

PUSHING AHEAD

A publication for and about Clairemont Equipment customers • www.CECPushingAhead.com

SECOND GENERATION

Komatsu's new D61i-24 dozers ensure high production from first pass to last



KOMATSU®

A MESSAGE FROM THE PRESIDENT



Ronald Zagami

**A second
generation
heads toward
the future**

Clairemont Equipment Company *Parts • Rentals • Sales • Service*
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Dear Valued Customer:

Three years ago, Komatsu introduced its first *intelligent* Machine Control product, a D61i-23 dozer. Now, the second generation is available with the launch of the D61i-24 models, which you can read about in this issue of your Clairemont Pushing Ahead magazine.

Both of these machines use Komatsu's integrated *intelligent* Machine Control technology, a 3-D-based system with semi-automation, which eliminates masts and cables. The technology does more than keep a dozer's blade on grade. It adjusts loads on the fly and monitors track slippage to ensure that operators are moving as much dirt as possible and are working efficiently.

The same technology was added to three Komatsu excavators with amazing results. The integrated-3-D system takes excavator operation to another level compared to the 2-D aftermarket systems. Find an interesting article inside that highlights the differences between 2-D and 3-D, helping you make an informed choice on which is better for your business.

Many other new machines have sophisticated technology built-in as well, such as Komatsu's KOMTRAX telematics system, which lets you track hours, idle time, fuel usage and machine location. That capability recently came in handy for one contractor whose machine was stolen. Thanks to KOMTRAX and the assistance of his Komatsu dealer, it was recovered within 24 hours.

If you would like information on any of these products or others, please call or stop by one of our branch locations.

Sincerely,
CLAIREMONT EQUIPMENT COMPANY

A handwritten signature in black ink that reads "Ronald Zagami". The signature is fluid and cursive, with the first name being the most prominent.

Ronald Zagami,
President

**Clairemont
Equipment**
RENTALS • SALES • SERVICE

PUSHING AHEAD

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TECH BOOM

See how today's technology is shaping tomorrow's jobsites

Technological revolutions don't happen overnight. Instead, they typically resemble the progression of a jobsite; one area is built, connected to another, tied to a third and so on. Once a project nears completion, the full picture finally begins to emerge. When looking at the future of technology in the construction industry, that picture is starting to come into focus.

While other industries may receive more mainstream attention for exciting advances, construction has already experienced its share of revolutionary breakthroughs, such as GPS-based grade control for machines. The next wave of innovation is on its way for construction professionals, and each one could redefine the industry.

Same tech, new purpose

Some of the most exciting technological advancements allow users to take full advantage of everyday items. Smartphones have become an essential part of daily activities, and the construction industry is adopting these new tools into its practices.

Construction companies are taking advantage of smartphone popularity and using project-management software and apps to help increase information sharing and connectivity among employees.

The Associated General Contractors of America (AGC) says that 83 percent of companies list mobile devices as their main choice of technology when managing projects outside of their traditional market area. In the AGC's 2016 industry outlook, 56 percent of companies surveyed said they planned to incorporate more mobile software and other apps in 2016. The most commonly noted was project-management software that enables companies to log daily field reports, share documents and track inventory. The AGC outlook also reported that 41 percent of companies planned to increase their information technology departments in 2016, while 11 percent expected to create one.

To access this technology and save on costs, companies are adopting a bring-your-own-device policy, which allows employees to use their personal mobile devices to access the software. This policy has proven to increase the adoption rate of the software among workers and increase connectivity and sharing of information within the company, without the expense of purchasing a new device for every employee.

Just as smartphones have demonstrated their staying power, industry professionals are betting that today's trendy tech-wearables like the Apple Watch, Fitbit fitness trackers and Google Glasses will find a place on jobsites. Steve Smith, Vice President of Strategic Industries at ClickSoftware, says that these pieces can assist companies in monitoring employee movement and help place staff members in optimal locations to increase efficiency. Additionally, the next area for potential advancement in wearable technology is clothing, which could make workplaces safer for employees.

Virtual reality (VR) – technology that was once a pipe dream saved for video games and



science-fiction movies – is also finding its way into construction applications. Thanks to innovations in cameras, virtual-reality glasses and software, the technology is becoming more cost-efficient and user-friendly. VR permits engineers to build a complete jobsite in a computer-generated program, allowing them to try multiple strategies in order to determine which is most efficient. Operators can also benefit by practicing dangerous maneuvers in a controlled environment before performing them on a jobsite. This technology application reduces the risk of injury and avoids costly rework.

Construction overhaul

Residential construction has remained largely unchanged for decades, but it may receive a major overhaul thanks to 3-D printers. Instead of raising walls and setting roofs with cranes, a 3-D printer enables contractors to create structures by laying down successive layers of material on top of each other. For 3-D construction printing, concrete is pumped through a nozzle that follows a CAD program to create the shell of a structure.

The advantages of 3-D printing come in the form of time, labor and material savings. The printer doesn't require a crew to cut and secure the materials – it prints only what it needs, where needed, in little time and with no excess material. According to a May 2015 BBC News report, the Chinese company WinSun used a 3-D printer to build 10 full-sized, single-story homes in one day.

