

ROAD MACHINERY

ROAD TO SUCCESS

A PUBLICATION FOR AND ABOUT ROAD MACHINERY LLC CUSTOMERS

KOMATSU®

PATRIOT DISPOSAL, INC.

Read how a shift to Smart Stream increases recyclable materials for Prescott Valley, Ariz., company



Bob Blankenship,
Operations
Manager



Chuck Rennie,
Maintenance
Manager



KOMATSU®

A MESSAGE FROM ROAD MACHINERY



Sloan Brooks



Dear Valued Customer:

Construction's technological revolution is on a dizzying pace. The industry has embraced telematics for gathering data; increased usage of GPS, drone surveying, parts ordering via the web; and more. Komatsu continues to be at the forefront with *intelligent* Machine Control dozers and excavators that are proven to increase production and efficiency, while reducing costs.

Komatsu wants customers to realize the greatest benefit from its *intelligent* Machine Control equipment, so when it launched the machines, we worked together to add personnel to our staff who can provide high-level technical support. Komatsu has also introduced SMARTCONSTRUCTION, a suite of services designed to assist customers with drone surveying, jobsite setup, model building and much more. Read about the benefits of SMARTCONSTRUCTION in this issue of your Road to Success magazine, then contact us to see how our SMARTCONSTRUCTION team members can be of service to you.

Rear cameras are now a staple in the construction industry, allowing operators to use an in-cab monitor to see what's behind them. Komatsu has taken the concept a step further with KomVision, which places multiple video cameras around a machine to give operators an all-around view. Check out the article on KomVision inside to learn more.

If you want a wealth of information about your machinery, as well as the ability to find parts and fulfill service needs, the new MyKomatsu website provides it all in one convenient place. More details are in this issue.

We also have informative stories about a customer using *intelligent* Machine Control dozers as well as Komatsu corporate trainers who can help you maximize production.

We hope 2019's construction season is a busy and profitable one for you. If there's anything we can do to assist you, please call or stop by one of our branch locations.

Sincerely,
ROAD MACHINERY LLC

A handwritten signature in black ink, appearing to read "Sloan Brooks".

Sloan Brooks
President & CEO

**Komatsu
leads the tech
revolution**



ROAD TO SUCCESS



A PUBLICATION FOR AND ABOUT ROAD MACHINERY LLC CUSTOMERS

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THE PRODUCTS PLUS THE PEOPLE TO SERVE YOU!

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PATRIOT DISPOSAL, INC.

Shift to Smart Stream increases recyclable materials for Prescott Valley, Ariz., waste-collection company



Bob Blankenship,
Operations Manager



Chuck Rennie,
Maintenance
Manager

Curbside recycling has become the norm for municipalities throughout the United States. In most instances, that involves homeowners separating plastics, paper, cardboard and other recyclable materials from regular trash items and placing them in various bins for pickup. It also necessitates the use of separate trucks.

Patriot Disposal, Inc., which was founded in 2000 and is owned by Jay Eby and Kapu Price, used to operate that way, but several years ago the company changed to Smart Stream Recycle technology. This process calls for residents to place all refuse in a single can, then recyclables are sorted out at its Freedom Recycle Center, which is located adjacent to Patriot's office in Prescott Valley, Ariz. The facility is a division of Independence Haul, which is affiliated with Patriot Disposal as well.

"As with traditional curbside recycling, the idea is to take the maximum amount

of materials out of the waste stream," said Operations Manager Bob Blankenship. "We believe Smart Stream is better, because it doesn't rely on individuals to pre-sort. Our experience was that it often didn't happen, so a significant amount of recyclable materials ended up in the landfill anyway."

Patriot Disposal began using the Smart Stream Recycle technology in 2011, and it quickly proved successful. Within months, the recycling center was sorting 100 tons of materials per week. Previously, Patriot Disposal picked up about 20 tons.

The tonnage continues to increase as the area it serves – all of Yavapai County – experiences ongoing population growth. Patriot Disposal now runs four facilities. In addition to the Freedom Recycle Center, which remains its largest operation by volume, it has transfer stations in Dewey, Rimrock and Cottonwood.

"Right now, roughly 235 tons per day come through the Freedom Recycle Center," shared Blankenship. "We remove paper, plastic, metal, glass, cardboard, electronic scrap and construction materials such as shingles and more. All are sorted out and sold for reuse. In addition to our trucks bringing trash, we now accept deliveries from competitors and other outside sources, including waste from Grand Canyon National Park. With the four locations, we handle a total of about 400 tons daily."

In addition to residential waste handling, Patriot Disposal collects materials from commercial and industrial accounts. The company supplies them with front-load containers and roll-off dumpsters, then picks up disposed metal scrap and cardboard. Additionally, it offers portable toilet services.

An operator scoops trash with a Komatsu WA270-7 wheel loader at Patriot Disposal's Rimrock, Ariz., facility.





Patriot Disposal uses Komatsu wheel loaders, including a WA320-7, at its Freedom Recycle Center and puts materials onto a conveyor using a PC228USLC excavator. "Space is at a premium, so we were looking for something that would give us excellent reach and power in a small package. The PC228 is the perfect fit," said Maintenance Manager Chuck Rennie. "We switched to the WA320 for its additional bucket and lift capacity. The WA320 increased our production," he added.

Greater production with Komatsu, Road Machinery

At the same time that Patriot Disposal switched to Smart Stream, it began adding Komatsu equipment to handle a variety of tasks. Patriot's fleet includes WA250 wheel loaders for managing piles of incoming refuse at its Freedom Recycle Center.

"We moved our original WA250 to Cottonwood, where it feeds a grinder that turns wood waste into mulch," said Maintenance Manager Chuck Rennie. "It's been through the severe duty of the recycling center and continues to give us productive hours. It's a testament to Komatsu's quality and durability, as is an older PC200 that we use to process metal at our Dewey site. They each have more than 10,000 hours, and we have done very little to them. Those are attributes we must have in equipment."



Patriot Disposal loads mixed waste onto a conveyor system for sorting using a tight-tail-swing PC228USLC excavator it recently added.

"Space is at a premium, so we were looking for something that would give us excellent reach and power in a small package. The PC228 is the perfect fit," said Rennie. "There are other machines and people constantly moving around the yard and in close proximity to the excavator. Because the excavator doesn't have a large counterweight, the operator can swing without worrying about hitting something or someone."

Continued . . .

'The WA320 increased our production'

... continued

Employees sort the material by hand as it moves down the conveyor belt. What isn't pulled for recycling, dumps out at the opposite end. Material from that pile is placed onto



(L-R) Patriot Disposal Operations Manager Bob Blankenship and Maintenance Manager Chuck Rennie work closely with Road Machinery Territory Manager Earl Stagger. "Given the environment and the terrain, we are happy with the Komatsu equipment and its performance," said Rennie. "All machinery experiences issues, and if we are unable to take care of it, dealer response is critical. I know that I can call Earl or anyone else at Road Machinery, and they will respond quickly."



