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See story on page 12
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This year’s convention is going to be the most fun the IDA group has had in a long time. Starting with the 60th Anniversary Party at the Jack Daniels facility on Tuesday, October 2… all the way to the Draw Down Games at the end of the event on Friday, October 5.

Remember the advantages of attending convention:

**Networking!**

Business networking is crucial for the growth of any business. Being part of the association activities allows you to connect with like-minded people in your industry in a collaborative environment that provides learning opportunities, idea exchange and beneficial relationships/friendships.

**Education!**

IDA offers a number of educational opportunities, including trade shows, workshops, seminars and – by the end of this year – webinars! Do you have topics you would like covered in any of these venues?

**Best Practices!**

Like all industries, the heavy equipment industry has specific best practices, and they differ depending on your line of work. If you are just starting out or want to keep up-to-date on best practices, IDA can help you, as well as our legal counsel, Robert McIntyre. Contact him at rmcintyre@dhplaw.com.

**Information and Resources!**

IDA membership gives you access to important news and developments in your industry. Members not only talk among themselves and share noteworthy updates, but the association also uses reputable, reliable sources, so you can rest assured the information you receive is accurate. Updates can come in the form of newsfeeds, as well as weekly electronic newsletters, the Universal magazine and other emails. It would be tremendous if you would forward your company news or news from other sources to share with your fellow members through the IDA publications. Send us your NEWS at info@idaparts.org.

**Improve Reputation and Visibility!**

Being part of IDA strengthens your image and lets consumers know you are a reputable, trustworthy business that is following industry standards. To heighten your visibility, may we suggest posting your IDA logo membership on your website and in your periodicals. Just write IDA for any version you need to publicize your membership at info@idaparts.org.

This year, the site of the 2018 IDA Convention and Trade Show is Nashville, Tennessee. If you search the web for “Best Convention Cities,” “Best Tourist Cities” or “Most Popular Destinations,” you will often see Nashville. This means that you, the IDA members, are in stiff competition for the hotel rooms. Here at the IDA office, we pull out the ol’ crystal ball and try to hold the exact number of rooms needed. However, it has to be a conservative number of rooms, because if the rooms are not used, IDA has to pay for them. So PLEASE RESERVE YOUR ROOMS NOW.

Remember! Even if you are still considering and checking your schedule, go to the IDA website at www.idaparts.org in the CONVENTION section. Look for “Click Here to reserve room at the hotel” to make your reservation. You can cancel these reservations up to 72 hours before your arrival date with NO penalty or charge. It’s a no brainer.

I cannot wait to see all of you again!

My best to you and yours,

Nancy
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Parts Connection
Tuesday, October 2, 2018

We leave in the morning from the Nashville Renaissance Hotel and have breakfast on the way to the Jack Daniel Distillery. Registered in 1866 by Jack Daniel, it is the oldest registered distillery in the United States and is listed on the National Register of Historic Places. We’ll tour the distillery with a memorable stop at the historic Barrel House 1-14. Here, we’ll linger over and sip five of the most popular whiskeys and liqueurs. Then listen to Blue Grass Music and entertainment while we enjoy a BBQ lunch at the pavilion on property.

We return to the hotel in the afternoon.

Register online for the IDA Convention & Trade Show: www.idaparts.org

IDA 2018 Convention Event Schedule - 2-6 OCT
Tuesday  60th Anniversary Celebration - Lynchburg
         Evening - Grand Ole Opry performance
Wednesday Golf Tournament
          Mead Plantation tour and luncheon
          Opening Reception at the Country Music Hall of Fame
Thursday  Breakfast for everyone. Entertainer/Keynote Speaker Billy Riggs
         Spouses Tour - Cheekwood Manor
Thursday  Economic speaker - Eli Lustgarten
         Luncheon then Breakout Sessions
         Booth set up
Friday    Trade show & Luncheon & Happy Hour
         Games with Kelly Sanner & Entertainment and Dance
Dear IDA Members:

Summer is here. Finally! At last! No cold weather and tons of fun. I suspect that many of you are looking forward to your vacation plans and other exciting adventures. In our household, the beginning of summer coincides with a discussion of a summer reading list. For my teenage son, I decided that he would begin his summer by reading *On Fire* by John O’Leary. To make sure that he is really reading, I had to also commit to reading this book. I have been deeply touched by it.

In the book *On Fire*, John O’Leary tells the story that defines his life. As a 9-year-old boy, he suffers and survives burns on 100% of his body; and he lives to tell about it. The author addresses issues of purpose, accountability and courage. I would strongly recommend that you take time to read it. It is a tremendously compelling story. As a family, we have been discussing it. It has provided opportunities to discuss some important issues and topics. There are two concepts in this book that I want to share with you now.

One concept is “Living Life on Fire.” For Mr. O’Leary, it means that “you aren’t afraid to know and own your story; you celebrate the scars you’ve accumulated along the way, and you are ready and willing to live life honestly.” When I reflect on this message, I realize that my natural inclination is to be cautious. I have got a lot a scar tissue. I am not always sure that it is good thing to share it with folks. However, I also realize that, by stretching myself (painfully and awkwardly), I have been able to grow. By living honestly, I connect with my world. Every time that I step on a job site or into the workshop, I am defined by my customers, employees and peers in terms of it. “Living Life on Fire” finds its way into our daily routines and interactions. It is the moment that we “let our light shine so it can illuminate the darkness others are feeling.” By doing so, we become beacons of hope to our family, neighbors, colleagues and community.

For a long time, I have been fond of the word “Veritas.” In Latin, it means “truth.” It is commonly associated with the expression “In vino veritas” or “where there is wine, there is truth.” For me, I like its basic meaning. I believe that we should be seekers of the truth. We should be willing to discover the truth without bias. We should be willing to live the truth without excuses. Earlier today, I had the arduous task of reviewing a warranty claim. There is no greater challenge than trying to figure out what caused a component to fail when you have the competing claims of your customer and the workshop. At the end of the day, the truth is found in the facts.

Another concept in O’Leary’s book is an “Ignition Statement.” According to the author, it “helps you determine what you are working toward every day, in good times and bad.” It is supposed to be the reason that you start up every morning. It is the reason that you run hard all day. It is the reason that you go to bed at night knowing that you have done a good day’s work. It becomes the reason for starting the cycle over again.

I absolutely love that concept. As Independent Distributors, we take nothing for granted. Life gives us opportunities at every corner to show our mettle. Like many of you, my Ignition Statement is deeply rooted in my family values, my connection to my community and my religious beliefs. In my own mind, I have taken great liberties at expanding on this concept. For what it is worth, I realize that I have my own Pre-Combustion routine, Firing sequence, Turbo-charged moments and perhaps even a post-operation Lubrication maintenance plan. I would be delighted to speak with you further at the next convention . . . even over a glass of wine.

Nancy has reminded to mention to everyone that we will be electing directors to the Board at the next meeting. Let me give a big shout out to Joe Ciriello. He is the chair of our Nomination Committee. Joe has done an awesome job! Please register at your earliest convenience for the convention. It will be here before you know it. It should be a good one. I hope to see you in Nashville.

From Stephanie and I, please have a safe, happy and enjoyable summer. If you make it to our part of the world, let me know. There is a nice piece of paradise that we would be delighted to show you.

*In vino veritas.* My kids translate that to mean “Dilly Dilly”!

Kind regards,

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Clearing the Air

When a new or existing client brings me a problem, after the dust settles, I always ask, “What do you want to see happen?” This drives time, cost, complexity, risk, and odds of success against the requested result. Whether it is litigation, a business negotiation, an administrative law or regulatory matter, or a simple dispute, three elements must be present to succeed:

a. Liability – Do you have the facts and the law on your side?

b. Damages (or a quantifiable result)

c. Collectability – the ability of the opponent to give you what you want

In this subset, sometimes the end result is a commercial resolution, a new venture or arrangement to join forces by former adversaries; compensation in “trade,” agreement to stop certain conduct, like infringing on a patent, or even ceasing trading in a certain manner. Thus, getting to “damages” could be a commercial evaluation and horse trading situation, instead of a check.