Simon Austin, a lead researcher for the School of Civil and Building Engineering at the United Kingdom's Loughborough University, tempers expectations. He thinks 3-D printing won't make an impact in efficiently mass producing complex elements and pieces used in traditional, pre-fabricated and modular construction until 3-D printers become easier to transport and cheaper to purchase. "The idea of bringing a gantry and printing machine to a site to print entire houses is a bit far-fetched at this time," Austin said.

Wide-sweeping innovations related to how buildings are made could be a few years away, but the future of what's used in their construction is already here. Today, many designers are looking to use "smart" materials that are both sustainable and enhance the efficiency of



their structures. Emerging Objects is developing materials, such as its Cool Bricks, that can respond to environmental conditions. The bricks are printed in 3-D and are porous, so they can hold water and allow air to pass through, creating natural air conditioning.

In Mexico City, Elegant Embellishments used a titanium dioxide paint that absorbs smog and converts it into calcium nitrate, which is harmless, to coat the façade of a hospital. The company reports that the façade reduces pollution equal to that created by approximately 1,000 cars per day.

One of the most unique material advancements is the introduction of self-healing concrete. Microbiologists at Delft University of Technology in The Netherlands created it by embedding self-activating, limestone-producing bacteria. This innovation could help reduce the amount of new concrete produced and lower the cost and frequency of repairs to streets and buildings.

The future of labor

One of the most common fears associated with these innovations is that the approaching technology will make human labor obsolete. While reducing expenses, especially labor costs, is at the center of these innovations, experts say that those fears are unfounded. Currently, the latest technology is either too expensive for many companies to own or too difficult to transport and store. While some positions may be lost, most of these advancements also create new jobs in other areas of the industry.

The central goal of the latest technology – whether it's the grade-control machines or self-healing concrete – is to improve the productivity, safety and efficiency of jobsites and make the construction industry stronger. ■

Self-healing concrete features self-activating, limestone-producing bacteria embedded in the concrete. The rise of "smart" materials such as this could dramatically reduce the amount of new concrete produced and reduce the frequency of road repairs.

HIGH-PAYING CAREERS

Construction affords a wealth of opportunities with substantial pay and benefits



Jennifer Wilkerson,
Director of Marketing,
Public Relations and
Build Your Future
at NCCER

There's no better time to work in the construction industry. With a growing shortage of skilled workers, salaries remain high and career opportunities are plentiful. Earlier this year, the National Center for Construction Education and Research (NCCER) released its annual Construction Craft Salary Survey, which lists the average annual salaries of craft professionals from industrial and commercial construction firms across the country. Average annual salaries ranged from \$47,100 to more than \$88,000.

This article is reprinted with permission from "Breaking Ground: The NCCER (The National Center for Construction Education and Research) Blog" at blog.nccer.org.

Earlier this year, the National Center for Construction Education and Research released its annual Construction Craft Salary Survey, which lists the average annual salaries of craft professionals from industrial and commercial construction firms across the country. Average base salaries ranged from \$47,100 to more than \$88,000.

As high as these salaries are, the reality is that what skilled craft professionals earn is typically far greater. The salaries listed in NCCER's survey are average, base salaries, not including overtime, per diem, bonuses or other incentives. Construction is known for having plenty of overtime and travel opportunities as well as bonuses. In addition, many contractors have incentives that pay for employee training, vacation time, retirement plans, cell phones, vehicle allowances and/or per diem or housing, depending on the length of a project.

Few industries offer the high salaries, incentives or growth opportunities found in the construction sector. While many craft professionals can earn well over six figures, it is important to remember that project location, company size, construction type, credentials, certifications and experience are some of the factors that determine a skilled professional's salary.

No limits on where craft professionals can go

These salaries show the earning potential that the construction industry offers individuals with or without a college degree. Construction is one of the few sectors where individuals can earn while they learn through industry training programs at local community or career colleges. Regardless of where a person starts, there's no limit to where he or she can go in this industry.

In construction, individuals can enter the workforce straight out of high school and start earning a salary. From there, they can develop their skills and take advantage of endless opportunities with huge earning potential. There's no better way to earn a living if you ask me! ■



KOMATSU CUSTOMER CENTER

Facility provides acres of opportunities to help customers find the best machines for their jobs

QUESTION: What is the Cartersville Customer Center?

ANSWER: Komatsu opened this facility in Cartersville, Georgia, in 2002 as a place to take customers so that they can see and operate Komatsu equipment first hand. It's been known by different names throughout the years, but we recently changed it to the Customer Center as a way to better reflect what it represents. As they say, only the name has changed. The focus and intent remain the same.

QUESTION: What does the Customer Center provide?

ANSWER: The center offers three main things: a demonstration site, training and publications, all of which benefit Komatsu customers. We have 600 acres of property and a wide assortment of equipment available, so that customers can visit our world-class facilities and run machines through their paces before making purchase decisions. One way we do that is by hosting customer-focused events such as Demonstration Days, which are typically in the fall and spring. The added benefit is that customers can talk with other industry professionals and compare notes. Komatsu has product managers and other personnel on hand to answer questions and ensure that customers are operating in a safe environment. In addition to large events, we also host individual customers and their respective distributors. We encourage our dealers to schedule these events through our website: www.komatsuamerica.com/service-and-support/training-and-publications.

