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put through its paces



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FEATURES

HANDS-ON Earthmoving

26 Rave Review for Komatsu's D51

When Komatsu loaned us a new D51PX-22 crawler dozer for an installment of Hands-On-Earthmoving, we took the tractor to the training facility that Local 649 (International Union of Operating Engineers) maintains in central Illinois. There we met Jim Schultheis, an absolute expert on a grading tractor, who spent half a day with the D51 and then gave us his thoughts on Komatsu's newest.



SPECIAL REPORT

36 Dealers Striving to Thrive Need Size

Equipment dealerships require increasing quantities of cash. Competition from rental firms, demands by manufacturers, and the expanding expectations of customers give today's dealers the choice to either grow or wither. Those who survive can develop more capabilities to serve their customers. Their challenge is to keep in touch with small businesses they have served so well.



Contents

HANDS-ON TRUCKING

44 GM's HD Pickups Come Work Ready

Truck Editor Tom Berg says, "It's like watching a frog race. Full-size pickups leap over each other with new and improved models every few years." Berg drives the latest GM heavy-duty 3/4- and 1-ton models, the 2500HD and 3500HD, which use the 1500's noses and cabs mounted on stronger frames and suspensions.



BUYING FILE

48 New Players Look to Roll in on Core Market



Product-line expansions by some OEMs are providing mainline contractors with a greater selection of single-drum soil compactors from which to choose. But, as traditional suppliers of primarily smaller machines roll into new markets with larger models, that doesn't necessarily translate into a market trend, according to one leading full-line compactor manufacturer. Senior Editor Mike Anderson reports on all the latest equipment additions in the soil-compactor market.

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Editorial Staff

Rod Sutton, Editor in Chief

630/288-8130; rsutton@reedbusiness.com

Larry Stewart, Executive Editor

314/962-0639; lstewart@reedbusiness.com

Walt Moore, Senior Editor

630/288-8132; wmoore@reedbusiness.com

Mike Anderson, Senior Editor

519/986-1789; michael.anderson@reedbusiness.com

Katie Weiler, Managing Editor

630/288-8142; kweiler@reedbusiness.com

Tom Berg, Truck Editor

Mike Vorster, Contributing Editor

Publishing Offices

Reed Business Information, 2000 Clearwater Drive, Oak Brook, IL 60523; Fax: 630/288-8185

Rick Blesi, Publisher

Dawn Batchelder, Marketing Coordinator

Bruce Ksiazek, Director of Finance

Karen A. Ruesch, Production Director

Victoria Jones, Production Manager

Allison Terres, Director, Audience Marketing

Bill Patton, Creative Director

Michael N. Smith, Senior Art Director

Monina Tan-Pipilas, Production Artist

Sales Representatives

Mary Adey, Regional Manager

630/288-8134; Fax: 630/288-8185
madee@reedbusiness.com

Michelle Lorusso, CBC, Regional Manager

770/209-3623; Fax: 630/288-8185
mlorusso@reedbusiness.com

Terry McGinnis, Regional Manager

801/273-8790; Fax: 801/273-8799
tmcginnis@reedbusiness.com

Michael Ostrowski, Regional Manager

630/288-8139; Fax: 630-288-8185
michael.ostrowski@reedbusiness.com

Jan Varnes, Account Representative

630/288-8143; Fax: 630/288-8185
jan.varnes@reedbusiness.com

Mike Hancock, International

Tel: 011 44 208/652 8248

Spec Check: Spec-Check.com

Bill Borthwick, Manager Product Analysis

Mac Wilcox, Manager Database

Reprints

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Enforce or Entertain?

It's summer, and you can assure your neighbors that all this road construction is a good thing. In fact, remind them of the complaining they did when the traffic wasn't moving quickly enough or the bumpy ride rattled their CD players. Along with the grousing, however, summer also brings news of construction-site accidents and fatalities. In most cases, these accidents happen when a vehicle rear-ends the one in front of it because it cannot stop in time. In other cases, vehicles strike machines or workers. The same barriers placed to protect the jobsite, ironically, create a false sense of safety for those traveling the roads.

Families rushing to vacation move rapidly through work zones at 10 or 20 miles over the posted construction speed limit. The locals on their way to work are doing the same.

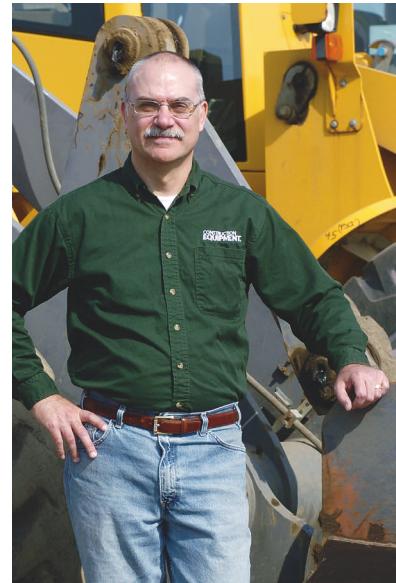
Here in Illinois, the state police threaten video monitoring, citing lawbreakers with an immediate \$350 fine if they are photographed even a couple of miles over the posted limit. We have yet to spot one of the video-touting vans, but the threat sure hasn't seemed to have had any effect.

The Federal Highway Administration (FHWA) has work-zone-safety advice for drivers, who represent 85 percent of the fatalities over the past five years. Interestingly, most fatalities, according to FHWA, are "working-age adults." That sounds more like commuters than vacationers.

Truth be told, we have all roared through a construction zone, whether on vacation or on our way to work. For those drivers who mind the limits, they feel the pressure of the bumper on their tails and the glares of the hurried drivers passing them.

Construction project managers can only do so much, though, and FHWA has some tips for them, too, which include involving law enforcement, using radar and hiring flaggers. In Portland, Ore., a flagger brings some flair to her job, smiling and waving at drivers, sometimes pointing the way with fingers and thumbs like toy pistols, or simply giving a thumbs-up. "They need to know there's a human being out there not surrounded by metal," she says in an article in "The Oregonian."

That is an entertaining idea. But the best move would be to enforce the existing work-zone speed limits. A few well-placed tickets might just save some lives.



Rod Sutton, Editor in Chief

We welcome your comments.

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MARKET WATCH

By KATIE WEILER, Managing Editor

Access our online reader response form at ConstructionEquipment.com/info. Just key in the issue date and make your selections. Subscribe to our monthly eNewsletter at ConstructionEquipment.com/subscribe.asp.

► Caterpillar

The AP655D asphalt paver uses a Cat C6.6 ACERT diesel engine, rated at 174 horsepower and Tier-3 compliant. It features dual operating stations with Caterpillar's Advisor Monitoring System, tilting consoles, "Mobil-trac" or steel undercarriage (the former available a raised-tread belt or smooth belt), high-capacity cooling system, belt-driven or hydraulically driven generator system, and independent auger and conveyor controls.

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► Ditch Witch

Ditch Witch says its new JT922 horizontal directional drill offers the highest power-to-size ratio in the 9,000-pound pullback category. Measuring one-foot shorter than its nearest competitor, the machine is said to have a higher carriage speed and greater pipe capacity as well. It holds up to 300 feet of pipe, and the carriage travels at 188 fpm. The unit is designed to set up and operate in tight spaces while being easy to transport. It features rack-and-pinion thrust drive, heavy-duty anchor system, open-top vise wrenches, and an integrated remote display.

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► Vermeer and McLaughlin

McLaughlin and Vermeer have introduced a new line of 500-gallon vacuum excavators. V500LT has a 10,000-pound GVWR and is powered by a 36-horsepower Kubota diesel. It provides 575 cfm. V500LTHD has a 49-horsepower engine. The blower pump delivers 950 cfm.

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► Volvo

Volvo has extended its C-Series excavator range with models spanning weight classes between 27.5 and 53.9 short tons. A new Volvo, Tier-III-compliant engine is tuned for high torque at low revs for fuel efficiency.

The onboard computer balances maximum available power to hydraulic output, preventing the engine from becoming overloaded (regardless of engine speed or pump demand). The new Care Cab gives operators more space, better climate control, improved visibility, and refined controls.

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Market Watch



► Xtreme

The XRM5.519 is a 19-foot telehandler rated at 5,500 pounds. Dana hydrostatic drives transfer power from the 71-hp Yanmar diesel to the ground. The unit will take 3,740 pounds to its maximum lift height, and 1,760 pounds out to its maximum reach of about 10 feet. Operating weight is 10,580 pounds. It features a 71-hp engine, 6 foot-3 inch height, and a turning radius of 11 feet 2 inches.

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► John Deere

John Deere is partnering with Mega Corp. to offer the 300D Water Wagon. Built on the platform of a 30-ton Deere 300D articulated dump truck, the 300D's six-wheel-drive power train delivers outstanding traction, gradeability and fuel efficiency, as well as a standard transmission retarder to extend brake life. A low center of gravity is delivered by an extended truck frame and the long, low tank, capable of holding 7,000 gallons of water.

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► Schwing

According to Schwing, the new S 52 SX concrete pump with the company's five-section RZ5 placing boom provides the best features of two boom types, Overhead Roll and Fold and Z-tip section. The pump has the ability to place concrete at distances of more than 170 feet vertically and 160 feet horizontally. The boom's main section has a 180-degree working range, allowing the main section to be positioned away from the pour, while the remaining sections can be maneuvered deep into buildings.

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◀ Kenworth

Kenworth has designed a high-capacity cooling package using a 1,780-square-inch radiator for its T800 wide-hood heavy haul tractor. The radiator, 17 percent larger than the one previously used, is needed for stationary

pumping or low-speed running with high-output EPA '07 diesels, which give off more heat than previous engines. It will effectively cool up to 600-horsepower Cummins ISX and Cat C15 engines, which are among those available in the T800H. Using the larger radiator and other cooling parts, the T800H is rated for up to 140,000 pounds GCW for all road conditions.

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▶ Benson International

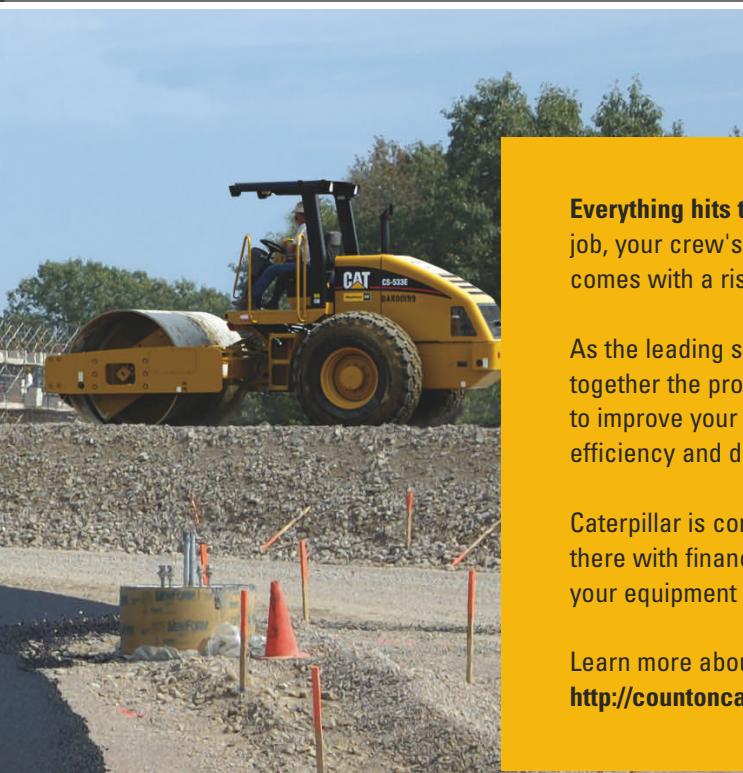
An aluminum drop-deck trailer, model 524, features a steel neck transition, which allows a concentrated load capacity of 52,000 pounds in a 4-foot span and 80,000 pounds evenly distributed. It has a 37-foot lower deck and 11-foot upper deck. The rear deck's height is 40 inches, and it has reinforced wheel cutouts for proper tire clearance. It comes standard with a winch track on the driver's side, LED lighting with sealed wiring, 22.5-inch tires, and aluminum wheels with 16.5- x 7-inch brakes with extended-service linings.

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▶ Komatsu

The 155-horsepower (net) D-61 crawler dozer is available with a standard undercarriage (D61EX-15) and a low-ground-pressure undercarriage (D61PX-15). Operating weights for these two versions are 36,420 and 39,990 pounds, respectively, when fitted with a power/angle/tilt (PAT) blade and a ROPS canopy. The D61 features a hydrostatic-steering system, which is controlled by a single joystick and allows full power to both tracks during turns. The single-lever blade controller uses Komatsu's Palm Command system.

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Market Watch

RexCon

The LoGo 10 Portable Transit Mix Batch Plant transports on a single trailer. Its self-contained, hinged cement section speeds installation, and it comes from the factory pre-wired and pre-plumbed. It has a hinged, 1,760-cubic-foot gravity-feed silo. Load cells on all batchers ensure precise measurement of materials. A 66-ton (45-cubic-yard), four-compartment aggregate bin is standard equipment, with either in-line or cross-bin configuration.

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Caterpillar

A trio of new double-drum, vibratory, utility compactors — models CB14, CB14 XW and CB14 Full Flush — have respective compaction widths of 31, 39 and 35 inches. The CB14 Full Flush uses an offset drum that provides effective compaction close to curbs, walls and other vertical obstructions. All three models use the Cat C1.1, three-cylinder diesel engine rated at 21.6 horsepower (gross).

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Ditch Witch

Ditch Witch introduced its largest trencher ever — the 220-hp HT220. This hydrostatic trencher, designed to work in both dirt and rock, can dig from 12 to 24 inches wide, and from 4 to 8 feet deep. According to the company, the HT220's gearbox delivers exceptional power to the attachment, while protecting the hydraulic system and other components from shock. Stabilizers further help to isolate vibration when the machine is working in rock.

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Dynapac

The CA 134 and CA 144 soil compactors replace the company's CA 121 and CA 141 models, respectively.

CA 134 uses a drum that is 54 inches wide, and the CA 144 uses a 66-inch-wide drum. Drums on both models, however, are 39 inches in diameter, and each model is available with either a smooth or padfoot drum. Normal operating amplitude for each model is .067 inch, frequency is 2,100 vpm, and centrifugal force developed is 20,000 pounds.

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Kenworth

The Kenworth T270 medium duty — a straight truck with a low-profile chassis and 19.5-inch wheels and tires — is available up to 26,000-pound GVWR and comes equipped with air or hydraulic brakes. An 8,000-pound front axle can be paired with 16,000-, 17,000- and 18,000-pound rear axle ratings. The T270 offers the Paccar PX-6 engine rated to 325 horsepower and 750 ft.-lbs. of torque. Customers can select manual or automatic transmissions.

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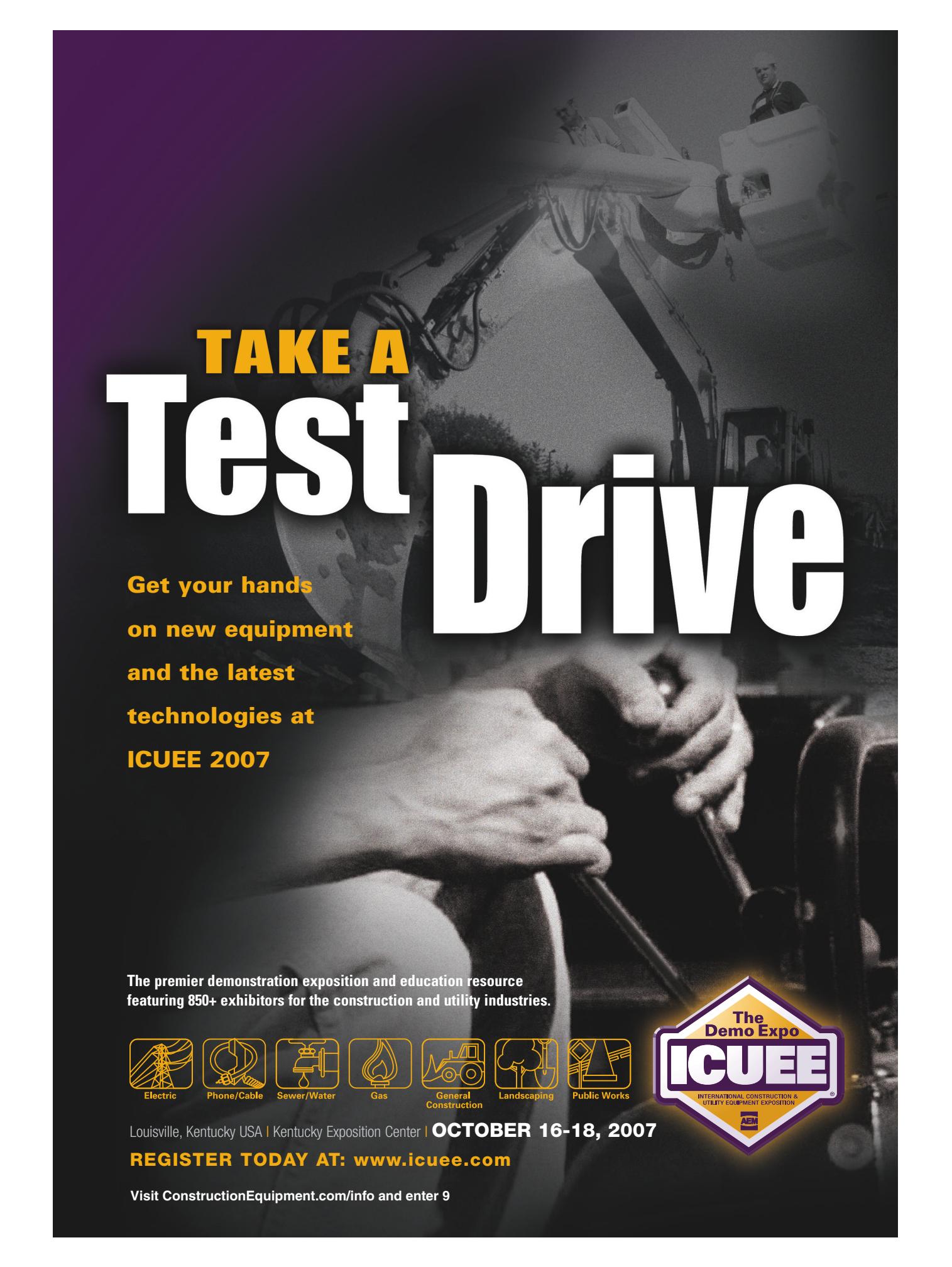


New Holland

New Holland replaced a 5.9-liter engine in the 24-ton E215B with a Tier 3, 6.7-liter CNH six-cylinder developing 160 horsepower at 2,000 rpm. Two larger-displacement pumps, pushing higher flow (58 gpm), working at reduced speed (2,000 rpm, down from 2,150 rpm) also contribute to reducing noise, extending life, and improving reliability. Re-

designed boom and dipper sticks are lighter, yet New Holland says they are designed for durability and increased lift capacity.