Many years ago in a patent case against an OEM, they surprised my client and me by simply agreeing not only to stop infringing, but also to source 100 percent of the infringing parts they had been making, with my client. It was a completely unexpected result, but being prepared for a potential commercial solution put an open mind in play. A long and costly fight could have ensued, with unpredictable outcomes.

Unfortunately, most of the reasonable mindsets and methods of rational thought are not that valuable when dealing with governmental agencies charged with environmental matters, particularly the enforcement of laws and regulations. This is complicated by the interplay between law and regulation.

Here’s why:

In the United States, the alphabet soup of environmental laws – RCRA, TSCA, CWA, and so on – are broadly drafted. Then, the implementation is carried out by the designated agencies – in most cases, the U.S. EPA. Since the law is broad and specifically confers rulemaking authority to the “agency,” the weeds rise accordingly to a bewildering level. A typical regulation that describes nothing more complex than the legally approved method for taking indoor air samples to test for pollution is: OAC (Ohio Administrative Code) 3745-300-07 (E)(5)9b)(ii) which simply says, “Make sure the collection canisters are at a slight vacuum before the end of the test.” Getting to the meat of the regulation takes careful reading, experience, and understanding.

This incredible complexity and unpredictable enforcement can take any business by ambush. And, the harsh truth, which can be found in the arduous and careful examination of the annual reports and budgets of the federal and state environmental protection agencies, is that they “bake in” an important amount of their operating funds from fines and penalties. This is nothing more than a country speed trap run by lawyers in suits, instead of a pot-bellied sheriff in mirror sunglasses.

For example, in one case involving a forgotten paint locker in a corner office, in a vacant factory with a dozen unopened one-gallon cans of toluene, the U.S. EPA demanded $50,000 per can for this “willful and dangerous” oversight. The

Continued on page 49
Undercarriages incorporating advanced technology, such as Komatsu’s rotating-bushing Parallel Link Undercarriage System (PLUS), are designed to significantly extend undercarriage life, essentially by extending bushing life and designing other undercarriage components to match.

New Technology, Practicing Fundamentals Extend Undercarriage Life

Advances in crawler-dozer undercarriage technology might not get the attention that, say, new 3D grade-control packages might receive. That said, today’s undercarriage systems do incorporate refined designs that can extend system life and reduce maintenance costs – which, by some estimates, can account for as much as 50 percent of a dozer’s lifetime repair expense.

Most crawler dozers today leave the factory with a sealed-and-lubricated track (SALT) undercarriage, designed to minimize wear in a particularly vulnerable spot in the system – between the outer diameter of the pin and the corresponding inner surface of the bushing. An oil reservoir in the pin supplies lubricant to the annular space between the pin and bushing via a radial passage, and critical to this design are the seals – positioned in the link counterbores in a conventional SALT chain – that retain the oil in the pin/bushing joint. This combination, he says, provides longer oil retention and improved lubrication of these critical track-chain components in demanding applications.

“Caterpillar’s use of synthetic oil in its SALT undercarriages (below) reduces seal friction with the end of the bushing,” says Nenne. “We’ve found that synthetic oil can reduce the adherence between the seal and bushing, and synthetic oil doesn’t break down as readily as conventional oil, retaining its premium lubricating properties for a much longer interval. Friction at the seal face is reduced by as much as 50 percent, which significantly reduces seal-face wear.”

To control wear at another vulnerable spot in undercarriage systems – between bushings and sprocket teeth, Caterpillar has made a further refinement, says Nenne.

“Caterpillar developed and patented Tough-Steel sprocket segments, which can increase bushing life as much as 50 percent,” he says. “Because the sprocket resists abrasion, teeth maintain their shape for an extended interval, and contact between the tooth and bushing remains relatively constant throughout the life of the sprocket. This lowers contact loads and slows bushing wear rates.

“For Caterpillar, this has changed the game for bushing turns. In many instances, sprocket segments and bushings are good until the links and rollers need attention – except maybe for machines running in highly abrasive environments. The key point is to maximize the link/roller system. The worst thing you can do is leave link life on the table.”
Back when most track chains were dry (assembled with no long-lasting lubricants), the one-sided wear on pins and bushings – both internally and externally – meant that these components could be turned 180 degrees to establish new working surfaces and restore proper pitch.

This procedure was routinely practiced to gain added life from the undercarriages of all sizes of tractors. The procedure usually was accompanied by new sprockets. The hope was that the repositioned components would last until the links and rollers were used up and ready for replacement.

Today, in theory at least, well-lubricated SALT chains, with negligible wear occurring internally, would need “turning” only because of external wear on the bushing.

“Although some systems are still being turned,” says Case's Max Winemiller, dozer product manager, “there’s not as much turning by a wide margin as in the past.”

Komatsu America Corp.'s Jim Funk, senior product manager, undercarriages, concurs. “Pin-and-bushing turns are not as common as perhaps 10 years ago, but it's still a viable repair option in some situations,” says Funk, “depending on such factors as overall undercarriage condition and the amount of downtime involved.”

**Wear-Resistant Undercarriage Technology**

Pin-and-bushing turns are being used less as a maintenance strategy, basically, because technology can make bushings last longer.

John Deere cross-section of a SALT chain illustrates the design of the lubrication system: Oil is initially drawn into the pin reservoir under vacuum through the self-sealing plug; a radial passage in the pin allows oil to flow into the annular space between pin and bushing.

John Deere, for example, offers two undercarriage systems that use the company’s SC-2 (slurry-coat) bushings, which have a proprietary coating fused to the bushing during a patented process that involves 2000-degree temperatures. The resulting surface, says the company, is more than three times harder than conventional hardened steel.

According to Nathan Horstman, product marketing manager, crawler dozers, John Deere Construction & Forestry, SC-2-coated bushings can yield up to twice the life of conventional bushings before a turn decision might be required - and in some instances can eliminate the need to turn.

In addition, says Horstman, each of the three undercarriage systems the company offers (Standard, Extended-Life, and Maximum-Life) uses seals developed specifically to match the longer life of SC-2 bushings, which are used in the Extended-Life and the Maximum-Life systems, the latter also using heavier components throughout.

“We’ve seen a dramatic improvement in seal life and other undercarriage components with the Maximum-Life system,” says Horstman. “Components are designed to wear at comparable rates, which yields high asset utilization and results in lower hourly costs. Another plus for these systems is that they’re designed to work in any application – rock, sand, clay, whatever – with no restrictions. We suggest customers work with the dealer to determine which of the undercarriage systems makes the most sense for their application.”

Another approach to extending overall undercarriage life is to allow the bushings to rotate or “float,” which significantly eases the abrasion and resulting wear as the bushing engages the sprocket tooth. According to Komatsu’s Funk and Anthony Gamba, manager, technical solutions/product quality (dozers and iMC), the company offers two “rotating-bushing solutions.”

The Parallel Link Undercarriage System (PLUS), designed for small and medium-size dozer models, uses bushings that are not pressed into the link bores (as in a conventional chain), allowing them to rotate freely as they engage the sprocket. Two sets of Komatsu-designed seals are used in the assembly, at the bushing/link interface and at the pin ends.

“Essentially, all the components in the PLUS system are designed to increase overall wear life, with bushing wear life a key point,” says Funk. “For example, the track’s links are taller than those in a standard undercarriage, sprockets have relief areas to help minimize packing, and the rollers have more material.”

For larger models (D275, D375, and D475), Komatsu offers its Dual-Bushing link assembly, which places a rotating bushing over a conventional, fixed bushing.

“The Dual-Bushing is designed to extend undercarriage life for large machines operating in highly abrasive conditions,” says Gamba. “Typically, the bushing slides across the sprocket tooth as it engages, causing wear, which is accelerated in abrasive materials. By allowing the bushing to rotate during engagement, wear is significantly reduced, both on the bushing and the sprocket.”