Whether a customer or distributor, our center provides complete training and unmatched educational support services. We offer classes for our customers and dealers at our state-of-the-art

Continued ...



Tom Suess, Director of Training and Publications

This is one of a series of articles based on interviews with key people at Komatsu discussing the company's commitment to its customers in the construction and mining industries – and their visions for the future.

Tom Suess joined Komatsu's Customer Center about a year ago after working most recently as a National Account Manager for the company. As the Director of Training and Publications, Suess oversees the Cartersville, Georgia, facility's operations related to demonstrations, training and publications.

"I view the Customer Center as a showcase that's dedicated to providing world-class services to Komatsu personnel, distributors, and most importantly, our customers," said Suess. "One of my goals is to increase the number of people who utilize the Customer Center and take advantage of all that it offers. For most of my tenure with Komatsu I have visited our customers; in my current role I am now lucky enough to have them come and visit me!"

Suess began his career with Komatsu in the finance division nearly 20 years ago after graduating from Illinois State University. He later went on to obtain a master's degree in Business Administration from the University of Phoenix. After working in finance, Suess transitioned into sales and served as a District Sales Manager, then as a Regional Sales Manager before earning a promotion to Director of Business Planning and Development. Suess later advanced to Director of the West Region and finally into national accounts. His diverse background allowed him to easily transition into his new role and provide a valuable customer perspective.

"I truly enjoy working with customers and helping them find the right pieces of equipment," Suess said. "I believe the Customer Center is a perfect complement to our machinery as it shows customers our commitment to providing more than a product."

He and his wife, Erin, recently celebrated their 14th anniversary. The couple has three children, and they enjoy spending time together as a family. Suess also likes to play basketball, read, golf and fish.

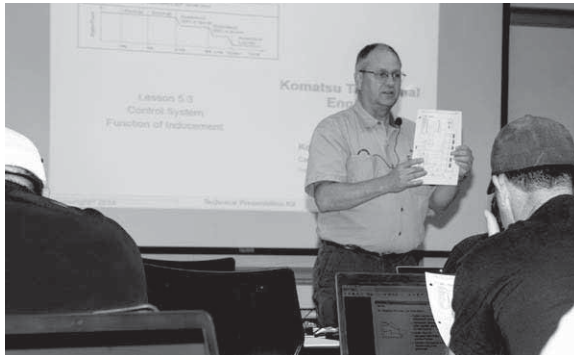
Center's goal is maximum productivity and efficiency

... continued



center, or we can conduct either operator or technical training at a company's facility or dealer site. Customers can set up this training through their distributors. We have in-house operator trainers who work closely with clients from the moment they arrive on site, both in our classrooms and during machine operation, to ensure that operators have a full understanding of how to get

The Customer Center provides classroom training to customers as well as to Komatsu distributor technicians so that they can properly diagnose and resolve issues quickly to minimize downtime.



Komatsu personnel are available to help with demonstrations and provide hands-on training.



Komatsu's Customer Center offers a variety of machines available for demonstration, including wheel loaders, dozers, excavators, trucks and motor graders.



the most out of a machine. For example, they can learn which operating mode to use for the best match to an application and soil conditions.

Finally, the publications team is responsible for printing and distributing all technical documents, including shop, operating and maintenance manuals as well as field assembly guides. All of these are critical to the success of both customers and distributors as they support Komatsu products in the field. These materials provide a wealth of knowledge about Komatsu machines, so again, our customers can get the most out of their equipment. Our focus is on providing comprehensive, accurate information.

QUESTION: Does the Customer Center offer more from a training standpoint?

ANSWER: Yes. Not only does this facility conduct training for Komatsu distributors and our customers, but we also focus on providing our Komatsu customer-facing employees with routine training from the Customer Center. For instance, we held a cross-functional training course this year that provided the opportunity for our sales, service, and parts teams to collaborate in a classroom setting by working together on case studies. In addition, we also offer specialized, technical training for Komatsu's large, electric-drive trucks that are used in mining operations.

Additionally, we design online classes through our learning management system. These classes are a good way to obtain background knowledge that can then be applied in the more hands-on setting provided in the Customer Center.

QUESTION: How does that benefit customers?

ANSWER: Our goal is to maximize productivity and minimize downtime. Komatsu makes world-class machinery, but even the best can experience an occasional issue or breakdown. Technicians with comprehensive knowledge of Komatsu machinery know how to resolve issues quickly to reduce downtime. If an issue or error code pops up, they know the proper procedures to diagnose and repair a machine quickly so that customers are up and running again as soon as possible. ■

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- Dig to grade accurately without slowing down
- No worry grading because there is no over digging
- The machine you have been waiting for:
Big, Fast, Accurate



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D61PXi-24



D61EXi-24

SECOND GENERATION

See how Komatsu's new D61i-24 dozers ensure high production from first pass to last



Sebastian Witkowski,
Komatsu Product
Marketing Manager

During the past three years, Komatsu has launched several *intelligent* Machine Control dozers that provide greater productivity and efficiency from first rough cut to finish grade. Now, Komatsu introduces the second generation of the dozers that started it all, with the new D61EXi-24 and D61PXi-24, which feature more efficient Tier 4 Final engines.

