

 Reed Business  
Information®

**28** How does the  
Zahn perform on site?



**34** Hot, new  
products from  
Conexpo-Con/Agg



**48** Sterling  
360 LCF on  
the test track



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## Quick on Its Tracks

**John Deere's innovative  
764 High-Speed Dozer  
promises potential  
p. 70**

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## COLUMNS & DEPARTMENTS

### Editorial 11

Running ignorant

### Managers Digest 21

JCB set to double distribution

### Equipment Executive 67

Avoid the trap of delayed replacement

### Iron Works 90

The Champion 100T grader

## PRODUCTS

### Market Watch 15

This month's primary machine introductions



### Spotlight 65

Light equipment

### Earthmoving Report 70

John Deere's 764 HSD changes the shape and speed of grading

### Compaction Report 73

Rental-friendly roller moves forward

### Truck Report 75

Aerodynamic LoneStar sports "wild styling"

### Market Watch Lite 76

Small solutions to jobsite challenges

Innovations & Ideas 83

Advertisers Index 87

Classifieds 88

Cover photo: George Pfoertner ©

## FEATURES



## FIELD REPORT

### 28 Ditch Witch Zahn: Dedicated Versatility

The new Zahn might best be described as a power unit that can accommodate various work tools, which actually form the front end of the machine. The idea behind the Zahn, says Ditch Witch, is to integrate the work tool with the power unit in a manner that allows the two basic components to function as a dedicated machine and, subsequently, to deliver dedicated-machine performance. It is designed to work as a dedicated trencher, cable plow, backhoe, dumper, tool carrier, tiller or stump grinder.



# Contents

## SPECIAL REPORT

### 34 Innovations Abound at the "Big Show"



Conexpo-Con/Agg 2008 outshone its siblings with an impressive array of product intros. We bring you just a sampling, with many more available at [ConstructionEquipment.com](http://ConstructionEquipment.com). From Caterpillar's D7E electric-drive dozer to Bobcat's suspended undercarriage, to John Deere's 764 High Speed Dozer, we showcase all the favorites from the show floor.

## HANDS ON TRUCKING

### 48 Sterling 360 Scoots Through Circles

LCFs — informally called cabovers — prevail in most overseas markets because of urban congestion and stricter length laws. Truck Editor Tom Berg drives the Sterling 360, which is Sterling's version of Mitsubishi Fuso's made-in-Japan FE145, a Class 4 LCF rated at 14,500 pounds. Berg says the 360 "is a slick, quick, nimble truck that deserves more sales than it gets, and that goes for all imported and domestic LCF versions sold here."



## BUYING FILE

### 52 Commercial Pavers Outgrow Their Name



As asphalt surfacing jobs have grown, small pavers are gaining highway-class features. New-machine introductions over the past six months by five of the seven paver manufacturers with machines weighing between 15,000 and 40,000 pounds suggests that a lot of commercial paving is challenging traditional boundaries of the machine category.

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## Running Ignorant

As we tell our children, ignorance is not bad. Ignorance simply means somebody doesn't know something. Being ignorant is not the same as being stupid. In fact, recognizing ignorance is the first step toward understanding and improvement.

We have uncovered a lot of ignorance in our continuing series on the environmental and emissions issues facing equipment managers, "Running Green." Many of the people responsible for managing the fleet assets of the nation's contractors, municipalities and nonconstruction companies are ignorant about the situation.

So we set out to determine what the industry does know, to benchmark, if you will, current understanding so we can mold our series to be the most useful and informative it can be. We mailed questionnaires to a cross-section of our readership and to members of the Association of Equipment Management Professionals. Nearly 20 percent responded, giving us a base of 442.

What we found didn't surprise us, and it should comfort and encourage those managers who are finding themselves playing catch-up.

A fundamental question is who governs emissions in your area, to which 31 percent said they didn't know. Given the choice between state, local or federal, this seems to indicate the level of confusion developing among fleets who operate in nonattainment areas, metropolitan areas, across regions, and those who work in rural areas. If you don't know, it's time to find out. Regardless of your operation's market range, regulation is heading your way.

Months ago, we suggested in this space that managers should consider a new function within their fleet structure: Fleet Environmental Manager. Our research shows why. Nearly half of respondents say "nobody" has official responsibility for fleet emissions/environmental compliance. More ominous: Eight out of 10 do not have a formal emissions plan or strategy.

Recognizing ignorance is the first step toward understanding. Not following up, however, is irresponsible. Your fleet needs to meet emissions and environmental standards, and you're the person responsible for the fleet. Benchmark your own understanding, learn what the standards are for your fleet today and beyond, and move on it. It's the responsible thing to do.