This Komatsu PC200 excavator continues to serve Patriot Disposal by processing metal at the company's Dewey, Ariz., site. It also uses older WA250 wheel loaders for various tasks. "Many of our Komatsu machines have more than 10,000 hours, and we have done very little to them," said Maintenance Manager Chuck Rennie. "Durability is another reason we continue to buy Komatsu equipment."

trucks with trailers using a 33,000-pound-plus, 165-horsepower WA320-7 loader. Patriot Disposal's Rimrock facility also loads trucks, but on a much smaller scale and not constantly like at the Freedom Recycle Center, where it employs a Komatsu WA270-7.

"Each trailer carries 25 tons, and we want to load them as quickly as possible," Rennie explained. "We switched to the WA320 for its additional bucket and lift capacity, compared to what we were using. It increased our production. The WA270 works well in Rimrock, and is also a great general-purpose machine for that facility."

Patriot Disposal currently works with Road Machinery and Territory Manager Earl Stagger, who helped the business acquire the machines and equip them for its operations. To avoid flats and premature failures, Patriot has its loaders equipped with solid rubber tires. It also uses grapple buckets to minimize material spillage.

"Given this environment and terrain, we are happy with the Komatsu equipment and its performance," said Rennie. "We are also very pleased with our relationships with Earl and Road Machinery. All machinery experiences issues, and if we are unable to take care of it, dealer response is critical. I know that I can call Earl or anyone else at Road Machinery and they will get to us quickly."

Preparing for growth

Patriot Disposal has approximately 80 employees now, and Blankenship and Rennie say that they have been vital to the company's expansion. "Everyone takes customer service very seriously; it's been instrumental to Patriot's growth," said Blankenship. "Customers know that we will bend over backward to fulfill their needs by supplying the recyclable materials they want, in whatever form they require."

The waste stream will likely continue to grow, too, as additional residents move into the area. "The climate and relatively low cost of living are attractive to retirees and others, alike," said Rennie. "We expect the volume to rise, and we are planning for it." ■

ARTICULATED TRUCKS

KOMATSU

MODEL	MAX WEIGHT	PAYLOAD	CAPACITY	SPEED	H.P.	TIER
HM300	116,823 lbs	30.9 TONS	22.4 yd	36.4 mph	332	T4F
HM400	162,597 lbs	44.1 TONS	31.4 yd	34.7 mph	469	T4F

CRAWLER DOZERS

KOMATSU

MODEL	WEIGHT	BLADE	CAPACITY	BLADE WIDTH	H.P.	TIER
D39EX*	20,834 lbs	PAT	2.89 yd	8'11"	105	T4F
D39PX	21,804 lbs	PAT	3.01 yd	9'9" LGP	105	T4F
D51EX*	28,484 lbs	PAT	3.5 yd	10'0"	130	T4F
D51PX	29,145 lbs	PAT	3.8 yd	11'0" LGP	130	T4F
D61EX*	37,237 lbs	PAT	4.5 yd	10'9"	168	T4F
D61PX	41,734 lbs	PAT	5.0 yd	12'8" LGP	168	T4F
D65EX	47,355 lbs	PAT/Sig	5.9 yd	11'2"	205	T4F
D65PX	49,315 lbs	PAT/Sig	5.78 yd	13'2" LGP	205	T4F
D65EXi	49,559 lbs	PAT/Sig	5.78 yd	11'2"	205	T4F
D155	87,100 lbs	Sigma	12.3 yd	13'4"	354	T4F
D375	157,940 lbs	Sigma	24.2 yd	15'5"	610	T3

*Machine is available with integrated GPS controls.

HYDRAULIC EXCAVATORS

KOMATSU

MODEL	WEIGHT	DIG DEPTH	CAPACITY	DIG FORCE	H.P.	TIER
PC88	18,558 lbs	15'2"	.37 yd	13,780 lbs	55	T4F
PC138	31,504 lbs	18'0"	.34 - 1.0 yd	18,300 lbs	92	T4F
PC170	37,740 lbs	20'6"	.48 - 1.24 yd	24,470 lbs	115	T4F
PC210	48,722 lbs	21'9"	.66 - 1.22 yd	29,762 lbs	165	T4F
PC210i	48,950 lbs	21'9"	.66 - 1.57 yd	29,762 lbs	158	T4F
PC228	54,405 lbs	21'9"	.66 - 1.57 yd	31,085 lbs	148	T4F
PC240	55,129 lbs	22'8"	.76 - 1.85 yd	34,171 lbs	177	T4F
PC290	70,702 lbs	22'8"	.76 - 1.85 yd	34,171 lbs	196	T4F
PC360	80,547 lbs	24'3"	.89 - 2.56 yd	51,150 lbs	257	T4F
PC490	109,250 lbs	30'2"	1.5 - 4.0 yd	53,790 lbs	359	T4F
PC800	188,670 lbs	28'3"	2.5 - 6.0 yd	72,750 lbs	487	T3

MOTOR GRADER

KOMATSU

MODEL	WEIGHT	MOLDBOARD	DRIVE	H.P.	TIER
GD655	37,346 lbs	14'0"	4WD	218	T4F

WHEEL LOADERS

KOMATSU

MODEL	WEIGHT	TIPLOAD	CAPACITY	BREAKOUT	H.P.	TIER
WA200	26,100 lbs	18,971 lbs	2.5 yd	24,251 lbs	126	T4I
WA270	28,531 lbs	20,216 lbs	3.0 yd	29,487 lbs	149	T4F
WA320	33,731 lbs	21,186 lbs	3.5 yd	36,310 lbs	165	T4F
WA380	40,532 lbs	29,630 lbs	4.0 yd	35,495 lbs	191	T4F
WA470	53,352 lbs	29,630 lbs	5.0 yd	43,163 lbs	272	T4F
WA500	79,802 lbs	54,326 lbs	8.0 - 9.8 yd	51,150 lbs	353	T4F
WA600	118,385 lbs	67,200 lbs	10.2 yd	87,230 lbs	527	T4F

CRAWLER CARRIERS

TERRAMAC

MODEL	CAPACITY	H.P.	WEIGHT	TIER
RT9	18,000 lbs	230	26,000 lbs	T3
RT14	28,000 lbs	280	32,700 lbs	T3
RT14R	28,000 lbs	320	40,000 lbs	T4F

HYDRAULIC BREAKERS

NPK

MODEL	ENERGY CLASS	CLASS	WEIGHT
PH4	1300 ft lbs	PC88	1,064 lbs
GH6	2000 ft lbs	PC138	2,150 lbs
GH7	2500 ft lbs	PC170	2,900 lbs
GH10	4000 ft lbs	PC200-290	4,200 lbs
GH12	5500 ft lbs	PC290	5,650 lbs
GH15	8000 ft lbs	PC300-360	6,800 lbs
GH18	12,000 ft lbs	PC400-490	7,800 lbs