Like their predecessors, the new D61i-24 models include factory-integrated GPS grade control that eliminates the need for blade-mounted cables and masts. Once engaged, the system automatically starts the cut and lowers the blade to grade in a typical dozing pass. If the load increases to maximum capacity, the blade automatically raises to minimize track slip, ensuring productive

dozing. This allows the dozers to achieve up to 8 percent greater efficiency in moving materials, based on start-to-finish grade testing against typical aftermarket machine-control systems.

“From first pass to last – rough cut to finish grade – the machine senses blade load, minimizes track slip and ensures that operators get the most from every push,” said Sebastian Witkowski, Komatsu Product Marketing Manager. “Also, eliminating the need to install or remove blade-mounted sensors each day not only reduces wear and tear and potential downtime, but it also saves the operator’s valuable time that can be used to run the machine longer.”

Operators can select from among four distinct machine-control operating modes (cut and carry, cutting, spreading and simple grading) to optimize performance to the application. They can also tailor blade loads to material conditions by choosing from light, normal or heavy-blade load settings.



Chuck Murawski,
Komatsu Product
Marketing Manager

Komatsu’s new second-generation D61i-24 dozers feature factory-integrated GPS grade control that eliminates the need for blade-mounted cables and masts. They achieve up to 8 percent greater efficiency in moving materials, based on start-to-finish-grade testing against typical aftermarket machine-control systems.

Lower maintenance, repair costs

The new D61i-24 dozers feature Komatsu’s Parallel Link Undercarriage System (PLUS) that provides up to double the wear life of traditional systems, lowering maintenance and repair costs. A new Triple Labyrinth final drive provides added protection for the final-drive floating seals.

“Standard and *intelligent* Machine Control D61 dozers remain popular because their size makes them a great fit on a wide variety of jobsites and in a broad range of applications,” said Chuck Murawski, Komatsu Product Marketing Manager. “D61i dozers combine all the benefits of a base machine with the greater efficiency of our integrated machine control. The new D61i-24 is a great choice for high production, low fuel consumption and decreased operating costs.” ■

Quick Specs on Komatsu D61i-24 Models

Model	Horsepower	Operating Weight	Blade Capacity
D61EXi-24	168 hp	41,094 lb	4.41 cu yd
D61PXi-24	168 hp	43,167 lb	4.98 cu yd



D61PXi-24



intelligent MACHINE CONTROL

- First to last pass grading technology
- Revolutionary track slip control
- External stroke sensing hydraulic cylinders
- New Tier 4 Final technology



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ANDY CHAPMAN / SALES REP / LINDER INDUSTRIAL MACHINERY / GREER, SC

“From financing to product quality to support and training after the sale, Komatsu delivers everything my customers demand. I’ve been selling their full line, including the PXi and EXi series dozers, for years. Innovation and the exclusive *intelligent* Machine Control set them apart from the others. And that’s why I AM KOMATSU.”

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ENHANCED FEATURES

ANOTHER SET OF VERSATILE DOZERS

Komatsu's D39-24s feature customizable settings for maximum efficiency



Jonathan Tolomeo,
Komatsu Product
Manager

Customers have come to expect innovative quality coupled with industry-leading efficiency from Komatsu's dozers. The new D39EX-24 and D39PX-24 crawler dozers deliver on those expectations. The latest editions of the popular dozers continue to produce outstanding power while increasing fuel efficiency.

"If you're looking for nimble, powerful machines that are easy to transport and a breeze to operate, these are the dozers for you," said Komatsu Product Manager Jonathan Tolomeo. "Residential and commercial development, highways or golf courses – the D39-24s get it done in any of these light-to-medium dozing and fine-grading applications."

Quick Specs on Komatsu D39-24 Models

Model	Horsepower	Operating Weight	Blade Capacity
D39EX-24	105 hp	21,891 lb	2.89 cu yd
D39PX-24	105 hp	22,817 lb	3.14 cu yd

The new Komatsu D39-24 crawler dozers feature a variety of customizable performance settings to allow operators to match work modes to application. "Anyone looking for nimble, powerful machines that are easy to transport and a breeze to operate, these are the dozers for you," said Komatsu Product Manager Jonathan Tolomeo.

The D39-24s still sport the award-winning, super-slant-nose design, but feature a host of enhancements. The improved Tier 4 Final-certified, 3.26-liter engine boasts 105 horsepower. Fuel efficiency was improved by nearly 5 percent with the addition of the Selective Catalytic Reduction system and diesel exhaust fluid. The Komatsu Diesel Oxidation Catalyst provides 98 percent passive regeneration, and the new auto-idle shutdown and economy modes help reduce idle time and save fuel.

Customized working modes

The D39-24 dozers also include a variety of customizable performance settings to allow operators to match engine output to application. Operators can work in either a quick-shift, three-speed mode or a 20-speed transmission setting to suit personal preferences.

