Candidates are primarily responsibilities for taking the lead on high level, technical sales quotes and must be familiar with the technical and engineering aspects of the chain & wire rope industry, overhead lifting, and material handling solutions market.

Candidates will also be responsible for growing revenue, developing new and key accounts, and overseeing two outside sales reps. Position

continued

also responsible for streamlining internal operations. Must have a BS/BA and be reliable, honest, a team player, and have knowledge of the wire rope industry. Technical aptitude is required. Engineering background preferred.

Competitive salary and benefits package including medical, life, 401K and profit sharing. Email resume to pstpierre@stpierreusa.com.

Sales & Operations Professional – Lifting and Rigging Products

Located in the heart of Upstate South Carolina, Stren-Flex has become a manufacturing leader in the overhead lifting industry.

We are seeking an individual with technical sales and production experience in the lifting industry to assist our production team, sales professionals, and distributors with their knowledge of sling manufacturing processes, product offerings and industry applications.

You must be familiar with the technical aspects of lifting products, overhead lifting, and the material handling industry. Candidates will have responsibilities within all aspects of production and sales management and will work closely with the VP of Sales & Operations and President of the company to ensure continued growth and prosperity.

Must have at least (5) years' experience in the lifting and rigging industry. Must be reliable and have used an ERP operating system. Technical aptitude is required. Engineering background preferred. Spanish speaking would be an asset. Must be the example of the company's essential core values of; Accountability, Teamwork, Commitment, Integrity, Respect, Quality, and Communication.

We are offering a competitive salary with benefits including profit sharing. Relocation packages are available for the right Candidate. If interested, please e-mail your resume to; jocilyn.waycott@stren-flex.com.

Branch Manager – West Palm Beach

Certified Slings & Supply has a warm winter waiting for you. We offer great benefits, growth opportunities, and we are always looking for great team members. Apply at www.certifiedslings.com/careers or send resume to HR@certifiedslings.com. Equal Opportunity Employer/VET/Disability.

GREATER RICHMOND AREA

Rigging Shop Assistant Manager; Required Rigging Fabrication/Sales Experience. We also provide rigging and safety training and inspections. Benefits include paid health insurance and the possibility to take over the business. Send inquiries to trshiring@gmail.com.

Our Product Lines are Growing, and So Is Our Team:

From our current headquarters in Saco, ME and Salisbury, NC, Yale employees unite around a common passion for solving problems by constantly pushing the boundaries of cordage technology. Yale is a company with passion, where quality is part of the culture and integrity drives our sales. If you're a sharp and enthusiastic sales professional who thrives on solving problems and has a gift for building genuine relationships, we'd love to meet with you… and if you're already a rope aficionado, even better. Visit our website, yalecordage.com for a complete list of openings and job descriptions.

Company: Southern Wire, a leading wholesaler/distributor of wire rope, slings, chain, and fittings is expanding its sales force.

We are seeking Inside Sales Representatives for the Memphis, TN area. We offer a competitive base salary and commission program. Our excellent benefits package includes medical, dental, life, disability, paid vacation, & 401K. Please visit company website: www.houwire.com.

College degree preferred – Industry knowledge a must. Send resume in confidence to: marketing@southernwire.com or Fax# 662-893-4732. *No calls please*.

Heco Slings Corp. located in Norfolk VA.

Looking for Experienced Wire Rope Fabricator/Rigger. Fabrication of wire rope slings and chain assemblies. General knowledge of rigging applications.

We offer competitive pay, company paid profit sharing. Benefits include: Paid Vacation, Health Dental and Vision, Company paid Life insurance.

Please send resumé to:
Heco Slings Corp
4570 Progress Rd
Norfolk VA. 23502

Marine industrial rigging shop looking for CDL driver and rigger experienced only must be willing to work in labor intense environment. Mechanically inclined. Contact John at 508-993-0070.

OUTSIDE SALES REP – BAY AREA

West Coast Wire Rope And Rigging, Inc.