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INDUSTRY EVENTS

On-Road Equipment Demos

This year's "Demo Expo" is taking that reputation one step further.

The 2007 International Construction and Utility Equipment Exposition (ICUEE) is expanding its working equipment demonstrations with a new ride-and-drive program spotlighting on-road vehicles. In addition to trucks and engines, products available for hands-on comparison will include transmissions, power systems, clutch and brake systems, safety

and collision warning systems, hybrid and alternative fuel systems, and fleet, fuel and GPS management systems.

"Exhibitors in the ride-and-drive program will now have the same opportunity as other outdoor exhibitors to show their equipment in action. This offers added value to attendees who are at the show to evaluate and purchase trucks, engines and components," says Nicole Hallada,

ICUEE show manager. Known as "The Demo Expo," ICUEE has long offered equipment demonstrations in outdoor exhibit space suitable for shallow digging, in addition to specific areas for deep digging. Hard-asphalt outdoor exhibit space accommodates above-ground and overhead demonstrations. This year's ICUEE will be held Oct. 16-18 in Louisville, Ky. The 2007 show will be the biggest to date.



MAINTENANCE MANAGEMENT

Seventeen-Year-Old Loader Keeps on Ticking

The loader charges hoppers with the lime rock and metallurgical coke used to produce 300,000 tons of sugar annually at American Sugar Crystal's sugar beet processing plant in East Grand

Forks, Minn. It also scoops lime waste and hauls it to a disposal site about a mile away.

The 544E's secret is engine oil changes every 10 days and regular preventive maintenance, according to

Kevin Grove, service manager at RDO, American's Deere dealer.

"For that application, most peo-

ple would have owned three or four loaders in that time," Grove says. "American Crystal Sugar people are sticklers about maintenance, and it pays dividends."

Bruce Keifenheim, factory engineer, says the company has no near-term plans to trade the loader.

"It's in decent mechanical condition. It's just old," he says.



The engine in this 1990-model Deere 544E has been overhauled twice. A new torque-converter bearing was installed in 1999, and the original hydraulic pumps worked 44,600 hours before being replaced.

USED EQUIPMENT

Equipment Values Decrease Slightly

The Rouse Value Index
(Avg. orderly liquidation value as % of cost)

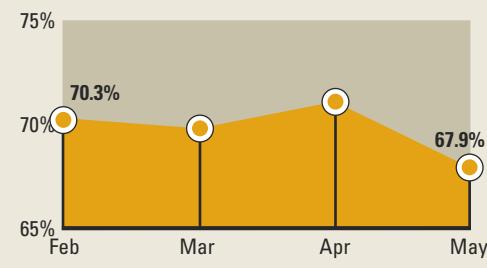


Note: Orderly liquidation value is expressed as a percentage of replacement cost (average cost paid for a new unit by large rental companies and dealers) for the average age of equipment within that category. Includes 10 categories of equipment common to rental fleets.

Source: Rouse Asset Services

Values for used equipment across the major rental categories were down 3.4 percent in May, compared to April. Sharp decreases in the equipment prices of high-reach forklifts, scissor lifts and backhoe-loaders influenced the overall move downward. Boom lifts, especially those with a reach capacity of 60 feet or more, continue to be in high demand and have seen steady increases over the last six months.

Backhoe-Loaders Slip
(Avg. orderly liquidation value as % of cost)



Backhoe-loader values dropped 4.6 percent from April to May, and have fallen 3.3 percent since November.

APPLICATION IDEAS

“Copy Cat”

Grant Garrett, a principal in Garrett Satellite Driven Excavation, a third-generation earthmoving company based in Hot Springs, Ark., equipped his first machine with a grade-control system six years ago. He quickly realized the competitive advantage the system provided, and today is a dedicated user of both 2-D and 3-D technology, which is employed from initial job layout to the

finished grade. Grade-control technology, he says, has allowed the company to triple production on many jobs, compared with conventional grading techniques.

Perhaps one reason Garrett has been so successful with electronic grade control is his ability to combine high technology with old-fashioned human innovation. For example, on a recent job, the Garrett crew needed to



The D11 “shadow” dozer on the right takes its grading cues from its two counterparts equipped with Topcon 3D-GPS+ grade-control systems.

move 170,000 cubic yards of dirt in 30 days to establish a 200,000-square-foot building pad.

The grading crew actually accomplished the task three days early by rough grading with a three-dozer combination. Two Caterpillar

dozers, a D11 and a D9, each fitted with a Topcon 3D-GPS+ system, worked side-by-side to establish the angle and depth of rough-cut passes. On the left flank of the D9, however, was what you might call a “Copy Cat,” a second Cat D11 that was manually

controlled by a good operator who observed and closely duplicated the blade position of the two satellite-controlled machines on his right. The result was a moving wall of dirt 57 feet across and some 9 feet high.

— Walt Moore

HEAVY EQUIPMENT FORUMS

Personal Protection Gear Varies Among Contractors

User #1: What do you wear for PPE (personal protection equipment) when out on a job? You probably don't wear a hard hat while in your machine, but what about when you get out? How about work boots with the steel toe, or the orange vest when working near traffic?

I worked briefly with a company last summer and the crew never wore any [gear]. I did though.

User #2: I wear the hard hat all day if I'm in or out. I don't like the vests, so I bought safety T-shirts. I never liked [steel-toe boots].

User #3: Steel cap boots only, safety glasses and Hi-Vis shirt all minimum for my sites. We really should be wearing hard hats... and I think it won't be long before we are.

I had a young laborer come for a couple of days from an agency. He had steel caps on the first two days; on the third he wore sandshoes and I didn't notice. It was then he ran over his own foot with the vertical rammer. His foot was black for a week. I didn't know whether to kill him or console him.

Sunburn is a very real issue for us. I supply two big pump packs of sunscreen which are always in the truck, along with two first-aid kits. I try and convince my guys to wear long sleeves for the added sun protection, but they think it's too hot.

User #4: The one thing that we are guilty of is dust protection. We are always trying to keep sites wet to stop the dust, but our saw

is often run dry and there is always a lot of dust around. We wear masks for concrete cutting, and get the full kit on for asbestos fencing, but the rest of the time there is stuff flying everywhere.

User #2: I almost forgot two of the most important items, safety glasses and earplugs when needed. I keep my personal pair of earplugs in the work truck and a box of cheap ones for anyone that needs them. I used to hardly ever wear safety glasses when doing things like using the concrete saw or the breaker on our backhoe. But after I got something in my eye that bugged me for a few days, I keep a pair in the truck.

User #5: Hardhat, safety glasses, safety vests, and steel-toed boots are required at all times. Insurance companies like to see it as part of your company safety policy. If you require it at all times, the PPE is always present. It's inevitable that if you go from a residential/subdivision type job to a larger commercial/governmental job, the guys will have forgotten to bring their PPE. Face shields, earplugs, metacarpal protection, dust masks, or respirators as needed.

HeavyEquipmentForums.com is a user forum where professionals in the heavy-equipment industry can exchange ideas and post questions or comments. Users include owner/operators, operators, company owners, repair technicians, safety officers and others. Posts have been edited for clarity and content.



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MANUFACTURER NEWS

Don't Cut Off This Vehicle In Interstate Traffic

With an operating weight of 31,500 pounds (without its armor plates) and a top speed approaching 60 mph, the new JCB HMEE (High Mobility Engineer Excavator) might be just a bit intimidating if you encounter it on the Interstate. And well you might, because the HMEE has been designed by JCB to keep

pace with military convoys all on its own, eliminating the need for a sizable truck and trailer to haul the vehicle. The HMEE combines the capabilities of the JCB backhoe-loader with those of the company's high-speed Fas-trac agricultural tractor, which adds full suspension and anti-lock brakes to the design.

The four-wheel-drive HMEE, fitted with a 6.7-liter Cummins ISB diesel engine (rated at 220 horsepower) and a 6F/2R ZF 6WG160 transmission, is designed to lift more than two tons with its front-loader mechanism, and to dig to depths of 13 feet with its backhoe. The machine features three steering modes, as well as four suspension modes, which can be



The JCB HMEE, equipped with four-wheel anti-lock air brakes, is capable of towing up to 10,000 pounds.

engaged to match the vehicle's operating mode, whether traveling, excavating, loading or being transported, such as on a Hercules C-130 aircraft. The new military machine also incorporates armor pro-

tection into the base design of its ROPS, says JCB, to dramatically increase the machine's ability to withstand enemy fire and the threat of roadside bombs.

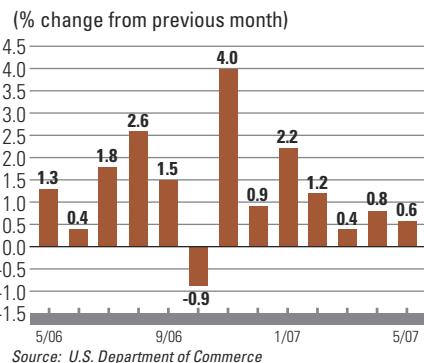
— Walt Moore

STATUS & FORECAST

COMMERCIAL CONSTRUCTION SPENDING

Spending is 17 percent higher than a year ago and is expected to be 14 percent higher for the full year. A 6-percent rise is projected for 2008. Multi-retail buildings is the strongest sector, followed by warehouses and stand-alone stores. The small auto and food markets are declining slightly. The value of retail starts is up 20 percent for the year through May, but they are beginning to slow as major retailers scale back expansion plans in response to sluggish profits.

For more of August's economic analysis, see the Economic Outlook at ConstructionEquipment.com.



MANUFACTURER NEWS

UpRight Parent to Buy Snorkel

The Tanfield Group, British parent company to UpRight, is preparing to acquire Snorkel with the proceeds of a planned placement of £115 million (about U.S. \$230 million). Tanfield will pay \$100 million for Snorkel and assume approximately \$25 million of the company's debt. Tanfield bought UpRight last year and has doubled its revenues.

"This is a transformational acquisition for Tanfield," says Darren Kell, Chief Executive of Tanfield. "The addition of manufacturing capability in the USA and Australasia, plus established sales networks in these territories, will create a Powered Access division with comprehensive global coverage."

MANUFACTURER NEWS

Doosan Infracore to Acquire Ingersoll Rand Business Units for \$4.9 Billion

Doosan Infracore agreed to acquire the Bobcat, Utility Equipment, and Attachments business units from Ingersoll Rand for \$4.9 billion, which is reportedly one of the largest foreign purchases by a Korean company. The sale is expected to close early in the fourth quarter of 2007.

The combined businesses manufacture skid-steer loaders, compact track loaders, mini-excavators and telehandlers; portable air compressors, generators and light towers; general-purpose light construction equipment; and attachments. In 2006, those businesses collec-

tively generated about \$2.6 billion in revenues.

According to the Wall Street Journal, a Doosan Infracore spokesman said the company will keep the Bobcat brand name in markets where it is well known, such as in the U.S. and Europe, and use the Doosan name in Asia.

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Hands-On Earthmoving

By WALT MOORE, Senior Editor

Schultheis also put the D51 to work constructing a V-ditch and noted that the machine's quick hydraulic response is a plus in this application.



Rave Review for Komatsu's D51

After half a day on this new dozer, professional operator Jim Schultheis came away impressed with its power, controllability and operator amenities

When Jim Schultheis shows up on a jobsite, chances are that the superintendent will shift people and machines around to get him on a grading tractor. After 40 years as a professional operator, he can competently run any machine you give him, but his reputation on a finishing dozer usually precedes him to the site.

"It must be in the genes," he says, "considering that both my father and uncle were finish hands."

Schultheis spends the construction season working as an operator, but spends the off-season as an instructor at the 125-acre training facility that Local 649 (International Union of Operating Engineers) maintains near Mapleton, Ill. (just west of Peoria). So when we asked Local 649's training director, John Salzer, if we could bring a new Komatsu D51PX-22 to the site and borrow an instructor for a Hands-On-Earthmoving evaluation, Schultheis drew the straw.

Komatsu's product manager for crawler dozers, Armando Najera, arranged to have the D51 shipped from Komatsu's Cartersville, Ga., demonstration facility. And on an unseasonably warm morning in late May, the *Construction Equipment* crew met up with Schultheis, Najera, and Komatsu product marketing manager, Bruce Boebel, for the evaluation.

D51 walk-around

First thing, Najera and Boebel gave us a tour of the new D51PX-22, which has a ready-to-work weight of 28,880 pounds and is the low-ground-pressure counterpart of the standard-track D51EX-22. These recently introduced 130-horsepower (net) machines, featuring a new Komatsu dual-path hydrostatic-drive system, are replacements for the D41P-6C and D41E-6C, which were rated at 110 net horsepower and used a Komatsu three-speed, planetary-type, powershift transmission.

"The D51 is designed to be very nimble and final-grading focused," said Najera, "but with the power and blade capacity to move dirt fast. You're not going to clear a shopping-mall site with this tractor, but you can still push a lot of dirt — and it might save bringing in a larger dozer on some sites."

Photos: George Pfoertner®



In the slot-dozing exercise, Schultheis was impressed with the D51's ability to keep a large load rolling.

The fresh engineering in the D51 makes it a considerably different tractor than either its D41 predecessor or its smaller hydrostatic-drive counterparts in the Komatsu line. For example, unlike the rigidly mounted undercarriages used on these machines, the D51 has oscillating track frames, employing an equalizer bar and pivot shafts, which are mounted forward of the final drives and absorb shock loads.

"Some users are of the opinion that oscillating track frames make grading more difficult," said Najera, "but Komatsu's extensive testing has shown little difference, compared to a rigid undercarriage."

Track assemblies for both D51 models (PX and EX) are identical, with seven rollers and 9 feet of track-on-ground. The only differences are track gauge (74 inches for the PX, versus 70 for the EX) and wider shoes (28 inches versus 20). Compared to its D41 predecessor, the new tractor is designed to provide 25 percent more undercarriage life, using thicker sprockets, larger-diameter bushings and longer links.

Since Schultheis had an hour or so on the previous day to get acquainted with the D51, he'd taken note of some of the new tractor's other design features. Among them were the shifted-forward operator's position and the un-



Operator Jim Shultheis runs machines during the work season, then shares his expertise with up-and-coming operators at Local 649's training facility.

Hands-On Earthmoving



Above: When you're in the seat, the D51's hood virtually disappears. Note the footpads adjacent to the monitor; the D51, with its low center of gravity, performs well on slope work.

Inset: The tractor's newly designed monitor provides fault codes to assist with diagnostics, and the center display indicates ground speed, with the "1/2/3" markings equating to gears in a conventional powershift. The D51 is equipped with Komatsu's remote monitoring system, Komtrax, which the buyer can use free of charge for five years.



commonly good view out the front window.

"This is the only tractor I've been on that lets you see the center of the blade," he said. "Usually, the hood is in the way. A new operator could learn faster on this machine, because of the visibility to the blade."

Najera explained that the operator's station is moved some 20 inches forward on the D51's new mainframe, in order to place it closer to the machine's center of gravity for improved balance. This position improves on the "back-of-the-bus" view afforded by some grading tractors, he said, and gives a more stable ride.

The good view that Schultheis mentioned results primarily from moving the D51's cooling package (radiator, oil cooler, charge-air cooler and fan) to the rear of the machine. With

The cooling package can be swung up even if a rear-mounted attachment is used. The fan is reversible for cleaning the heat exchangers, and even though the system is designed to pull most of its cooling air through perforated panels at the rear of the machine, it does draw some air from the engine compartment for added cooling. Isolation-mounted steel tubing conveys coolant between the engine and the aluminum radiator.

the engine compartment thus devoid of cooling components, the D51's nose can be dropped sharply to reveal more of the blade.

And still on the subject of visibility, Schultheis called our attention to another D51 feature that impressed him.

"The exhaust stack is placed so that the right windshield post hides it. That's good thinking, because you already have a blind spot with the post, so why create another with the stack?"

As we moved around the machine, Schultheis rapped the D51's hood and said that when he checked the machine's fluids upon its arrival, he'd been impressed with the sturdy construction of the hood and service door.