"Operators now have the ability to work in a mode that is best-suited for the jobs at hand," explained Tolomeo. "Working this way, in conjunction with the other upgrades, helps boost productivity and efficiency."

Monitoring efficiency

The working environment inside the D39-24s provide operators with all the tools necessary to make sure they are working as efficiently as possible. The dozers are equipped with a Level 5 KOMTRAX telematics system that tracks key machine metrics, such as diesel exhaust fluid consumption, fuel level, operating hours, location, cautions and maintenance alerts. The new Operator ID feature makes it possible to display those metrics by operator, application or job.

The cab features a large, multi-lingual, seven-inch, high-resolution LCD monitor with Ecology Guidance, in addition to a standard, rearview-monitoring system. ■



HM300-5

THE MOST RUGGED TRUCKS

- Built-in payload meter and external display lamps
- Hydraulic wet multi-disc brakes with retarder
 - Komatsu traction control system
 - Selectable working modes



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JASON ROGERS / PRODUCT SERVICE MANAGER / KIRBY-SMITH / TULSA, OK

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PC240LC-11

TIER 4 FINAL EXCAVATOR

- Improved engine efficiency with lower fuel consumption
- Large DEF tank capacity for operation on slopes
- Hydraulic closed-center load sensing system
- Spacious and quiet cab
- Auto idle shutdown



I AM KOMATSU

RYAN HAZELTON / SALES REP / ANDERSON EQUIPMENT / MANCHESTER, NH

"I sell a variety of quality Komatsu equipment. Take the PC240LC-11 excavator. It's got great features like a hydraulic closed-center load sensing system (CLSS) that provides quick response and smooth operation. Its large, quiet operator cab is more comfortable. Better engine efficiency improves response and helps get the most from every gallon of fuel. More innovation and more choices. That's why I AM KOMATSU."

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MASTER YOUR FUTURE

Komatsu showcases innovative new products at MINExpo 2016

Companies often talk about the future at shows like MINExpo 2016, but Komatsu literally gave attendees a sneak peek at what's ahead with its display at the Las Vegas Convention Center. Komatsu's theme was "Master Your Future," and among the highlighted products that drew heavy attention was the cabless Innovative Autonomous Haulage Vehicle (IAHV) with a 254-ton (230-metric-tonne) payload.

"MINExpo is a wonderful event that showcases technology and solutions for the mining industry," said Rich Smith, Komatsu Vice President, Product and Services Division. "For Komatsu, it is a premium opportunity to

engage with customers and share our latest technologies in equipment. It also allows us to work closely with customers to develop real-world solutions that provide actual value today. We deliver products, solutions and services that meet today's needs and open a window to the possibilities of the future."

Komatsu developed the concept 2,700-horsepower IAHV to maximize the advantages of unmanned operation and eliminate K-turns at loading and unloading sites. It distributes equal load to all four tires when loaded or unloaded, and by adopting four-wheel drive, retarder and steering, it aims

Continued . . .



Rich Smith,
Vice President,
Product and
Services Division

▶ VIDEO



The centerpiece for Komatsu's MINExpo 2016 display was its new cabless Innovative Autonomous Haulage Vehicle (IAHV), a 2,700-horsepower mining truck with a 254-ton (230-metric-tonne) payload, four-wheel drive and four-wheel turning.

New machines lower owners' operating costs

... continued

for high performance in both forward and reverse travel. Komatsu expects the IAHV to significantly improve productivity at mines where existing unmanned haulage vehicles face challenging conditions, such as slippery ground as well as confined spaces for loading. No date is set for its formal release.

"The IAHV is going to change the mining industry," said Smith. "It's a completely radical design – no cab, four-wheel drive, four-wheel

steering, and it's autonomous. The IAHV, along with the other Komatsu equipment on display, really shows what the future of mining will look like."

Attendees also saw the present with the North American introduction of the PC4000-11, which is powered by a Tier 4 Final 1,875-horsepower, 16-cylinder engine and features a timesaving engine-oil management system. Best suited to pair with 150- to 240-ton trucks, it can be configured as a shovel or backhoe. Various buckets and wear packages are available to suit multiple material densities and properties.

New dozer, truck coming soon

Back to the future, Komatsu previewed its new 930E-5 mining truck and D375Ai-8 dozer, both of which will be available in 2017. The 636-horsepower D375Ai-8 is the first mining-class dozer with *intelligent* Machine Control, and it has structural enhancements for increased durability of the mainframe and track frame. It increases production and cycle times and delivers 20 percent greater horsepower in reverse.

The 930E-5 will join a 930 line that is the world's most popular for ultra-class mining trucks. It has a 2,700-horsepower Tier 4 Final engine that reduces fuel consumption up to 5 percent and delivers a 320-ton payload. It's a good match in large-scale mining applications with big bucket shovels of 49 to 55 cubic yards, such as the Komatsu PC7000 and PC8000.

Additional features of Komatsu's display booth included the recently released WA600-8 wheel loader and information on maximizing production and efficiency. More than 43,000 people attended the event, which had more than 2,000 exhibitors, and 840,000 square feet of exhibit space.

