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March 2023

A PUBLICATION FOR AND ABOUT OUR CUSTOMERS IN THE NORTHWEST



Alan Good,
owner

Good Crushing Inc.
Washington company makes
a wide range of products,
from sand to riprap



A Message from Modern Machinery



Jeff Schwarz

**Fuel savings,
reduced
emissions**



Dear Valued Customer:

While prices at the pump have dropped for gasoline, diesel remains stubbornly high. There are many ways to reduce fuel usage such as idling less and shutting machines down when they will be out of service for extended periods of time.

Choosing the right equipment for the job can also help ensure maximum productivity and fuel efficiency. On traditional dirt jobs that involve digging, swinging and loading, a solid option is Komatsu's innovative Hybrid HB365LC-3 excavator that converts swing braking into electric energy that is stored and used to provide swing power. Compared to standard machines, the hybrid can also cut emissions significantly, which helps reduce your carbon footprint and improve sustainability measures.

Speaking of innovation, no one does it quite like Komatsu with its suite of Smart Construction solutions. Check out the articles on how Drone, Dashboard and Remote are helping customers save time and reduce costs with the increased efficiencies these solutions provide.

Remember: If you don't take care of your machines, they won't take care of you. We offer some tips on battery maintenance and remanufactured NOx sensors that can be useful to your operation.

That has always been our mission — to provide you with helpful information, the best equipment and world-class service. We will continue to do so in 2023 and beyond.

As always, if there is anything we can do for you, please feel free to contact us.

Sincerely,
Modern Machinery

A handwritten signature in black ink, appearing to read "Jeff Schwarz", written over a light grey background.

Jeff Schwarz,
President



In this issue

Good Crushing Inc. pg. 4

Meet Alan Good, whose business makes products ranging from sand to riprap.

Industry Outlook pg. 9

Discover what is in store for the construction industry in 2023.

Guest Opinion pg. 12

Listen to Sam DeBaltzo's advice about liens.

Smart Construction pg. 15

Move earth faster and save money with Smart Construction solutions.

Greener Excavator pg. 19

Check out Komatsu's Hybrid HB365LC-3 excavator.

Savings for You pg. 23

Take a look at Komatsu's genuine Reman NOx sensors.

Battery Maintenance pg. 25

Follow these tips when handling batteries.

Forestry Focus pg. 27

Get a glimpse of Komatsu's new XT-5 tracked harvesters.

Timber Talk pg. 28

Read about how the Falcon Winch Assist has helped transform steep-slope logging.



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See employee directory

The name may have changed, but Good Crushing Inc.'s reputation for providing quality products hasn't



Alan Good,
Owner



Discover more at
ModernUpdate.com

Even though the name didn't always reflect it, Good Crushing Inc. has been turning big rock into usable materials almost since it was originally founded as Good Construction, according to owner Alan Good.

"We did roadwork early on, but adopted portable crushing right away," recalled Good, who started the business in Washington in 1987. "A lot of our jobs were for the Forest Service, and that eventually changed into more state and county projects. We opened a quarry in 1995 and changed the name around that time, but we maintained the portable work as well as roadbuilding."

About a decade later, Good decided to drop roadbuilding and concentrate solely on crushing. He also acquired a second quarry. Today, he owns two and leases two more.

"We have three hard rock 'drill-and-blast' operations located near Winlock, Adna and Lexington, and we have one near Mossyrock that is a river rock operation," Good noted. "From those, we can service a sizable area of southwest Washington with just about any needed materials."

Good Crushing makes about 12 to 14 products, ranging in size from sand to riprap. Good estimates that the company tonnage is between 600,000 and 750,000 annually. Chips, five-eighths-inch rocks, 1.25-inch rocks, as well as rocks that are between 2.5 and 3 inches are top sellers.

"Currently, we are running full time at Winlock and Lexington, and we will open up and crush out of the others as necessary," said Good. "The Winlock area especially is growing rapidly, and we have a convenient and centralized location just off of Interstate 5 with very high-quality rock, so we have supplied a lot of products to several big projects."

Good Crushing also offers hauling to customers with its own trucks as well as with contract haulers.

"There are a lot of local guys running dump trucks, and they buy a lot of rock from us, so hiring them is mutually beneficial," said Good.

Komatsu loaders lead the way

Good bought his first Komatsu WA500 wheel loader from Modern Machinery in the mid-1990s and has continued to trade up and use them ever since. He does, however, still run one of the first units he acquired, a WA500-3, along with a WA500-6 and a WA500-8.

"The 500-3 has about 27,000 hours, and we have never touched the motor, brakes or transmission," Good said, who also purchased a WA470 several years ago. "Basically, all we have done is regular maintenance and replaced the pumps. It's still tight and a good machine. I suppose I could trade it in, but it still has too much value for me to give it up. The 500s have always given us outstanding production and reliability. They are in near-constant motion — digging into piles and carrying material — as we use them for charging crushers."

Good Crushing recently worked with Modern sales representative Chris Thompson to add a new WA475-10 that has more horsepower and better fuel efficiency compared to the WA470. It also has increased boom lift and break force, as well as a new bucket design



Operator Jim "Fred" Jones charges the crusher with a Komatsu WA500-8 wheel loader with an 8.5-yard bucket. "It has great power, so I can move material quickly, and I like the joystick control," said Jones, "It has about 8,000 hours with no breakdowns, and we've never done anything to it other than routine maintenance."





► VIDEO

Operator Dan Fisher carries a load of rock with a Komatsu WA475-10 loader at Good Crushing's Winlock, Wash., quarry. "The transmission (a Komatsu Hydraulic Mechanical Transmission with dynamic braking that reduces brake wear and extends component life) is incredible," said Fisher. "If I'm on a hill and see a truck coming behind me, I just let off the gas and the loader stops. I don't have to worry about it rolling back. When I'm loading trucks, the (factory-installed) on-board scale is very helpful because tonnage is more accurate without the guesswork."

that improves pile penetration and better retains material in load and carry applications. Modern equipped the loader with an automatic lubrication system.

"The WA470 is a great loader with outstanding reliability, and we still use it practically all day, every day," said operator Dan Fisher. "The WA475 is a real upgrade. I would say I can push about 50% more material when leveling stockpiles. The transmission (a Komatsu Hydraulic Mechanical Transmission with dynamic braking that reduces brake wear and extends component life) is incredible. If I'm on a hill and see a truck coming behind me, I just let off the gas and the loader stops. I don't have to worry about it rolling back. When I'm loading trucks, the (factory-installed) on-board scale is very helpful because tonnage is more accurate without the guesswork."