"It's 6-millimeter [1/4-inch] material," said Boebel. "We didn't want the distraction of a vibrating, noisy hood when an operator's concentrating on the grade."

This brought us to the newly designed, 11-foot-wide, six-way (power angle and tilt) blade, which the D51EX also can use as an alternate to its 10-foot-wide version. The new blades for the D51 incorporate added box-section reinforcement for increased strength. The D51 also uses a newly designed, cast-steel, inside-mounted C-frame, which connects to the blade via a bolt-on center ball incorporating a large surface area.

Last stop on the tour was the new cab, where Boebel gave Schultheis a run down on new features. In particular, Schultheis took note of the shape and texture of the joystick

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Hands-On Earthmoving



When grading in rough terrain, Schultheis noted that the glass in the doors allowed a distortion-free view of the work area.

controllers — the left for steering and directional control, the right for blade control — saying that they fit his hands well, that they were neither too slick nor too sticky, and that the flare at the bottom of the levers was a natural support for the sides of his hands.

Boebel pointed out that in the left joystick are two buttons for “shifting” the transmission — actually for controlling the volume of oil flow through the hydrostatic system, and thus, regulating ground speed when the electronic throttle is turned up. This two-mode system, controlled by a selector switch on the dash, can program the buttons to increase or decrease ground speed in three distinct shifts, or in 20 seamless increments, the latter providing virtually infinite variation of speed up to the maximum.



On a long push up and across a large berm, the Komatsu D51PX-22 handled big loads with no track-slip and no engine lug-down.

In the dirt

In the first exercise with the D51, Schultheis started at the bottom corner of a 200-foot-long, 30-foot high berm of well-compacted sandy clay, then pushed large loads up and across the face in a sweeping arc to the far bottom corner, cutting perhaps 5 inches deep. After a number of such passes, we asked for his thoughts.

“It’s got power. It carried a lot of dirt for a finish machine — you can see the good-sized windrow it left. I don’t think most grading tractors this size would move as much. I turned with big loads to see if the engine would pull down or the tracks would slip, but neither happened. This is sandy material, and if the tracks are going to slip, they’ll do it here.”

He also was impressed with the D51’s control features:

“I liked the transmission buttons. I preferred the mode that lets you dial in speeds, because you can set the exact speed you want, which was just short of second gear on the indicator for this application. And you don’t feel the shifts; it’s very smooth.

I also liked the detent in the forward/reverse lever. If you have to hold a lever in forward or reverse against spring tension, it’s hard on your wrist. Overall, it’s a very controllable machine — the steering is smooth, and the blade hydraulics are quick, but that’s okay — you just adapt.”

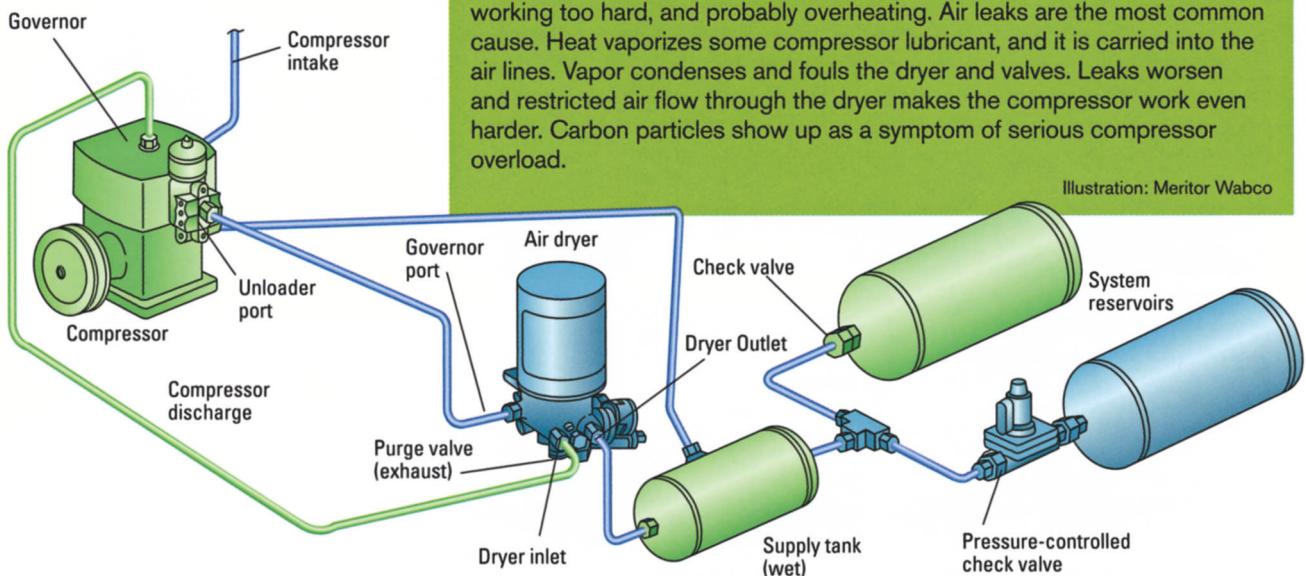
In a second exercise, we asked Schultheis to take the D51 into an area where student dozer operators had created a washboard — to get his opinion on how the tractor would handle itself in rough-terrain grading. In two passes, he

Cool Compressors Keep Brake Air Reliable

Keep the Compressor Cool

A compressor laboring under load more than 25 percent of the time is working too hard, and probably overheating. Air leaks are the most common cause. Heat vaporizes some compressor lubricant, and it is carried into the air lines. Vapor condenses and fouls the dryer and valves. Leaks worsen and restricted air flow through the dryer makes the compressor work even harder. Carbon particles show up as a symptom of serious compressor overload.

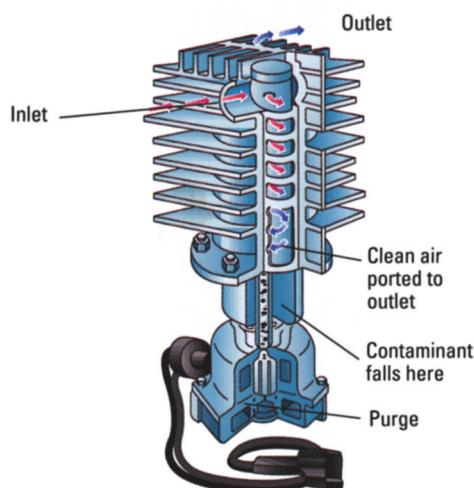
Illustration: Meritor Wabco



Prefilter High-Volume Air

Oil filters that collect water and oil aerosols from compressor discharge are good for low-air-use systems, and they can be added upstream from the dryer in high-volume systems. Manufacturers claim they can double dryer desiccant life. Filters also remove particulate from the air stream. Contaminants are purged every time you step on the brake.

Illustration: Haldex





Unplug the Purge

Vapors condense on the purge-valve seat because this is where compressed air cools as it expands to lower ambient pressure. Contaminants stick on the wet valve seat and prevent it from sealing. The leak overloads the compressor, and interrupts the purge cycle that is supposed to blow-dry the dryer desiccant. Replace the purge, and remember to tear down any leaky valve to see if it is fouled by carbon.

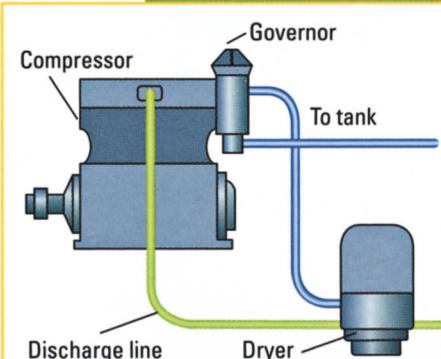
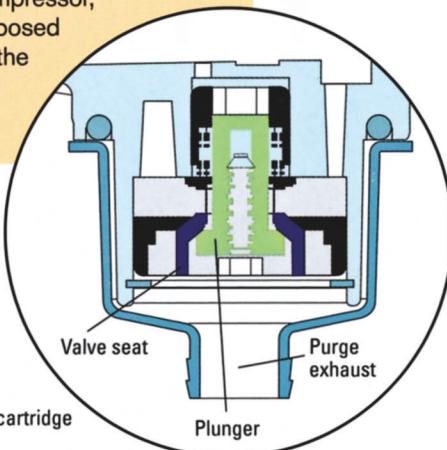
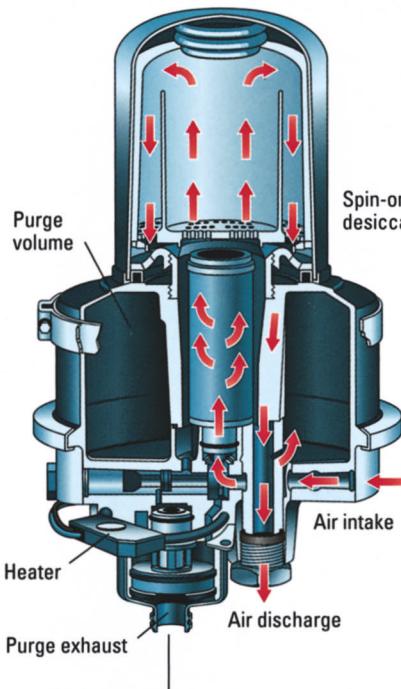


Illustration: Bendix

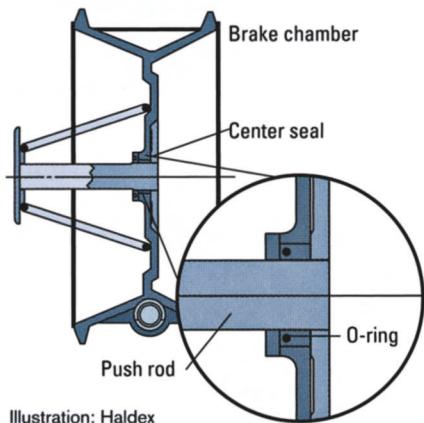


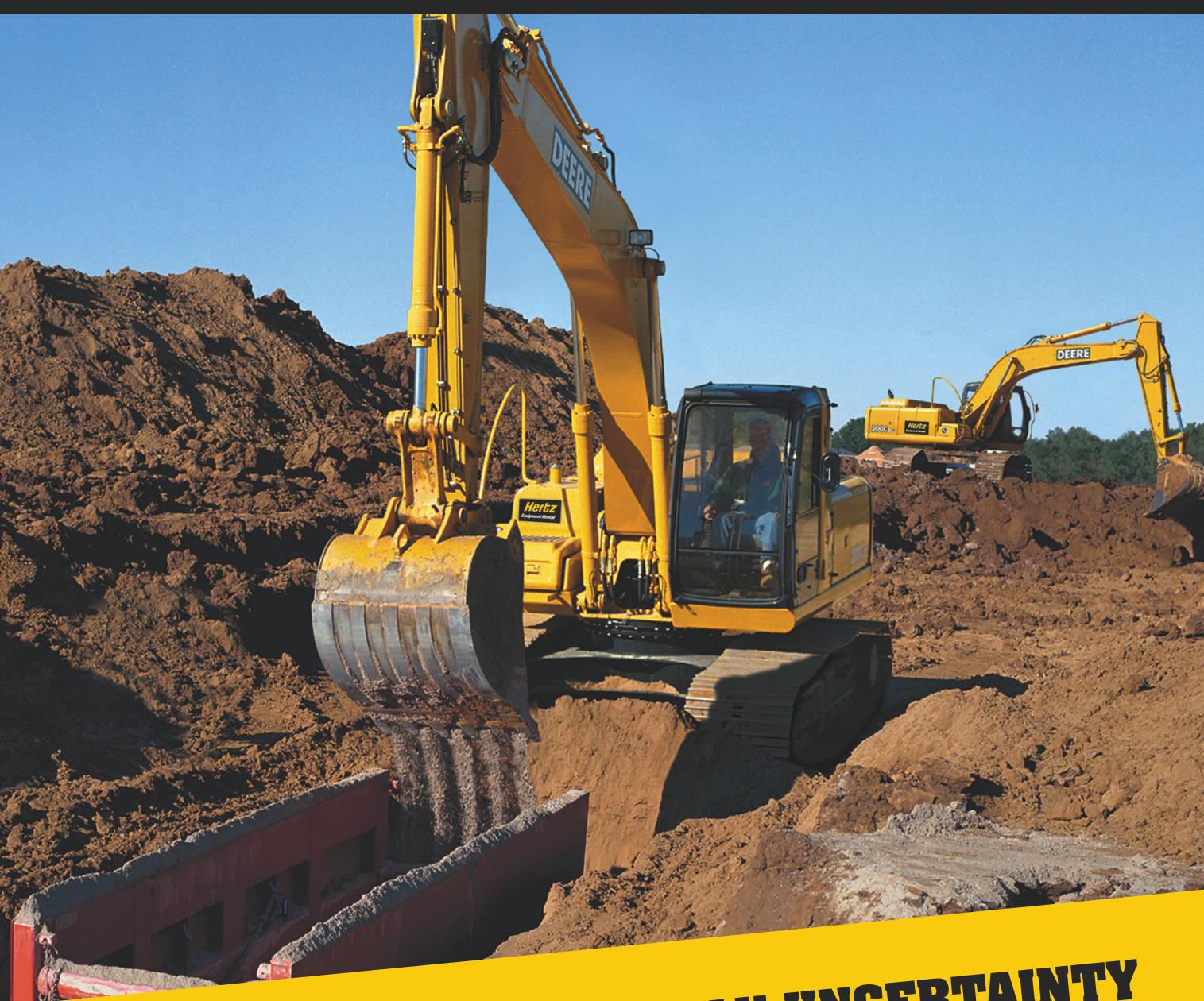
Illustration: Haldex

Check Air System's Weak Point

The seal in the brake chamber between the service side and spring-brake side is the point most prone to leakage in an air system. Every time you apply or release the parking brake, the push rod slides through the O-ring seal. Over time it wears out.

To check center seal leakage, charge the air system to governor cut out, and turn the engine off. Chock the wheels, and release the parking brake (push the knob in). If a center seal is leaking, you will hear air escaping from the exhaust port of the service relay or QR valve. (A leak at the exhaust while the parking brake is still applied means the valve is bad.)

To verify which center seal is leaking, disconnect the service brake hoses one at a time and listen for back flow.



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Hands-On Earthmoving



In downhill dozing, Schultheis said the D51 exhibited a flat-footed stability.

could transform a swath of ridges and dips into an acceptable grade, but he said he'd make a third pass on a real job site. He commented again on the D51's power and controllability, and noted that the machine provided a good ride in this bumpy material. Then he made an observation that we'd probably never have considered.

"The visibility from the cab is excellent, because whoever designed it realized that the flatter the doors, the better the view. The whole point of a grading tractor is seeing the work in front of you, but if the glass in the doors comes back from the windshield at too sharp an angle, you get a lot of distortion. You'll notice that a lot of finish hands will open the doors when getting close to grade — which defeats the whole idea of the cab to keep things quiet and clean."

We then asked if the set-forward operator's compartment affected his ability to judge the grade.

"I thought at first that it might. But like most

operators on finishing tractors, I mostly feel what the machine is doing on the grade by what comes through the seat. This tractor still lets you sense that. A contractor once told me, 'Schultheis, your brains are in your [posterior region].' I said, 'thanks for the compliment.'"

Slot dozing was a third exercise, and the object here was to push as much dirt as possible. The D51's power was again at the top of the list for Schultheis, but he noted a couple of creature comforts as well.

"It impressed me with the amount of dirt it was rolling — and still no engine lug-down. It had the power to work at the speed I wanted. And the cab is very quiet — no need for earplugs. But that said, it lets you hear enough to know how the machine's performing. Good seat, too, plenty of adjustment, including the armrests. I'd say a lot of thought went into the design of this tractor."

Schultheis went on to do a bit of experimenting on his own with the D51, including building a V-ditch and taking it up and over a steep, steep spoil pile. We then asked him for his overall take on the new machine.

"I haven't been on a tractor this size that moved as much dirt. This machine is very friendly to run — someone's taken the time to design it from an operator's point of view." 

We're not sure, but we think the Komatsu guys went a little pale when Schultheis took their tractor up and over this 30-plus-degree pile of loose spoil.



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Special Report: Distribution

By LARRY STEWART, Executive Editor

Dealers Striving to Thrive

Need Size

Competition from rental companies, manufacturers' demands, and customer expectations all require capital and push dealers to grow

With competition from rental firms, demands by manufacturers to improve customer service, and customers' expanding expectations, construction-equipment dealers have had the choice to either grow or wither in the 21st Century. It has been difficult for dealers to maintain business as usual, and distinctions between rental companies and equipment dealers have blurred.

More customers expect to rent equipment: Dealers add notoriously cash-hungry rental fleets.

Diesel emissions regulations bring computer controls and other innovations on construction equipment: Dealers multiply their spending on technician training and retention.

Manufacturers push to refine the customer experience: Dealers invest in parts inventory, facilities, and retailing systems.

A dealer needs size to generate the capital necessary for these improvements. Dealers who survive can develop better capabilities to serve their customers. These entrepreneurs' challenge is to grow without losing touch with the smaller businesses they have served so well.

"The construction equipment business is very much a local business, a people business, a personal business," says Toby Mack, president and CEO of the Associated Equipment Distributors. "Having the entrepreneur interacting in the market with the customers is what makes these businesses so successful."

Rental consolidators have pushed the

equipment-retail size race. Unrealistically low rental rates contrived to service monumental debt, and to compete with deluded competitors, made renters out of a lot of equipment users. Several rental consolidators' shareholders and creditors are footing the bill for this self-destructive market pioneering, but it seems to be working.