MATERIAL PROCESSORS & SHEARS

NPK

MODEL	JAW OPENING	JAW TYPE	CLASS	WEIGHT	MAX CRUSH
M-28G	35.8 in	Pulverizing	PC200	6,850 lbs	125 tons
M-28K	25.1 in	Shearing	PC200	6,900 lbs	133 tons
M-35G	38.6 in	Pulverizing	PC300	7,544 lbs	127 tons
M-35K	22.8 in	Shearing	PC300	7,831 lbs	125 tons

DOUBLE DRUM ROLLERS

DYNAPAC

MODEL	WIDTH	WEIGHT	H.P.	TIER
CC900/950	35"	3,500 lbs	24	T4F
CC1200	47"	5,900 lbs	25	T4F
CC1300	51"	9,000 lbs	49	T4F
CC4200	66"	23,000 lbs	130	T4F
CC6200	84"	33,500 lbs	130	T4F

SINGLE DRUM ROLLERS

DYNAPAC

MODEL	WIDTH	WEIGHT	H.P.	TIER
CA1300D	54"	10,000 lbs	75	T4F
CA1400D	66"	14,000 lbs	75	T4F
CA2500D	84"	25,000 lbs	130	T4F

PAD FOOT ROLLERS

DYNAPAC

MODEL	WIDTH	WEIGHT	H.P.	TIER
CA1300DPDB	54"	10,000 lbs	75	T4F
CA1400DPDB	66"	14,000 lbs	75	T4F
CA2500/3500DPDB	84"	25,000 lbs	130	T4F
CT3000 TAMPING COMP		49,000 lbs	260	T4F

PNEUMATIC ROLLERS

DYNAPAC

MODEL	WIDTH	WEIGHT	H.P.	TIER
CP1200	69"	12.5k-28.5k lbs	74	T4F
CP2700	72"	27k-60k lbs	110	T3

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REDUCING FATALITIES, INJURIES

OSHA initiative aims to increase awareness of safety hazards during operations

*Editor's note:
Information for this
article was supplied
by the Occupational
Safety & Health
Administration.*

Trench safety involves several factors, including proper excavations and having a means of access and egress from the trench, such as ladders.

Anyone who works in the excavation business agrees that one injury or death from trench-related incidents is too many. However, each year there are still multiple fatalities. Data from the Bureau of Labor Statistics showed that there were 37 trench-related fatalities in 2016. That was nearly double the average number throughout the previous five years. The most recent information available showed fatalities in 2017 at 23, a significant reduction from the previous year, but still above the norm.

Those numbers prompted the Occupational Safety & Health Administration (OSHA) to initiate a new National Emphasis Program (NEP) to increase awareness and compliance with trenching and excavation safety requirements. The program consists of two components:

OSHA inspectors will conduct and record trenching and excavation inspections in a national reporting system, and each OSHA area office will develop outreach programs supporting compliance assistance within their jurisdictions.

“We are promoting stronger industry awareness about the seriousness of trenching hazards and the means available to address them,” an OSHA spokesperson reported. “In collaboration with industry stakeholders, the agency has developed new compliance assistance resources.”

OSHA’s updated Trenching and Excavation website (www.osha.gov/SLTC/trenchingexcavation) provides the following:

- U.S. Secretary of Labor Alexander Acosta’s recorded audio public service announcements, in English and Spanish, that highlight effective ways to stay safe when working around trenches and excavations.
- A 45-second video, “5 Things You Should Know to Stay Safe,” covering safety measures that can eliminate hazards and prevent worker injuries.
- An updated Trenching Quick Card about protecting workers.
- OSHA’s revised “Protect Workers in Trenches” poster, which offers a quick reminder of the three ways to prevent dangerous trench collapses. The poster is printed in English and Spanish.
- A new “Slope It. Shore It. Shield It.” sticker, available in English and Spanish.

Following trenching standards is best prevention

OSHA says compliance with existing trenching standards would prevent most, if





OSHA says compliance with existing trenching standards would prevent most, if not all, fatal incidents. Included among those standards is having a protective system for trenches 5 feet or deeper, unless it is made entirely in stable rock.

not all, fatal incidents. Included among those standards is having a protective system for trenches 5 feet or deeper, unless it is made entirely in stable rock, and a competent person has examined the ground and found no indication of a potential cave-in.

A competent person is any individual, selected by the employer, who is capable of identifying existing and predictable hazards or working conditions that are hazardous, unsanitary or dangerous to workers; can determine soil types and required protective systems; and is authorized to take prompt corrective measures. OSHA requires that a competent person conduct daily inspection of a trench before workers enter.

Safe access and egress, including ladders, steps, ramps or other safe means, are required for employees working in trench excavations 4 feet or deeper. They must be located within 25 feet of all workers.

Other general rules include keeping heavy equipment away from trench edges; keeping soil and other materials at least 2 feet from the edges; knowing where underground utilities are located before digging; testing for atmospheric hazards; and ensuring that workers wear high-visibility or other suitable clothing.

“The goal of this NEP is to reduce or eliminate workplace hazards,” OSHA stated. “As part of it,

Know your protective systems

Here are OSHA’s definitions of the protective systems. When designing one, you must consider factors such as soil classification, depth of cut, water content of soil, changes caused by weather or climate, surcharge loads and other operations in the vicinity.

Benching: A method of protecting workers from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels. Benching cannot be done in Type C soil.

Sloping: Involves cutting back the trench wall at an angle inclined away from the excavation.

Shoring: Installing aluminum hydraulic or other types of supports to prevent soil movement and cave-ins.

Shielding: Protecting workers by using trench boxes or other types of supports to prevent soil cave-ins.

Compliance Safety and Health Officers will initiate inspections whenever they observe an open trench or excavation, regardless of whether or not a violation is readily observed. These observations may occur during the course of their normal workday travel or while engaged in programmed or unprogrammed inspections. Operations will also be assigned for inspection as a result of incidents, referrals and complaints. We want to prevent all trench collapses and save lives.” ■

ALTERNATIVE FUNDING STUDIES

Seven states earn grants to explore innovative ways to pay for infrastructure investment

The Federal Highway Administration (FHWA) recently committed \$10.2 million for testing new ways to finance highway and bridge construction projects. It announced that seven states will receive “Surface Transportation System Funding Alternative” grants.

The primary goal is to allow states to test user-based alternatives to support the federal Highway Trust Fund. It currently relies primarily on the federal gas tax, which has remained at 18.4 cents per gallon since 1993. Inflation and more fuel-efficient cars have had negative impacts on the tax’s ability to sufficiently fund road construction and repairs.