"Ease of maintenance is great too, because you open the hood with the push of a button, and everything is right there in front of you," Fisher added. "It has handholds around the cab and steps that let you get right up to the windows when you're replacing wiper blades



Operator Rick Wallace separates riprap with a Komatsu PC390LC-11. "The PC390 is well-balanced with good stability," said Wallace. "I use it to dig after blasting, and there are some sizable rocks in the mix. It handles those without issues."



or cleaning glass. Komatsu really thought of everything."

Good also runs a Komatsu HM300-5 articulated truck in the Winlock quarry. For overburden

Continued...

'We like the balance and stability of the PC390s'

... continued



**Richard "Bear" Terry,
Mechanic**



**Kevin "Beans" Miller,
Operator**

removal and digging loosened rock after blasting, Good Crushing has turned to Komatsu PC390LC-11 excavators.

"We like the balance and stability of the PC390s," said Good. "They are big enough to handle good-sized loads of material and separate large rocks from small, while also being small enough that we can easily move them on a low-bed trailer. I also have a new PC210 (LC-11) that I use around my farm to clear and pull stumps. It's a strong, stout machine."

Modern handles routine scheduled service through Komatsu Care for up to 2,000 hours or three years on Good's most recent purchases and provides repair service on its other brands of equipment. Good Crushing maintains its older Komatsu machines, as well as its competitive-model crushing equipment, with parts and fluids from Modern.

"Modern is a one-stop shop, and it and Chris, Cody Marshall (product support sales representative) and Preston Hornby (shop foreman), are outstanding individuals to work with," stated Good. "If I need anything, they are right there to take care of it. I appreciate

the quality of their work and their equipment knowledge. I can honestly say that Modern's been a big part of our ability to expand over the years."

Credit to staff for success

Good gives most of the credit for the company's success to his staff. He employs about 15 full time and adds more during summers when Good Crushing performs overburden removal.

"If you don't have good employees, you don't have much of a company," Good emphasized. "They are number one in my book. I have some that have been with me — or in the industry, or both — for a long time like Dan Fisher; Jim Jones; Richard Terry, who we call Bear; Rick Wallace; and Kevin Miller, who's known as Beans. It's a great group of people across the board."

He may be looking to hire more soon.

"Our next step will probably be to put another crushing spread together," said Good. "That's our goal right now. We see demand staying fairly high for a while, and we have the resources to meet it." ■

(L-R) Good Crushing owner Alan Good works with Modern Machinery's Cody Marshall and Chris Thompson. "If I need anything, they are right there to take care of it," said Good. "I appreciate the quality of their work and their equipment knowledge."

▶ VIDEO





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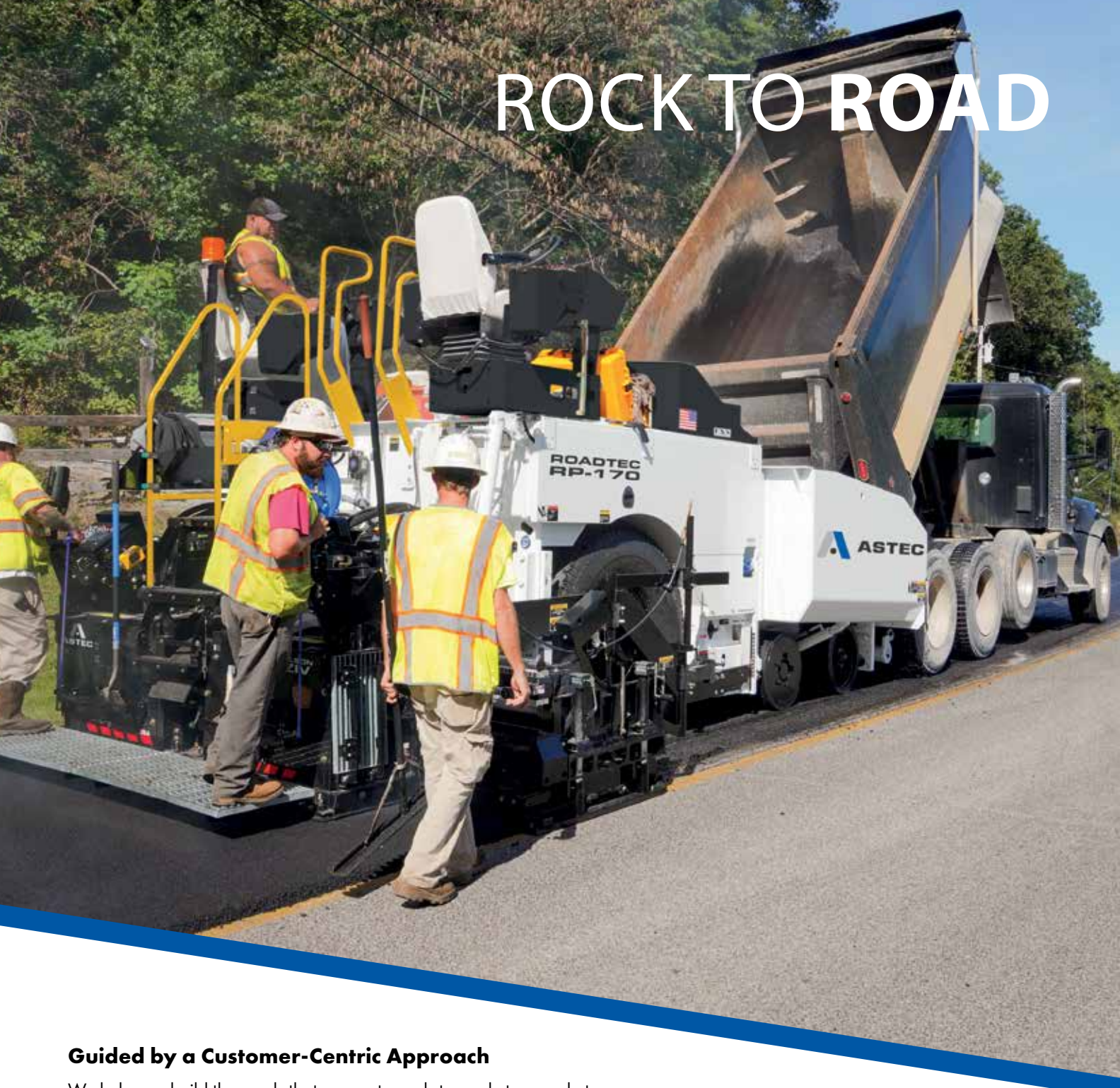
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Bipartisan Infrastructure Law positively impacts transportation, overall forecast is mainly flat due to inflation concerns

In late 2021, President Joe Biden signed the \$1.2 trillion Infrastructure and Investment Jobs Act (IIJA) into law, which was a historic investment in the nation's infrastructure and transportation funding. The Bipartisan Infrastructure Law has had a positive effect and will continue to do so in 2023, according to several construction industry professionals as they forecast this year's outlook.