For the past five years, even as the post-bankruptcy rental industry has been raising rates toward a sustainable level, *Construction Equipment's Annual Report & Forecast* research consistently measured about 65 percent of contractors using short-term rentals. Short-term rental use has been consistent with about 83 percent of firms with fleet values of \$10 million or more. Moreover, about 25 percent of contractors say the number of machine hours they rented increased in each of the past five years. About 33 percent of firms with \$10 million and larger fleets say they have increased rental spending.

An unsettling number of rental outlets ultimately define success based on attracting investors to buy their company rather than on luring equipment users. United Rentals, Hertz, RSC, Neff and NES are owned by private-equity firms — groups of investors who pool cash and borrowing power to invest in companies that can be resold for a profit. On a smaller scale, private-equity firms have purchased Coast Crane in Seattle, Old Country Rentals on British Columbia's Vancouver Island, and Toronto's Stephenson's Rental Services.



All of the vendors in your rolodex have one goal: to make money for their owners. Some of them have figured out that the best way to do that is to make sure you make money. Firms owned by private equity groups plan, ultimately, to make money by selling the company. They have to operate the business to do that, so renting equipment from them may not feel significantly different than renting from anybody else. For now.

"When a company is owned by a group of investors, it's for sale," says the fleet manager at one of the private-equity rental companies. "It affects how they're managed.

"They have a very short-term outlook," he continues. "You don't have to make decisions that will improve the fleet or the company 10 years from now. You just have to look good in three years or five years.

"So it's not about staffing up service departments or training technicians. It's too hard to keep skilled employees from jumping ship, and the payoff doesn't come quickly enough to improve the selling price of your company."

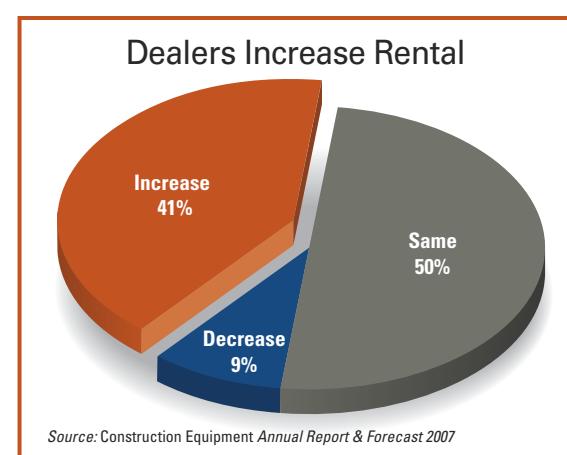
Hertz and RSC both did stellar business in 2006 — the best year in terms of revenue and profit in either company's history, according to Dan Kaplan a consultant and former Hertz Rental CEO. But he adds that both firms are reducing their capital spending this year to improve cash flow. An operating company — one committed to long-term service to its customers — would likely invest more of 2006's success in the company.

Individual branch operators will work hard to remain competitive, but these companies may not be the most secure choice for firms looking to forge long-term partnerships with vendors.

Apparently some long-haul rental managers have been investing their growth in diversification. Thirty-five percent of rental firms responding to *Construction Equipment's* Annual Report & Forecast survey in late 2006 reported significant increases in new equipment sales and parts sales. Thirty percent reported significantly increased service sales. The AED Rental 2006 study found that 60 percent of rental companies sell equipment using rent-to-own transactions.

Dealers have long complained about rental firms selling new equipment to customers, and the typical rental firm's manufacturer suppliers require them to hold equipment in their fleets for at least 12 months before selling it. But some rental companies are making a concerted effort to become authorized

Dealers' service contracts are not only profitable revenue generators, they can also offer a competitive advantage to contractors who have not been able to hire enough qualified service technicians.



It's not surprising that more than 40 percent of dealers report a significant increase in rental revenue last year. About 65 percent of all contractors use short-term rentals. About a third of firms with fleets valued at \$10 million or more have reported significant increases in rental hours purchased each year for the past five.

Special Report: Distribution



Equipment dealers are more likely than traditional rental companies to offer heavier equipment for rent, such as this Cat 938G in Hawthorne Machine's Cat Rental Store fleet.

acquired NationsRent late last year, the company admitted it planned to export the integration objective to Ashtead's North American subsidiary, Sunbelt Rentals.

Details of what the merged Sunbelt and NationsRent operation will look like remain scarce. But Sunbelt's spokesman is willing to say that the NationsRent brand will give way to Sunbelt's, and that the company will continue to integrate new-equipment sales.

As rental companies try to look and act more like equipment dealers, it's no secret that dealers are also looking more like rental companies.

Forty-one percent of dealers responding to *Construction Equipment's* Annual Report & Forecast study said they'd done significantly increased short-term rental business in 2006. The Associated Equipment Distributors surveyed its members last year and found that the typical dealer gathers 13 percent of its revenue from rental.

When The Cat Rental Store concept was launched in 1997, Cat's North American dealers operated about 85 light construction rental operations. Today there are more than 450 Cat Rental Store locations operated by Cat's independent dealers on this continent, and 1,600 worldwide.

The Cat Rental Stores illustrate how strongly equipment manufacturers feel they need a cooperative rental channel. In the late 1990s, few Cat dealers were anxious to dump capital into dedicated rental operations.

dealers.

NationsRent emerged from bankruptcy protection with a private management team and the stated objective of becoming a "fully integrated" rental company. They wanted to integrate equipment sales with the rental services they offer customers. When the British rental giant, Ashtead,

But Caterpillar wanted its dealers competing head to head with the big rental companies, and negotiated purchasing agreements with allied equipment lines such as light towers, compaction tools, pumps and other non-Cat equipment. Cat offered the benefits of its buying power to dealers who would set up distinct rental operations separate from their sales organizations — a stipulation designed to make The Cat Rental Store competitive.

"We have been in the rental business for over 40 years — mostly rent-to-sell on heavy equipment," says Chris MacAllister, president and chief operating officer of MacAllister Machinery, the Cat dealer in Indianapolis. "We got into what we call the Rental Services business — light construction equipment — in about 2000 and it has grown rapidly for us.

"It has also somewhat changed the nature of our company," MacAllister adds. "We are now doing business with a lot of new customers who are not heavy-equipment buyers."

"We had to learn how to process a lot of transactions — every rental creates an invoice — and it's a lot more action that we have to figure out how to process," MacAllister says. "Rental seems to carry a greater sense of urgency. It has been good for us to learn to be more responsive — to check things out while the customer is waiting there at the counter.

"We had to learn the rental-services paradigm and fit it together with our heavy-equipment rental model," MacAllister says of what may be the greatest challenge dealers face when adding rental. "We hope customers can rent heavy and rent light and not have to talk to two different people to do it."

Dealers' traditional rental operations, what MacAllister calls "heavy-equipment rental," are typically rent-to-own operations — extensions of the sales organization. They're effective sales tools — putting machines in the hands of cash-strapped businesses that use the horsepower to earn a down payment. But they're not sustainable as stand-alone rental operations.

Equipment rental thrives on what managers call dollar utilization, annual rental revenue divided by the original rental-fleet cost. The major rental companies maintain dollar utilization around 60 percent. A dealer's heavy-equip-



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If you have off-road equipment built before emissions regulations took effect in 1996, it may pay to have an emissions upgrade. Here's why:

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- **Resale value**
Machines with emissions-reduction technology may be worth more.

- **Government incentives**
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Replacement of the engine with a new or remanufactured engine.

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Addition of new components to reduce nitrogen oxide (NOx) and particulate emissions for Tier-1 compliance.

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Contamination Control is good for business.

The increasing integration of electronics with hydraulics is heightening the need to control contamination.

Here are some contamination control tips to help you reach your productivity and cost goals:

- **Fix leaks immediately**—When fluid can leak out, contaminants can enter the system.
- **Perform fluid analysis regularly**—Regular fluid sampling can reveal early signs of contamination so you can avoid costly repairs.
- **Store fluids properly**—Use drum covers and store drums under a roof when possible.
- **Replace filters on schedule**—Follow the filter change schedule provided in the Operation and Maintenance Manual.

For more information on Cat Dealer Support, contact your Cat Dealer or visit www.catproductinfo.com/8

ment rentals would be hard pressed to deliver half that utilization, even if they did charge for all of the time that a machine was off the lot.

Because of heavy equipment's high cost and because policies that improve dollar utilization are not good sales strategy, equipment dealers who want to compete in the rental business often have two distinct types of rental to manage — the heavy-equipment sales tool, and light-equipment rental services.

"Rental Services is profitable for us, but it is very capital intensive. It generates better cash flow, but it takes about a \$1 in inventory to generate every \$1 in sales," MacAllister says. "I'm not sure the heavy-equipment side is that cash intensive, and with parts and service representing about 35 percent of sales, our heavy-equipment business delivers better margins."

Adding rental operations to an equipment dealership does have some distinct advantages for both dealer and customer. The dealer's service capabilities should be able to maintain a reliable fleet, and many dealers' inventories are closely matched to heavy-construction contractors' needs. The dealer can typically fill a bigger order more quickly.

Caterpillar plans to help its dealers emphasize the convenience of choice.

"We are going to apply fully the RUN model — rental, used, and new," says Paulo Fellin, Caterpillar's vice president of Europe, Africa, and Middle East marketing. "We don't want salesmen to just be selling machines — we want them to sell solutions. Customers that have a low-hour need might be best served by a used machine. If they have big peaks of work, they might want to rent. If they have high, consistent need, they probably need a new machine."

Of course, Caterpillar dealers have new machines to sell, and Rental Store inventories to rent, but Cat wants buyers to know that their dealers can also take machines out of rental fleets at many different price points to suit many different buyers' needs.

"If a customer wants to buy, he can buy a new one or a rental rollout — we can take a machine out of the rental fleet to satisfy a need," says MacAllister. "We have made and saved deals like that."

The challenge is to balance the very different sales and rental operations in a single organization and encourage everybody in the dealership to apply the best solution for the customer.

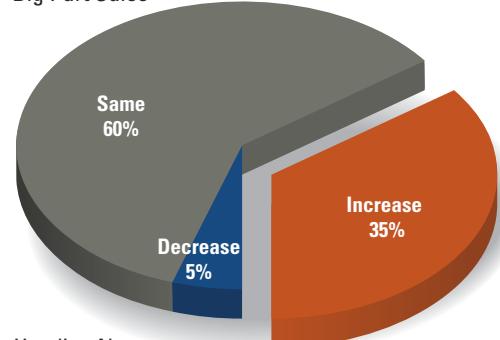
"We no longer pay salesmen on commission," says MacAllister. "They do get a bonus, a large chunk of which is based on combined heavy sales and rental service department profits. We're giving them an incentive to work together, share leads, and do whatever it takes to get each customer's business."

Most major manufacturers that build light equipment would like to see their dealers get into the rental business — Deere and Komatsu have growing programs. The Cat Rental Store has been such a dramatic success because of the amount of capital Cat dealers can sink into the project. Each of the 53 U.S. Cat dealers, on average, has access to \$4.1 billion in capital, according to machinery-industry analyst John McGinty, who was managing director at Credit Suisse First Boston before he went to work with private equity group USB in 2006. His analysis of the capitalization of various manufacturers' distribution networks suggests that the average Deere dealer is capitalized at \$750 million, the average Komatsu dealer at \$500 million, CNH dealer at \$450 million and Volvo CE dealer at the \$400 million.

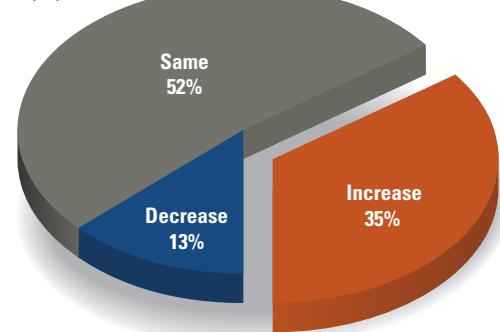
Volvo Construction Equipment, with a

Rental Firms Act Like Dealers

Big Part Sales



Hustling New Equipment



Source: Construction Equipment Annual Report & Forecast 2007

Some rental firms have offered their capabilities to manufacturers hungry for more distribution and became authorized distributors. But manufacturers require typical rental firms to keep new machines in their fleets for at least a year before selling them, according to the AED Rental 2006 study.

Special Report: Distribution



Equipment rental companies' inventories and rental rates for backhoe-loaders have thoroughly challenged many contractors' traditional ownership arithmetic and introduced firms to rental.

very aggressive goal of becoming the clear No. 3 construction-equipment manufacturer in the world by the end of 2009, has decided to invest its own capital in building a rental channel through VolvoRents franchises.

On the occasional Sunday, you can find an ad in the Wall Street Journal beckoning entrepreneurs with a minimum of \$500,000 in cash and another \$500,000 in assets to become VolvoRents franchisees. Volvo offers its brand, systems and purchasing power to the franchisee, and the manufacturer will lend qualified applicants up to \$5 million to get started.

There are 76 VolvoRents rental centers in North America (66 in Europe, and one in Mexico). Supposing Volvo committed an average of \$3 million to each of its North American outlets, the company would have \$228 million invested in securing a rental channel for its products. It's not necessarily an uncomfortable position for Volvo. The company owns 60 percent of its distribution in Europe, and CEO Tony Helsham says it's a good working model for the Swedish company.

Manufacturers seem convinced that if their dealers build deeper levels of service, customers will pay for it. Some evidence suggests they're right. The rise of component remanufacturing and rebuilding programs suggest that customers are realizing the compelling eco-

nomics behind replacing with vendor-refurbished components. Caterpillar and its dealers have done almost 3,800 certified rebuilds around the world since the company started certifying rebuilds. About 1,000 of them have been through the Powertrain Plus program, which upgrades the entire power train of a machine and its cab.

"Customers have been asking for CSAs (customer-service agreements)," says Bill Springer, Caterpillar's vice president of marketing and product support in Peoria. "A lot of customers are beginning to change the way that they want their business to be done. They're identifying their core competencies and in many cases they're saying, 'Caterpillar dealer, you have great capabilities, so figure out a way to help me.'"

It is possible, though, that demand for dealer service is localized to areas where the shortage of qualified technicians is worst, because demand for service agreements appears to be less than universal. Nineteen percent of dealer respondents to the *Construction Equipment* Annual Report and Forecast study said they have seen significant increases in customer service agreements. Nearly 80 percent have seen no change in service-agreement business.

"I wouldn't say a significant number of our customers use customer-service agreements, but it is growing," says MacAllister. "I expect it will continue to increase, but it has been slow coming."

Nevertheless, construction equipment is a unique kind of purchase in that the dealer who sells the product is often more important to the choice of what to buy than the product itself. Construction equipment is not so nimble as heavy trucks or cars, easy to transport long distances to reach a suitable service center. When problems arise, construction equipment usually waits for service people to come to it. Waiting is expensive, and customers value dealers who can get them up and running fast. It's a fact that preserves dealer importance in the equipment distribution chain.

Perhaps the most common distinction between traditional dealers and rental companies, or any alternate channel of distribution, is their service departments. As inconsistent as their



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Special Report: Distribution



Dealer service can be more important than product or price in an equipment purchase decision.

relationship with your local equipment dealer. But the entrepreneurs who run independent dealerships are creative and motivated people. Those who haven't mastered the local touch on a larger scale will learn from those who have. They must, because it has become a very competitive world in which they make their living.

Rental companies are looking for opportunities to get between dealers and their customers. These specialists' retail rental processes — again as a group, not each and every branch — are refined to attract people long accustomed to owning machines to choose renting. Some are becoming authorized machine dealers and expanding their service capabilities, making themselves available to fill any voids left by stretched dealers with products on allocation from their suppliers.

Of course dealers and rental companies can both be excellent business partners for equipment users, if you want them to be.

"The relationship between a fleet manager and an equipment dealer or manufacturer is held together with the same glue that binds a thriving marriage — the success of either is built on trust and communication," writes Greg Kittle, equipment manager with Ryan Central in Janesville, Wis. His comments were published as president of the Association of Equipment Management Professionals in their magazine, *Equipment Manager*. "In many ways, the relationship among end-user, dealer and manufacturer is harder to maintain than a marriage. After all, two people who are married to each other share the same general plans, expectations, goals and dreams — or they should. In the business world, however, it sometimes takes a healthy helping of innovation and imagination to lead two or three diverse businesses in the same direction and to the same destination."

Dealers have a lot of experience finding, training, and retaining technicians. They haven't cornered the market on customer service, but dealers in general — not every single dealer, but manufacturers' authorized dealers as a group — set the standard for how other distribution businesses should treat customers.

Growth, as necessary as it is to marshal the necessary capital today, has not made it easier to keep an open relationship with your local equipment dealer. But the entrepreneurs who run independent dealerships are creative and motivated people. Those who haven't mastered the local touch on a larger scale will learn from those who have. They must, because it has become a very competitive world in which they make their living.

Some dealers and rental companies are anxious to talk about how their resources can save you money or free your people and resources to focus on winning contract awards and building projects. That's why AEMP coined the phase "equipment triangle" and has focused on how to strengthen relationships between the parties.

The AEMP encourages all parties to seek ways to transcend traditional, often adversarial, vendor/customer relationships through exchange of information and responsibilities. The intent is for users to avail themselves of dealers' equipment-management resources. Vendors should profit as equipment users become more successful.