“These grants provide states with the opportunity to explore innovative ways to help pay for infrastructure improvements and maintenance,” said FHWA Deputy Administrator Brandye L. Hendrickson.

The Federal Highway Administration (FHWA) announced grants for seven states to study alternative funding to support the Highway Trust Fund. The primary goal is to explore innovative ways to help pay for infrastructure improvements and maintenance, according to FHWA Deputy Administrator Brandye L. Hendrickson.

Searching for new solutions

According to the FHWA, the seven projects will investigate and evaluate various mileage-based and road-user charges, including those for trucks and automated vehicles, and the implementation and operation of the technologies at a regional level. FHWA officials selected proposals from California, Delaware, Minnesota, Missouri, New Hampshire, Oregon and Utah.

The grants were announced soon after President Trump urged Congress to act on infrastructure in his annual State of the Union speech. He has called for as much as \$1.5 trillion in federal spending on new roads, bridges and other critical needs in the past.

“Both parties should be able to unite for a great rebuilding of America’s crumbling infrastructure,” said Trump during his speech. “I know that Congress is eager to pass an infrastructure bill – and I am eager to work with you on legislation to deliver new and important infrastructure investment, including investments in the cutting-edge industries of the future. This is not an option, this is a necessity.”

Construction industry groups praised Trump’s push for infrastructure improvement. “The President encouraged Congress to set aside their politics and unite to repair bridges, roads and all of the America’s outdated, overburdened and crumbling infrastructure,” said National Stone, Sand and Gravel Association President Michael W. Johnson, IOM. “A collective commitment and bipartisan compromise are essential to finally making the much overdue and badly needed investment required if the U.S. is going to continue to be the strongest economy and most secure nation in the world.” ■



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BREAKING THE GLASS CEILING

Today's society needs to encourage, promote engineering careers to women



Lucia Pía Torres

Lucia Pía Torres is Program Manager for engineering at SINERGEIA-ESCO, specializing in energy efficiency and renewable energies. She has experience in project management, production, operation and maintenance in various industries and international companies.

Modern society – and its ability to manage technological changes, while also combining classic thought with modernity and coexistence with advancement – leaves no alternative but to build on a foundation of gender, social and culture diversity. In a globalized world, every profession or occupation is interconnected with technology; it is clear that we need more engineers, scientists and technologists. In order to achieve our goals and develop these professions, we need to be more inclusive and strongly involve women. That is our challenge.

While society has progressed from the days when a woman like Marie Curie, an innovator in her field, was considered exceptional, there is still a long way to go in the engineering profession. I believe that we still need more

female role models to inspire new generations to follow a technical professional path; it remains difficult to publicly identify successful female engineers or scientists.

Merit, rather than gender

For modern women, technical and complementary training, including leadership skills, management and teamwork, are becoming more attractive areas. The possibility of growing and developing within the profession is a very valuable asset. Often it is perceived that there is an unbreakable glass ceiling, and that the positions of middle and upper management are almost inaccessible for women. These jobs must be based on merit, technical abilities and leadership skills, not dependent on gender.

The word engineer has its origin in the Latin word *ingenium*, which refers to machines or artifacts as well as an innate and natural disposition to invent, create and design. So, any person with the vocation to innovative, create, design or shape a vision to solve common and everyday problems, can be an engineer.

Women are able to perform any task regardless of the traditional stereotypes and stigmas; it is up to us, as a current society, to eliminate them. If we train, accompany and encourage women, who want to continue to increase their knowledge and enhance their skills, promoting and recognizing their development, we will be able to fulfill our main objective: a diverse, balanced and equitable world, sustainable for the next generation. ■

Society should encourage women to pursue engineering, says author Lucia Pía Torres. "If we train, accompany and encourage women, who want to continue to increase their knowledge and enhance their skills, promoting and recognizing their development, we will be able to fulfill our main objective: a diverse, balanced and equitable world, sustainable for the next generation."



Editor's note: This article is an excerpted version of an original that first appeared on worldcement.com. You can read the full version there.



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Hunter and Clint Shackelford
Shackelford Construction / Yazoo City, MS

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CASE STUDY



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'OUR BRAND OF CHOICE'

High production, costs savings with *intelligent* Machine Control dozer spur growing firm to build Komatsu fleet

Good decisions are often directly tied to profitability and prosperity. Justin Lott, Co-owner/Senior Vice President of Southern Transport & Equipment, LLC, learned that lesson after completing fire school.

"I had my sights set on being a firefighter, but I had to finish EMT training as well," recalled Lott. "The summer after I graduated, I took a job working for an oil-field company to make some money. I quickly realized that type of work paid much better than I was projected to make as a firefighter. I was given an opportunity to grow with the business that I worked for, so I took it."

Lott started his own land-clearing and earthwork firm to keep busy during breaks in the company's two-weeks-on, two-weeks-off schedule. Those side jobs eventually evolved into a full-time business, and after a few years, he combined forces with three other entrepreneurs to form Southern Transport & Equipment in 2017.

First impressions

The new venture needed a dozer to make aggressive pushes in tough material. A colleague suggested a standard Komatsu D155. A visit with the local Komatsu distributor convinced Lott to demo an *intelligent* Machine Control D155AXi-8.

"The material at the test site was a very coarse aggregate, and the dozer handled it with ease," Lott recalled. "The grade control is phenomenal, and the fact that we can use a machine of its size from first pass to last on large-scale projects is incredible."

After purchasing the initial D155AXi-8 and then a second, Southern Transport & Equipment also added two *intelligent* Machine

Control D65PXi-18s, a D61PXi-24 and a D85PXi-18. "No matter the size of the dozer, the integrated GPS system works flawlessly," reported Lott. "The costs savings are apparent. Fuel usage is down, while production and efficiency are up. We love that there are no masts or cables to install or remove every day. That increases time spent moving material."

The company has invested in standard Komatsu machinery as well, including a WA500 wheel loader it uses to fill trucks at a gravel pit. On some projects, Southern Transport & Equipment utilizes PC360LC-11 excavators and HM400 articulated trucks to move mass amounts of material.

"Once we tried the intelligent dozers, Komatsu equipment became our brand of choice," declared Lott. ■

Southern Transport & Equipment relies heavily on Komatsu *intelligent* Machine Control dozers. "No matter the size, the integrated system works flawlessly," said Justin Lott, Co-owner/Senior Vice President. "The cost savings are apparent. Fuel usage is down, while production and efficiency are up."