During testimony before the Environment & Public Works (EPW) Committee in late 2022, American Road & Transportation Builders Association (ARTBA) President and CEO Dave Bauer told senators that 29,000 transportation improvement projects are moving forward thanks to the Bipartisan Infrastructure Law. Bauer highlighted ARTBA's economic analysis, showing that highway formula funds supported 2,500 more safety, mobility and maintenance improvements in 2022 than in 2021, while the number of \$100 million projects increased from 18 in 11 states to 24 in 14 states.

"Though each project has a unique story of need and solution, they are all tangible illustrations of the impacts underway from the leadership of this committee in delivering generational investments through a multiyear surface transportation program reauthorization," said Bauer.

The Bipartisan Infrastructure Law reauthorized surface transportation programs for five years, investing \$110 billion in America's aging roads and bridges.

ARTBA estimated that highway and bridge construction spending will increase 13.4% this year to a total of \$119 billion, according to the article "2023 Forecast: Markets are Mixed for Year Ahead" published by Engineering News-Record (ENR). Dodge Data & Analytics Inc. is even more optimistic, predicting new starts will be as high as 20%, thanks to infrastructure funding. That would be an increase beyond the 23% rise Dodge forecast for the end of 2022. Dodge Chief Economist Richard Branch pointed out that only 19% of funding from the Bipartisan Infrastructure Law had been allocated by late last year.

"There's a lot of money still on the table waiting to be spent," said Branch in the Equipment

World article "Dodge Economist: Prepare for a Rocky First Half of 2023." "We continue to think 2023 and 2024 are the best years for infrastructure construction. But, I could foresee, again, if we have appropriation delays, that maybe 2024 and 2025 are the best years."

Modest downturn, quick recovery

Infrastructure projects are bright spots in the overall construction industry, which has been slowed by several factors during the past year. Dodge sees it as relatively flat in 2023, with a slight decline. Fails Management Institute (FMI) forecasts a 1.3% decline.

"I don't think this is another great recession," said Jay Bowman, Principal of Industry Management Consultant for FMI in the ENR article. "I'll take flat over down any day of the week."

Branch noted that inflation will be a big factor going forward, along with other causes for concern such as the war in Ukraine and oil production cuts by the Organization of the Petroleum Exporting Countries (OPEC). Branch's forecast assumes that core inflation will improve, and there will not be any major shocks.

Continued...

Multifamily housing appears to be a bright spot in the residential sector. Dodge predicts a 1.4% rise in starts, while FMI sees a nearly 6% jump.



'Inflation is expected to remain high'

... continued

If his predictions are correct and everything remains stable, Branch believes a "technical recession" could be avoided with economic stabilization and recovery starting in the latter half of 2023. He added that a strong banking system and undersupplied housing market are favorable for the construction industry.

"We're sitting at 14- to 15-year highs in the Dodge Momentum Index, so it should provide some semblance of confidence and reassurance that developers and owners are continuing to put projects into the queue despite the fact that we're concerned about what might happen when interest rates keep rising and the economy slows down in 2023," said Branch.

In its most recent outlook, the Portland Cement Association (PCA) projected a near-term demand decline of about 3.5% for 2023, the first decline in 13 years. It expects the slowdown to be short, with growth returning in 2024.

"Due to inflation and rising interest rates, economic growth is expected to remain

sluggish through mid-2023 with unemployment reaching 4.7%," said Edward J. Sullivan, PCA Chief Economist and Senior Vice President. "Inflation is expected to remain high, leading to further monetary policy tightening through this year and into early next."

Sector gains

While both Dodge and FMI predict overall construction starts to be down in 2023, both foresee increases within several sectors. Dodge predicts a slight increase in total residential construction, including 1.4% in the multifamily category. FMI anticipates a nearly 6% jump in multifamily, despite overall residential starts being lower.

Dodge and FMI have opposing outlooks on total non-residential as well. FMI is optimistic of a 4.4% rise, led by the manufacturing sector with a jump of 15.4%. It sees lodging, amusements and recreation, education, health care, commercial and public safety all getting boosts. Dodge predicts increases for hotels and motels, stores and shopping centers, and education. ■

The Bipartisan Infrastructure Law will give a boost to projects such as roads, bridges, canals, broadband, utility upgrades and more in 2023, according to industry forecasters. ARTBA estimated that highway and bridge construction spending will increase 13.4% this year to a total of \$119 billion. Dodge is even more optimistic, predicting new starts to be as high as 20%, thanks to infrastructure funding.



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Subcontractors, don't waive your right to a lien



Sam DeBaltzo,
Associate Attorney,
Tonkon Torp LLP

In the course of reviewing construction subcontracts, I've recently seen provisions similar to the following (simplified for convenience and confidentiality):

- "The subcontractor shall reimburse the [contractor and/or owner] for any costs and expenses for any claim, obligation, or lien that arises from the performance of the work."
- "The subcontractor shall remove and discharge any lien, claim, security interest, or other encumbrance related to the subcontractor's performance of the work."

The provisions are often followed with boilerplate requirements for paying the third-party claimant, bonding, reimbursement of attorneys' fees, indemnification responsibilities, or other ways of providing security to the owner or general contractor.

The purpose of these types of provisions is clear: Owners want their projects completed free of liens, and they want the person responsible for the work to make sure that happens. This is an understandable position, and it is reasonable for any construction contract to require lien waivers. The problem is that these provisions do not require payment prior to the waiver.

Yes, if a subcontractor is paid, it should agree to keep the project clear of liens and remove any

liens filed by its respective subcontractors or suppliers. But, until payment has occurred, retaining the powerful lien right is essential for any prudent subcontractor. Whether intentional by the drafting party or not, these provisions suggest the subcontractor is agreeing to waive its lien rights even when the owner or contractor fails to pay.

Simple solution

With these specific provisions, I find the solution is simple and relatively unobjectionable; I like to add "provided subcontractor has been paid for the work" at the beginning of the phrase.

Subcontractors should be on the lookout for these and other potential pitfalls, and make sure they do not unwittingly leave themselves unprotected by accepting provisions that are inherently unfair. ■

About the Author: Sam DeBaltzo has a wide variety of experience representing clients in real estate transactions and the purchase, sale and leasing of real property. He additionally provides counsel in several related industries, working routinely with construction, architect and engineering contracts. His business law experience includes general corporate matters and representation of both for-profit and non-profit businesses in mergers, acquisitions and dispositions. For more information, visit tonkon.com.