"They won't reach that destination unless representatives of all three sides of the Equipment Triangle — manufacturers, dealers, and end-users — are sensitive to the unique needs of the others," Kittle continues. "Our relationship with dealers and manufacturers continues to evolve. We are asking more of them than we ever have, but we are also sensitive to their profitability. We realize that when we grow, our vendors grow, and we know we could not do what we do without their support. In turn, dealers are well aware that a large part of their success depends on the help they get from equipment manufacturers."

"The bottom line is that partners in a relationship who are willing to take their share of the liability will also earn their share of the profits," says Kittle. "That sounds kind of like a marriage, doesn't it?" 

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Hands-On Trucking

By TOM BERG, Truck Editor



GM's HD Pickups

Come Work Ready

Most people expect a firm ride in 3/4- and 1-ton pickups, and they'll get it in the new Heavy Duty models

It's like watching a frog race: Full-size pickups, primarily from the domestic Big Three auto makers, leap over each other with new and improved models every few years.

General Motors was the latest to upgrade its vehicles, to where writers at enthusiast magazines have proclaimed the new 1500-series Chevrolet Silverado and GMC Sierra as the best half-ton trucks now available.

But folks who tote lots of tools, supplies and equipment — in the bed or on a trailer — prefer the heavy-duty 3/4- and 1-ton models. For them, GM recently released the 2500HD and 3500HD, which use the 1500's noses and cabs mounted on stronger frames and suspensions.

Does the charm of the highly regarded lighter-duty models migrate upward? Yes and no, I found, after driving several of them during a GM event in Charlotte, N.C.

A rough ride

The HDs look a lot like the handsome half-tonners; and many interior features, including gauges, switches and controls, and trim packages, are shared throughout the line — though there are some style differences in the hoods and noses of Chevy and GMC versions. However, the exceptionally smooth, controlled ride that's one of the Chevy/GMC 1500's finest features is not present in the heavier models.

That was plain after just a few blocks in a couple of 3500HDs I briefly drove, as well as the 2500HD featured here. Over even asphalt, their ride was firm, as one might expect from stronger underpinnings; and over rough concrete, the ride bordered on harsh. This was true with single rear wheels or duals, long or short wheelbases, and simple or posh trim levels.

Simple was the word for the work-truck

HD pickups use the same nose and cabs as the 1500 series, but are mounted on stronger frames and suspensions. Brakes on the 2500HD are bigger than those on previous models.

(W/T) trim on this bright-red Regular Cab pickup. Inside it had a split bench seat with a fold-down armrest and seat bolsters for driver and passenger; the raised upholstery kept my rear and legs in place through corners, but I had to plant my broad beam squarely between the two bolsters to keep my thighs from being pinched. A handsome, tweedy cloth fabric in black-and-grey looked nice, felt good, stayed cool, and will probably wear well.

The dashboard was the “pure-truck” design (a “luxury” style is used on higher trim levels), and the truck had cruise control, air conditioning, and a nice-sounding stereo radio with CD player. But its equipment was otherwise no-nonsense, with rubber floor mats, roll-up windows, and non-motorized mirrors.

The two-piece mirror on the right side was an annoyance, as I had to stretch across the wide cab and roll down the window to grab and adjust the glass, and I couldn’t seem to get the convex portion aimed to where I could see enough. Power mirrors are a better idea, especially if a truck will be regularly driven by more than one guy or gal. And as on the 1500s, there is no assist handle for the driver, which made climbing into high-floored 4x4s a chore, as there’s only the steering wheel to grab.

Now, would the 2500HD’s firm ride settle down while toting a load? GM Fleet & Commercial’s press-relations manager, Rob Minton, arranged for one — a pallet of bottled water weighing about 1,300 pounds. A crew forklifted it aboard, and as it settled into the bed, the truck’s stout, two-stage leaf springs hardly deflected. The ride remained firm but less choppy, and the truck seemed more than able to handle more weight.

This truck had some optional bed hardware that helped secure the load. The pallet’s

forward edge rested against a tube-and-mesh divider that locks into aluminum rails on either side. Various sizes and shapes of tool boxes are also among the aluminum accessories available as part of this system.

The only gasoline



A six-liter (364-cubic-inch) Vortec gasoline V-8 has plenty of power and torque; and it works well with a new, smooth-working six-speed Hydra-matic.

engine offered in HD pickups is the Vortec 6000 V-8, as the big-block Vortec 8100 can now be had only in GM’s medium-duty trucks; of course, guys who tow heavy trailers with pickups will choose the Duramax diesel anyway. The 6-liter (364-cubic-inch) Vortec makes up to 353 horsepower and 373 pounds-feet of torque. It does not have Active Fuel Management, which cuts out four cylinders when loads are light to save gasoline and is standard with this engine in 1500-series pickups. Engineers figure that in a heavier truck, the engine will work harder and be less likely to revert to V-4 configuration.

The Vortec 6000 in the HD comes only with a new six-speed Hydra-matic (you can’t get a manual transmission). The new automatic’s 5th and 6th gears have overdrive ratios of



W/T (for work truck) trim includes a two- or three-passenger split bench seat with handsome cloth covering, complete instrumentation in the “pure-truck” style dashboard, and easy-to-use rotary knobs for the HVAC.



Hydra-matic’s quadrant includes an “M” position that lets you up- or downshift using a sliding switch on the lever. Here it’s in 4th gear at a little over 30 mph.

Hands-On Trucking



Optional aluminum hardware in this bed includes a load divider, which the 1,300-pound pallet snugs against, and available tool boxes. HD pickups come with 8- or 6.5-foot beds.

0.85 and 0.67, respectively, and 4th is a slight underdrive at 1.15 to 1. The tranny and its torque converter had a ratio for every situation, so the engine neither lugged nor overreved. It's so smooth that you're not aware of what gear it's in unless you're counting.

Or unless you're playing with the Manual position on the shift quadrant, just below Drive. While in M, you can thumb a sliding switch on the shifter lever to down- or upshift the tranny. I soon learned that leaving it in D and using the Tow-Haul mode worked better. When engaged by a push-button on the end of the shifter, T-H caused the tranny to stay in each gear longer during acceleration and downshifted all the way to 2nd during braking to add some engine-compression retarding.

Both the Manual and Tow-Haul modes originated several years ago in the six-speed Allison 1000 automatic that comes with the 6.6-liter Duramax V-8 diesel. While the two Allisons I drove in Charlotte shifted smoothly enough, they thumped roughly into gear from Park or Neutral. I couldn't tell if this is a new characteristic or if these two examples simply needed an adjustment.

Urban sprawl along interstates, state highways, and county roads north and west of Charlotte provided plenty of opportunities to

TEST SET

Truck: 2007 GMC Sierra 2500HD Regular Cab 2x4 pickup w/8-ft. bed, GVWR 9,200 lb., payload (including people) 3,892 lb., W/T (work-truck) trim

Engine: 6-liter (364-cubic-inch) Vortec gasoline V-8, iron block/aluminum heads, 353 hp @ 5,300 rpm, 377 lbs.-ft. @ 4,300 rpm

Transmission: Hydra-matic 6L90 six-speed double-overdrive w/Manual and Tow-Haul modes

Steering: Integral hydraulic power, recirculating ball

Front axle/suspension: Long- and short-arm independent torsion bar

Rear axle/suspension: Live axle on semi-elliptic 2-stage multi-leaf springs, 3.73 or 4.10 ratio

Wheelbase: 133 inches

Tires & wheels: LT245/75R16 on steel discs

Brakes: 4-wheel hydroboosted hydraulic discs, 12.8- x 1.5-in. front, 12.8- x 1.2-in. rear

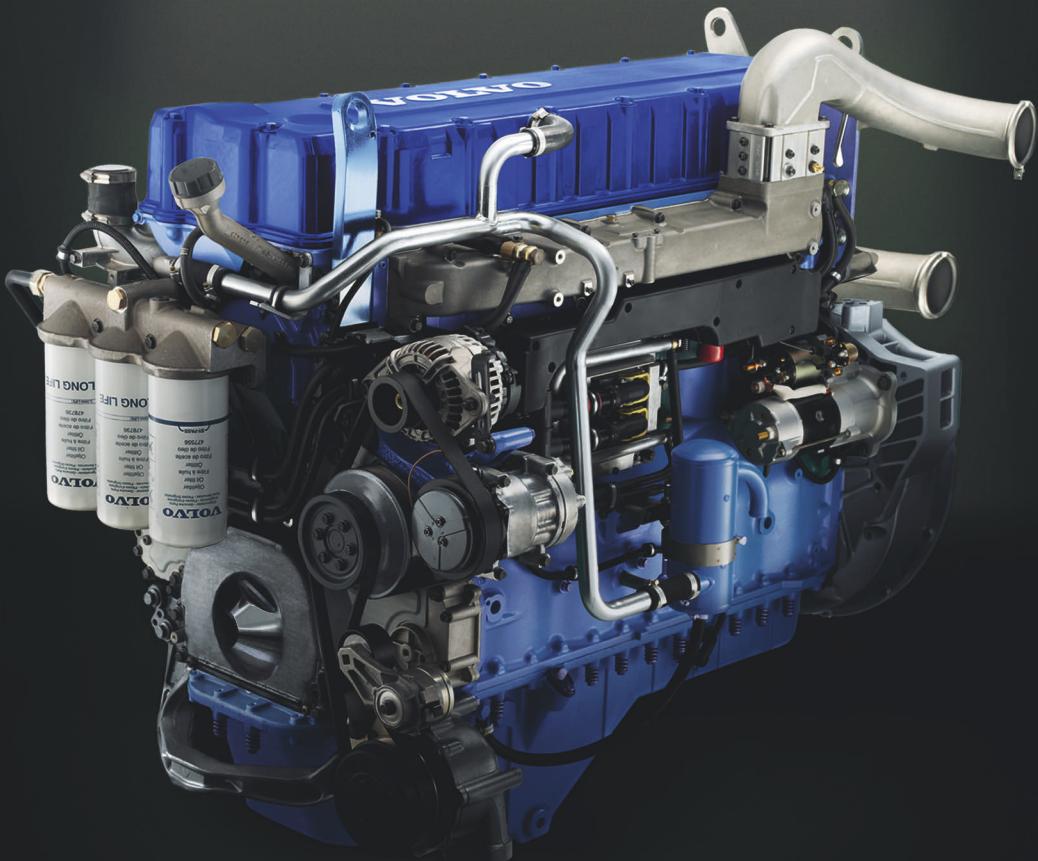
Maximum trailer towing: 12,900 lb. w/4.10 ratio

slow, stop and accelerate, giving the Vortec/Hydra-matic powertrain a brisk workout. As temps climbed, I cranked up the windows and switched on the strong A/C. The HVAC controls on this work truck were easily understood rotary knobs, while upscale trim levels use sometimes puzzling push buttons.

New equipment available on the new-series HDs includes a stronger hitch platform with a 2.5-inch receiver (versus the usual 2-inch size) and an integrated trailer-brake controller, which this truck didn't have. Standard is a hydroformed front frame section, larger disc brakes, and revised steering with supposedly better center-line feel, though my hands failed to sense the improvement.

Altogether, I covered about 90 miles in this very able but plain-vanilla pickup, and concluded that GM's new 2500HD and 3500HD are just what they appear to be — good looking, well equipped and built, seemingly easy to live with and, with the proper options, work ready — a combination worthy of your consideration. And if you already own a firm-riding pickup, you'll also feel right at home. 

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Buying File: Soil Compactors

By MIKE ANDERSON, Senior Editor

New Players **Look to Roll in** **On Core Market**

Niche manufacturers adjust their product lines
behind the leadership of industry giants

Product-line expansions by some OEMs are providing mainline contractors with a greater selection of single-drum soil compactors from which to choose.

But, as traditional suppliers of primarily smaller machines roll into new markets with larger models, that doesn't necessarily translate into a market trend, says one leading full-line compactor manufacturer.

"I don't see a shift toward larger models,"

says Richard Evans, national sales manager for Hamm. "I know that one, maybe two makers of smaller compaction equipment have expanded their lines, but I believe this is just a decision on their own to offer a broader product line."

Recognized primarily as a compact-equipment innovator, Stone Construction Equipment has recently introduced two Rhino 84X smooth-drum models, moving up into the full-size, 84-inch drum width class of machines.

"Our Rhino line already contains models from 43 inches up to 66 inches," says Jeff Gambrill, vice president, marketing and sales. "The 84-inch Rhino expands our line to include the most common size single-drum dirt roller. Dealers that have traditionally carried the smaller rollers can now carry a complete line that is versatile enough to handle small to large industrial and commercial jobs."

The newest soil-compactor offering of light and utility construction-equipment manufacturer Multiquip is the 54-inch P54KA padfoot model, incorporating a new hydraulic concept with Poclain's Twin Lock traction control system. The 54-inch drum width is the largest offered by the company.

The Cost of Ownership

Size	List Price	*Hourly Rate
Less than 2.9 metric tons	\$55,895	\$22.67
3.0 - 4.9 metric tons	\$79,767	\$29.66
5.0 - 7.9 metric tons	\$110,125	\$39.44
8.0 - 11.9 metric tons	\$130,870	\$48.78
12.0 - 14.9 metric tons	\$161,801	\$58.79
15.0 metric tons and up	\$204,183	\$71.39

* Hourly rate represents the monthly ownership costs divided by 176, plus operating cost. Adjusted operating unit prices used in the calculation are diesel fuel at \$2.80 per gallon, mechanic's wage at \$42.50 per hour, and money costs at 5.25 percent.

Source: EquipmentWatch.com, phone 800/669-3282



With its new Rhino 84X models, as shown above, Stone Construction Equipment has moved into the full-size, 84-inch drum width class of single-drum soil compactors. Known primarily as a compact-equipment manufacturer, Stone now offers a more complete product line of rollers, according to the company's vice president, Jeff Gambrill.

"We don't really get into the larger models of compaction equipment, those classified at five tons and above," says Matthew Bennett, product development manager - compaction. "The fortunate part of that is the four-ton-and-below units continue to be larger volume sales units in the market."

"Even though our current customer perception is that we are not in the heavy-iron business, that doesn't mean that we will never be. We are constantly looking at new opportunities to more completely wrap our arms around the market. If we think it makes sense and it provides a viable, equitable and, of course, profitable service, you will see Multiquip in every market."



Stone, likewise, is pleased to be where it is at this time.

"We don't currently see Stone expanding into even larger rollers," says Gambrill. "However, you can't predict where the market demand may lead us."

Hamm has taken its place of prominence in the 84-inch-drum-width market one step further with the 3412 VIO model, combining traditional vibration and Hamm Oscillation compaction technologies into a single drum.

Buying File: Soil Compactors



With its "steep-slope" tracked CV550 single-drum roller, Sakai offers a solution for contractors facing the challenge of having to scale slopes while compacting them. The triangular track drive system can climb 45-degree slopes while allowing the machine to continue with the job at hand.

New technology

Hamm's newest models, the 84-inch 3412 VIO and 66-inch 3307 VIO, combine the conventional vibration and non-aggressive Hamm Oscillation compaction into a single drum.

Oscillation compaction works by imparting a horizontal or rocking force into the base material, side to side, rather than by forcing it downward by an up-and-down motion.

The drum never leaves the material. Unlike traditional vibratory compactors that achieve compaction by bouncing the drum on the ground, oscillation technology ensures the roller drum maintains constant contact with the ground. Horizontal forces are transmitted from the drum into the surface, resulting in quieter compaction in fewer passes, with less vibration-related wear on operators and surroundings.

Combined with the vibration option in the same drum, the oscillatory soil compaction system provides the machine operator with total control over the type and the degree of compaction used. Vibratory compaction can be selected for classic compaction situations, and Hamm

Oscillation for more demanding applications. The operator can select the frequency and amplitude best suited to the material.

Recently, a new Hamm 3410 VIO was put to work on a New Hampshire road rehab job, the objective being to limit vibrations transmitted to a nearby plant where ultra-precision systems for casting contact lenses and other optical products are manufactured. The contractor, Park Construction Corp., reported a reduction in transmitted vibration of about 50 percent of normal for a unit of this size.

Oscillation soil compaction also is quieter than conventional compaction, so it's appropriate for night work and near sensitive areas like schools and hospitals.

New technologies aside, Hamm's Evans sees enhanced operator platforms are where large single-drum soil compactors are changing.

"Cabs are where the action is," he says. "We are definitely seeing a growing market for air-conditioned cabs, and that's a big thing for Hamm, because we manufacture more machines with cabs than without. Air conditioning is essential in the U.S."

New name

Despite the move by niche manufacturers to expand their product lines, the single-drum soil roller market remains the bailiwick of traditional compaction leaders. Brands such as Dynapac, Bomag, Caterpillar and Sakai offer in excess of a dozen models each.

In terms of branding, the biggest change is the arrival, this year, of Volvo to the game. Via the acquisition of Ingersoll Rand's construction-equipment business, the full-line Volvo construction equipment brand is instantly attached to an established line of 18 models, placing it immediately among the giants of this sector.

In fact, figures from Spec-Check indicate Volvo's smooth-drum SD-200DX TF and padfoot-drum SD-200F TF models offer the largest operating weight and gross horsepower among the 84-inch models available. 

TALKBack

What is your opinion? Go to the online article at ConstructionEquipment.com.