Justin Lott,
Co-owner/Senior
Vice President,
Southern Transport &
Equipment

▶ VIDEO



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Marv Selge (with Noah & Justin) / Selge Construction, Inc. / Niles, MI

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SPECIAL EVENT



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COMPLETE LINEUP

Customers test wide range of Komatsu equipment using a variety of materials at Demo Days

Construction equipment owners and operators from across the United States met at the Cartersville Customer Center in Georgia for the three-day fall Komatsu Demo Days event. To provide realistic working conditions, sand, gravel and rocks of various sizes were available so that customers could test machines to their fullest capabilities using materials consistent with their usual jobsites.

Each day began with a tour of the Chattanooga Manufacturing Operation in Tennessee, where many Komatsu excavator models are assembled. After a catered lunch and an informational session about KOMTRAX and Komatsu CARE, attendees made their way to the 45-acre demonstration site to test the latest equipment Komatsu offers.

"Demo Days featured more than 40 Komatsu machines for attendees to operate," explained Komatsu Director of Training and Publications Bill Chimley. "Customers could try out our full range of equipment, with Komatsu experts ready to answer any questions."

New competition

The newest addition to the event was a timed competition where participants used a Komatsu PC55MR-5 compact excavator to pick up and drop three rubber balls into a tub as quickly as possible. Daily winners earned a Komatsu jacket and all who finished in 30 seconds or less received a Komatsu hat.

"We work in a very competitive industry and wanted to introduce some of that spirit into the event," said Rich Smith, Vice President, Product and Services Division, Komatsu America. "Our goal is to give the customers a new experience every time they visit the Cartersville Customer Center." ■



The newest addition to Demo Days was a timed event where attendees operated a Komatsu PC55MR-5 compact excavator and competed to place three rubber balls into a bucket as quickly as possible.

Online Exclusive



Scan to watch a video of one customer's experience at Demo Days.

▶ VIDEO



The recent, three-day Demo Days event included more than 40 machines for guests to operate at the 45-acre Cartersville Customer Center demonstration site.



Discover more

MODERN JOBSITE SOLUTIONS

SMARTCONSTRUCTION provides a full suite of offerings to help implement technology



Jason Anetsberger,
Komatsu Senior
Product Manager

Technology continues to evolve at a rapid pace in the construction industry, and those companies that embrace and fully utilize it are more likely to win future bids and finish jobs faster and more profitably. Komatsu is committed to helping customers optimize their jobsite productivity through its SMARTCONSTRUCTION suite of offerings, including *intelligent* Machine Control dozers and excavators.

Available through Komatsu distributors, SMARTCONSTRUCTION provides aerial mapping, 3-D modeling, training and consultation, GPS hardware and jobsite setup. Komatsu-certified Technology Solutions Experts (TSEs) and SMARTCONSTRUCTION

consultants can assist customers with technology implementation as well as optimization of the jobsite.

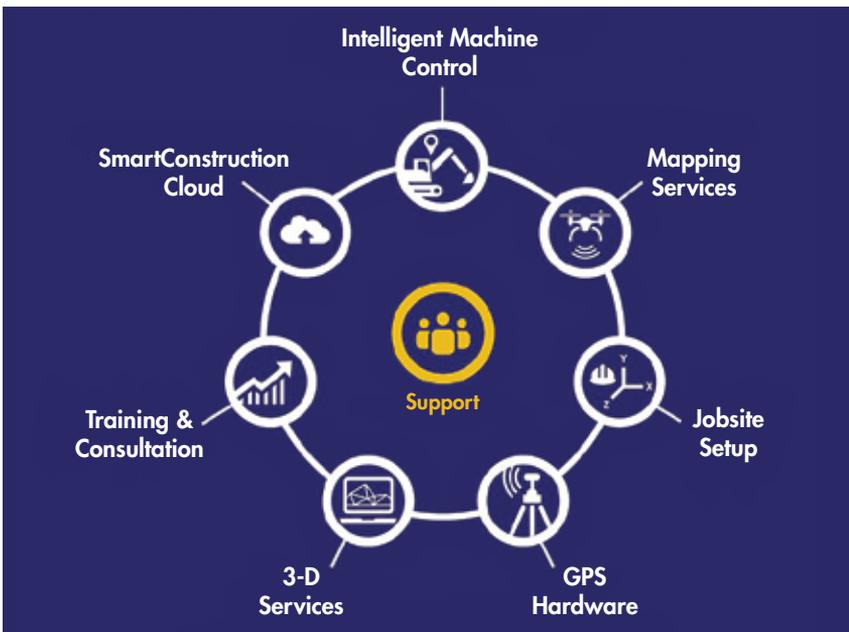
“We want every user to realize the full potential of their jobsite,” stated Jason Anetsberger, Komatsu Senior Product Manager. “Technology is changing every day, and our customers want to be on the cutting edge. With SMARTCONSTRUCTION, we can help them access the latest innovations. Our TSEs and consultants have the knowledge and skills to help with every aspect, whether it’s choosing the right *intelligent* machinery and implementing it into a fleet, training on base and rover usage or providing aerial mapping and other solutions that maximize production and efficiency.”

Komatsu sparked a revolutionary leap in machinery with the introduction of its GPS-integrated *intelligent* Machine Control dozers in 2013. Excavators followed soon after. Komatsu developed SMARTCONSTRUCTION as a one-stop source for solutions that help *intelligent* Machine Control users maximize production and efficiency.

“For those new to *intelligent* Machine Control equipment, we offer initial instruction from our certified trainers on how to quickly and easily adopt the technology,” said Anetsberger. “From there, we focus on consulting with customers to deliver the targeted jobsite efficiency improvements.”

Improved accuracy with aerial mapping

One popular SMARTCONSTRUCTION service is aerial mapping, which gathers topographic data from above. Surveys can be



Komatsu’s SMARTCONSTRUCTION program provides one-stop solutions to help *intelligent* Machine Control users maximize the advantages of the technology throughout a project.



Komatsu and its distributors have partnered with leaders in aerial mapping technology so that customers can enjoy the benefits of highly accurate, yet quickly gathered topographic data.

completed before, during and after a project to measure existing and ongoing volumetric changes, stockpile calculations, record amounts of material moved and gather final as-built data.

Anetsberger said customers are amazed by the resolution and accuracy of the data collected. The highly detailed information gathered prior to the start of a project helps in preparing better estimates and bids, as well as in jobsite planning for greater production and efficiency.

During the construction phase, drones can finish numerous surveys per day without disrupting an active jobsite. That allows companies to get a more accurate picture of progress in less time compared to traditional methods.

“Aerial mapping with drones is something that customers request frequently,” said Anetsberger. “Time savings is one of the main reasons. We find that it takes one drone operator roughly 30 minutes to survey a 40-acre site. Compare that to the half-day it typically takes a manned topography crew, and it’s easy to see why there’s a demand for



Komatsu Technology Solutions Experts and SMARTCONSTRUCTION consultants play a vital role delivering SMARTCONSTRUCTION services on the jobsite. Trained and certified by Komatsu, they are specialists at deploying technology to help operations run at peak efficiency.

this service. Additionally, on many jobsites, manned topography may measure only every 20 or 50 feet on a grid, whereas a drone can map nearly every tenth of a foot. That offers greater resolution and improved accuracy.”