Until payment has occurred, retaining the powerful lien right is essential for any prudent subcontractor.



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Smart Construction solutions, iMC help Castle's Renewable Energy Division move earth faster with decreased costs

The company known today simply as Castle was originally founded as Progressive Pipeline in 1999 by Mike Castle Sr. His business focused on providing service to the oil and gas industry with jobs done with integrity, on time and on budget. That strategy proved highly successful, and within three years, the company landed its first multimillion-dollar contract, which led to the creation of more divisions within the firm.

In addition to Pipeline, Castle's divisions now include an Integrity Group, a Facility Group, Directional Drilling, Environmental Reclamation, and its latest undertaking: Renewable Energy, which focuses on sitework and other services for wind and solar projects.

"Castle saw the transition to renewables and wanted to be a part of that," said Vice President Chris Scheve, who joined the company about a year ago and has helped spearhead the formation and expansion of the Renewable Energy Division. "With our skilled workforce and our equipment, it's a nice fit to move over and do the renewables effort."

Joel Brewton, Vice President of Asset Management & Centralized Services, added, "Outstanding service is our hallmark, and that's really built around doing things safely and efficiently. We believe that goes hand in hand with delivering solid production. We are

always seeking ways to improve our practices. Technology — such as the Komatsu Smart Construction machinery and solutions we now use — is playing an increasingly bigger role for us because we see the benefits it is delivering in terms of cost and time savings."

Brewton and Scheve emphasized that the two large solar projects that Castle's Renewable Energy Division recently took on in Wisconsin are prime examples. About a year ago, Castle began site preparation, including putting the sites to grade, building basins, and handling erosion control. Between the two, Castle team members moved about 700,000 yards of dirt.

"Our Onion River project, which is the bigger of the two, involved about 18 different sites, so it was pretty spread out," explained Superintendent Rocky Hartwick. "We started in July and had the mass grading done by the end of the year. Our Crawfish River project began earlier, and the grading was basically done within a relatively short timeframe."

Hartwick continued, "These projects were our first ones using Komatsu's intelligent machines, and we were very impressed with the ability to use the integrated GPS from grass to grade. Using traditional methods, we cut approximately two acres to grade each day. Komatsu's intelligent machines allowed us to do 10 to 12 acres without the need for a grade

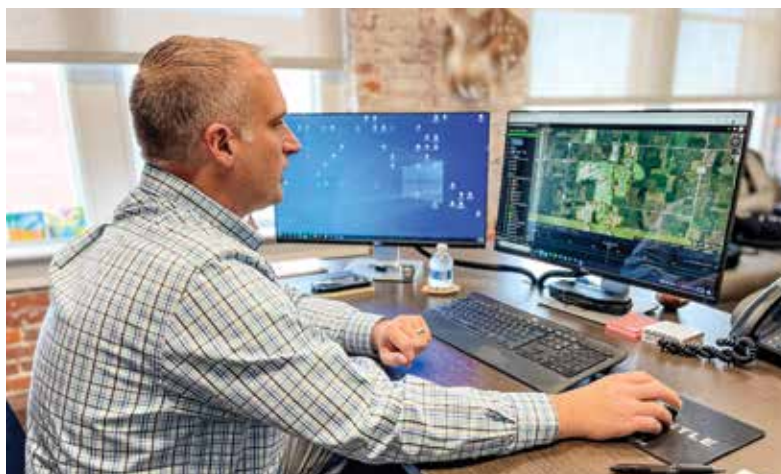


Chris Scheve,
Vice President,
Renewable Energy



Joel Brewton,
Vice President of
Asset Management &
Centralized Services

Continued ...



Komatsu's Jason Anetsberger (left) uploads data from the Smart Construction Drone flights to Smart Construction Dashboard. Castle's Joel Brewton (right) uses Komatsu's Smart Construction Dashboard in his office in Meridian, Miss., to check the progress of Castle's job sites in Wisconsin.

Technology helps Castle stay on schedule

... continued



Watch the video

checker because the machines always know where they are in relation to final grade. The accuracy and efficiency are spot on."

Using Smart Construction solutions

Throughout the projects, Castle has used Komatsu intelligent Machine Control (iMC) dozers and excavators, as well as Smart Construction Drone, Smart Construction Dashboard and Smart Construction Remote. Castle also purchased its own drone, and staff members received training from Komatsu, so they could conduct flights independently.

"Komatsu corporate has been a big part of helping us learn the intelligent system as well as incorporating drone flights to verify that what the machines are seeing is exactly what we're seeing," Scheve explained. "We've made drone flights a standard, so before we ever move a speck of dirt, we do an initial flight of the sites to make sure we have accurate models to work from. CAD (computer-aided design) files are developed from those, and those models are uploaded to the intelligent machines. We do subsequent flights about a month apart to check progress and verify how much dirt was moved, and that gets uploaded to Dashboard. That information helps us put together as-built models we can show to the customer and keep accurate records."

Brewton said that level of accuracy has been impressive to Castle and its customers.

"We are a very schedule-driven contractor," Brewton stated. "When we make a schedule, we want to stay on it. Drone flights let you verify a site within a matter of hours rather than days with the old methods of walking the site and staking it. Instead of taking maybe 20 shots with a rover and a stick within a 10-foot section, the drone is shooting thousands of points in that same area, so it's delivering a more accurate picture. Billing is another advantage we see. We don't want to overcharge our customer or be underpaid. With the drone, you can verify exact quantities, and you get paid for exactly the work you've done, and that's what we want."

Additional adoption

Increased productivity and efficiency with Komatsu iMC machines and Smart Construction solutions on the Renewable Energy Division's Wisconsin projects have encouraged the Castle team to expand their usage of technology.

"Recent legislation is only going to put additional significant dollars into renewables, and we have customers asking us for commitments for several years out; making the investment makes sense," said Scheve. "We see the applications for the machines and solutions in our other divisions too, such as Pipeline, so we are looking into how to adopt it for those going forward." ■

***The opinions expressed here are from the end users who are quoted.*



An operator cuts grade with a Komatsu D71PXi-24 intelligent Machine Control (iMC) dozer on Castle's Onion River project near Adell, Wis. "We were very impressed with the ability to use the integrated GPS from grass to grade," said Superintendent Rocky Hartwick. "The accuracy and efficiency are spot on."

► VIDEO





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Hybrid HB365LC-3 excavator offers significant fuel savings and helps reduce your carbon footprint with lower emissions

Looking for ways to increase production while reducing costs? In today's economy with diesel prices higher than ever, using a hybrid excavator such as Komatsu's Hybrid HB365LC-3 is a solid solution, according to Kurt Moncini, Senior Product Manager, Komatsu.