Rod Sutton, Editor in Chief

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# MARKET WATCH

By KATIE WEILER, Managing Editor

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## Case

The Case CX130B excavator has been upgraded to Tier-3 certification with an electronically controlled, 95-horsepower (net) Isuzu engine. According to Case, the new machine's common-rail fuel-injection system and redesigned hydraulic system enhance fuel efficiency by 15 percent. Hydraulic-system refinement for the 27,800-pound unit includes more hydraulic horsepower, plus routing of return oil (normally flowing directly to the tank) to combine with pump flow in order to reduce overall cycle time. Sound levels inside the cab, says Case, are as low as 68.5 dB(A).

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## Pettibone

Pettibone's complete line of telehandlers now features a 1,000-pound increase in lifting capacity. The company made a few modest design changes, and the up-rating was verified by ANSI B56.6 tilt table stability testing. All 12 telehandler models have been up-rated, and all machines have been renamed to reflect the change.

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## Genie

Genie GTH-5519 compact rough-terrain telehandler has a redesigned cab and increased load capacity at maximum reach. Cab's FOPS grid is integrated into the cabin structure, underneath the glass, reducing overall cab height to 6 feet 4 inches. Lift capacity has increased to 1,900 pounds at 11 feet horizontal reach — 200 pounds more than the previous model. Engine options include

either a Deutz or Perkins engine, Tier 3-compliant. Upgraded hydraulics include reversible and continuous flow functionality on the auxiliary line.

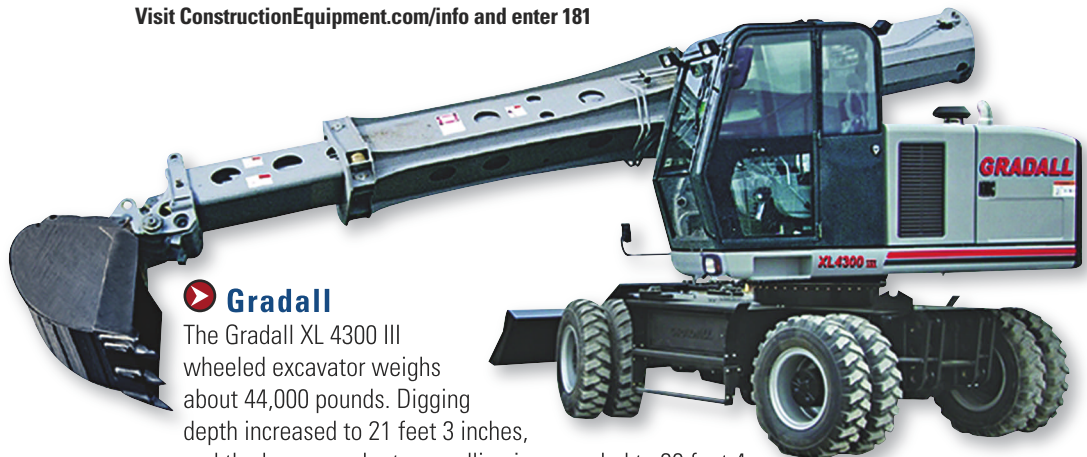
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## Gradall

The Gradall XL 4300 III wheeled excavator weighs about 44,000 pounds. Digging depth increased to 21 feet 3 inches, and the boom reach at groundline is expanded to 30 feet 4 inches. Front axle oscillation locks provide stability without lowering outriggers. Powered by a 173-horsepower Detroit OM 904 diesel, the carrier is 9 inches shorter and tail swing is reduced by 12 inches.

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# Market Watch

## ◀ Wacker

Wacker has introduced four, articulated, compact wheel loaders (WL 18, WL 25, WL 30 and WL 50). They range in horsepower from 25 to 75 and in operating weight from about 4,000 to 11,000 pounds. Also in Wacker's new wheel-loader range are two all-wheel-steer models, the 280 and 850. Weighing 7,055 pounds, model 280 uses a 49-horsepower Yanmar engine and is equipped with a 0.85-cubic-yard bucket. The 850 is a 9,921-pound machine with a 66-horsepower Deutz diesel.

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## Komatsu

Replacing the Komatsu WA320-5, the WA320-6 wheel loader has an operating weight of 31,590 to 32,070 pounds and a heaped bucket capacity of 3.0 to 4.2 cubic yards. Hydrostatic transmission system allocates power as needed and adjusts automatically to the tractive effort demands on the machine. Breakout force is 29,060 pounds, and static tipping load is 27,635 pounds straight.

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## ▼ Allen

The HDX 600 (Hydra-Drive-Extreme) is a double-4-foot-diameter riding trowel that features all-hydraulic drive and steering; a 44-horsepower liquid-cooled Kubota diesel engine; two 46-inch-diameter, 5-blade non-overlapping rotors; rotor speeds to 135 rpm; electric-powered spray system for retardant application; flip-up seat; and removable screens for access to engine, clutch and driveline.