Allows excavation companies to concentrate on moving dirt

SMARTCONSTRUCTION personnel can not only help companies utilize the data collected from aerial mapping, but also with other data services such as takeoffs.

3-D data modeling services are offered to provide customers of all sizes and capabilities with information for their GPS equipment.

“We are providing quality 3-D data, and our TSEs and consultants know how to optimize it for the machine and the application,” said Anetsberger. “With SMARTCONSTRUCTION, we are able to take all of the knowledge and data we have compiled and use it as a total solution to help our customers operate their jobsites at maximum efficiency. That lets earthmoving and excavation companies concentrate on what they do best – move dirt.” ■

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Brian (left) and Thomas Cronin / Prosperity Construction / Jackson, MS

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PASSING THE TEST

Attention to detail is the key for Komatsu's Arizona Proving Grounds General Manager Neil Johnson

QUESTION: What is the Komatsu Arizona Proving Grounds?

ANSWER: It's a 660-acre facility in Sahuarita, Ariz., where up to 40 employees conduct research and development primarily for Komatsu mining haul trucks. However, with the formation of Komatsu Mining, we are expanding our reach to test other mining products. We currently have a PC7000 excavator and P&H 77XR drill here.

QUESTION: What kind of testing takes place at the facility?

ANSWER: We focus on three types of testing: performance, structural and durability. Typically, we address the first two on our site. We have a mine operation set up here, and we spend hours running the equipment through various exercises. Once we complete performance and structural testing, we closely monitor the durability of the machine at a customer's site for approximately 2,500 hours.

QUESTION: What role does the Arizona Proving Grounds play in the development and testing of Komatsu's Autonomous Haulage System (AHS)?

ANSWER: We are the only Komatsu site that engages in AHS development and benchmarking. We have the same testing process for AHS as we do for the trucks. The group in Peoria, Ill., handles the design and integration, and we put it to work in the field to validate performance. We ensure that the sensors in all structures meet life expectancy and measure stress as well as vibration on those components.

Here in Arizona, we also analyze software updates before they are integrated into Komatsu

Continued . . .



Neil Johnson, General Manager, Komatsu's Arizona Proving Grounds

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.

Neil Johnson has spent his entire career with Komatsu. After graduating with a degree in mechanical engineering in Newcastle, England, he began conducting research and development on excavators for Komatsu UK Limited.

"For nine years, I worked with wheeled, crawler, high-reach, road-rail, super-long-front and utility excavators," recalled Johnson.

In 2009, he moved stateside to Komatsu's U.S. Test Group (USTG) in Cartersville, Ga.

"When I came to the States, I visited customer sites and conducted many field tests," shared Johnson. "Then, I got involved with the *intelligent* Machine Control machines, which used a D51-22 dozer that was converted to the prototype for the D61PXi dozer."

Two years after arriving in Georgia, he moved to the Arizona Proving Grounds, where he served as Chief Engineer and was eventually promoted to his current role of General Manager. His tenure at the facility has included several exciting projects.

"One of the major events was moving to this current facility in 2015," noted Johnson. "We put a lot of thought into the building design, test courses and the mining site, in addition to installing permanent infrastructure for the Autonomous Haulage System."

In his free time, Johnson enjoys traveling with his wife, Angela, and riding motorcycles, in addition to mechanical projects.

Working to meet customers' high standards

... continued

equipment. Our group performs a stability test, which is a 150-hour exercise that searches for any failures in the system. If issues are detected, they are addressed and testing begins again. We pride ourselves on delivering products and technology that perform to our customers' high standards from the very beginning.

Equipment goes through rigorous testing at the Arizona Proving Grounds. "We focus on three types of testing: performance, structural and durability," said General Manager Neil Johnson. "We have a mine operation set up here, and we spend hours running the equipment through various exercises."



In addition to equipment and technology testing, the Arizona Proving Grounds evaluates mining site plans to help customers layout their operations in the most efficient manner.



QUESTION: In addition to addressing equipment and technology, are there other ways you help customers increase productivity?

ANSWER: While equipment and technology are major components to efficient operation, we also look at site design. Sometimes removing three stop signs from an operation or changing an incline can result in significant fuel savings, so we work with customers to address those as well.

QUESTION: What does the future look like for the Arizona Proving Grounds?

ANSWER: We have several new things coming up, including larger customer events. In the past, we primarily hosted individual customer demos, but, for the first time, we recently held an AHS event for a group of customers, and we have others planned. It's exciting to open the doors to the facility so that people can see it and experience the equipment, because both are really impressive.

We will continue to work with AHS, including testing the Innovative Autonomous Haul Vehicle. It is the world's first cabless, driverless haul truck. Komatsu debuted the prototype at MINExpo in 2016. After the show, it came straight here for testing. It's been a very good research platform. ■

Komatsu's Arizona Proving Grounds is a 660-acre facility north of Tucson in Sahuarita, Ariz. It primarily handles research and development for mining haul trucks and recently began testing other Komatsu Mining equipment and alternative technology.





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MAKING MORE TOP OPERATORS

Komatsu helps build combination of skilled operators and well-designed machines for maximum production

Ask any group of construction equipment owners about the importance of their operators, and chances are you will hear very positive comments about the people in their cabs. That's because, according to Kurt Wilson, it takes a combination of well-designed machines and proficient operators to achieve top production.

Wilson is one of three corporate trainers certified and qualified by Komatsu to offer expert-level instruction. They work with equipment owners and their staff members to help them get the most from Komatsu machines. With years of experience running equipment – as well as delivering training – all Komatsu corporate trainers have the skills and knowledge to help companies increase job efficiencies and operators enhance their skills.

They offer training at Komatsu's Cartersville Customer Center in Georgia or at a customer's requested location.

"As we work with operators, we are learning too," said Wilson. "We have techniques, tips and information about the machines that we

can share based on our experiences. At the same time, they often provide us with valuable insight that we can incorporate into our training and pass along to others. It's a two-way street."

Focusing on safety

Safety is of utmost importance, so Komatsu corporate trainers emphasize it in every session. "Once we have established that safety comes first, then we typically begin with classroom activities," explained Todd Bresemann, another Komatsu trainer. "During these meetings, we present information about the machines, and, at the same time, participants help us better understand their particular circumstances and needs."

When a group moves from the classroom to a site, they begin with a complete walkaround of the machine. "We go over pre-operation inspections thoroughly, then move to systems, functions and actual operation," said Jason Gillard, the third training team member.