"Hybrid technology continues to grow and be adopted in the automotive world, and the construction industry is coming around to the benefits such as lower fuel costs and emissions," said Moncini. "The HB365LC-3 offers increased fuel efficiency without sacrificing power, so the overall performance is outstanding. A topper on the cake is the added benefit of reduced emissions that lowers your carbon footprint and promotes sustainability."

Moncini continued, "Based on EPA's (Environmental Protection Agency) CO2 formula, the Hybrid potentially offers an up to 20% reduction in CO2 emissions compared to the standard PC360LC-11. It's a big win all around."

Komatsu introduced the 36-ton Hybrid HB365LC-3 — the industry's first true hybrid in that class size — in 2017. Since then, thousands have been used around the world for all types of excavation, loading trucks and to perform other tasks. The HB365LC-3 followed the introduction of Komatsu's first hybrid excavator, which was launched in 2008.

"The Hybrid HB365LC-3 has equal or better performance than our standard PC360LC excavator, but with fuel savings that could be as high as 20%, depending on application," said Moncini. "It's a great fit for construction companies that use excavators in high-swing applications, as well as for feeding crushers in quarry, recycling and demolition applications where swing is a constant."

An electric swing motor captures and regenerates energy as the upper structure slows down and converts it to electric energy.

Moncini explained, "It's using energy that would normally be wasted and makes it available to do work, contributing to increased efficiency and decreased diesel usage."

Highly responsive

The energy captured during each swing braking cycle is stored in the Hybrid HB365LC-3's ultracapacitor. Each time the excavator swings, the capacitor discharges electric power to the electric swing motor.

"A traditional battery requires time for the chemical process that releases electricity to occur," stated Moncini. "The heavy work nature of construction equipment places a much faster demand on power transfer. The ultracapacitor's ability to store and discharge energy quickly makes it ideal."

Continued...



Kurt Moncini,
Senior Product
Manager,
Komatsu



Learn more

Komatsu recently improved the warranty on the HB365LC-3's hybrid components to seven years or 15,000 hours. The warranty covers the electric swing motor, motor-generator, capacitor and inverter.



'Users are raving about their productivity and cost savings'

... continued

He added, "When it comes to the boom arm and bucket, the capacitor drives the swing, and all available engine horsepower can go into the hydraulic system. This creates faster cycle time and a very quick, responsive swing. It's snappy."

In addition to powering the swing motor, the ultracapacitor sends electric energy to the engine via the motor-generator. This energy is used to accelerate the engine from an ultra-low idle speed of 700 revolutions per minute (rpm) and improve hydraulic response.

Tier 4 and more

Komatsu recently improved the warranty on the HB365LC-3's hybrid components. The special hybrid component warranty term is now up to seven years or 15,000 hours and covers the electric swing motor, motor-generator, capacitor and inverter. If you sell the excavator, the warranty is transferrable.

The Hybrid HB365LC-3's 269-horsepower engine is a six-cylinder with a Komatsu aftertreatment system that meets U.S. EPA Tier 4 Final emissions regulations. A Komatsu Diesel Particulate Filter (KDPF) and Selective Catalytic Reduction (SCR) work together to inject Diesel Exhaust Fluid (DEF) and decompose nitrous oxide into non-toxic water and nitrogen.

Komatsu Care comes standard, including two complimentary KDPF exchanges and two SCR services during the first five years with unlimited hours. It also covers scheduled maintenance for the first three years or 2,000 hours. All work is done by factory-trained distributor technicians.

Hours and key performance data can be tracked remotely with Komtrax. Operators can see the information first-hand on the 7-inch, color LCD monitor, including a capacitor charge gauge, DEF levels and a rear-view camera. Komtrax has an Operator Identification System that records machine-operation and application data for up to 100 individual ID codes.

Operators will also appreciate lower noise levels in the spacious ROPS (roll-over protective structure)-certified cab. Features include vibration-dampening mountings and a fully adjustable, air-suspension seat and arm rests. A Bluetooth AM/FM radio is now standard on new machines.

"Users are raving about their productivity and cost savings," said Moncini. "It's not the right machine for every application or job site, but on those swing intensive jobs where it fits, it really stands out. We encourage anyone who uses excavators in the 36-ton class to contact their distributor for more information and to set up a demonstration." ■

"The Hybrid HB365LC-3 has equal or better performance than our standard PC360LC excavator, but with fuel savings that could be as high as 20%, depending on application," said Kurt Moncini, Senior Product Manager, Komatsu. "It's a great fit for construction companies that use excavators in high-swing applications, as well as for feeding crushers in quarry, recycling and demolition applications where swing is a constant."

Quick Specs	
Model	Hybrid HB365LC-3
Horsepower	269 hp
Operating Weight	81,791-85,495 lbs.
Bucket Capacity	0.89-2.56 cu. yd.



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Reman NOx sensors deliver optimal performance while lowering costs, controlling emissions and promoting sustainability

Equipment users often think of remanufacturing when it comes to engines and large components because the cost savings are significant, and they are getting “like-new” with a warranty. However, you could also save resources with smaller remanufactured items you may not have considered.

“NOx (nitrogen oxides) sensors are a great example of a high-quality, low-cost replacement option that help avoid breakdowns and reduce owning and operating expenses,” said Komatsu’s Goran Zeravica, Senior Product Manager, Reman. “A Reman NOx sensor protects your diesel engine’s aftertreatment system and promotes optimal performance with the added benefit of lowering emissions and promoting sustainability.”

Komatsu genuine Reman NOx sensors meet original equipment specifications, assembly processes and test procedures to match the performance of a new part. They help equipment users stay in compliance with regulations while maintaining productivity.

Komatsu genuine Reman NOx sensors can also help you:

- Avoid maintenance issues with new/upgraded probe tips fitted with an anti-seize lubricant that is pre-applied to the sensor threads

- Reduce wear with watertight inline connectors that verify electronic continuity between the probe and the control module
- Operate predictably with limited data from the control panel, including temperature, mileage and hours
- Reduce waste and save natural resources by reusing and salvaging components

Get the credit you deserve

Zeravica noted that sensor probes are a common failure, so remanufactured NOx sensors are fitted with new probe tips. Once the sensor probe is replaced, Komatsu Reman NOx sensors are calibrated and bench tested. Reman components are backed by a one-year, unlimited-hour warranty.

“We highly encourage that you return your used NOx sensor, so you get full core credit, even if the probe has been cut,” said Zeravica. “Contact your Komatsu distributor for additional details and work with them to acquire the right sensor and for proper installation.” ■

To learn more about Komatsu Reman, visit <https://www.komatsu.com/services-and-support/equipment-reman-assembly/>.