Position Description: Performs sales function for new and existing accounts aimed at Industrial applications, including crane services and/or construction for wire rope and hardware. Also, delivers high quality and efficient customer service by utilizing knowledge of company products and programs.

Job Functions:

• Pioneers and develops all potential accounts within assigned territory.

• Develops call schedules and itinerary for efficient time management of sales calls.

• Makes customer sales calls obtaining; orders, specifications for products and marketing information.

• Maintains accurate records for all assigned accounts as to contacts, competitors, products, pricing, potential sales, and marketing information.

• Provide timely and accurate information to new and existing customers when requested, using product and application knowledge.

• Coordinates sales requirements with Inside Sales Manager and Shop Foreman to meet customer needs and maintain acceptable customer service level.

• Explores new business opportunities and relationships for the company.

• Provides a positive image of WCWR with customers and co-workers.

• Prepares reports as required, and submits them in a timely manner.

• Attend and participate in designated sales meetings.

• Special projects as needed by Sales Dept.

Hiring Requirements:

• Minimum 2 year of either Inside or Outside Sales experience.

• A motivated self-starter, with excellent interpersonal skills.

• Wire Rope & Hardware Industry Knowledge a plus.

• Computer skills, including Microsoft Products.

• Must be detail oriented and organized.

• Must Possess a Valid Driver's License.

Please submit your resume to the HR Manager: brianc@wcwr.com.

A 34 year-old successful Western USA Wire Rope Distributor is looking for a General Manager to manage the various departments of the company. Many benefits include paid Health Insurance and a retirement plan. Please email resume as well as salary requirements to: job2017@uymail.com.

POSITION WANTED

Outside sales professional with 20+ years experience seeking full time position. Willing to relocate. Reply to mrrigging@gmail.com.

Our client requires a part-time Bookkeeper (1-2 days/week) to assist them with an ongoing temporary assignment. This position could become permanent for the right candidate. You will be responsible for Bookkeeping, Accounts Payable entering, setting up inventory, filing, organizing and some administrative duties. You must be able to thrive in a team environment and also work well alone.

The successful candidate for this role will have excellent knowledge of Simply Accounting. Strong written and oral communication is a must. To be considered for this great opportunity please e-mail us at employmentjoboffer9@gmail.com.

Loos & Co., Inc. manufactures stainless and nickel alloy wire and cable products. We are seeking an Engineer with experience in metallurgy, preferably with a wire drawing background. Must have a BS in metallurgy, or substantial industry experience in wire or specialty metals industries. Medical grade alloys knowledge is a definite plus. We offer competitive wages with a comprehensive benefit program. An EEO/AA Company.

Visit our website at www.loosco.com
Forward resumes to careers@loosco.com

Experienced Wire Rope Sling (Flemish) fabricator needed. CWR Hawaii is seeking a worker with knowledge and hands-on ability to fabricate wire rope and chain assemblies. Full-time, 401k, vacation, insurance, and other benefits. Relocationg cost can be negotiated.

If you are interested in working for our company, please e-mail me at allen@cwrhawaii.com or call me at 808-843-2020.

Former Division-Product Manager, Regional Outside Sales Manager desires southeast territory to manage and solicit accounts in the wire rope, chain, fittings, and related industries. Over 25 years experience including District Manager, Bethlehem Wire Rope, Regional Manager, Wire Rope Ind Product Manager, Rud Chain, Inc. Interested parties reply to M.E. (Mike) Givens mike90309@aol.com, ph 256-476-7700.

HELP WANTED

Fast growing Billings Montana industrial supply and rigging shop seeks experienced rigger and wire rope assembler. Must be familiar with all aspects of rigging shop operations. E-mail resume to bjones@gotbolts.com.

REPS WANTED

Manufacturer Representatives for Lifting Equipment & Accessories wanted by KWS Inc., a member of the THIELE-Group.

Representative shall call on sling makers and rigging companies and should be familiar in the business.

Territories are now available in NE, KS, MO and TN. Also territories for Western Canada are available.