"We were very excited to debut our newest mining machines at MINExpo," proclaimed Smith. "We have a commitment to the mining industry. These new machines were designed to lower the total operating costs for customers. We want to help them work as productively and as efficiently as possible." ■



Attendees check out the new Komatsu PC4000-11 at MINExpo 2016. It features a Tier 4 Final 1,875-horsepower engine and can be configured as a shovel or backhoe.

Komatsu's D375Ai-8 dozer is the first mining-class dozer equipped with *intelligent* Machine Control. It was featured at MINExpo 2016 and will be available in 2017.



SPECIAL RECOGNITION



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CELEBRATING 30 YEARS

Chattanooga Manufacturing Operation builds the future as it reflects on the past

As it celebrates its 30th anniversary, Komatsu's Chattanooga Manufacturing Operation (CMO) is firmly planted in the present and looking ahead to the future. This forward focus is evident as the Chattanooga, Tennessee, facility recently began mass production of the *intelligent* Machine Control PC490LCi-11, the world's largest excavator with a fully factory-integrated machine-control system.

"The future of construction is already here thanks to innovative machines like the PC490LCi-11," said General Manager Bruce Nelson. "We couldn't be prouder to assemble this revolutionary excavator at CMO. This plant continues to be a production leader, and having the PC490LCi-11 as one of the many products in our lineup highlights our staff's exceptional capabilities and the trust Komatsu puts in CMO to produce quality products."

The Tier 4 Final, 359-horsepower PC490LCi-11 handles a wide variety of jobsite tasks, including mass excavation, trenching and fine grading. It boosts production and efficiency while removing

Continued . . .



Bruce Nelson,
General Manager,
Chattanooga
Manufacturing
Operation

Komatsu demonstrated its first PC490LCi-11 at a Jobsite of the Future event earlier this year. It recently began mass production of the *intelligent* Machine Control excavator at its Chattanooga Manufacturing Operation.

▶ VIDEO



Komatsu personnel assemble an *intelligent* Machine Control PC490LCi-11 at the company's Chattanooga Manufacturing Operation. The PC490LCi-11 is the newest model built at one of Komatsu's premier excavator plants.

Innovation goes into building every machine

... continued

the worry of overexcavation. The excavator's exclusive control function lets operators focus on moving materials efficiently without digging too deep or damaging the target surface.

Like other *intelligent* Machine Control excavators, the PC490LCi-11 uses 3-D design data loaded into the touchscreen display to show machine position relative to target grade. When the bucket reaches the target surface, automation kicks in to limit overexcavation. Once the target elevation is reached, no matter how hard the operator tries to move the joystick control to lower the boom, the excavator won't allow it.

Standard bearer in excavator production

CMO opened in 1986 and originally assembled WA600 wheel loaders. It has also produced dozers, articulated and rigid-frame dump trucks as well as motor graders during the past three decades, but it eventually became a premier excavator plant. In addition to the PC490LCi-11, CMO produces six standard Tier 4 Final models that range in size from the PC210LC-11 to the PC490LC-11.

"We offer additional options, such as pipeline-spec excavators and modifications to base machines," noted Nelson. "Throughout the years we have developed ways to reduce lead times for most distributor orders, from about two months in 2009 to now, less than

a week. That's due to a constant focus on efficiency, as well as the dedication and hard work of the 360 CMO employees."

Additionally, this facility is the only Komatsu plant in the world that builds specialized forestry tracked machines. It produces four sizes of forestry excavators along with tracked harvesters and feller bunchers.

State-of-the-art robotic welding

Innovation goes into building every machine, and recently CMO upped the ante with the installation of new Komatsu-designed robotic welding units, technology that's not yet used in any other Komatsu plant in the world.

The robotic units make a large number of the welds on excavator track frames, while skilled, experienced welders apply the final touches manually. Each unit can hold an entire track frame and rotate it.

"We have used robotic welding units for many years, and they are good, but these state-of-the-art welders really take efficiency to another level," said Nelson. "They can maneuver in more sophisticated ways than older machines."

Adding more intelligent machines

The mix of robotic welding units and human assemblers have produced tens of thousands of machines since CMO opened 30 years ago. In addition to the current excavator lineup, the plant will begin mass producing *intelligent* Machine Control PC360LCi-11s relatively soon. Like the PC490LCi-11, it will have more components than a standard machine due to the built-in technology.

"Because we only make Tier 4 Final products at CMO, we have not yet taken on the PC210LCi-10, which was the first *intelligent* Machine Control excavator and is an Interim machine," explained Nelson. "It's anticipated that when the second generation of that machine comes around, we will likely produce it, too. As with previous products, we will refine the process of building the PC490LCi-11 and apply that to make the assembly of other *intelligent* Machine Control excavators more efficient." ■

New state-of-the-art robotic welders perform more than 90 percent of the welds on excavator track frames. Each robotic unit can hold an entire track frame and rotate it, maneuvering in more sophisticated ways than older robotic welders.



KOMTRAX LOCATES MACHINE

Telematics system helps Ates Construction recover stolen PC55MR excavator

Emergencies come in many different forms. Sometimes it's a water line break. Or, it could be finding out that the machine you need to help fix the water line has gone missing. Such was the case for Alan Ates when he went to pick up his Komatsu PC55MR excavator.