Goran Zeravica,
Senior Product
Manager,
Reman,
Komatsu



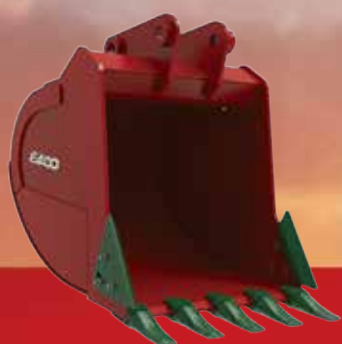
Discover more

A Komatsu genuine Reman NOx sensor protects your diesel engine’s aftertreatment system and promotes optimal performance. The low-cost, like-new replacement can help you avoid breakdowns and reduce expenses.



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Proper storage and handling of your equipment's batteries ensure safety, help maintain peak performance

Batteries are crucial to your equipment's productivity, and properly caring for them can ensure their performance and longevity. Here are some tips to prepare batteries for storage, so they are ready to work when you are.

"Safety is of utmost importance because batteries generate explosive hydrogen gas," emphasized Komatsu's Veronica Vargas, Product Manager, Parts. "Always wear safety glasses, a face shield and proper gloves when working on or near them. Batteries also contain corrosive sulfuric acid that can destroy clothing and burn the skin. Neutralize acid spills with a paste made of baking soda and water or large quantities of water."

To stay safe when handling batteries, remember these tips:

- Keep sparks, flames and cigarettes away from batteries
- Do not connect or disconnect "live" circuits
- Always turn charging and testing equipment off before attaching or removing clamps to avoid creating sparks
- Perform work in a ventilated area
- Never lean directly over a battery while boosting, testing or charging it

Always store batteries in a cool, dry place, and do not store batteries outside or high on racks. Add demineralized water to non-maintenance-free batteries as required.

Test, inspect

When it's time to use the batteries again, testing should be done prior to installation. Use load testers to simulate starting, and test for conductance and voltage. Charge batteries, if necessary.

"Just as you do with batteries, it's important to maintain testing and charging equipment," said Vargas. "Clean the terminals and cable ends. Check for correct output, check leads for corrosion, and change leads annually. As you prepare to test the batteries, check them for any signs of damage, and if there is any, or if there is any doubt about their safe usage, replace them immediately as usage may lead to severe consequences."

Vargas concluded, "If you take care of batteries, they will take care of you. We recommend that when it's time to replace them, you use genuine Komatsu products from your Komatsu distributor." ■



**Veronica Vargas,
Product Manager,
Parts,
Komatsu**



Proper battery care ensures your equipment's productivity and long battery life. If you are storing batteries, it's essential to follow safety guidelines.





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New XT-5 tracked harvesters provide maneuverability and power in demanding conditions

To harvest trees in tight, dense and rugged-terrain forests, operators need machines with maneuverability, power, versatility and reliability. With Komatsu's XT430-5 and XT445L-5 tracked harvesters, operators can harvest closer to the carrier and maneuver confidently thanks to a lower center of gravity and off-set boom.

Made to perform in demanding conditions, Komatsu's XT-5 closed-loop tracked harvesters enable operators to simultaneously travel, cut, delimb, harvest and swing timber. Engineered with hydraulic lines for each function, operators can use the tracks, boom, arm and tools concurrently.

"Komatsu developed the XT-5 tracked harvesters to meet demanding needs, including a larger swing motor that provides additional swing torque compared to previous models," said Kyle Kovach, Product Planning Manager for Komatsu Forest. "They are also very versatile with multiple work equipment lengths and the ability to utilize many harvesting head sizes."

Benefits of the XT-5 tracked harvesters include:

- Significantly greater lift capacity
- 10% more horsepower
- 16% more torque
- 5% lower fuel consumption
- Excellent uptime and serviceability

More powerful, more productive

The short-tail swing of Komatsu's harvesters lets operators work through dense forests and clear-cutting environments. The set-back boom allows cutting close to the undercarriage and tracks, while the powerful swing torque excels in demanding applications.

Designed to significantly increase lift capacity, handling trees with the arm fully extended is made easier. With an excellent balance between boom lift and arm holding capacity, the XT-5 harvesters can be equipped with a wide selection of harvesting saw heads.

The harvesters can be adapted to the job with two different working ranges. Use the short reach and larger-scaled head to harvest larger trees, or switch to a longer reach and more compact designed head to grab trees further from the carrier.

With the XT-5 harvesters, you can save on maintenance costs because the innovative hydraulic tank system design requires 55% less hydraulic oil. Pumps are equipped with hydro-nucleation to help prevent pump cavitation and are 17% larger to help extend component life by operating 500 revolutions per minute (rpm) slower. The engine gull-wing and wide swing-out doors on the XT-5 harvesters offer quick and easy access to all engine service points and all key components.

"Terrain will be a determining factor in which model to choose for your particular operation," said Kovach. "The XT430-5 is non-leveling, while the XT445L-5 provides a leveling capability, so it's more effective on uneven and steep ground. It also has more tractive effort and better stability. We encourage anyone in the forestry industry to contact their Komatsu distributor for additional details." ■

All comparisons and claims of improved performance made herein are made with respect to the prior Komatsu model (XT-3) unless otherwise specifically stated.



Kyle Kovach,
Product Planning
Manager,
Komatsu Forest



XT430-5



XT445L-5

Quick Specs

Model	Horsepower	Tractive Effort	Swing Torque
XT430-5	331 hp	64,926 lbf.	64,445 lbs.-ft.
XT445L-5	331 hp	75,799 lbf.	64,445 lbs.-ft.

Komatsu's new XT-5 tracked harvesters enable operators to simultaneously travel, cut, delimb, harvest and swing timber.



Modern Machinery completes milestone build of 200th Falcon Winch Assist system that helped transform steep-slope logging

Logging steep slopes presents safety risks as well as challenges that affect production. Overcoming both has been a mission for DC Equipment, manufacturer of the Falcon Forestry Equipment (FFE) Falcon Winch Assist, which recently saw completion of its 200th unit with the help of Modern Machinery.

"The 200th is one of a significant number of units Modern has built during the past several years," said Modern Territory Manager Russ Smith, who was instrumental in bringing the FFE Falcon Winch Assist to the Pacific Northwest. "Customers love the ability it gives them to more productively and safely log steep ground."

Like other units, Modern equipped the 200th with a previously used Komatsu PC290LC excavator. After removing the counterweight and thoroughly inspecting the machines, Modern service technicians

mounted the Falcon Winch Assist on the back of the excavator, which gave it approximately the same operating weight as a traditional excavator. The Falcon Winch Assist houses about 1,640 feet of 1 1/8-inch swaged rope with nearly 80 tons of breaking strength. The rope runs through rollers on the excavator's main boom, and a tension monitor where the boom and arm meet senses the load.