“Komatsu actually offers owners a range of undercarriage designs,” says Funk, “including heavy-duty configurations and a General Construction configuration that will soon be offered as an economical repair option for the D51, D61, and D65.”

Caterpillar’s rotating-bushing undercarriage, System One, is available as a factory option for some models, and as a retrofit system for more. At the heart of the system, says the company’s Nenne, is a self-contained pin-and-bushing assembly (“cartridge”), and specially designed links that accommodate the cartridge. Four oil seals are used in the cartridge: a pair at the bushing ends, and another pair that seal the pin in the non-rotating sections of the cartridge. A major feature of System One, says Nenne, is the center-tread idler design, which means that only the carriages contact the idlers, not the link rails.

*Continued on pg 15*
Niitsu Turbo Industries offers a wide range of turbochargers focusing mainly on the construction machineries such as Caterpillar, Komatsu, Hitachi, Volvo, Cummins and others. Our product range covers the complete turbocharger, cartridge, repair kit, turbocharger components and gaskets. Please feel free to get in touch with our Sales Team to learn more about Niitsu and we hope to be your ultimate partner in your turbocharging needs.

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“The center-tread design eliminates the link scalloping that can occur in a conventional undercarriage,” says Nenne. “Smooth rails reduce vibration and make for a stable grading platform. All the components in the System One design are engineered to provide extended service life, that functions as an even-wearing, long-life ‘system.’ Depending on the model and operating conditions, it’s possible that the sprockets and idlers can last through two track systems.” Case, says the company’s Winemiller, has three undercarriage offerings, including standard SALT, Max-Life, and Ultra-Life. The company recently made a major investment in redesigning its undercarriage systems, says Winemiller, based on what the company saw as the “rising expectations of production-dozer owners.”

How to Extend Undercarriage Life

“Case wanted to build a long-life undercarriage that would also reduce noise and vibration,” says Winemiller. “Component size was increased, hardening processes enhanced, the tensioning system redesigned, and double-flange track rollers were made standard on 850M up to the 2050M, regardless of the chain chosen by the customer. Center-flange rollers were added on all 750M through 1150M, adds a second, hardened, rotating bushing over the conventional fixed bushing of the SALT track, says Winemiller. This system, he says, can provide double the life of the standard system in certain conditions. The Ultra-Life system, designed for larger Case models, also adds a second, wet, rotating bushing.

Winemiller also brings an unusual observation to the undercarriage discussion. “Case is finding that grade-control systems can be a means of extending undercarriage life,” he says. “Grade control assists the operator in attaining grade faster, with fewer passes, so the machine is not using up the undercarriage to over-dig in tough material that stresses the undercarriage, then having to backfill. Another factor – which sounds unlikely at first – is that grade control promotes less aggressive operation.”

TURNING CONSIDERATIONS

If turning pins and bushings in a SALT chain is a feasible maintenance option, the process can be a “grease” turn, which reassembles the chain with only grease between the pins and bushings. Or it can be a “wet” turn, which replaces oil in the pin’s reservoir – a process that, if done properly, can involve pressurizing the joint to check seal integrity, then drawing a vacuum in the joint to assist in recharging with new oil through a self-sealing plug in the pin.

Choosing between the wet or grease processes should include an analysis of cost versus hours of operation gained (wet turns cost an estimated 30 to 40 percent more), condition of bushing ends (if grooved from contact with old seals, a wet turn could be out), and number of failed (dry) pin/bushing joints (if excessive, alternatives might include running the chain to destruction then installing pin-and-bushing kits or installing new chains – especially on smaller machines). Some manufacturers guarantee a wet turn and will replace failed components within a certain usage time frame.
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Egyptian Steel Launches its Fourth Steel Plant in Al-Ain Al-Sokhna

Egyptian Steel, comprised of four plants that produce steel with the latest eco-friendly technology in the world, has carved its name as a main player in the regional and global steel industry since its establishment in 2010.

Under the leadership of CEO Ahmed Abou Hashima, the group has grown to acquire 20 percent of Egypt’s steel market in just eight years. Hashima grew and sustained this entity in the most difficult economic and political conditions Egypt has known in its modern history, with investments exceeding $1 billion and a production capacity of 2.3 million tons annually.

Egyptian Steel Group is celebrating the opening of its fourth steel plant, which is strategically located near the port of Al Ain Al Sokhna in Egypt and boasts a production capacity of 830,000 tons of billet/year and 530,000 tons of rebar/year.

The eco-friendly technology used in this plant is a new leap toward achieving the group’s mission of becoming the largest green steel producer globally.

This is the world’s fastest technology for producing steel – just two hours – and has the lowest dust emission rate, 40 percent less than other plants. It also has the highest levels of sustainable development, has a top energy-saving rate ranging from 25-30 percent, and the final products comply with the highest international quality standards.

More massive projects are in the pipeline for Egyptian Steel Group, such as the Egyptian Complex for Building Materials, with investments of over six billion Egyptian pounds. This includes six plants, among them the Egyptian Cement Plant in Sohag, which will boast a production capacity of two million tons per year and will be a major economic addition in Upper Egypt. This project is expected to launch by the end of 2018.

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Odisha Targets Increasing Steel Production to More than 100 MTPA by 2030

Mineral-rich Odisha, aspiring to become a manufacturing hub in India with downstream metal industries, will have an incremental steel capacity of 56 million tonnes per annum (MTPA) in the next few years, taking its overall production level to more than 100 MTPA by 2030.

“As of now, steel plants in the state have an installed capacity of about 33 MTPA, with commitment for another over 56 MTPA in the next few years, as major proponents like SAIL, Tata and JSPL have plans for expansion of their installed capacities,” the state government has stated in a letter to the Centre seeking relaxation of area limits for mining leases of iron ore.

The steel industry in the state has seen as many as 45 firms sign memoranda of understanding (MoU) with the state government for steel projects, and 33 other firms are working on steel plants. Of these, 10 projects with a committed capacity of 13.13 MTPA are in the project implementation stage and are likely to be commissioned soon, said an official. The remaining steel plants have already been commissioned with an installed capacity of 25.7 MTPA and a committed capacity of 47.84 MTPA.

The state government has also given the green signal to JSW for setting up a 12-MTPA greenfield steel plant in Odisha after 2020. Other steel giants, namely Tata Steel, Jindal Steel and Power Ltd, and SAIL are in the process of ramping up capacity. The Tatas plan to add capacity of five million tonnes in the Kalinganagar plant over the next four years.

Liebherr Opens New Production Site in India

On May 8, 2018, the Domestic Appliances division of the Liebherr Group opened a new plant in Aurangabad, in the Indian state of Maharashtra. Numerous personalities and dealers from all over the country were present at the opening ceremony, which was also attended by two of the Group’s shareholders, Dr. Isolde Liebherr and Stéfanie Wohlfarth.

Liebherr Appliances India Private Limited specializes in the production of high-quality refrigerators and freezers for the Indian market. The new production plant covers an area of 50 acres. The Liebherr Group has invested some five billion rupees in the ultra-modern and flexible production facilities. The current production capacity is around 500,000 units per year, and can be expanded when necessary.

Liebherr expects demand for refrigerators in India to grow substantially in the years ahead due to the positive economic development.
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Federal-Mogul Powertrain has developed a new piston ring for use in commercial vehicle diesel engines that enhances gas sealing capability by stabilizing ring dynamic motion and homogenizing oil film. The running surface profile of the new eLine™ rings for use in the second groove has been designed to distribute oil more evenly around the cylinder bores and to modify the running face area for reduced gas pressure force. This results in enhanced engine efficiency, increased robustness and lower emissions. Bench tests with eLine in different diesel engines have shown a significant reduction in blow-by of up to 20 percent, which converts directly into either an increase in mean effective pressure or a decrease in fuel consumption.