Please visit our website www.kwschain.com and contact us at h.kurz@thiele.de.

ELT Lift has openings for independent sales reps and resellers to cover a variety of sales channels across the US and other markets. Fill out the form and we will be in touch to discuss specifics. Thank you for your interest. www.eltlift.com/about/resellers.

Sales rep wanted for an established manufacturer of labels and sling tags. We are looking for a sales rep that currently calls on sling makers and rigging companies and is familiar with the business. Etiflex is a registered trademark and manufactures custom sling tags for synthetic and wire rope slings and has an excellent reputation in the field. We advertise in trade journals and exhibit at industry shows to generate brand awareness. Please contact us at info@etiflex.com or call 866-ETIFLEX for information.

CLASSIFIED ADS

are continued on next page

WIRE ROPE NEWS HOPES YOU ARE HAVING A GREAT DAY!

CLASSIFIED *continued*

PRODUCT LINES WANTED

Merit Sales, Inc. (Manufacturer Representatives) is looking for rigging related lines to compliment the manufacturers we currently represent. If you need sales people in any of our states (AL, AR, FL, GA, LA, MS, NC, OK, SC, TN, TX, VA) please contact. We also have 2 regional warehouses available in the Atlanta area & Houston. e-mail: johng@meritsalesinc.com or call Johnny at 713-664-7723.

HARDWARE FOR SALE

New Ropes for Sale in NE PA; IWRC; 1770, BRT, A3 RHL, Uncoated. Sizes: 3 ½″ 6x49(SF): (2) 800′ & (1) 397′ ; 3″ 8x50(SF) (1) 670′ & (1) 682′. Call John (570)450-5086 Ext. 201 for pricing and more details.

CROSBY BLOCKS FOR SALE:

•6″ 2 Ton, C-700 single sheave snatch block, for 3/8″ WR, 42 pieces.

•6″ 4 ton, 642B Western double sheave block for 3/8″ WR, 53 pieces. Contact DD Sling at dd@ddsling.com.

For Sale: 15 reels of 1″ dia. 6 x 36 BRIGHT EIPS IWRC DOMESTIC WIRE ROPE, WASHINGTON WIRE ROPE, plus freight. Total amount of wire is 15,000 feet. Call Drew 504 259 3978.

Blowout Inventory Sale over 60% off list with a variety of latch kits, hooks, thimbles, clips, links, clamps and more! We also have 3,000 RUD Chain Load Rings available for $2 each. Email msims@lamcoinc.com for a complete list. Or call 309-236-9689 with any questions.

HARDWARE WANTED

Williamsburg Bridge Suspender Rope.

I am a very avid collector of bridge paraphernalia and 'Bridge Parts'. I am looking for a section of genuine Williamsburg Bridge suspender rope. It's 1.5″ diameter and the wires in the outer sections of the Core and Strands have a varied diameter. VERY similar to Manhattan bridge suspender rope but Manhattan bridge rope has all wires at same size. Will pay a fair price and I'll be willing to include a copy or two of my well-known book, The Magnificent Bridges of New York City. My E-Mail is drfrieder@aol.com.

EQUIPMENT FOR SALE

ESCO Mark 75 Swager Press - Like New, Excellent condition. 573 hours on Press and Power Pack Unit.

ESCO Mark 150 Swager Press with Power Pack Unit. Press Completely Refurbished.

ESCO Mark 150 Swager Press - Completely Refurbished; Die Plates Moved Back to Press 1 1/2″. Email lee@pacificindustrial.com.

•500 ton National Swager with tooling; •Tinius Olsen 20K vertical proof tester; •Tinius Olsen 44K horizontal proof tester w/30 foot bed. Located in Scranton, PA, in use & calibrated. Email: mlawrence @spencerindinc.com.