Uphill, downhill

An excavator equipped with the Falcon Winch Assist serves as the "uphill" machine in the mechanization process. It sits stationary with no operator, and the bucket is dug into the ground for added stability.

"The PC290 gives us a great base machine to start with because it's stout with plenty of capacity," said Smith. "At the same time, at about 80,000 pounds with the Winch Assist, it's easy to haul."



After removing the counterweight and thoroughly inspecting the machines, Modern Machinery service technicians mounted the Falcon Winch Assist on the back of the excavator, which gave it approximately the same operating weight as a traditional excavator. The Falcon Winch Assist houses about 1,640 feet of 1 1/8-inch swaged rope with nearly 80 tons of breaking strength.



Modern Machinery personnel deliver the finished unit that is ready for action.

The Falcon Winch Assist is designed for constant tension and attaches to a log loader, feller buncher, harvester or skidder to allow those "downhill" machines to work on steep slopes where it would be dangerous to operate without a cable assist.

A control box and antenna are mounted inside the cab of the excavator for communication with the "downhill" machine. Operators use the winch to move uphill and downhill, controlling it with foot pedals. Winch mode, tension settings, manual pay out or wind in rope, and emergency stop are controlled via the joystick in the harvester. A control screen displays rope tension, length of rope payed out, and additional important information.

"We have two shops that build the units and install the controls, and usually put four to five techs on them," said Modern Equipment Coordinator Matt Moore. "If they see anything during inspection that needs to be replaced, it's taken care of. In addition to the Winch Assist components and the bucket, all are equipped with a thumb. That, along with the bucket, gives customers added versatility

because they can use the machine for other tasks as needed."

No longer a trend

Modern and DC/FFE representatives say the Falcon Winch Assist System is increasingly contributing to the logging industry's switch to mechanization and reduction of work done by hand. That's largely being influenced by felling machines and the support of winch assist methods on steeper slopes.

An example of this can be seen in New Zealand (where DC Equipment is based) where mechanization for ground-based felling has increased from 50% to 90% between 2009 and 2019. This movement is happening across the globe, including in Modern's territory.

"It's no longer a trend, but an adoption in the industry because loggers see that it's the most effective and practical method for most steep-slope situations," said Smith. "We are looking forward to building more of these units going forward, and we encourage anyone who does this type of work or is interested in adding steep-slope logging to contact us for more information." ■



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Used Equipment Priced to Sell

(Prices subject to change without notice)

Manufacturer/Model	Description	Serial No.	Year	Hours	Price
Dozers 					
KOMATSU D375A-8	U BLADE, MS RIPPER	80042	2019	4,765	\$910,000
KOMATSU D155AX-8	SIGMA BLADE, MS RIPPER	100359	2019	2,259	\$575,000
KOMATSU D85PX-18	SU BLADE	22098	2017	5,076	\$229,000
KOMATSU D65PXI-18	PAT BLADE, UHF SYSTEM, NEW UC	90339	2016	6,040	\$185,000
KOMATSU D65PXI-18	PAT BLADE, UHF SYSTEM, NEW ENG, GOOD UC	90273	2016	8,501	\$175,000
KOMATSU D65PX-18	PAT BLADE, MS RIPPER	90014	2016	4,295	\$182,000
KOMATSU D65WX-18	PAT BLADE, MS RIPPER	91899	2019	1,511	\$275,000
KOMATSU D61PX-24	PAT BLADE	45174	2021	1,393	POR
KOMATSU D51PXI-24	PAT BLADE, 915 SYSTEM	B20850	2020	1,246	\$245,000
KOMATSU D39PX-24	PAT BLADE, MS RIPPER	100179	2021	984	POR
Wheel Loaders 					
KOMATSU WA600-8	9.5 YD SPADE NOSE BUCKET, BRAKE COOLING, A-LUBE	80429	2022	410	POR
KOMATSU WA500-8	8.2 YD BUCKET, AJSS, 875/65 TIRES	A97144	2020	3,560	POR
KOMATSU WA480-8	6.5 YD BUCKET, AJSS, A-LUBE	A48132	2020	4,482	\$289,000
KOMATSU WA475-10	QC, BUCKET, FORKS, AJSS, 775/65 TIRES	A40066	2022	1,594	POR
KOMATSU WA380-8	QC	A75257	2020	2,407	\$219,000
KOMATSU WA380-8	QC, BUCKET, 3RD VALVE	A75008	2019	2,877	\$195,000
KOMATSU WA380-8	QC, BUCKET, 3RD VALVE	A74981	2019	3,261	\$195,000
KOMATSU WA320-8	QC	A39141	2020	569	\$209,000
KOMATSU WA270-8	QC	85728	2022	1,079	POR
Compaction 					
DYNAPAC CA5000D	84" SINGLE DRUM, A/C	10000174TMA031170	2021	479	POR
DYNAPAC CA3500PD	84" SINGLE DRUM, PADFOOT	10000168AJA023630	2019	359	POR
DYNAPAC CA2500D	84" SINGLE DRUM, A/C	10000167ANA034348	2023	387	POR
DYNAPAC CA2500PD	84" SINGLE DRUM, PADFOOT, A/C	10000167HNA033445	2022	122	POR
DYNAPAC CA1500D	66" SINGLE DRUM	10000160LLA030284	2021	398	POR
DYNAPAC CA1400D	66" SINGLE DRUM	10000169PLA030646	2021	64	POR
DYNAPAC CC4200VI	66" ASPHALT ROLLER	10000385JJA023170	2019	150	\$137,000
HAMM CC1300VI	51" ASPHALT ROLLER	10000374HLA030106	2021	489	POR
HAMM HDO120V	OSCILLATORY ASPHALT ROLLER	H1750133	2006	8,411	\$28,000
Excavators / Backhoes 					
KOMATSU PC800LC-8E0	11' ARM, COUNTERWEIGHT REMOVAL SYSTEM	65380	2019	3,882	\$850,000
KOMATSU PC650LC-11	14' ARM, QC	80094	2019	2,127	POR
KOMATSU PC490LCI-11	13' ARM, UHF SYSTEM	85184	2017	5,766	\$260,000
KOMATSU PC490LC-11	11' ARM, QC	A42188	2019	5,091	\$347,000
KOMATSU PC390LCI-11	13' ARM, QC	A31068	2022	1,100	POR
KOMATSU PC390LC-11	13' ARM, QC, NON CON THUMB, COMBO HYDRAULICS	A30678	2021	991	POR
KOMATSU PC360LC-11	10' ARM, QC, THUMB, +1 HYDRAULICS	A37574	2020	1,599	POR
KOMATSU PC360LC-11	10' ARM, QC, +1 HYDRAULICS	A38766	2022	1,264	POR
KOMATSU PC290LCI-11	11' 6" ARM, QC	A29168	2022	687	POR
KOMATSU PC290LC-11	11' 6" ARM, QC, THUMB, FOPS	K73150	2019	696	\$311,700
KOMATSU PC240LC-11	10' ARM, QC, +1 HYDRAULICS	95397	2019	3,908	\$189,000
KOMATSU PC238USLC-11	9' 6" ARM, QC, THUMB	5616	2018	3,206	\$206,000
KOMATSU PC210LCI-10	9' ARM, QC, +1 DUAL HYDRAULICS	505700	2021	1,154	POR
KOMATSU PC210LC-11	9' 7" ARM, QC, +1 HYDRAULICS	C80861	2019	1,353	POR
KOMATSU PC170LC-11	8' 7" ARM, QC, THUMB, +1 A-HYDRAULICS	36122	2021	383	\$206,000
KOMATSU PC138USLC-11	8' ARM, QC, 36" BUCKET, THUMB, A-HYDRAULICS, BLADE	50155	2016	4,061	\$155,000
KOMATSU PC88MR-11	QC, PRO THUMB, ROADLINERS, 18"/24"/48" BUCKETS	10369	2022	967	POR