Federal-Mogul Powertrain’s new eLine piston ring has a circumferential groove toward its lower side, allowing surplus oil to be retained below the ring.

“eLine is the first commercial vehicle piston ring technology that distributes oil circumferentially in a consistent layer,” explained Dr. Steffen Hoppe, Director, Technology, Rings & Liners, Federal-Mogul Powertrain. “The design compensates for localized surplus oil drops, protects against local oil film breakdown, supports low oil viscosity strategies, improves the sealing of combustion gases and reduces wear. The specific running surface profile has also been designed to prevent radial ring instabilities, which are becoming more common due to the industry trend for increased peak combustion pressures.”

Rings used in the second groove of commercial vehicle engines are predominantly designed with a tapered running face profile. These can struggle to maintain a homogenous oil film in sub-optimal conditions, such as bore distortion or oil supply issues. The tapered profile also provides a comparably large running face area, which can result in radial ring instability when pressure between the inner and outer diameter of the ring becomes imbalanced.

The eLine piston ring has a circumferential groove toward its lower side, allowing surplus oil to be retained below the ring. The oil in this groove reservoir creates a circumferential pressure difference that generates controlled oil flow around the bore as the piston reciprocates, improving the uniformity of the oil film. The hydrodynamic function of the running surface profile has been developed in a way that allows for a reduced area for gas pressure force toward the upper side of the ring.

Federal-Mogul Powertrain’s eLine piston rings are currently with customers for validation in preparation for short-term market introduction.

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Volvo, Skanska to Test Electric, Autonomous Site Quarry This Fall

Volvo Construction Equipment, which had announced its electric site quarry initiative at its Xploration Forum in September 2016, is now gearing up for a 10-week field test this fall.

The company says it’s building a fleet of eight prototype HX2 autonomous electric carriers to take part in the test, which will also include its LX1 hybrid wheel loader and an EX1 cable-connected excavator.

Volvo is partnering with Swedish construction giant Skanska Sweden, the Swedish Energy Agency and two Swedish universities on a $30 million project aimed at creating an electrified quarry, where not only carbon emissions are reduced by up to 95 percent, but also the total cost of quarry operating costs are reduced by 25 percent.

The electric site project has developed into a rethinking of quarry processes and layout, particularly in the ways aggregate is handled. Instead of using articulated dump trucks or rigid frame haulers to move aggregate from Point A to Point B, the electric site concept will use the autonomous 15-ton HX2 carriers to load crushed aggregate directly from the crusher.

HX2 autonomous carrier

The HX2 prototype carrier is the latest iteration of the HX1 revealed at the Xploration Forum.

Volvo now says its second-generation HX2 concept machine is “fundamentally different” from the initial HX1. It now incorporates shared technologies and components from the Volvo Group, including electric motors, batteries and power electronics.

“Integrating a completely new drive-train was crucial to take full advantage of the groundbreaking electromobility improvements that are happening inside the Volvo Group,” says Uwe Muller, Volvo CE’s chief project manager for the electric site projects. In addition, the HX2 now has a vision system, with which the machine can detect humans and obstacles.

The LX1 hybrid wheel loader prototype has gone through its own testing in the United States at two Waste Management sites in California. Last year, Volvo announced that after six months of testing, the LX1 loader achieved up to 50 percent fuel efficiency improvement over a comparison machine in certain tests, well exceeding the 35 percent goal it set for the project.

John Meese, Waste Management’s senior director and slow the speed of the dump cycle, so that we can meter the material in. It was just a few keystrokes. That was amazing.”

Volvo’s 70-ton EX1 cable-connected prototype excavator will also play a role at the quarry. The machine still has a diesel engine, which can be used to reposition the unit in the quarry, a feature that will only be used a small percentage of its total hours. “For 95 percent of the time, it’s loading a crusher,” says Scott Young, Volvo CE’s electromobility director. “During that time, it’s connected to the grid, coming from Skanska’s wind-generated power.”

Volvo built the EX1 by using a Volvo EC750 and adding an electric motor to the diesel-powered machine. Fitting the new components into the machine without increasing its size required a “significant amount of repackaging work,” Muller says. “However, in terms of the operator interface and controls, nothing has changed.”

Muller says the electric site research project is “a step toward transforming the quarry and aggregates industry. We are combining intelligent machines, automation and electromobility as a door opener to developing complete new solutions to meet customer needs.”

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Nuts & Bolts continued on page 31
Orders for the mining machines and construction bulldozers made at this sprawling Caterpillar Inc. factory in central Illinois have jumped, in general, three-fold over the past year.

But meeting that boom in demand at the world’s largest heavy equipment manufacturer is a challenge, in part because of Caterpillar suppliers like Steve Kirsh.

Years of watching Caterpillar and other big manufacturers cut inventories, close plants and axe workers in the last downturn has embedded caution in Kirsh’s ambition to expand after the surge in orders, reflecting a more fundamental shift in how many industrial businesses view expansions, according to interviews with Caterpillar executives, more than a half-dozen Caterpillar suppliers and U.S. economic data.

“I just wasn’t sure it was real,” said Kirsh, speaking from a windowless office at the front of Kirsh Foundry Inc., in Beaver Dam, Wisconsin, which makes metal parts for Caterpillar and other customers.

Even with a surplus in demand for its product, Caterpillar CEO Jim Umpleby told investors last month the company will not invest in factory capacity. Instead, it plans to spend more on new technologies, expanding its parts business and selling more rental and used equipment.

The company’s big East Peoria assembly plant runs just one shift and operates only four days a week, while its own parts-making facilities are running three shifts, five days a week to provide it enough components to assemble, according to the company officials. Outside suppliers are similarly scrambling to catch up to the surge in orders.

This has extended the lead-time to deliver final products to dealers. For instance, it takes more than eight months to get one model of its large engines into a customer’s hands.

The Trump administration’s efforts to rewrite trade relations with key partners, especially China, only add to the uncertainty. The latest move to step back from a confrontation with China is good news for many domestic producers, who worry that a trade war could quickly puncture the global expansion, going on nine years, which is feeding the U.S. factory boom, manufacturing executives told Reuters.

The result is a drag on the economic expansion that President Trump and Republicans hoped for coming off U.S. corporate tax reform last year. The idea behind Trump’s tax reform was that companies could pour more money into expansions, hire more workers and lift wages.

There has been an upswing in plans for capital spending, but much of it is concentrated in the technology and energy sectors. Spending plans by industrial companies are up only slightly. For a graphic,

For those companies that do want to expand, from car companies to railroads and engine makers, they often can’t find the workers to expand fast enough.

The contraction of their supply chain in the last downturn thrust many players, big and small, into a “just in time delivery” business model, creating order backlogs, which has led to soaring prices for raw materials in the recent upswing.

Chastised by that slump, the Deerfield, Ill.-based company embarked on a restructuring strategy that aims to squeeze more production from its factories and buy more of what it needs from outside suppliers on a just-in-time basis. Caterpillar has closed or restructured more than 25 factories, and its full-time
workforce is smaller now than it was at the end of 2012. And cuts continue. Caterpillar plans to close two more facilities this year and is considering shuttering an engine plant, which would eliminate 880 jobs.

Caterpillar executives said the new strategy is boosting profitability by allowing it to get the best use out of its existing factories. They blame the backlogs on its suppliers’ inability to keep up with the surge in orders.

Timing is part of the problem. Caterpillar and a host of other industrial companies all ramped up orders at the same time. “That switch got turned on after being turned off for several years – all at the same time,” said Amy Campbell, director of investor relations.

Campbell, however, said the supply situation is improving. The central Illinois plant will go back to the normal five-day shift beginning in June.

Caterpillar’s investors love this approach, since it helps deliver strong margins in the good times and minimizes pain in bad times.

The company recently boosted profit projections for 2018 by about 25 percent, and in the latest quarter, every segment posted better results compared to a year ago. But its stock price took a hit when the company’s CFO warned higher prices for raw materials, like steel, are going to start squeezing margins even as growth continues.