"We were doing a job and had parked the machine for the night at a designated yard," explained Ates, Owner of Ates Construction. "I got an emergency call to repair a ruptured water line the next morning and sent my guys to pick up the machine and take it to the new job. When they told me the excavator and the trailer it was on were missing, I called the police and then my Komatsu Sales Rep."

Using Komatsu's KOMTRAX telematics system, within minutes the distributor was able to pinpoint the PC55MR's location in another state about three hours away.

By simply entering the serial number of the machine, KOMTRAX showed the exact location of the stolen excavator. The police department in the city where the excavator was taken quickly confirmed the PC55MR's location and secured the machine.

Will use it more

Using information from KOMTRAX, as well as surveillance and other video, police were able to trace the time line of the machine's theft to its recovery, helping them build a case against the thieves.

"I knew the PC55MR had KOMTRAX, but I never really used it," said Ates. "That will change after this experience. I don't

think I would have seen the excavator again if it weren't for KOMTRAX. I appreciate everything my Komatsu distributor and the police did to ensure the machine was recovered." ■



Ates Construction Owner Alan Ates (second from right) is pictured with his crew and the company's PC55MR excavator, which had been stolen. Ates recovered it with the help of Komatsu's KOMTRAX telematics system. "I knew the PC55MR had KOMTRAX, but I never really used it," said Ates. "That will change after this experience. I don't think I would have seen the excavator again if it weren't for KOMTRAX."

BUYING WITH CONFIDENCE



Discover more

CERTIFIED EQUIPMENT DELIVERS

Komatsu's Tier 4 machines offer peace of mind for buyers of used equipment



Josh Alters,
Senior Manager,
Komatsu
ReMarketing

When Komatsu introduced its Tier 4 machines in 2011, it also launched Komatsu CARE, a complimentary program that provides factory-scheduled maintenance for the first three years or 2,000 hours of the machine's life. "Today's buyers understand that the better a machine is maintained, the longer it will last and, in the long run, lower their owning and operating costs," explained Senior Manager, Komatsu ReMarketing Josh Alters.

Komatsu CARE Certified Equipment gives customers a chance to purchase used equipment that has been maintained by certified Komatsu CARE technicians for the first 2,000 hours or three years of operation, providing a much clearer picture of the machine's history.



Under the Komatsu CARE program, machines receive Komatsu Genuine fluids, filters and coolants. They also undergo a 50-point inspection at each interval, and certified technicians log the information from the services. "We are now seeing owners trading in machines that were covered under the program," said Alters. "This careful monitoring paints a very clear picture about the machine, providing a detailed history compared to other used equipment."

Just as Komatsu CARE assures that late-model Komatsu equipment receives proper maintenance, Komatsu CARE Certified Equipment offers peace of mind for buyers in the secondary market.

"Only machines with less than 6,000 hours of operation on them and that have been maintained for by certified technicians at regular service intervals are selected for our rigorous certification process," noted Alters.

The program covers all eligible Tier 4 machines, which includes Komatsu's *intelligent* Machine Control line.

"Those who purchase CARE Certified Equipment will also receive a CARE Report that shows the machine's service history and complete records, eliminating many of the unknowns that are associated with purchasing used machines. This way customers know exactly what they are buying," shared Alters. "Additionally, if a machine has any Komatsu CARE coverage remaining, the balance will transfer with the machine to the new owner. That's a lot of added value, which provides peace of mind for customers looking to purchase a used machine." ■



Discover more

THE NEXT DIMENSION

Learn how 3-D GPS-technology from Komatsu provides full picture for excavator operators

Aftermarket grade-control systems revolutionized the construction industry by slashing project times, wasted material and labor costs in the late 1990s. When Komatsu's integrated *intelligent* Machine Control with semi-automation hit the market in 2013, it took the industry to another dimension, literally.

"Komatsu's *intelligent* Machine Control technology works in 3-D, so the machine knows where its reference points are in all directions, at all times," said Komatsu Senior Product Manager Mike Salyers. "With a 2-D only system, the machine simply knows where target grade is relative to a known elevation and only in the posture that the known point was measured."

When Komatsu introduced *intelligent* Machine Control on the PC210LCi-10 excavator in 2014, the improvement was dramatic. Grading efficiency increased by as much as 66 percent compared to conventional grading on a sloped surface.

The excavator's integrated, 3-D GPS technology was a massive upgrade over 2-D aftermarket machine control systems as well. The 3-D system doesn't require operators to re-establish elevation after moving the machine.

"With 2-D, every time operators move their machines – either to a new spot or to dump a load – they have to re-establish their positions using the bucket to define certain elevations," explained Salyers. "With the GPS system, the machine's position is updated in real time providing information so the operator can focus on digging.

"The *intelligent* Machine Control equipment can have the project plans uploaded to its computer, providing all of the information the operator needs to cut and grade even the most complex designs accurately," he continued.

For example, many house pads today have unique designs that present challenges to even

the most experienced field personnel. Carving detailed bump outs can be easily and accurately performed because the machine's position is continually updated without the need to re-establish its position.