Single-Drum Soil-Compactor Specs (10 metric tons & up)

Smooth-Drum Model	Operating Weight (lb.)	Drum Width	Vibration Frequency (hz)	Centrifugal Force (lb.)	Gross Power (hp)
Hamm 3410	22,663	84"	30 - 40	39,375 - 50,625	131
Bomag BW211D-3*	22,928	83.9"	30 - 36	38,250 - 53,100	131
Hypac C840C*	22,928	83.9"	30 - 36	38,250 - 53,100	131
Volvo (IR) SD-100D TF*	23,100	84"	31.2 - 33.6	46,300 - 59,300	125
Caterpillar CS-533E*	23,120	84"	31 - 34	30,000 - 52,600	130
Dynapac CA262D*	23,148	84"	30	22,031 - 45,636	148
Intensus CV100D*	23,369	84"	30 - 35	24,746 - 47,242	152
Sakai SV505D*	23,525	84"	27.5 - 36.67	38,580 - 50,170	125
Volvo (IR) SD-105DX TF*	23,700	84"	20.42 - 33.75	17,044 - 59,000	125
Dynapac CA250D*	23,810	84"	33	26,754 - 55,306	110
Volvo (IR) SD-116DX TF*	23,930	84"	31.7 - 34.2	47,900 - 61,000	n/a
Sakai SV510D-II*	24,140	84"	28 - 37	38,580 - 50,710	138
Caterpillar CS-563E*	24,520	84"	31.9	30,000 - 60,000	150
JCB Vibromax VM 115D*	24,912	82.7"	31 - 36	36,644 - 58,675	125
Case SV212*	25,386	87"	32 - 35	46,249 - 62,250	148
Compac T84D*	26,400	84"	30	26,000 - 52,000	150
Volvo (IR) SD-122D TF*	26,400	84"	30.83 - 33.75	46,300 - 63,200	156
Hamm 3412*	26,433	84"	30 - 40	48,375 - 57,600	127
Hamm 3412 V10	26,433	84.25"	33	64,575	131
Volvo (IR) SD-122DX TF	26,650	84"	20.42 - 33.75	46,300 - 63,200	156
Bomag BW213D-3	26,850	83.9"	30 - 36	44,550 - 61,825	148
Stone SD84X*	27,337	84"	30 - 35	42,743 - 62,989	130
Bomag BW213DH-3*	27,400	83.9"	30 - 36	44,550 - 61,825	155
Hypac C855C*	27,400	83.9"	30 - 36	44,550 - 61,825	155
JCB Vibromax VM 132D*	28,660	82.7"	29 - 36	39,117 - 63,396	150
Dynapac CA362D*	29,105	84"	33	32,865 - 67,850	150
Sakai SV510TF-II	29,875	84"	28 - 37	40,790 - 55,120	138
Caterpillar CS-573E*	29,922	84"	31.9	30,000 - 60,000	150
Sakai CV550D*	30,210	84"	30 - 40	38,580 - 50,710	169
Case SV216*	31,479	87"	29 - 35	53,261 - 73,037	148
JCB Vibromax VM 146D*	31,967	82.7"	29 - 35	43,163 - 66,768	173
Bomag BW213DH-4 BVC	32,849	83.9"	28	82,125	155
Caterpillar CS-583E	33,296	84"	30	37,300 - 74,600	150
Dynapac CA512D*	34,400	84"	29 - 33	53,545 - 67,850	173
Volvo (IR) SD-160DX TF*	35,200	84"	30.8 - 33.8	59,400 - 76,300	173
Caterpillar CS-663E*	36,820	84"	30	37,300 - 74,600	173
Caterpillar CS-683E	40,785	84"	30	37,300 - 74,600	173
Dynapac CA602D*	41,015	84"	29 - 31	51,945 - 71,210	190
Intensus CV190D*	41,667	83.9"	28 - 35	58,489 - 86,609	190
JCB Vibromax VM 200D*	43,431	82.7"	29 - 35	46,086 - 83,179	173
Hamm 3520*	43,651	87"	27 - 30	54,450 - 74,250	194
Volvo (IR) SD-200DX TF*	45,000	84"	30.8	53,700 - 82,800	205

* These smooth-drum soil compactors are offered in comparable padfoot-drum models.

Source: Spec-Check Xpanded Specs (as of June / 07)

Gallery of Soil Compactors

Hamm

Two Technologies Rolled into One Machine



into a single drum, ideal for fast compaction above softer bases or other materials that could be disturbed or damaged by conventional vibration.

Number of models: 18

New models: 3412 VIO, 3307 VIO

Product-line features: A three-point articulation joint is unique to all Hamm 3000 Series compactors, allowing better traction in uneven terrain by keeping both the drum and rear axle on the ground, even during full turns. The use of a bottom knuckle pin and top stabilizer link allows complete oscillation at the center joint, regardless of the turning angle or surface conditions.

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Wirtgen's Hamm Compaction Division introduced combination vibratory and oscillation compaction into a single roller, available in two sizes. At a drum width of 66 and 84 inches, respectively, the new 3412 VIO and 3307 VIO models combine the conventional vibration and the exclusive non-aggressive Hamm Oscillation compaction



DYNAPAC

New Roller All About Compaction

Compaction is not only the application for Dynapac's newest soil rollers, but the design, too. Built for compaction in tight spaces, the new self-propelled CA134 and CA144 models replace the former 121 and 141, respectively. With drum widths of 54 and 66 inches, both new soil compactors have a drum diameter of 39 inches. An overall width of less than 72 inches and length of 13 feet ensure easy transport.

Number of models: 20

New models: CA134D, CA134PD, CA144D, CA144PD

Product-line features: With new compactors, special applications may be achieved through configuration options. Each model has a choice of drum drives, a bolt-on pad shell option for the compaction of cohesive soils, and optional leveling blade.

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VOLVO

New Brand, Established Product

Volvo may be a new brand in the soil-compaction market, but its product line is tried, tested, and among the most extensive. As part of this spring's acquisition of Ingersoll Rand's construction-equipment business, Volvo Construction Equipment now offers 18 soil compactor models. Among its newest features, the product line launched the Comp Analyzer for the measurement, display and printing of compaction performance in real time.

Number of models: 18

Product-line features: For maximum productivity, variable frequency is a standard feature on Volvo's DX compactors that allows the operator to select the correct frequency for the job, based on the material being compacted. The newly offered packaging of popular options is designed to make configuration selection easier for customers throughout the extensive Volvo product line.

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"Our overall costs in maintenance are lower in part due to the effort and expertise provided by Shell."

*Barbara Smith
Albian Sands Energy, Inc.*



Like any off-road business that relies on heavy equipment, Albian Sands knows downtime costs money. They look to the full line of Shell heavy-duty lubricants and coolants for protection against some of the world's harshest job-site conditions. They depend on brands like Shell Rotella® T and Rimula® premium engine oils, Spirax® and Donax® drive train oils, Retinax® greases, and Shell Rotella® Extended Life Coolants. But these products are even more valuable thanks to world-class technical support from Shell. Even when grades are steep, loads are heavy, and sites are cold and dusty, Shell Lubricants helps keep your equipment and your business moving. To find out how Shell Lubricants can help your business, call 1-800-64-LUBES.

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Gallery of Soil Compactors



BOMAG AMERICAS

Price-Sensitive Customers Equally Served

With new 12- and 13-ton-class machines on the market, Bomag is providing dual vibration frequencies and amplitudes for single-drum compaction customers ranging from the price-competitive rental house and entry-level contractor to the full-line road-building operation. Incorporated into their vibration-isolated operator platforms, the Bomag BW211-40 and BW213-40 Series machines offer improved sight to the rear, ensuring all-around visibility. Bomag also offers the Hypac brand of compactors to the North American market.

Number of models: 17

New models: BW211D-40, BW211PD-40, BW213D-40, BW213DH-40, BW213PDH-40

Product-line features: Both the new BW211-40 and BW213-40 Series can be ordered with the optional padfoot or smooth-drum shell kits. Shell kits allow rollers to be converted from a smooth-drum to a padfoot configuration, and vice-versa, providing the versatility of two rollers in one.

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JCB

Machines Suited for Slope Work

Ranging from 4.6 to 20 metric tons in both smooth and padfoot configurations, JCB's established two-speed VM Series single-drum vibratory rollers offer drum widths from 55 inches for the VM 46 model up to about 83 inches for the VM 200. A traction management system facilitates work on slopes, as does hydrostatic propulsion of the drum and wheels. Auto vibration control is standard on the JCB Vibromax machines.

Number of models: 12

Product-line features: The use of teflon impregnated sealed bearings on JCB's single-drum rollers means there is no daily greasing required. A grouped electrical panel and hydraulics test station provides centralized maintenance, and the forward-tilting engine enclosure provides cleaner access to the engine and hydraulics.

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CASE

Weight Balance Offers Versatility

With four core model sizes available in both smooth and padfoot configurations, Case Construction Equipment's 200 Series single-drum vibratory rollers offer a drum width ranging from 66 inches on the SV208 to 87 inches on the SV216. Each of the models features dual vibration modes, adjustable amplitude and frequency, and centrifugal forces from 29,225 to 73,125 pounds to match a variety of soil and material conditions.

Number of models: 8

Product-line features: With a heavy-duty articulation and oscillation joint, the Case single-drum vibratory roller combines 36-degree articulation with the ability to compact over uneven surfaces with 12-degree oscillation. Gradeability is enhanced by a 60:40 weight balance between the front and rear. Large fuel tanks allow Case rollers to operate up to 36 hours between refills.

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Gallery of Soil Compactors

STONE

Company Takes Product Line Up in Size



In response to customer requests, the Rhino vibratory dirt roller offering from Stone Construction Equipment moved into a new market with the recent rollout of 84-inch models. Previously, the company went up to 66 inches with its soil-compactor line. Powered by 130-horsepower Cummins engines, the new 84X models feature

dual amplitude with a choice of low or high compaction forces, up to 63,000 pounds. Operators utilize a four-in-one vibratory and directional control lever.

Number of models: 10

New models: Rhino SD84X, SD84XC

Product-line features: Stone's smaller 43- and 54-inch models include tires and drums matched for optimum compaction in any condition. The 66- and 84-inch models have a combination tractor/turf type tire that performs both with the smooth or padfoot configurations. While the smaller models feature a posi-traction system for maneuverability in confined spaces, the larger rollers feature no-spin axles for enhanced climbing.

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MULTIQUIP

Rammax Offers New Traction Control

The Multiquip product family offers three core sizes of compact single-drum ride-on rollers manufactured by Rammax, defined by drum widths of 35, 48 and 54 inches, and available in a variety of drum and blade configurations. The newest and largest padfoot model, the P54KA incorporates a new hydraulic concept

with Poclain's Twin Lock traction control system, which provides flow division while automatically transferring torque to the wheels with the greatest ground adhesion.

Number of models: 14

New model: P54KA

Product-line features: A new frame design for the Multiquip Rammax single-drum ride-on compactor improves access to daily and routine service areas. The engine has been turned 180 degrees for better access to the hydraulic system.

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CATERPILLAR

Exclusive Systems Put to Use

With operating weights ranging from 12.2 to 17.3 tons, the Caterpillar 500E-Series vibratory soil compactors feature the exclusive Cat dual pump propel system. This provides separate hydraulic flow to the rear wheels and drum for tractive effort in soft conditions and superior control on grade in forward and reverse. The patented Caterpillar eccentric weight system, with the two pod-style weight housings within the drum, eliminates heavy weights slamming together and wedging.



Number of models: 14

Product-line features: A large spread between high and low settings on the 500E-Series-standard dual amplitude makes it easier for the operator to adapt compactive effort to any changes in lift thickness, soil characteristics, and density requirements while maintaining performance.

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SAKAI

Track-Driven Unit Tops Product Line

In addition to the 14 SV Series models ranging in drum width from 54 to 84 inches, the soil compactor product line of Sakai America is topped by a unique track-driven vibratory compactor — the 84-inch CV550 available in both a smooth and padfoot model. Dual amplitude and dual frequency, high centrifugal force output, shock isolation and a heavy-duty steering hitch design are staples of the Sakai product offering.

Number of models: 16

Product-line features: Along with an assortment of smooth, padfoot and combination models, Sakai soil compactor customers may also consider the strike-off blade option for increased application opportunities in various sizes. On all Sakai models, ROPS and seat belts are standard.

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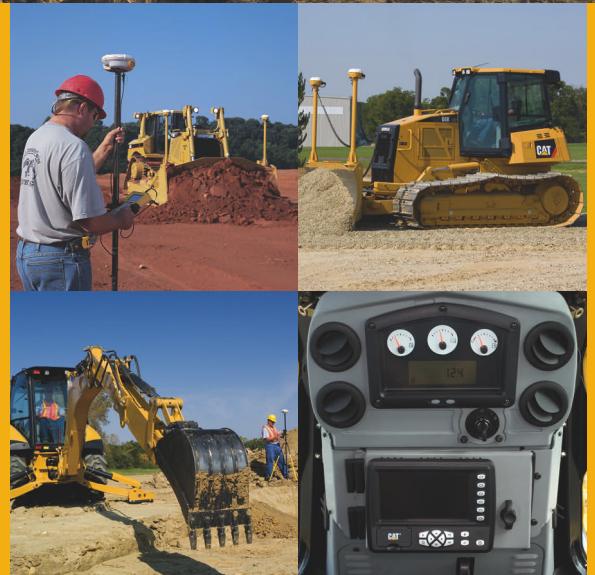
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Lubricants

CITGO

Introduced by Citgo for high-performance diesel engines, Citgard 700 oil has since been expanded to two products. The original synthetic blend product, introduced as Citgard 700, is now marketed as Citgard 700 Plus. Offered in a 15W-40 viscosity grade, this oil is designed for on-road and off-road power units operating under severe conditions. Added to the line is a new Citgard 700, formulated with premium base stocks to meet the needs of most fleet owners. The Citgard 700 line meets the new API CJ-4 specifications.

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SHELL

To meet the new API CJ-4 service category for heavy-duty diesel engine oils, Shell has introduced Rotella T 15W-40 with Triple Protection technology, representing the largest formulation advance in Shell's engine oil technology in 30 years. The oil has also been approved for the new Caterpillar ECF-1-a and ECF-2 specs. According to Shell, the new Rotella T is providing on average 50-percent greater wear protection than the previous formulation in industry-standard tests, supported by more than 10.5 million miles of on-highway service using current-generation engines demonstrating lower iron wear.



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LUBRICATION ENGINEERS

A product of Lubrication Engineers, 8800 Monolec Ultra is a 15W-40 engine oil designed for year-round, extended drain service in diesel and gasoline engines. The product has been reformulated to meet the latest robust API CJ-4 standard for engine oils, designed for 2007 low-emission engines. It is also backwards-compatible, for use in both older and newer engines. Other Lubrication Engineers' products appropriate for construction applications include 8130 Monolec Ultra 10W-30 and 8420-8450 Monolec GFS engine oils, and the 2410-2420 BTU+ diesel fuel improvers.

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CHEVRON

Among the products of Chevron, Delo Extended Life Coolant is designed to protect the cooling systems of off-road vehicles for 15,000 hours and on-road vehicles for 750,000 miles, without the use of chemical extenders. Exceeding current performance levels for products claiming extended life capabilities, Delo Extended Life Coolant helps deliver greater return on investment and lower maintenance costs.

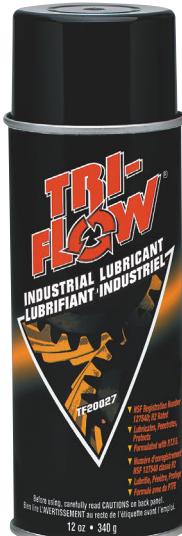
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Spotlight

KRYLON

A formula of premium oils, micron-sized synthetic particles and additives from Krylon Products Group, Tri-Flow industrial lubricant deposits a film that reduces friction and wear, inhibits rust formation, and displaces moisture and contaminants. Able to withstand temperatures from minus-60 to 475 degrees Fahrenheit, non-staining Tri-Flow provides long-term rejection of dust, sand, salt spray and other abrasive elements.

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CENEX

More than 134 million miles down the road, Cenex's Superlube TMS 15W-40 diesel oil has proven a clean, healthy lubricant for heavy-duty engines. Following multi-year, over-the-road tests in which 70 trucks traveled the equivalent of about 5,380 trips around the Earth, "engine parts were evaluated and found in excellent condition with superior sludge cleanliness," reports Bob Theisen, lubricants technical services manager with CHS, parent company of the Cenex brand. Particularly impressive for a test of this magnitude, the cylinder liners showed very minimal wear, says Theisen.



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D-A LUBRICANT

The full-service D-A Lubricant offers two engine oil lines for use in construction equipment. Depending on the viscosity, D-A Reliant is recommended for diesel and some gas engines needing a lubricant to meet API service categories CI-4, CH-4, CG-4, CF, CF-2, SJ, SL, as well as Cummins CES 20078, CAT ECF-1a and ECF-2, Mack EO-N Premium Plus and Volvo VDS-2. For use regardless of fuel sulfur levels, D-A Extra Treated II meets Caterpillar TO-4 specs. To minimize engine wear, the ChemGuard additive provides both of the D-A oils with extra acid neutralization capability.

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PETRON PLUS

Providing construction equipment lubrication solutions for 30 years, the Petron Plus Formula 7 and Petronomics Formula 7 brands also offer semi-synthetic supplement products that can be used with most oils and other lubricants to reduce friction and provide wear protection. These are not oil additives, nor replacement petroleum products, but semi-synthetic constituents chemically bonded in a patented process to form a new extreme pressure ingredient. When the supplements are added to an existing lubricant, tiny molecules are carried directly to the friction face.