Supply chain bottlenecks, meanwhile, are hitting companies across the industrial heartland.

The Institute for Supply Management’s index for order backlogs, one of the best U.S. metrics for how quickly manufacturers are meeting demand, now stands at its highest level in 14 years. And many companies remain tight-fisted. The Commerce Department recently reported that orders for capital goods, a key measure of business investment, fell in March, the third decline in four months. These numbers show that companies are holding back on spending, even as their order books swell.

“We’re in a period of significant disruption where everyone is scrambling – but it’s the way supply chains work today,” said John Layden, a consultant in Indianapolis, who helps companies design and manage supply networks.

WHERE ARE THE WORKERS?

Finding employees is another drag on the U.S. manufacturing supply chain. When Kirsh decided to add people early last year at his foundry – which melts iron and forms it into the rough shapes that will be refined for Caterpillar and others – he could not find them. Wisconsin’s jobless rate has hit an all-time low of 2.8 percent.

So Kirsh tried something new, hiring a Minnesota staffing company that specializes in parachuting industrial workers into factories that can’t find them locally.

He eventually got about 10 of these workers, who he calls “mercenaries,” who helped get his backlog under control. One came from as far as Detroit. But it was a costly fix. Between paying the staffing company, hotels and a per diem for the workers, he estimates they cost about three times more than local labor.

Industrial companies have always struggled with big swings in demand, but the problem of shortages emerges much quicker in today’s super-lean economy.

In the past, manufacturers from Kirsh to Caterpillar often kept more goods on warehouse shelves, creating a built-in buffer that could be absorbed as signals went out to suppliers that the latest upturn is going to continue. That gave more time for everyone to gear up.

It is a luxury that does not exist anymore, said Joe Williams, president of privately-held Wolfe and Swickard Machine Company Inc. in Indianapolis, which buys forged parts from Kirsh and over 20 other foundries that his 85-worker shop shapes and polishes into final machine parts.

Early last year, Williams saw orders from Caterpillar surge 80 percent, a stunning increase that left him scrambling.

“When we get an order, we have to order from a foundry, which has to communicate with the people supplying them metal, so there’s always a lag,” he said.

This time, however, it was particularly difficult. Some foundries simply refused his business, because they were swamped with orders from other customers.

Like Kirsh, Williams has had trouble hiring workers and said he still needs at least 15 more machinists. Caterpillar has told him to expect orders to go up another 20 percent this year.

Stephen Volkmann, a machinery industry analyst at Jefferies, said Caterpillar was slow to ramp up production – which frustrated dealers clamoring for machines they could sell.

But he said Caterpillar and its suppliers are smart to be cautious. “They all know that (business) could be down again next year,” he said, and so over expanding now “would be an expensive mistake.”
Canada Initiates Dumping Inquiry into Steel Imports from China, Vietnam and South Korea

The Canadian International Trade Tribunal (CITT) said recently it has initiated a preliminary dumping inquiry into steel imported from China, South Korea and Vietnam.

The tribunal will investigate whether the alleged dumping and subsidizing of “cold-reduced flat-rolled sheet products of carbon steel” from these countries have harmed Canada’s steel industry.

CITT, which operates in Canada’s trade remedy system and reports to parliament, said it will determine the results of the investigation on July 24 and will provide the reasons for the same on August 8.

Canada’s steps follow U.S. actions. The U.S. Commerce Department slapped steep import duties on steel products from Vietnam that originated in China after a final finding that they evaded U.S. anti-dumping and anti-subsidy orders.

The global steel industry is struggling with a glut of excess production capacity, much of it located in China, which has pushed down prices.

https://ca.reuters.com/art. 5/18

Senior Management Changes at John Deere Power Systems

John Deere Power Systems (JDPS), Waterloo, Ia., has announced a change to its senior management team in response to the planned retirement of John Piasecki, director of worldwide marketing, sales & customer support.

Hoffman has held various positions in product engineering, factory marketing, branch operations, sales and customer & product support in the U.S. and Europe, including managing worldwide engine and drivetrain sales.

Piasecki’s career at John Deere spanned more than 20 years.

Starting with John Deere’s Construction and Forestry Division, and then transitioning to JDPS, he held positions in marketing, sales, and customer support.

David Hoffman, who has been director of customer & product support for John Deere Tractors, will replace Piasecki.

While at JDPS, Piasecki led the organization’s OEM engine and drivetrain business among other duties. Prior to working for Deere, Piasecki spent 22 years in the engine-manufacturing industry in commercial and engineering management positions.

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Marubeni-Komatsu Introduces the New PC1250-11 Excavator.

Marubeni-Komatsu announces the launch of the new PC1250-11, a large hydraulic excavator with improved production levels and safety features. Its powerful and economical Komatsu engine, exempt from current EU emission regulations, integrates Komatsu’s latest fuel saving technology.

The PC1250-11 has operating weights ranging from 115.9 tons to 118.3 tons. A Komatsu SA6D170E-7 engine provides 578 kW / 775 HP @ 1,800 rpm. Exempt from current EU emission regulations, but EU Stage V ready, it features two diesel particulate filters (DPF), with no need for a Selective Catalytic Reduction (SCR) system.

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Workability & Reliability

Work modes include the well-known Power and Economy modes, and the PC1250-11 also benefits from the new “Power plus” (P+) mode, which allows the operator to make full use of the increased engine power to achieve up to eight percent higher production than with a PC1250-8 in P mode. The Heavy Lift and Swing Priority functions are still available, as on the previous model.

A two-mode setting for the boom lets the operator choose between smooth operation for gathering material and maximum power for more effective excavating. The shockless boom control makes operations smoother and reduces both stress on the machine and operator fatigue.

Thanks to a large cross-sectional structure using high tensile steel with thick plate and partition walls, the boom and arm are long-lasting and resistant to bending and torsional stress. The undercarriage is strengthened for excellent reliability and durability when working on rocky ground. Sturdy guards shield the travel motors and piping against damage.

Safety First

The PC1250-11 raises the bar when it comes to standard safety equipment. The operator’s cab conforms to OPG top guard level 2 (ISO 10262) for falling objects. It has a high shock-absorption capability, excellent impact resistance and an increased sound absorbing capability. Derived from mining excavators, a new hydraulically-operated 45° retractable stairway enables safe access to the machine. A standard “auto lock” function automatically interrupts all machine hydraulic functions if the stairway is not fully retracted.

The Neutral Detection System will also activate the hydraulic “auto lock” if the work equipment control levers are not in the neutral position when the hydraulic lock lever is released. The “auto-lock” status is clearly displayed and easily reset on the monitor panel.

Three emergency stop switches are provided, the first directly in the operator’s cab. The two others can be quickly accessed from ground level, one on the right deck near the fuel fill connection, and the other on the left catwalk, next to the hydraulic stairway.

For improved safety, KomVision is standard: four networked high-definition cameras create a real-time birdseye view on the machine monitor, to eliminate the blind spots on the rear and sides of the machine.

First Class Comfort and Easy Maintenance

First Class Comfort and Easy Maintenance

The Komatsu PC1250-11 features industry-leading comfort levels and easy maintenance.

The low vibration cab, highly rigid with a damper mounting system and excellent noise absorption ability, is wider than on a middle-sized excavator. It includes a high back air-suspension heated seat with a reclining backrest; height and inclination are easily adjusted with a simple lever. The operational position of the armrest and console can also be customized. The cabin is pressurized, and the high capacity air conditioner is standard.

The interface of the large high resolution Liquid Crystal Display (LCD) monitor was redesigned for quick and easy reading of necessary information.