"We help operators familiarize themselves with the latest machine features as well as proven operational techniques," noted Gillard. "Our aim is to assist those who run equipment to boost operational effectiveness, and to do so in ways that reduce maintenance issues. That leads to increased machine availability, which, in turn, provides even greater output and lower per-ton and per-yard costs."

"Observing people in action is always part of the process, with the goal of pointing out strategies to use the machinery most effectively," added Wilson. "We want to see companies achieve the greatest returns on their equipment investment as possible, and we know that skilled employees are one of the keys to doing that." ■

(L-R) Komatsu Corporate Trainers Kurt Wilson, Todd Bresemann and Jason Gillard assist companies in improving return on investment through hands-on and classroom learning. Training can be arranged through your Komatsu distributor.

▶ VIDEO



ALL IN ONE PLACE

'MyKomatsu' website brings together wealth of machine information and support items

What if you could check the location of your machines, their health and how they are being used and then order parts or learn the status of an order already placed, all from the same tool? Soon, you will be able to do all of that and more with the MyKomatsu website, set to launch in early 2019. The rollout across the country in the months to follow promises to bring a variety of information about your fleet and the support you need to maintain it, right to your desktop, laptop, tablet or mobile device.

"Customers told us they wanted comprehensive information in one convenient spot, instead of looking for it through multiple applications," said Rizwan Mirza, Komatsu Manager, KOMTRAX, Products and Services Division. "We responded with the new MyKomatsu website. Owners can monitor their fleet and find the necessary items to maintain it with a solid integration of the parts world."

MyKomatsu is more than just a telematics tool, it's also a complete redesign of Komatsu America's eCommerce solution. "MyKomatsu is designed to bring eCommerce and parts ordering back into the comprehensive fleet management conversation," says Dan Chapeck, Manager of Retail Marketing, Komatsu Parts. "We understand our customers require a tool that brings everything into one place, so our goal was to create a single environment where owners can learn about their machines, monitor jobsites, and maintain equipment with the highest quality Komatsu Genuine Parts, all in the same place."

Free and easy-to-use

The MyKomatsu website (<https://mykomatsu.komatsu>) will offer a familiar suite of all-inclusive telematics solutions, allowing owners to access information about their equipment location, machine hours, load

factors, cautions and more, as reported through Komatsu's existing telematics resources, such as KOMTRAX or KOMTRAX Plus. Signing up for an account is free and simple and can be done through your local Komatsu distributor.

"You can get a general overview of an entire fleet, such as average idle time, as well as have the ability to drill down to specific machines for greater detail," said Mirza. "For example, owners can take a quick glance at the machine's performance or health; pull up a specific machine's spec sheet; look up operator and maintenance manuals or parts and service news; plus use a catalog to find a part and place an order online with a local Komatsu distributor."

"To best serve our customers and continue to earn the right to be their partner in business, we are offering tools to simplify the entire ownership experience. Being able to view and manage your business in this environment in the same way as you do in reality was the smartest place to start," added Chapeck. ■

For more information or to register for MyKomatsu, contact your local authorized Komatsu distributor.



Rizwan Mirza,
Komatsu Manager,
KOMTRAX, Products
and Services Division



Dan Chapeck,
Manager,
Retail Marketing,
Komatsu Parts



The MyKomatsu website (<https://mykomatsu.komatsu>) provides a wide range of information to track equipment, including hours, load factors, cautions and more. "Users can monitor their fleet and find the items necessary to maintain it," said Rizwan Mirza, Komatsu Manager, KOMTRAX, Products and Services Division.

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Dawn Mallard / D.Grimm, Inc. / Conroe, TX

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INDUSTRY ACHIEVEMENT

2 BILLION TONS HAULED

FrontRunner autonomous haulage system sets record with latest milestone

The numbers doubled quickly. In 2016, Komatsu's FrontRunner Autonomous Haulage System (AHS) marked 1 billion tons hauled since its first commercial deployment in 2008. Then, in 2018, AHS hit the 2-billion-ton mark, which is higher than all other commercial systems combined.

The feat was accomplished with more than 130 driverless trucks in operation in mines across the world. The number of tons hauled will keep rising significantly, with an additional 150 trucks slated for deployment in the Canadian oil sands throughout the next seven years.

"AHS continues to play an increasingly crucial role in effective mine management as more and more operations transition from manned to unmanned fleets," said Dan Funcannon, Vice President/General Manager, Large Mining Truck Division, Komatsu America. "As the demand for AHS grows, Komatsu will continue raising the bar in an effort to help mines provide safer environments, maximize production and reduce operating costs."

Future focused

Komatsu has accelerated the pace of AHS deployment by working closely with customers and educating them about the system's 10-year, zero-harm and productivity record as well as unmatched ability to accommodate an array of mining environments. Today's FrontRunner system operates around the clock to haul copper, iron and oil sands at seven sites across three continents.

"The ongoing investment in technology and equipment by major mining companies underscores their belief in the value of

autonomous haulage," said Anthony Cook, Vice President Autonomous and Communications Solutions at Modular Mining Systems, a subsidiary of Komatsu.

Komatsu's best-in-class approach for FrontRunner AHS brings the world's best-selling, ultra-class dump trucks together with Modular Mining Systems' industry-leading DISPATCH Fleet Management System, the preferred management system in nine of the 10 largest mining operations in the world. The system enables 100-percent compliance with proven optimization methodology, delivering unrivaled performance.

Komatsu plans to enhance AHS' mixed-operations functions. In an effort to enhance safety and efficiency, Komatsu is working with industry stakeholders to standardize interoperability between Komatsu and non-Komatsu autonomous vehicles. ■



Dan Funcannon,
Vice President/
General Manager,
Large Mining Truck
Division, Komatsu
America

Komatsu's FrontRunner Autonomous Haulage System passed the 2-billion-ton mark recently. Commercial deployment of the driverless trucks began in 2008, and today there are more than 130 of them in operation around the world.

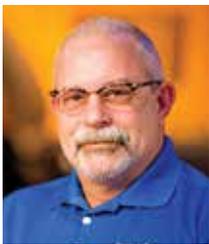




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BIRD'S-EYE VIEW

New camera system gives operators unparalleled look at work area from excavator cab



Kurt Moncini,
Komatsu Senior
Product Marketing
Manager, Tracked
Products

Jobsites are often described as choreographed chaos – multiple machines and workers completing tasks in tight spaces and under extreme deadline pressure. That is why Komatsu developed KomVision, a multi-camera system that helps operators better track activity around their machines.

“Rearview cameras are already standard on our machines today; this was the next logical step,” said Komatsu Senior Product Marketing Manager, Tracked Products Kurt Moncini. “Inside an excavator, the counterweight as well as the engine and pump compartments create unavoidable blind spots for the operator. KomVision helps eliminate them and improve situational awareness for everyone on a jobsite.”