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CONOCOPHILLIPS

Various API CJ-4 diesel engine oils from ConocoPhillips are now compliant with all new Caterpillar engine crankcase fluid specifications, both for pre-2007 and new models. Previously qualified as Cat ECF-3, these oils were designed for use in 2007 or later model engines equipped with diesel particulate filters and catalysts for exhaust after-treatment. ConocoPhillips API CJ-4 products now approved as compatible with ECF-3, ECF-2 and ECF-1-a specs are Guardol ECT, Fleet Supreme EC and Kendall Super-D XA. Since then, ConocoPhillips announced the upgrading of 76 Super Diesel to API CJ-4 quality.

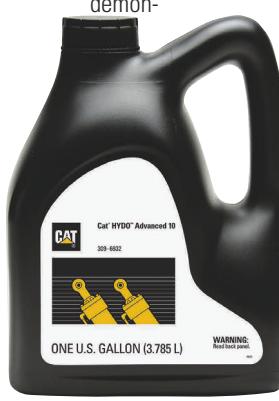
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CATERPILLAR

A combination of additives and two premium base oils, Caterpillar's new HYDO Advanced hydraulic oil is designed to provide extended drain intervals and extra protection to hydraulic-system components. Being introduced to some international markets this year with worldwide release next February, the oil is strating improved filtration properties, air release properties, corrosion protection, and oxidation resistance, reports Caterpillar. Upon full release, HYDO Advanced will be used as factory-fill at Caterpillar facilities worldwide.

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Moving Outward Means Moving Forward

Wisconsin-based Giant re-evaluates how to manage equipment

In terms of equipment operations, The Boldt Co.'s centralized model of the past simply had to change, says a fourth-generation company leader.

"I'm not sure if there was a strategic plan that was in place," recalls Thomas J. Boldt, chief executive officer. "Because we were equipment owners, we wanted to have maintenance staff that would maintain these machines to peak efficiency."

"Construction equipment makes you money if you've got the right types, the right quantities, and the right applications. So, over the years, we had built up a centralized maintenance, painting, stores, inventory — the whole thing really — that would service all of our operations throughout all of our different jobsites, as well as our different operating groups."

A privately held, 118-year-old organization based in and historically focused primarily around Appleton, Wisc., The Boldt Co. has moved beyond its Upper Midwest homestead. Today, there are three divi-

sions, the largest being Oscar J. Boldt Construction, which itself is comprised of five major regional operations, many of those with additional satellite operations.

"In the past, our headquarters operation based in Appleton was where the vast majority of the work was generated from," says Boldt. "If you look at the growth of the different markets we have, these regional operations are all now significant, \$150- to \$200-million-revenue-per-year types of operations. They are no longer the stepchildren; they're equal partners in the organization."

"So, recognizing their growth and their success, you can't work the same type of model you had before."

The result was a shift that, according to Industry Giants information reported to *Construction Equipment*, has had the greatest impact on the cost-efficiency of operations in and around The Boldt Co.'s \$76-million equipment fleet. Although, says Boldt, that's not cut and dried.

PROFILE



**Thomas J. Boldt,
Chief Executive Officer**

The Boldt Co.

Headquarters:
Appleton, Wisc.

Specialty:
Construction management, general construction and maintenance in institutional, industrial and commercial markets, with special expertise in machinery moving and installation

Fleet makeup:
\$76 million in large- to mid-sized cranes, rough-terrain and industrial forklifts, earthmovers, trucks, and concrete placement and specialty equipment

Facilities:
Approximately 135,000 square feet of maintenance and storage throughout the company

Market Range:
Nationwide, with strong presence in the Upper Midwest, Southeast and West regions



As The Boldt Co. expanded its market, the need to decentralize equipment operations became apparent. Here, teamster Scott Hanagan secures a load placed onto a flatbed by forklift operator Bill Aherens.

Great Managers



For The Boldt Co., the move to increasingly place equipment decisions where the actual work is located is a major adjustment for a company with a long history. Here, Rod Kent, Local 139 operating engineer and mechanical technician, fills and checks fluids on a Grove rough-terrain crane.

"Where this decentralization took place more was in our upper midwestern operations, in which the sites once could basically be driven to and probably get back home from in a day. We found that was getting to be inefficient, and we were trying to force a business model that really didn't work," he says.

With the contraction of the pulp-and-paper industry, a traditional company stronghold, "we felt that our regional offices would be more efficient, more nimble and responsive, and would have better control of their equipment needs. We also began to rely more on our supplier network. This eliminated the need for certain support staff and reduced our 'running around' from the central location."

The Boldt Co. started the decentralization process with smaller pieces of equipment, and moved up to "a certain point in time where you say, 'you know, this doesn't make a lot of sense,'" says Boldt.

"I don't think we appreciated the handling costs and the support costs like we do today," he explains. "As we focused on our changing business model, we added different metrics that helped us make better decisions on what we bought and serviced locally, what we maintained and redeployed, what we traded in, or what we cycled through. We work our equipment hard, and it needs to make us money, not cost us money."

The role of equipment managers away from Appleton has certainly developed, says Boldt, "because in the past, they were dependent on somebody else for purchasing, maintaining, delivery, inventorying . . . and now they are more responsible for that. I think they always had some

of that, because they would have pieces of equipment they would buy for specific jobs in those particular areas, but it's just been ratcheted up."

Back in Appleton, with the historical market contracting, it forced an evaluation of operations that coincided with the overall shuffling of equipment responsibilities.

"We've done a lot of analysis on certain pieces of equipment that were bread-and-butter pieces, but because of some of the change in the market, are not as desirable anymore," says Boldt. "As an example, some of these smaller industrial cranes are nowhere near in the demand that they were 15 years ago. We're having to adjust our fleet accordingly."

Correspondingly, The Boldt Co. had operated two active yards in the Appleton area, the second as part of a corporate acquisition. A decision was made to consolidate into one active yard, with the second reserved only for slow-moving or dormant inventory. "We had a decentralization from a centralization," Boldt says with a laugh.

This is all, he says, simply part of the moving forward of The Boldt Co.

"If you're going to stay in business, you have to change and you have to be open to different kinds of things. I'm sure for the people who were involved in it, it wasn't an easy thing, because this is the way we've done business for the last umpteen years, and why would it change? To me, it just shows the company is willing and able to change as times change."

"I often tell people that if we were doing exactly what my great-grandfather was doing in 1889, none of this would be here." 



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Availability and Utilization

Similar yet unlike metrics work together to define a machine's usefulness



Mike Vorster

David H. Burrows Professor of Construction Engineering and Management at Virginia Tech. See Construction Equipment.com for full archives of "Equipment Executive."

High availability is easy to achieve if the machine is required to work only a portion of the day or week. It is impossible if the machine is required to work extended periods.

This graphic representation shows how the two metrics relate to a machine's total time of service in the fleet.

Equipment executives use the terms "availability" and "utilization" in slightly different ways to mean something slightly different. The terms themselves are easy to define, but as with most things, the devil is in the detail. A simple definition of availability is the time a machine is required and able to work divided by the time a machine is required to work. Utilization is the time a machine is actually used divided by the time a machine is required and able to work.

The figure displays some of the complexities of calculating availability and utilization and shows how three forms of wasted time combine to reduce the total period of ownership to a much shorter effective working time.

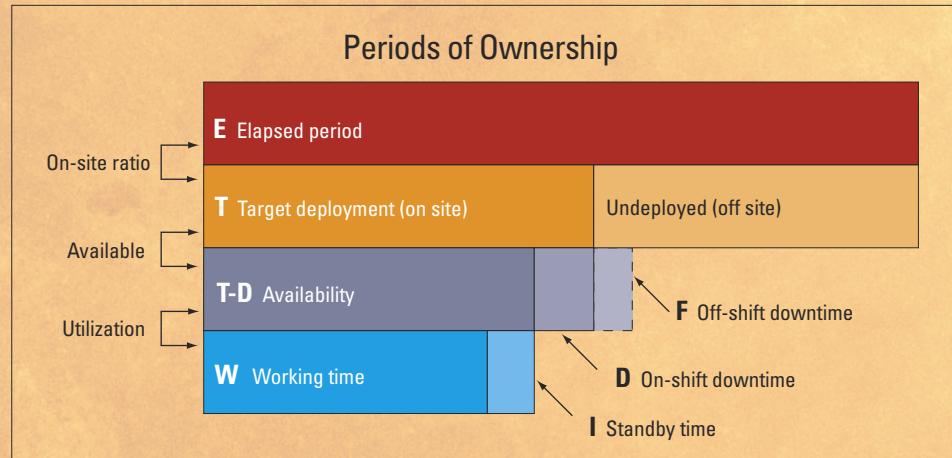
In order to understand the figure, we must first define the total elapsed period, E. We own our equipment for the year, so E is frequently defined as 365 days. The machine can be deployed, or on site, for a certain period, T. The number varies tremendously with machine type, length of construction season, and the like. You would not expect more than 150 days of target deployment for a paver in the northeast, but you might expect close to

300 days of deployment for an excavator in Arizona.

The period of time undeployed, or off site, makes up the balance of the elapsed time. This undeployed time is our first opportunity to look for and manage waste in the system, which includes days when equipment is in the yard and unable to work because of seasonal work restrictions, days when it is in the shop or in the dealer's facility undergoing major repairs, and days when it is in storage because no work is available.

The target deployment period, T, is critical. It sets the rate at which annual costs are absorbed and, more than anything else, determines the economics of owning and operating your own equipment fleet. The on-site ratio ($T \div E$) is an important metric that measures the time a machine is either not expected to work or the time it spends forlornly forgotten at the bottom of the yard. Values below the expected norm preclude fixed-cost recovery and call into question the need for continued ownership.

Once the machine is deployed on site, it can either be available to work or incapable of working due to repairs, maintenance, fueling or any other mechanically based reason. This downtime comes in two forms. On-shift



Availability, Utilization Calculations

$$\text{Availability} = \frac{T-D}{T}$$

$$\text{Utilization} = \frac{W}{T-D}$$

T = The time the machine is required to work.

D = The number of hours the machine is not able to work during the specified work period.

W = The number of hours the machine worked.

Availability and utilization measure different metrics. Each is a ratio of time, using the measurements defined above.

downtime precludes the machine from working as required for the full shift, D. Off-shift downtime, F, absorbs cost, time and effort but does not preclude the machine from achieving the targeted number of shifts or hours. Downtime on shift is a wasted production opportunity, but downtime off shift is frequently time wisely spent on planned or preventive maintenance actions with no negative impact on planned operations. Availability is quite simply the ratio of available hours to target hours, or $(T-D) \div T$.

The following illustrates the difference between on-shift and off-shift downtime and shows the availability calculation. Assume:

- The job on which the machine works is set up to run a nine-hour shift from 7 a.m. to 5 p.m. with a break from 12 p.m. to 1 p.m.
- The operator arrives on time but cannot start until 8 a.m. because no survey information was available.
- The fuel truck, by prior arrangement, fuels the machine and checks fluid levels during the noon break.
- The machine is shut down at 3 p.m. for an overheating problem. A mechanic arrives on site at 3:30 p.m. and works on the machine until 5:30 p.m., when it is fixed and ready for the next day.
- The mechanic then takes the opportunity to perform a required 125-hour preventive-maintenance check. He finishes this task at 7:30 p.m.

The machine was required to work for nine hours. It was able to work for the whole period except for the two hours when it was down during the shift. Therefore:

$$\text{Availability} = \frac{9-2}{9} = 77\%$$

Our illustration reveals two important points. First, availability does not measure total downtime. It measures the degree to which the maintenance personnel are able to support production by ensuring that equipment is up and running for as long as possible during a defined production shift. Second, availability can be much improved by performing all planned and preventive-maintenance actions off shift. High levels of availability are thus relatively easy to achieve if the machine is required to work only a portion of the total hours in a day or week. High availability is impossible to achieve if the machine is required to work extended periods per day.

Once the machine is available, it can either be working, W, or on standby, I, for operational reasons such as work sequencing, waiting for instructions, or weather. (Standby time is the third form of waste.) Utilization, then, is the ratio of working time to available time, or $W \div (T-D)$. The machine in our example worked for six hours (8 a.m. to 12 p.m. and 1 p.m. to 3 p.m.) out of the available seven-hour period. Therefore:

$$\text{Utilization} = \frac{6}{9-2} = 86\%$$

Finally, for these detailed descriptions of "availability" and "utilization" to work, we must pay attention to the data and how it is collected.

1. The target deployment period, T, must be set administratively for the company, site or machine. It is most often set in terms of hours per month with a minimum number of months per year. This enables companies to track availability and utilization on a monthly basis with the on-site ratio tracked on an annual or quarterly basis.

2. Hours worked (W) and on-shift downtime (D) are best recorded by operations when completing their normal daily job-cost reporting.

3. Hours worked, standby time and on-shift downtime must total the target deployment period. It is therefore unnecessary to record standby time if the deployment period is set (nine hours in the example) and if hours worked and hours down (six and two, respectively) are diligently recorded.

4. On-shift downtime that impacts production (two hours in the example) is different from maintenance downtime and mechanical downtime (three and 2.5, respectively). These numbers are best recorded by field mechanics as part of their work order or time-recording system and used to measure the mechanical performance of the machine. 

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At 189 net horsepower, the Caterpillar 963D track loader offers 25 percent more engine output compared to the C-Series model it replaces.



Not Simply a Power Play

Caterpillar D-Series track loaders make more use of increased horsepower

Double-digit percentage increases in horsepower represent only half of the story for Caterpillar's new full-sized D-Series track loaders.

"There are two things you can do to make your machine more efficient and productive — one is to increase the horsepower and the second is to use this energy more efficiently. In this case, we made both changes," says Cedric Gold, who represents track loader and wheeled excavator marketing with Caterpillar's North American Commercial Division.

Editors who gathered recently in Peoria, Ill., for equipment rollouts covering various Caterpillar product lines were introduced to the 953D and 963D track loaders, powered by 6.6-liter, six-cylinder Cat ACERT engines offering net horsepower increases of more than 15 and 25 percent over the comparable C-Series models. At 148 and 189 horsepower, respectively, the new 953D and 963D loaders enhance that output even further via the use of a new load-sensing hydraulic implement system that delivers only the required hydraulic oil flow to the work tool and lift arms, working in conjunction with electro-hydraulic implement controls.

"If you're just traveling with the machine, and the operator is not demanding any hydraulic flow from the system, the pump is simply going to destroke," says Gold. "You're going to then increase your

fuel efficiency, because you're not wasting energy pumping oil through the valve back to the tank. The same principle applies during pushing applications — all the power is available to the tracks since the load-sensing system is again avoiding unnecessary pumping of the oil."

Further enhancing the efficiency of the hydrostatically driven 953D and 963D track loaders is the use of position sensors on the lift and bucket cylinders, allowing the operator to set kickouts with a switch from the cab.

A choice of joystick or two-lever control is available for bucket lift and dump, as part of a new sealed, pressurized cab featuring an adjustable, vibration-isolated, air-suspension seat. A hydraulic demand fan provides lower sound levels and improved fuel economy, as well as optimum cooling performance.

As an option, the Caterpillar Messenger system is available to the D-Series track loaders. This electronic operator interface displays full text and machine health information, and allows drive train and implement response adjustments.

With their ability to cover territory wheel loaders cannot, track loaders are designed to work in a wide range of general and building construction, solid-waste handling, demolition and industrial applications.

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Basic Specs: D-Series Track Loaders

	953D	963D
Engine Model	6.6 ACERT	6.6 ACERT
Net Power (hp)	148	189
Operating Weight (lb.)	34,881	45,128
GP Bucket Capacity (cu. yd.)	2.42	3.2
Digging Depth (in.)	5.2	5.4
Reach at Full Lift Height (in.)	47	54
Bucket Hinge Pin Height (in.)	142.1	155.1
Overall Machine Length (in.)	245	273.3



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Compact Backhoe Is Contractor Tough

Kubota replaces the B21 with a 5,500-pound, four-wheel-drive backhoe-loader

Kubota replaced its 10-year-old B21 compact backhoe loader with the much larger B26, positioning it between other compact TLBs in the mid-20-horsepower range and Deere's 41-horsepower 110.

A 26-horsepower Kubota diesel delivers 23 percent more horsepower and 18 percent more loader lift capacity than the B21. Backhoe digging depth increased 9 percent to 8 feet 2 inches, and lift capacity increased 18 percent to 780 pounds.

The 5,500-pound B26 is at least a ton heavier than all its contemporaries except Terramite's T7. It outweighs the T7 by 25 percent. The new Kubota is also the only four-wheel-drive tractor in its horsepower class.

Differential lock on the front axle promises flexible traction control.

Hydrostatic drive is common in the 25-horsepower range, but Kubota adds a three-range hydrostat with rocker-style pedal more like compact backhoes with 40-plus horsepower.

The B26's 11-gallon-per-minute hydraulic pump flow is half that of Deere's 110, but at least three gallons per minute more than its contemporaries.

Spill-guard hydraulics keep the bucket level as the loader arms raise to prevent spilling the load back on the tractor. The loader comes with a skid-steer-type quick-attach coupler and



Kubota's B26 is the only backhoe in the 25-horsepower range that can be bought with a bucket thumb and auxiliary hydraulics.

is available with auxiliary hydraulic lines to power various tools.

Auxiliary hydraulics capable of pushing 7 gallons per minute are options on both the loader and the backhoe.

The curved, excavator-style backhoe boom; the stick; and bucket are all now under the command of a refined inching valve designed for smoother, more precise functions. The differences in performance are subtle, but after some practice on the B26 and its predecessor, even this inexperienced operator could multi-function the stick and boom through a level cut.