On the display, ECO guidance shows the status of the machine in real time. With a single touch, its menu enables you to check records for operation and Eco Guidance, as well as fuel consumption history, enabling total fuel usage to be reduced.

https://hub-4.com/news 5/18

Nuts & Bolts continued on page 37
THE FUTURE HAS NEVER BEEN SO PRESENT

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Hitachi has launched a rental initiative in Europe that will see its dealers offer mid-sized machines for medium- and long-term rentals. Hitachi will own the machines, with dealers paying a monthly fee to the manufacturer.

The target is for the rental fleet to reach 1,000 units by 2020, with 50 units already available and around 300 by March next year. Hitachi Construction Machinery (Europe) has invested an initial €11 million in new machines for the venture and will spend around €100 million by 2020.

Not just focusing on manufacturing and selling, but becoming active in all channels, to add value…If the market is moving toward rental and sharing, you cannot focus only on sales. If you wait for the change, you are too late.”

Unlike other OEM rental initiatives, such as Caterpillar’s Cat Rental Store network, where dealers invest in their own rental fleets, Hitachi has decided to own the rental fleet and make it available to dealers through monthly fees. Dealers will also be given the opportunity to sell the used machines after a certain period, but Hitachi will take final responsibility for used sales.

“We will keep ownership of the machines. We will take care of financing it, and we will take care of used equipment,” said Danielsson, speaking exclusively to International Rental News.

The fleet will comprise machines in the 8 t to 50 t range and will initially focus on rental by the month and periods of up to one year. Only when the volume of the fleet grows will short term rentals become possible, a move that will also require dealers to invest in logistics. There is also a plan for dealers throughout Europe to share fleet, helping to maximize utilization.

“Hitachi has taken the decision to look at the full supply chain from production to customers to equipment second life,” said René Danielsson, the former Finning, Pon and Linde executive who joined Hitachi last October to manage the rental program.

Discussions with dealers have been ongoing for some months. Those in Spain, the Netherlands, France, Hungary and Iceland are already on board, and discussions are underway or pending in Germany and Italy. The UK, where the culture of “plant hire” is extremely mature, is not yet being included in the program.

The initiative will require a significant investment by Hitachi, but Danielsson said this would not be onerous over the longer term. “If you look over the full period, the dealer will pay for the machine. There will be a capital gain [for Hitachi].” He also pointed out that low interest rates made it a good time to invest.

The new strategy in Europe follows similar programs run by Hitachi in Japan and parts of Asia. Danielsson said he had no idea of any similar plans for North America, but said there had been some interest from dealers in North Africa and the Middle East.

René Danielsson, Rental Manager, Hitachi Construction Machinery (Europe).

“A Hitachi ZX225 excavator. The rental program will span machines in the 8 to 50 ton range.
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H&E Opens New Salt Lake City Operation with Two Huge Buildings and 10-acre Yard

H&E Equipment Services has relocated its Salt Lake City branch to newly-constructed facilities at 5052 West 2400 South, Salt Lake City, Utah.

The new operation includes two state-of-the-art buildings, built to meet the most stringent energy efficiency standards, the company says.

“After nearly 40 years at our old location, our entire team is excited to transition to our new facilities. The dual-building approach allows us to be more laser-focused on specific products and achieve operational efficiencies that will benefit customers tremendously,” says Lee Anderson, H&E Salt Lake City branch manager.

At 31,285 square feet, the first building specializes in aerial lifts, earthmoving, forklifts, and all other general construction equipment. The second building is 29,295 square feet and will focus on cranes.

The two facilities are on 10 acres, with a fully-fenced and paved yard. The combined operations include 32 service bays, with two 20-ton and two 10-ton overhead cranes in the crane shop, and four 5-ton overhead cranes in the general shop, H&E says.

The facilities also include sales and management offices, a fully-stocked parts warehouse, capacity to repair large cranes, and most makes of industrial, construction and compact earthmoving equipment.

“Great thought went into the design and construction of our two buildings to provide an operation that is well laid out, responsive, and totally devoted to providing customers the high level of service they expect and depend on from H&E,” Anderson explains. "This move helps to ensure that we are the leading provider of equipment rentals, sales, parts, and service in Salt Lake City, and throughout our territory, for many years to come."

The new operation provides full-service coverage to customers throughout central and northern Utah, southwestern Wyoming, southern Idaho and northern Nevada.

There’s equipment from Allmand, Atlas Copco, BOMAG, Club Car, Doosan, Gehl, Generac, Genie, Grove, JCB, JLG, Laymor, Lincoln, Miller, Manitowoc, Multiquip, National, Okada, Polaris, Skyjack, Taylor, Towmaster, Wacker Neuson, Yanmar, and others.

In addition to equipment rentals, the facility provides new and used equipment sales, in-shop and mobile service, a comprehensive parts inventory, training, and other value-added services. The phone number is (801) 974-0388.

www/equipmentworld.com 5/18
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In what is perhaps the longest and most successful joint venture in the heavy equipment business, John Deere and Hitachi are celebrating their 30th anniversary this year. To highlight the event, Deere brought the press to its Greensboro, North Carolina headquarters and showed its latest excavator models and technology.

Deere 345G LC
The newest machine produced by the joint venture is the Deere 345G LC. The counterweight on this reduced tail swing model barely inches out over the tracks when the cab is rotated 90-degrees, giving you a powerful digger (249-horsepower) that can be used where room to maneuver is at a premium, such as road building jobs, urban sites and landscaping.

“As infrastructure projects across North America increase, there’s a desire for larger, more powerful reduced tail swing excavators to traverse tight job sites,” says Jonathan Spendlove, excavator product marketing manager, John Deere Construction & Forestry. “The ability for our customers to swing a machine and not have the counterweight extend into an additional lane of traffic or bump into a tree is an equipment trait they are considering when looking at options like the 345G LC.”

A three-pump hydraulic design provides the dedicated flow needed to run attachments at fast cycle times without any loss of power. It also keeps your swing torque strong when you’re working on a slope and slewing the bucket uphill and downhill. A factory option auxiliary hydraulic package lets you power bigger attachments, such as couplers and hammers.

Hitachi ZX345USLC-6 excavator
The Hitachi version of the 345G LC is the ZX345USLC-6. You can also set pressure and flow on auxiliary hydraulics on the 345G LC electronically from the cab using the monitor. No need to stop the machine, bust out the wrenches to switch the lines or adjust the pressure every time you change attachments. And you can program up to 12 hydraulic settings for your attachments.

Side-by-side cooling cores boost cooling efficiency and make cleanout easier. The Tier-4 Final engine runs on an SCR (selective catalytic reduction) emissions system requiring DEF (diesel exhaust fluid), but eliminates the need for a DPF (diesel particulate filter) and the associated maintenance on this component that was standard on most earlier Tier 3 and Tier 4 interim machines.

Deere also upized the cab and enhanced the LCD monitors. You select your work modes, check maintenance intervals and diagnostic codes, access operating information and tune the radio with a turn and tap rotary dial. A standard rearview camera improves visibility to the rear of the machine.

While most joint ventures are temporary responses to market demands, the Deere-Hitachi JV is heading into its third decade, having established three major manufacturing facilities: the factory in Kernersville, North Carolina in 1988, one in British Columbia, Canada in 1998; and one in Sao Paulo, Brazil in 2011.

According to the company, the Kernersville factory can produce an excavator “from steel to real” in eight days. As befits its Japanese partner, the facility uses the Kaizen manufacturing process where small improvements are made on a continuous basis and add up to big quality improvements and cost savings.

The Deere-Hitachi Specialty Products in Langley, British Columbia was the first in the industry to manufacture purpose-built forestry excavators with a focus on 26- to 46-ton machines. Deere-Hitachi Brazil produces 13- to 35-ton excavator models.

Since the 1988 birthday, the two companies have built more than 55,000 hydraulic excavators for the North, Central and South American markets.

In 2002, the two companies integrated marketing operations in the Americas. They also recently opened a new 115-square foot regional parts distribution center in Miami, Florida.
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China’s Dominance of the Global Steel Industry

Global steel production has surged over the past 70 years, increasing from 189 million tons in 1950 to 1.689 billion tons last year, an increase of nearly 800 percent.