KomVision uses software to stitch together video from mounted cameras and then displays it on the in-cab monitor in real-time as one image that looks as if it were filmed from above the machine.

KomVision uses multiple cameras mounted on the exterior of an excavator to compile video from the machine's blind spot and then uses software to stitch it all together and display a real-time, bird's-eye view on the in-cab monitor.



“It gives the operator a bird's-eye view of everything surrounding the excavator,” Moncini added. “This is a great feature, especially for those who work in confined spaces. The operator has a complete view of the area to locate poles, equipment or crew members near the machine. It significantly improves situational awareness.”

KomVision is currently available on six Komatsu excavators – PC170LC, PC238USLC, HB365LC, PC650LC, PC1250 and PC1250LC – and Moncini expects that number to increase in the near future.

Customized views

On standard excavators, the four-camera system captures a 300-degree view, while short-tail models use three cameras to monitor 240 degrees, with the remaining area in clear, first-person view of the operator. KomVision's view reaches beyond a fully extended arm and bucket to cover the entire work zone. Additionally, the counterweight swing radius is marked with a red line while a yellow one denotes a “caution area” with a radius that is two meters wider.

“You get an optimal view of your surroundings to easily identify any potential hazards within those zones,” noted Moncini. “Increasing an operator's situational awareness is the primary objective.”

Operators can use the default, split-screen mode, which displays the bird's-eye view on the left and a selectable camera view on the right, or they can switch to full-screen mode to display the feed from all cameras simultaneously.

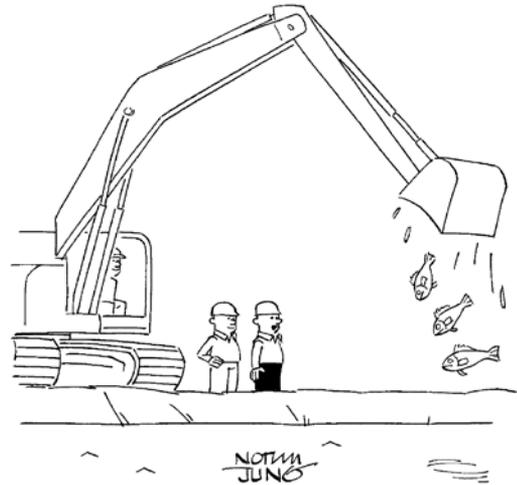
“When backing up, for example, the operator can use the split-screen mode to see the rearview camera on one side and the overhead view on the other,” noted Moncini. “It's customizable and easy to toggle between cameras.” ■

SIDE TRACKS

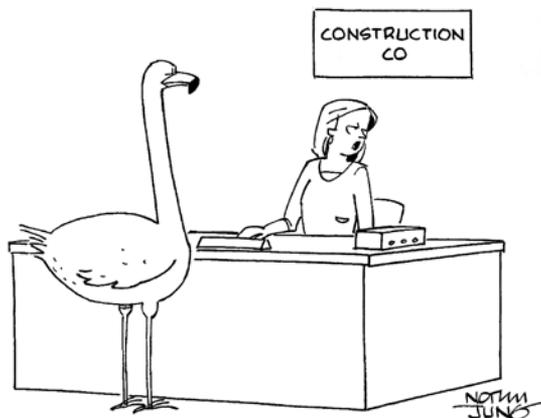
On the light side



"When the market is up, it's selfie time!"



"Wirth likes to fish during his breaks."



"The crane operator you requested is here."

Did you know?

- An ounce of gold can be stretched into a wire 50 miles long.
- No two spider webs are the same.
- The first Kentucky Derby was run at Churchill Downs in 1875; Aristides was the winner.
- The human brain is approximately 85 percent water.
- Olympus Mons on Mars is the largest volcano in our solar system.
- There are 100 tiles in a Scrabble crossword game.
- Flavored coffees are created after the roasting process by applying flavored oils specifically made for use on coffee beans.
- The extended right arm of the Statue of Liberty is 42 feet long.
- President Rutherford B. Hayes started the annual White House Easter egg roll in 1878.
- Fingerprints serve a function; they provide traction for fingers to grasp things.

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.RMLRoadToSuccess.com

1. CREFROWOK _____ F _____
2. LIBCALKF _____ C _____
3. TUBDGE _____ D _____
4. PSUMT _____
5. DRIG _____

MORE INDUSTRY NEWS

Court rules general contractors can be cited for subcontractors' safety violations

The U.S. Court of Appeals for the Fifth Circuit in New Orleans ruled that the Occupational Health and Safety Administration (OSHA) may cite general contractors for subcontractors' safety violations. The ruling receded from a 1981 precedent by an administrative law judge that said OSHA could only cite controlling employers – a legal term indicating the general contractor – for the safety of its own employees.

The opinion stems from a 2015 case in Texas where a general contractor directed a

subcontractor to work in what was deemed unsafe conditions. Both were cited for willful violation of an OSHA regulation regarding exposure of employees to a cave-in hazard.

An administrative judge for the Denver Occupational Safety and Health Commission previously ruled the general contractor could not be cited for the safety hazards created by a subcontractor. The Fifth Circuit said recent rulings in similar cases render the 1981 decision obsolete. ■



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2005 Komatsu WA380-7



2009 Komatsu D155AX-6



2013 Komatsu WA380-7



2015 Komatsu WA270-7



2012 Komatsu PC360LC-10



2013 Komatsu PC490LC-10



2017 Komatsu PC650LC-11



2014 Komatsu PC800LC-8EO

USED EQUIPMENT FOR SALE

YR	MODEL	HRS	S/N	PRICE
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WHEEL LOADERS

2015	Komatsu WA270-7	9,750	80802	\$55,000
2014	Komatsu WA380-7	2,514	10316	\$129,500
2014	Komatsu WA320-7	2,500	80428	\$109,500
2015	Komatsu WA320-7	2,570	A36500	\$102,500
2005	Komatsu WA380-5	7,400	61153	\$42,500
2013	Komatsu WA380-7	4,790	10180	\$85,000
2013	Komatsu WA320-7	4,600	80043	\$96,500
2013	Komatsu WA470-7	4,725	10087	\$179,500
2016	Komatsu WA470-8	2,540	100008	\$235,000

EXCAVATORS

2014	Komatsu PC240LC-10	1,700	90055	\$98,500
2014	Komatsu PC290LC-10LF	1,842	A25844	\$165,000
2012	Komatsu PC360LC-10	4,460	70043	\$129,500
2013	Komatsu PC490LC-10	5,180	A403429	\$179,500
2017	Komatsu PC650LC-11	1,670	80004	\$499,500
2014	Komatsu PC800LC-8EO	2,850	65144	\$599,500

DOZER

2009	Komatsu D155AX-6	11,951	80895	\$95,000
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CRAWLER CARRIER

2017	Terramac RT14	148	EMD015308	\$232,000
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