The *intelligent* Machine Control excavators are pre-programmed with the bucket's full dimensions. In combination with the semi-automatic function of the boom, the operator is ensured not to undercut the target surface no matter the position of the bucket, giving full control of cutting and grading applications.

"In conventional 2-D systems, the bucket can only be referenced from a single point – usually the bucket teeth. This can be an issue if the body of the machine is sitting on a slope; one edge of the bucket may be below the target surface and one edge above," Salyers explained. "A 3-D bucket allows the system to determine the closest point to target surface to prevent any undercut."

Komatsu is the only manufacturer to offer excavators with integrated 3-D *intelligent* Machine Control with semi-automation – the PC210LCi-10, PC360LCi-11 and PC490LCi-11. ■



Mike Salyers,
Senior Product
Manager

Komatsu's line of 3-D *intelligent* Machine Control excavators with semi-automation, including the PC360LCi-11, recognize the full dimensions of the bucket and how it works with the boom and arm to curl when excavating dirt. This ensure that operators maintain grade and limit overexcavating.



PLANTING SEEDS

New 'Build America Bureau' aims to increase efficiency for federal funding of infrastructure projects

The U.S. Department of Transportation recently announced the opening of its Build America Bureau, which is designed to help speed up repairs of roads and other infrastructure projects. The new bureau aims to streamline the application process for federal funding and assist public and private investors in obtaining loans, support and expertise.

One of the bureau's initiatives is to make government more efficient and help private donors contribute to large projects. It brings together officials from a variety of agencies to offer a one-stop shop for loans and streamlined access to existing funding sources.

The U.S. Department of Transportation aims to accelerate road repairs and other infrastructure projects with its Build America Bureau. A new report from the American Society of Civil Engineers showed U.S. infrastructure needs will exceed projected spending by \$1.4 trillion during the next decade with surface transportation accounting for \$1.1 trillion of the shortfall.

"By opening the Build America Bureau, we're planting seeds for future projects across the nation," said Transportation Secretary Anthony Foxx at a press conference announcing the bureau.

Report shows funding gap

The announcement of the bureau's opening coincides with a new report from the American Society of Civil Engineers (ASCE) that showed U.S. infrastructure needs will outpace projected spending by \$1.4 trillion during the next decade. ASCE's study says that if current spending levels continue, the gap will grow to more than \$5 trillion by 2040.

"Our nation's infrastructure bill is overdue," said ASCE Past President Greg DiLoreto. "Poor infrastructure is inefficient, and it puts a drag on America's economy."

Surface transportation accounts for \$1.1 trillion of the \$1.4 trillion shortfall. The 10-year deficit for electricity is \$212 billion, followed by \$113 billion for water and wastewater, \$46 billion for aviation and \$18 billion for ports and waterways.

DiLoreto said all means of new funding should be on the table, including increasing the gas tax, introducing fees on vehicle miles traveled, continuing efficiencies in the expenditures that utilities make and hiking utility rates. Foxx also says more infrastructure funding is necessary.

"We still have a chronic problem in this country of underinvesting, and that remains part of our challenge," Foxx told reporters during a briefing on Senate transportation appropriations earlier this year. ■

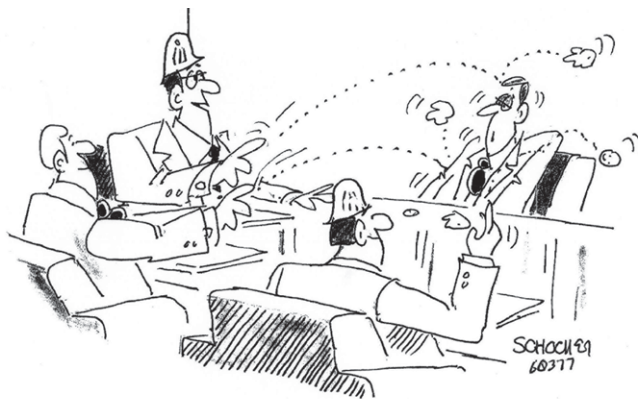


SIDE TRACKS

On the light side



"This will be my first experience in a 'Gated Community!'"



"It's very important for every organization to have someone to be able to bounce ideas off of, Benson."

Did you know?

- Bubble wrap was originally intended for use as wallpaper.
- Tears caused by sadness, happiness and onions look different under the microscope.
- Any month that starts on a Sunday will include a Friday the 13th.
- Caterpillars have approximately 4,000 muscles.
- A pumpkin is a fruit. Most people think of it as a vegetable.
- Auburn is the only school where John Heisman coached and has produced a Heisman Trophy-winning player.
- A day on Venus lasts nearly a year; it is 243 Earth days.
- The highest waterfall in the world, Angel Falls in Venezuela, has a total drop of 3,212 feet.

Brain Teasers

Unscramble the letters to reveal some common construction-related words. Answers can be found in the online edition of the magazine at www.CECPushingAhead.com

1. TGNELEITLNI _____ L _____
2. NROTIOM _____ T _____
3. AMUNLA _____
4. SSMESIONI _____ S _____
5. AZER _____

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