As for the driving force behind the global surge, it largely reflects the influence of just one country: China.

China, at 831.7 million tons, produced nearly as much steel as the rest of the world combined. To put China’s figure into perspective, it was eight times larger than Japan, the world’s number two producer.

India, in the third spot with 101.4 million tons produced, looks set to surpass Japan in the not-too-distant-future as the nation continues to modernize.
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Researchers estimate that artificial intelligence in construction will balloon from US$407.2 million ($537 million) in 2018 to US$1.83 billion ($2.41 billion) by 2023. The report highlights several important issues for the stakeholders, including which market segments to focus on in the next two to five years for prioritizing efforts and investments. AI in the construction market was segmented into residential, institutional commercials, heavy construction among others.

The report found that early adopters were benefiting from AI solutions and services by reducing the duration and cost of construction, while also being able to increase return on investment. The Asia Pacific region is set to grow at the fastest rate, with construction companies in rapidly growing economies, such as China, Japan, and Singapore, using AI tools via AI platforms across different industries to provide effective solutions.

North America continues to have the largest market size, where construction firms have made sizeable investments, while several vendors have modernized to cater to the rapidly growing market.

Last year, Australian robotic technology company, Fastbrick Robotics Limited, entered into an agreement with construction giant Caterpillar, to discuss and develop a potential framework for collaboration regarding the development, manufacturing, sales, and services.

https://theurbandeveloper.com/, 5/18
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The familiar roar of a diesel engine and black puffs of exhaust from heavy equipment could soon start to fade from construction sites. Like all vehicle manufacturers, heavy equipment makers are looking to harness electricity to drive all of the mobility and hydraulic functions on their machines.

Japanese compact equipment maker Takeuchi recently showcased its fully electric e240 excavator, operating it throughout last year’s CONEXPO-CON/AGG 2017 show in Las Vegas, despite being indoors. Takeuchi says it not only generates zero fossil fuel emissions on site, but also is 90 percent cheaper to run than a comparable diesel-driven machine.

While the prototype is not yet a production model, Takeuchi projects battery-powered heavy equipment will replace diesel in 10-15 years, gaining traction now and ramping up as buyers look for green alternatives.

The e240 is compact and suitable for enclosed space applications, such as within a building or in large tunnels, where diesel emissions cause issues.

What they do have in production, however, is the compact TB216H, which rolled out in November 2016. It’s a hybrid machine and perhaps a taste of what will become the norm throughout the industry as battery technology advances.

It doesn’t actually run on batteries, but is a plug-in, running on either a three-phase source at between 400 and 480 volts. It can also switch wholly to diesel power with equal power on tap regardless of the source. Deere, for example, presented some of their work at the same CONEXPO-CON/AGG 2017. They teamed with BMW’s Designworks to create the Fixstern backhoe, a concept based on customer feedback.

Part of the innovations focus on ergonomics, with an isolated command center design for the cab, which dampens vibrations and cuts operator fatigue. It also has a 15 percent larger opening for ease of access and exit and visibility front and back with a larger interior for better storage.

The use of composites has reduced overall weight by 20 percent, and the frame itself has been developed as exoskeletal modules, with a longer wheelbase for better stability and improved onboard stabilizers. The tires are airless radials, and steering is through all four wheels giving a tight turning circle, while the lower profile of the tires also increases visibility.

John Deere says the features rank among the most asked for in customer feedback surveys, and while the concept isn’t likely to see production for a decade, some of the features could be incorporated soon in existing product lines.

In line with the trend, it’s also been designed with a hybrid drive train, which in turn has also lowered the center of gravity.

Manufacturers are also looking at how to incorporate autopilot functions into the machines, though clearly the technology required will be much different than existing self-drive software for trucks and vehicles.

Supersized dump trucks are already on autopilot while working within the closed parameters of a quarry or mine site, and autonomous dirt movers are already on the horizon.

Start-up Built Robotics in the U.S., for example, has raised $15 million to build a production version of their
autonomous dirt mover. The machine is designed to be programmed with parameters and tasks and then left to do its own thing – ensuring, of course, that the designated work area is free of hazards and people.

Meanwhile, software is automating groups of controlled actions and monitoring load transfer progress.

Volvo launched their take on automation two years ago with “load assist,” which is available on their front end loaders ranging from the L110H to L250H.

It’s a monitoring technology integrated with Volvo Co-Pilot, the in-cab interface that tracks load transfers for greater inventory control and production tracking.

Case CE, meanwhile, is floating its DL 450 concept, described as half Compact Track Loader and half dozer. It seeks to fill the niche with a dual machine which can be used in dozer mode with a 90-inch blade, but is better designed to move the stress through the chassis instead of the arms which are otherwise prone to failure.

It also features modern tech-like back up cameras and two interior cab screens to enhance the operator’s visuals.

As onboard technology merges with software advances, it’s clear big changes are in store for big machines over the next few years.

The John Deere 644K is powered by a hybrid-electric drive and delivers up to 25 percent better fuel efficiency than its conventional engine counterpart.

Operating weight is 45,300 pounds. Its HIOS IV hydraulic system contributes to fuel efficiency by delivering on-demand performance and the right amount of pump flow when metering pilot controls. Additionally, power and performance is balanced with three work modes. Economy (ECO) maximizes fuel efficiency, while delivering an enhanced level of productivity. Power (PWR) delivers a balance of power and speed, plus fuel economy for normal operation. High Productivity (H/P) delivers more power and faster hydraulic response.

The excavator can road up to 21.7 mph.

Maintenance features include at-a-glance gauges and grouped service points with easy access to the washer tank, air cleaner, DEF tank and battery disconnect switch. A redesigned counterweight with LED lights and rearview camera enhance job site visibility.

The ZX190W-6 wheeled excavator has a Tier 4-F Isuzu engine that does not need a diesel particulate filter (DPF).

The ZX190W-6 is protected by a heavy-duty undercarriage and durable D-channel side frames. Added strength comes from welded bulkheads within the boom that resist torsional stress, tungsten-carbide thermal-coated arm surfaces, and oil-impregnated bushings.

New to the Dash-6 model are sound absorption pads, mounted on the rear pump compartment, that are more durable and maintenance-free. Plus, a standard, larger blade cylinder cover better protects the blade lift cylinder.
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Volvo 3-D Prints Specialized Spare Parts for Heavy Equipment

Volvo Construction Equipment (CE) now uses 3-D printing, sometimes called additive manufacturing, to create aftermarket parts for its heavy machinery, reported Engineering.com.

The company said this method will allow highly specialized spare parts to be created more quickly and efficiently – perhaps within one week – especially for legacy equipment no longer in production. Components will be made from thermoplastic, though the company is considering metal parts down the road.

Volvo CE will maintain 3-D printers for research and development with the hope of using additive manufacturing to prototype future equipment.

Dive Insight:

More sectors of the construction industry are embracing 3-D printing, as evidenced by the growth of 3-D printed buildings, 3-D printing in color and with liquid, and with how the technology can potentially boost wind power.

Project AME – unveiled at ConExpo-Con/Agg 2017 – claimed to be the world’s first fully functional 3-D printed excavator and marked the first large-scale use of steel in 3-D printing. Cab components, the hydraulic oil reservoir, steel boom, heat exchanger and cooling system all were 3-D printed.

Volvo CE joins Caterpillar in implementing additive manufacturing in its business. Caterpillar last year showed how its autonomous 300-ton mining trucks could work alongside human-operated trucks on jobsites. Fitted with onboard computers, the autonomous trucks can avoid rocks along haul paths, locate the berm on dump sites and dodge collisions. The company hopes to have more than 100 such vehicles in use through three continents.

Startup Built Robotics tested an autonomous Bobcat track loader last year that can excavate holes for building foundations 24/7. Still in its early stages, the technology has been tested on small pilot programs in the Bay Area.