Kubota says it takes two people five minutes to detach the frame-mounted backhoe and set the three-point lift arms in place. Two product specialists demonstrated the change in less time. The three-point lift arms produce nearly 60 percent more power than the B21.

Close inspection of the B26 supports Kubota's claims that it was designed from scratch as an integral backhoe-loader for hard work. Despite the considerable jump in size from the B21, it is said to be priced less than 2 percent more than that model.

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B26 Backhoe-Loader vs. 25-horsepower Range

	Engine/ Net HP	Bucket Dig Force (lbf)	Stick Dig Force (lbf)	Loader Bucket Force (lbf)	Operating Weight (lb.)
JCB MINI CX	JCB/20	2,884	3,320	3,607	3,373
Kubota B26	Kubota/23.3	4,211	2,123	2,344	5,531
Allmand TLB-225	Kubota/23.5	2,875	2,265	2,600	3,211
Lay-Mor Digmaster	Honda/24	4,100	2,500	2,200	3,080
Terramite T7	Kubota/26	3,100	2,800	4,400	4,180

Source: SpecCheck.com

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Market Watch Lite

By KATIE WEILER, Managing Editor

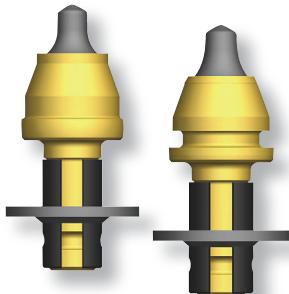
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Caterpillar

AccuGrade Compaction is a GPS system designed for mapping and soil-compaction measurement on soil compactors. It uses a color display that provides compaction data, including working speed, amplitude, frequency, compaction values, and number of passes. The compaction values, says Cat, are displayed as a graduated color scale that is calibrated to match the characteristics of the material being compacted. The target compaction value is presented in a particular color, and when the color of an area matches the target color, the operator knows that optimum compaction has been established.

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Kennametal

Road Razor RZ Series represents a re-engineering from tip to tail of Kennametal's road-planing tools. A new tip profile geometry improves tool rotation for longer tool life and less chipping. The carbide tip and tool body are forged with an advanced process, making the tip the hardest part of the road-milling tool. Initially available in eight configurations, RZ Series tools offer two body styles — one with a puller groove to assist in tool removal and another without the groove for customers who use a hand or air punch.

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Landa

LanCom wireless remote is available for five models of pressure washers: VHG, PHWS, VNG, EHW, and SEA. The remote controls the pump, burner and detergent injection operations from up to 300 feet away, according to the company.

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Kaeser

Featuring the proprietary power-saving Sigma Profile rotary screw air end, the Mobilair M100 compressor produces 375 cubic feet per minute. It is powered by a Kubota diesel engine and features a high-capacity, cold-start battery. As well as allowing quick access to components for servicing, the weatherproof canopy and wide-opening gull wing doors reduce noise levels. The steel chassis, torsion bar suspension, and instrument and light package combine for easy portability and transport stability.

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JP Carlton

The 1260 wood chipper has a 12x6-inch throat opening. The 6-inch disk-style chipper has dual top and bottom feed rollers and high-torque, dual-feed motors. Digitally controlled auto-feed system stops and feeds materials based on parameters set by the operator.

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Daniel Manufacturing

The Rake attachment handles site-prep work and clears debris without piling up a lot of dirt. It comes in 6- and 7-foot sizes with options and a 40-inch for walkbehinds. An optional dozer extension enables faster leveling, and ripper shanks can be lowered to loosen up undisturbed soil or deep compaction from heavy equipment.

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Market Watch Lite

► eBid Systems

eBid eXchange 2007 Winter Edition is a web-based solution for procurement and estimating professionals in AEC, utilities, transportation, the public sector, and manufacturing. Five modules — Invitation, Documents, RFQ, Contracts, and Compliance — make eBid eXchange affordable and allow organizations to ease into eProcurement. Modules can be added "with the flip of a switch." Users can transfer information to and from eBid eXchange using Excel. The most basic package starts at less than \$85 per month.

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► Chicago Pneumatic

The Chicago Pneumatic CP 1210-Series of pneumatic breakers includes 10 models (all with a 35-pound rating) and are designed, says the manufacturer, for light- to medium-duty chores, such as demolition of masonry floors and walls, breaking frozen ground and breaking pavement. Models vary by shank size and by design — basic, silenced or vibration-reduced, but all require airflow of 59 cfm and deliver 1,400 blows per minute.

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► Laser Reference

Pro Shot Alpha is a long-range automatic laser level suited for projects such as large building pads, commercial foundations and grade checking over long distances. In its standard operating mode, the instrument provides one-button automatic leveling, but it can also be used as a manual grade laser that self-levels in the cross axis. When the instrument completes its initial leveling, an Elevation Alert program constantly checks for disturbances that could affect accuracy. According to the manufacturer, the Pro Shot Alpha is accurate to $\pm .060$ of an inch at 100 feet, has a working diameter of 2,000 feet, and will operate for more than 100 hours on four C-size alkaline batteries.

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► Allmand Bros.

By introducing geographic-specific features to the PRO Series, Allmand Bros. has re-configured its Night-Lite model offerings. In addition to the standard Night-Lite PRO, available now are the Night-Lite PRO International, PRO CSA Approved and PRO Arctic Special models. Rather than GFCI duplex outlets, the International package has two Schuko receptacles and a 6-kilowatt, 220-volt, 50-hertz power generator to make it suitable for locations outside the United States. Likewise, the CSA package meets all Canadian Standards Association requirements with a VIN package, UL-approved luminaire and CSA-approved wiring harness.

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► Vermeer

The MX240 modular mixing system is designed to allow fast, high-volume mixing of drilling fluids used for horizontal directional drilling (HDD). The mixer can support either a 750- or 1,000-gallon tank. The system's primary components include the power pack, a 3-inch centrifugal pump, and a venturi-type mixing hopper for injecting additives. If the hopper is used, its cone-shaped lower end prevents additives from collecting at the bottom. But a new venturi design, says Vermeer, features a direct-injection hose, which allows injecting liquid drilling additives directly into the tank through the venturi without using the hopper.

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Topcon

New total stations and software are designed to make "construction layout simple and affordable," says Topcon. The Pocket Layout software is paired with the company's new Green Label total stations. The initial Green Label products are the GTS-100N total station series. Two models are available, the GTS-102N and the GTS-105N, featuring 2- or 5-arc second accuracy, respectively. In addition to the two total stations, two new automatic levels, the AT-G4 and AT-G6 round out the initial "Green Label" optical product line.

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Dynapac

Four LT-Series rammers are designed for compaction chores in cohesive soils. Models LT5000 and LT6000 have operating weights of 137 and 150 pounds and deliver impact forces of 2,985 and 3,330 pounds, respectively. The 170-pound LT7000 generates an impact force of 4,200 pounds. The diesel-powered LT800 delivers 5,040 pounds of force per blow.

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Kipor

The KDE5000TA diesel generator runs quietly with a specially designed enclosure, intake silencer and resonator. Maximum output is 5.0 kVA. A digital control panel allows easy view of performance, load characteristics, voltage, power, frequency, generator run time, and battery charge voltage. It features an electric starter, and the generator runs for 8.5 hours on a tank of fuel, the company says. Price is \$2,179; commercial warranty of one year.

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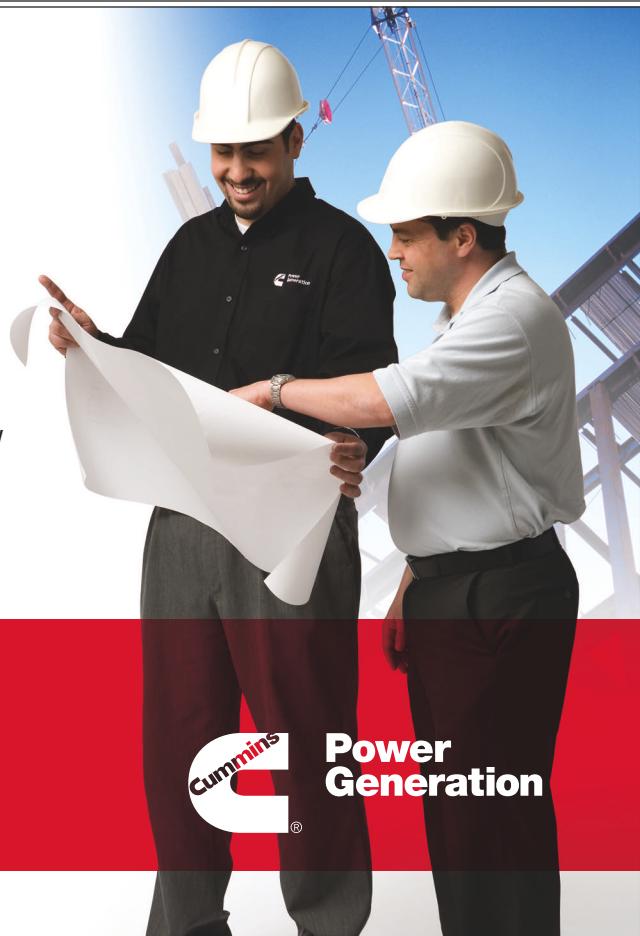
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Market Watch Lite

► Creekside

Three models of self-dumping hoppers are designed for construction and recycling applications. Hopper capacities are 2,000, 3,000 and 6,000 pounds. They can be customized to fit into tight corners or under production machines with low clearance, the company says. Optional casters provide added maneuverability.

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► Diamond Products

Diamond Products has refined its Core Cut CC500M gas-powered masonry saw, which is available with either a 5.5- or 6.5-horsepower gasoline engine. The new saw features a "stay-level" design for its blade guard and a vibration-isolating engine mounting system, coupled with a 14-inch-blade capacity, standard water pump and standard depth-control lock.

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Construction Lifters

Caldwell Group offers expanded capacities in Model 108 Pipe Tongs. Designed to fit a wide range of applications, they are now available in six sizes from 2 to 15 inches in diameter and up to 1-ton capacity. They feature curved gripping arms for a positive grip on pipe, round bars, castings, or other round shapes. Padded tongs are optional to protect polished surfaces.

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Honda Power Equipment

Honda's EU6500i portable generator produces 6,500 volt amperes (VA) — or watts — of power. Compared to the EX5500 it replaced, the EU6500i is more than 33 percent smaller. Noise generated at rated load has been reduced by 5 dB(A). Fuel consumption at 1/4 load has been reduced by 30 percent. The unit has a dry weight of just 253 pounds. Its inverter produces enhanced commercial-grade electricity with a wave form distortion factor of less than 2.5 percent.

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Topcon

The LPS-900 3D machine control system has the company's X-TRAC tracking technology and integrated radio communications for quicker speed. It can be used as a base for machine automation or traditional robotic surveying and supplies grade information in a continuous stream via high-speed radio.



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Specification (Unit of Measure: English)	Allmand Brothers TLB-335 ESL	Bobcat B100 B	Caterpillar 580M Series 2	Caterpillar 430E
Engine make	Iveco	Kubota	Caterpillar	Caterpillar
Engine model	SLD1	D1105-T	445M2	3054D DT
Net engine power - hp	0.0	31.5	76.0	97.0
Drive	Hydrostatic	Hydrostatic	Synchronous/Pvt Shrtl	Synchronous/Pvt Shrtl
Transmission type	1/1	1/1	4/4	4/4
No. of speeds (fwd/rev)	5.5	4.7	24.5	26.8
Max. travel speed - mph	2WD	2WD	2WD/4WD	2WD/4WD
No. of drive wheels	2WS	2WS	2WS	2WS
Steering configuration				
Hydraulics	8	11.7	28.5	43
Hydraulic pump flow - gpm	2400	..	3050	3611
Relief valve pressure - psi				
BACKHOE	12° - 36°	..	12° - 36°	12° - 36°
Backhoe bucket width range - in				
Max. dig. depth, optional extended stick - ft/in	18' 3"	19' 6"
Loading height, standard stick - ft/in	7' 8"	..	11' 2"	13'

3

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Specification (Unit of Measure: English)	Allmand Brothers TLB-335 ESL
Engine make	Iveco
Engine model	SLD1
Net engine power - hp	0.0
Drive	Hydrostatic
Transmission type	1/1
No. of speeds (fwd/rev)	5.5
Max. travel speed - mph	2WD
No. of drive wheels	2WS
Steering configuration	
Hydraulics	8
Hydraulic pump flow - gpm	2400
Relief valve pressure - psi	
BACKHOE	12° - 36°
Backhoe bucket width range - in	..
Max. dig. depth, optional extended stick - ft/in	..
Loading height, standard stick - ft/in	7' 8"

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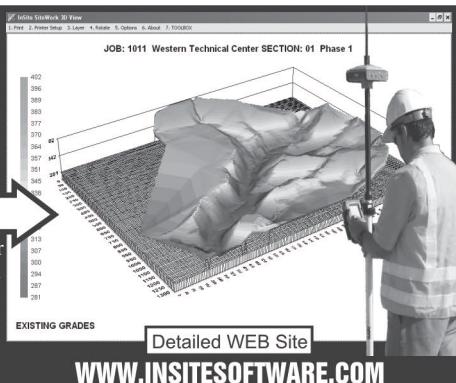
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The Thompson Pump

Inventor establishes company that would become a leading manufacturer of rotary pumps for wellpoint dewatering and horizontal under-drain dewatering systems

Thompson Pump & Manufacturing was founded in Port Orange, Fla., in 1970 by George A. Thompson and his two sons, Bill and George Jr. Previously, George Sr. had extensive experience in the dewatering industry, and had worked on numerous large projects including the Vehicle Assembly Building and launch pads at Cape Canaveral, Fla. As he gained experience in the field by working first-hand on solving dewatering problems, he found deficiencies in pumping products then available on the market, and thought he could improve them with some engineering modifications. He also detected a need for specialized pumps that could perform tasks beyond the capabilities of existing equipment. So George Sr. decided to get into the pump-manufacturing business himself.

After establishing the company, George Sr. put his mechanical aptitude to work and was soon inventing and patenting pump products that earned the company a reputation for innovation. In 1973, Thompson adapted the rotary pump for wellpoint dewatering — the first time a rotary pump had been used for this application. It was so successful that it became Thompson's most important product, and the company still maintains its leadership in this market. Also in the 1970s, Thompson invented the Vacuum Under-drain Pipe for dewatering under high vacuum. Instead of using the usual vertical wellpoint pipes, his method employed a series of horizontal pipes to drain large areas efficiently. Although an excellent idea, the system didn't work as well as it should because horizontal boring and directional-drilling technology was not sufficiently advanced. Following major advances in horizontal-drilling technology in 1994, Thompson was able to introduce its patented "FilterVac" pipe, working on similar principles to the earlier system, but this time with exemplary success.

In 1977, Thompson introduced its own version of vacuum-assisted, dry priming pumps that allowed standard pumps to prime without first filling the pump housing with water. It also enabled pumps to handle large amounts of air and reach higher heads for demanding applications.



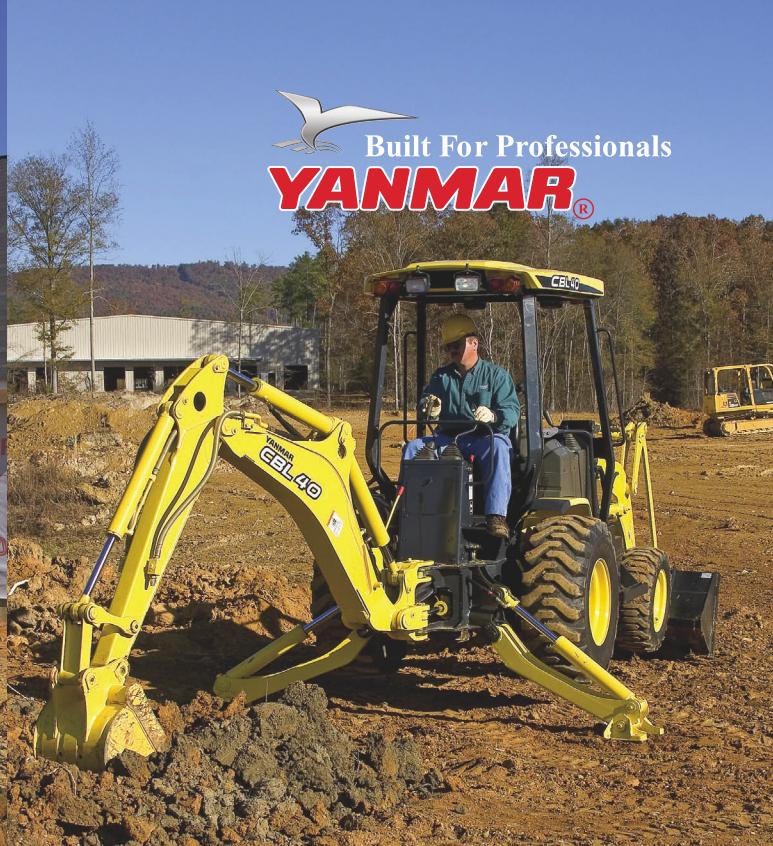
In 1973, Thompson adapted the rotary pump for wellpoint dewatering — the first time a rotary pump had been used for that application.

Product innovation continued in the 1980s with the introduction of Thompson's hydraulic power units with submersible pump heads, mainly for use in mines or quarries with high-head, high-lift applications. A patented, environmentally safe priming system called "Enviroprime" was launched in 1997 — a unique compressor-assisted priming system for safe sewer bypass and similar applications.

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