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Manufacturer/Model	Description	Serial No.	Year	Hours	Price
Motor Graders 					
KOMATSU GD655-7	14' BLADE, MS RIPPER	65027	2019	638	\$330,000
KOMATSU GD655-6	14' BLADE, MS RIPPER	60073	2017	1,606	\$250,000

Off-Road Trucks 					
KOMATSU HM400-5	ARTICULATED TRUCK, TAILGATE	11260	2019	3,340	\$484,000
KOMATSU HM400-5	ARTICULATED TRUCK, TAILGATE	11211	2019	3,458	\$535,000
KOMATSU HM400-5	ARTICULATED TRUCK, TAILGATE	11664	2020	2,106	POR
KOMATSU HM400-5	ARTICULATED TRUCK, TAILGATE	11940	2021	1,963	POR
KOMATSU HM400-5	ARTICULATED TRUCK, TAILGATE	12047	2021	2,126	POR
KOMATSU HM300-5	ARTICULATED TRUCK, TAILGATE	10365	2017	4,723	\$374,000
KOMATSU HM300-5	ARTICULATED TRUCK, TAILGATE	11337	2021	1,897	POR
KOMATSU HM300-5	ARTICULATED TRUCK, TAILGATE	11219	2020	3,209	POR
KOMATSU HM300-5	ARTICULATED TRUCK, TAILGATE	11508	2022	864	POR

Aggregate Equipment					
KPI-JCI K400	SPOMAC REAR DISCHARGE JAW PLANT	210380	2021	247	POR
KPI-JCI K300	SPOMAC REAR DISCHARGE JAW PLANT	C211587	2021	1,237	\$717,500
KPI-JCI FT2650	PIONEER TRACK MOUNT JAW	419869	2022	531	POR
KPI-JCI FT2650	PIONEER TRACK MOUNT JAW	419868	2022	671	POR
KPI-JCI J20	RANGER 2034 TRACK MOUNT JAW	225130	2023	20	POR
KPI-JCI J20CC	RANGER 2034 TRACK MOUNT JAW	225127	2022	407	POR
KPI-JCI GT125	PIONEER TRACK MOUNT JAW	419835	2023	112	POR
KPI-JCI FT4250CC	TRACK MOUNTED HORIZONTAL IMPACT CRUSHER	419969	2022	234	\$965,770
KPI-JCI FT4250CC	TRACK MOUNTED HORIZONTAL IMPACT CRUSHER	419309	2020	992	\$812,950
KPI-JCI 7203-38	SPOMAC SCREEN PLANT	S15SPT0110	2014	N/A	POR
KPI-JCI 6203-32	SPOMAC SCREEN PLANT	S225575	2022	132	\$295,000
KPI-JCI 6203-32	SPOMAC SCREEN PLANT	S225577	2022	315	POR
KPI-JCI 6203SP	VALE SCREEN PLANT, 9 WAY CHUTES	210342	2021	100	POR
AMS GT165	AMS SCREEN PLANT	214978	2021	534	POR
AMS GT205S	AMS SCREEN PLANT, 2 DECK, MULTI FREQ.	225140	2022	802	\$443,850
KPI-JCI 36"X150'	SUPER STACKING CONVEYOR	419961	2022	2	POR
VALE 36"X100'	VALE RADIAL STACKER SELF CONTAINED, DIESEL	220784	2022	556	POR
VALE 36"X80'	VALE RADIAL STACKER SELF CONTAINED, DIESEL	210701	2021	5	POR
SPOMAC 36"X60'	LOW PRO EXTREME	M22CON1516025	2022	N/A	POR
SPOMAC 36"X40'	LOW PRO EXTREME	M18CON0473	2019	N/A	POR
SPOMAC 36"X40'	LOW PRO EXTREME	N/A	2020	1	\$26,500
SPOMAC 36"X30'	LOW PRO EXTREME	M1210915	2021	N/A	POR
KPI-JCI GT3260	32X60 RANGER TRACK CONVEYOR	225279	2022	55	POR
SPOMAC 42PBF	42" PORTABLE BELT FEEDER	BF424239821	2021	1,259	\$226,465
TRANSCO 32BF	36" PORTABLE BELT FEEDER	1223361	2021	N/A	\$115,000
SPOMAC MM14	14X9 STATIC GRIZZLY	M1399877	2022	N/A	POR

Forestry Equipment					
DEERE 2954D	10000 LOGMAX	1FF2954DVE0290211	2014	9,216	\$250,000
DEERE 859MH	7000 LOGMAX	1T0859MHKHF315963	2017	8,877	\$297,500
TIMBERPRO TL775D	SHOVEL LOGGER TC60 GRAPPLE	TL775D0771081220	2020	1,170	POR
KOMATSU PC290LC-11W	WINCH ASSIST MACHINE	A28000	2018	4,498	\$650,000

Miscellaneous					
ATLAS COPCO ROC T45-10	ATLAS COPCO DRILL, 3.5-5"	G18SED0141	2018	2,532	\$502,000
ROADTEC RX600E-3	ROADTEC MILL 86" DRUM	4039	2016	2,486	\$185,000
ROSCOE RB50	BROOM, A/C	308656	2021	28	POR
AUSTIN AE12	12000 GALLON AUSTIN WATER TOWER	12WKT0879	2022	N/A	POR

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