Other robotic machinery is tackling tasks that are dangerous for humans, including tying bridge rebar and mining in unsafe areas. Doxel earlier this year developed a robotics-driven system that uses artificial intelligence and LIDAR laser scanning technology to streamline construction processes. It’s also developing an autonomous robot that the firm said can climb stairs and move along construction sites to scan site progress with accuracy down to the millimeter.

Additive Manufacturing Benefits Customers

Additive manufacturing – as 3D printing is commonly known – is the process of repeatedly layering a molten material or liquid in a specific pattern that is set by the printer’s software, until it solidifies into the required three-dimensional shape. For its aftermarket service, Volvo CE commissions the creation of spare parts made of thermoplastics to send to customers who require the replacement of a part that has worn out through natural usage.

Parts can be made of any shape and size, and for any unit in Volvo CE’s range of off-road machinery. Typical parts made by 3D printing so far include parts of a cabin, plastic coverings, and sections of air conditioning units. The company uses its own archive of drawings, 3D models and product information to feed into the printer to produce the correct new part.
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government lawyer told me, without even a blush, that her performance, as well as her boss’ and their department’s performance, was measured by fine income. She was also notching her “career bed-post,” so she could get that dream defense job in a big law firm, fighting her present colleagues.

This oversight and enforcement system is incredibly broken. It does not focus on the real objective — protecting this fragile planet for the next generations — but instead, is geared toward keeping the agencies alive by picking the low hanging fruit at the cost of legitimate and honest businesses. In addition, this is a perpetual political game of chance: the “pollution lottery,” where reasons attached to the environment can almost always be traced back to some industry or group that wants more profit at the expense of a sustainable place to live and the common good.

On the other hand are the “greenies.” They have no shame driving their cars on paved roads, sharing a nice meal in a restaurant powered by electricity, where the food was delivered by trucks after farmers grew it using tractors. But then, they rail at a public meeting about the installation of a hot-mix asphalt plant 20 miles away.

This is not about being a “liberal” or “conservative.” It is about good sense. One of my friends, a staunch conservative, also said that he did not own the beautiful acres his family lived and worked on, but that he was only a caretaker and that he had better do a good job for his children and grandchildren.

So, here we are, nearly 40 years into the “EPA” serving as an integral part of our lives and businesses. The U.S. is the cleanest country in the world. What next? That is the real question, and it has two key parts: How much farther do we have to go, and at what cost, to achieve an even cleaner world? What must we do to keep special interests on both sides from imposing ridiculous rules or protecting buggy whip factories?

The first part is what impacts our industry most. A quick glance a Cat ad in the SAE Off-Road Journal shows a C9.3 engine with an emissions control suite that is bigger than the engine. Diesel is notoriously hard to clean up to the “last drop,” and the hardware and software are costly and complex. We are at a point, like the early 1970s, where automotive emissions limits imposed by the government resulted in powerless and thirsty cars. But today, cars are incredibly clean and are orders of magnitude more efficient. The only “global” problem is that there are a lot more of them — to the point where some cities, such as London, impose a “congestion fee” to drive to work downtown. Some say the fee cleans the air; others say it fattens an inefficient city government with suburban professionals’ money.

In contrast, the second part — politically mandating the use and existence of 50+ year old coal-fired power plants to save shareholders’ fortunes from bad management — is not the answer. Nor is relaxing rules on disposal of coal ash or fracking waste, however reasonable it seems on paper…unless you live nearby and cannot pay your local politician as much as the PAC for the impacted industry.

Going deeper into “how clean is clean,” there are two present paths: one silly and one promising. The first, “electric,” is sexy and lets the engineers’ minds wander into new concepts and deep technical forests. Unfortunately, battery electric machines, like those on the eve of introduction — such as the MECLAC, Doosan, Volvo and other mini and small sized excavators — are NOT “clean.” They are merely machines without extension cords to the wall socket and the power grid, and they will not be truly clean until the unicorn of renewable energy is grazing in everyone’s backyard. Simply put, this is just sweeping the power plant “carbon” under the political and advertising rug. Truth be told, to drive your Tesla from New York to Chicago takes more BTUs of coal or natural gas energy than 20 diesel semis, due to the natural losses in moving and transforming the plug-in electricity at either end.

This is not to dismiss battery electric machines; they do and will have an important place in the industry for working in urban areas, inside, and where noise is an issue. But the battery powered five-yard loader is still a pipe dream and not truly clean until the “source of power” issue is solved.

Coming full circle to our beloved diesels, at what cost to manufacturing, operation, and repair must we endure to scrape that last small percentage of CO, NoX, and particulates from the exhaust? This is both a hardware and a software issue. The latter I have written about many times, as the OEMs are circling their wagons to close out any engine rebuilding that depends on the ECU or MCU to restart and operate the engine after a rebuild.

The hardware issue not only concerns the add-ons which, for now, are not an aftermarket matter, but also the internal and external hard parts that the governmental “lawyer-engineers” have suggested must come only from the OEMs. If the OEMs have their way, no part of an engine that even remotely could impact emissions must be “approved.” Even the slightest deviation from “OEM” specifications is fair game for regulators and, of course, the inevitable “enforcement.” It gets ridiculous. An oil pump must conform, lest it pump too much or too little oil and the rings do “something” that increases emissions. Rules made and enforced by technically clueless governmental engineers and lawyers makes responding to any challenge a costly and risky proposition.

Needless to say, the OEMs love this target rich environment. They not only send their engineers and lawyers makes responding to any challenge a costly and risky proposition.

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lobbyists to the halls of power, but also have black programs that target the aftermarket with disinformation forays to the regulators and enforcers. This can take many forms, from seeking to ban their own foreign made machines from being “gray” imported, because they have “polluting” engines or ECUs to trying to “explain” to regulators why aftermarket parts cannot possibly meet OEM specifications and, thus, should be banned and the bad boy aftermarket fined out of business. Do not be complacent. This is not a “cold war,” but an integral part of OEM and Tier 1 strategies to increase market share with phony claims and unethical tactics.

The regulators love this, as unwitting sheep following the Little Bo Peep OEM Plan that will lead to more fines, promotions, and maybe even to Big Law or OEM jobs. How could the OEMs even be thought to deceive the regulators? After all, they are all wonderful, ethical companies. Just look at their ad and mission statements.

What is the answer? It is global, but also more personal. This is our members’ livelihood and future. Forget the old used machine business, where engines were drained into the dirt; that’s ancient history. Today, we must be aware and agile and, unfortunately, willing to spend time and money to protect ourselves from the OEMs and their willing allies, the regulators. Why us? Well, why not? If the OEMs and Tier 1s are willing to spend millions on influencing regulators and lawmakers, we need to get out our wallets and start to spend on counterattacks. Now is the time, and it should be an Association, board, and industry priority. Is there any reason why we should not team up with APEXX, ADS, and others? All of our businesses are at risk in one way or another. The OEMs and Tier 1s are on the march. Fight now or lose later.

**LEGAL LINE**

*Continued from page 49*

Robert W. McIntyre is now affiliated with Dinn Hochman and Potter, LLC, a law firm dedicated to representing and supporting businesses in successfully navigating advisement, litigation, and intellectual property matters worldwide.

Bob can be contacted at rmcintyre@dhplaw.com or 01.440.466.1100

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**Bobcat’s New Rear View Camera Brings Blind Spots into Clear View**

There’s no way around the fact that skid steers have a big blind spot directly to their rear line of sight. Side mirrors help, but Bobcat has come up with an additional solution – a retrofit rear camera kit.

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The camera mounts on your Bobcat loader tailgate, protected by a sturdy metal housing.

The camera is activated whenever the ignition is turned on and runs continuously as the loader runs in forward and reverse. A heavy-duty metal housing and a rubber backlit keypad protects components from hazards. Internal heaters keep snow, condensation and ice from obscuring the view in temperatures as low as minus-40 degrees Fahrenheit to as high as 185-degrees.

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