BUILDING FOR SALE

RIGGING WAREHOUSE FOR SALE: 20,000 sq ft Steel building, 22 ft ceiling, 1700 sq ft offices, 3 phase electric, 2 dock high loading docks, 1.75 ac; Large yard space. Location: NE GA, near Atlanta, I-85, SC, NC. Reply: Gabldg2020@gmail.com or tel: Ed or Paul, 305.238.2375.

COMPANIES: BUYING & SELLING

Are you thinking about your company's succession plan and the thought of selling to Private Equity or the three major players in the U.S. doesn't sound appealing? We should talk. I am an experienced rigging professional who has spent the past few years pursuing acquisition entrepreneurship. I have the means and relationship with a commercial lender to get a deal done. My goal is to preserve your brand and your company culture for your employees, while scaling the business. I will gladly sign a mutual NDA/CA. Please email riggingshopbuyer@yahoo.com to start a dialog.

SEEKING ACQUISITION - A leading U.S. distributor and fabricator of wire rope & synthetic slings, rigging hardware, overhead cranes, and custom engineered lifting devices is seeking to expand its existing business through the acquisition of similarly focused companies. With a proven and successful history of driving growth through strategic and mutually beneficial acquisitions, we are ideally positioned to pursue additional acquisition prospects. Interested parties should respond using this confidential email address acquisition@slingbuyer.com.

SWAGING BUSINESS ACQUISITION

Swaging industry professional with over 30 years experience seeking to expand its current business through the acquisition of a small to medium swaging assembly operation or swaging assembly product provider. We believe that our strong technical background and overall business competitiveness has positioned us to expand our business through a mutually beneficial swaging company acquisition. Please respond to: SwagingOpportunities@gmail.com.

SEEKING MERGER

Rigging products company seeks merger: A nationally-prominent rigging equipment manufacturer seeks to grow through merger with similar company. Strong brand recognition and extensive cargo control, wire rope, chain and synthetic sling production capabilities have fueled our growth. We now seek a merger partner so that we may take advantage of economies of scale and get to the "next level". The business is not for sale; merger inquiries only. Principals only please, no brokers. Respond in confidence to rigmerger@gmail.com.

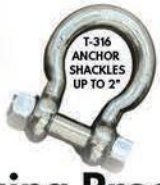
PHOENIX ROPE & RIGGING

HIGH PERFORMANCE CRANE ROPE

JACKSONVILLE, FL
904-367-1842

GARDEN GROVE, CA
714-538-9940

PRP STAINLESS



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WIRE ROPE CLIPS

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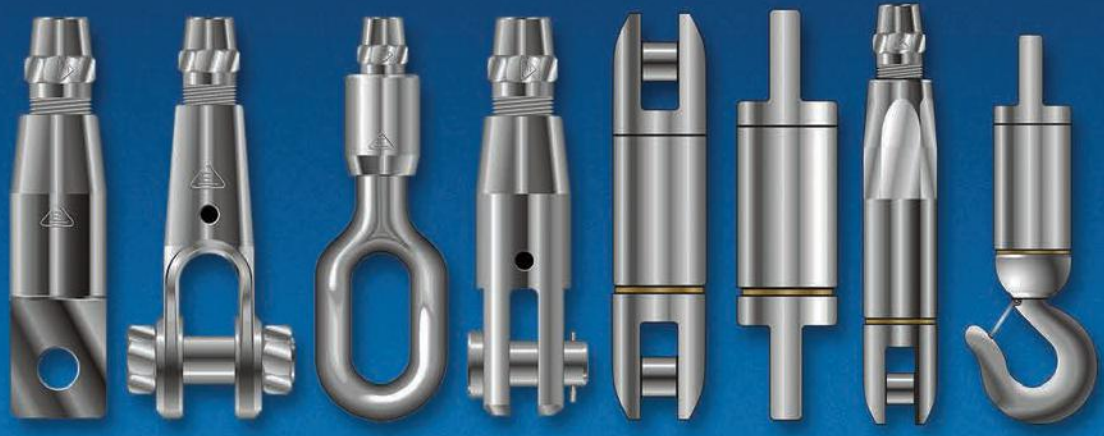

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