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## ▶ Case

Four compact excavators — the CX27B, CX31B, CX36B and CX50B, ranging from 5,566 to 10,261 pounds — have been upgraded to Tier 4 certification with Yanmar engines that range from 21.3 to 39.8 net horsepower. The zero-tail-swing models are designed to be easy to trailer, yet they reach maximum dig depths from 8 feet 4 inches to 11 feet 9 inches. All models are equipped with a hydraulically controlled backfill blade.

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## ▶ Terex

The seven-axle Terex RD7000 rear-discharge transit mixer features a 29-foot outer-bridge length with six axles under the rear fender. The truck can deliver an 11-cubic-yard payload (based on 4,000 pounds per cubic yard of concrete) or a gross permissible weight of 76,820 pounds. The RD7000, which combines a 12-cubic-yard drum with a Sterling LT9500 chassis, has a low-profile design, resulting, says Terex, in enhanced traction and stability on site. The mixer drum's 42-inch opening is designed to deliver efficient discharge of a wide variety of mixes.

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## ▶ Bobcat

The Bobcat 418 compact excavator, replacing model 316, features zero tail swing (with tracks extended) and has an operating weight of 2,593 pounds and a maximum digging depth of 6 feet. The new excavator has pilot-operated joysticks and allows choosing between the ISO and standard patterns via a control-pattern-selector valve. The 418's undercarriage retracts to less than 28 inches, and the tip-over-protective structure folds down, permitting the machine to fit through a standard doorway. The unit also features two-speed travel and top-mounted boom cylinder.

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# Market Watch



## LBX

LBX Spin Ace Series minimum-swing-radius excavators includes the 75SA, 80 Swing Boom, 135SA and 225SA. Operating weights range from 17,500 to 53,800 pounds. Isuzu Tier III diesels

carry a two-year, 3,000-hour warranty. Wide, low-noise cab has expanded leg and elbow room, and large entry door enables easy egress.

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## Terex Roadbuilding

The Terex FDB7000 front-discharge transit mixer, with an 11-cubic-yard mixer and a gross permissible weight of 79,500 pounds, is now the largest unit in the Terex mixer-truck line. The new Total Control System features an electric-over-hydraulic joystick that operates drum start/stop; material charge/discharge; main chute up/down and left/right; and fold/unfold of optional hydraulic folding chutes — plus it controls truck forward/reverse travel direction on the jobsite when the operator switches travel control from the dashboard to the joystick.

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## Kobelco

Kobelco SK295LC Acera Mark 8 features an FPT turbocharged diesel. The company's PowerBoost system increases bucket breakout force by 10 percent, on command, and the Intelligent Total Control System provides progressive power.

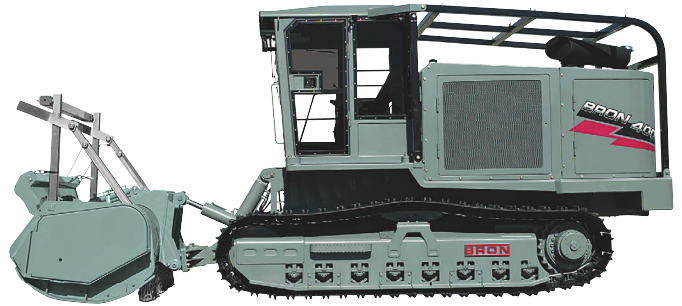
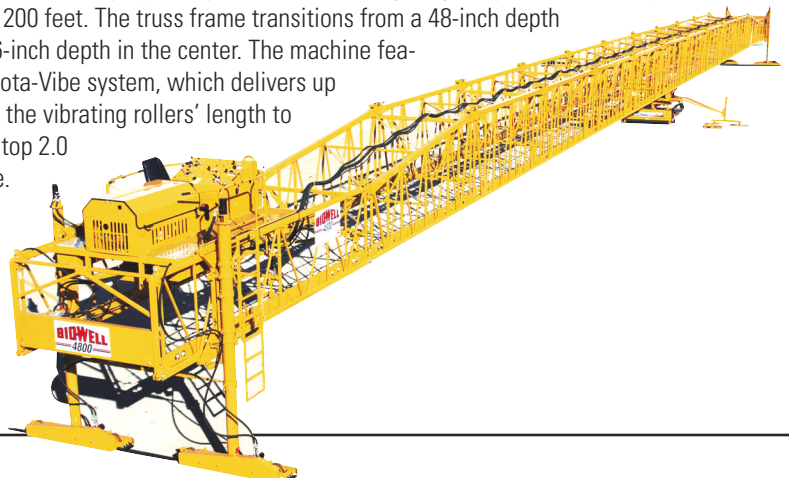
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## Bid-Well

According to Terex Roadbuilding, the Bid-Well 4800 automatic roller paver, featuring a newly designed truss system, is the first paver on the market to reach paving widths of 200 feet or more. When paving beyond 150 feet, the paver's frame is constructed with ultra-high-strength steel that is nearly 120 percent stronger than the conventional steel typically used in Bid-Well pavers. The proprietary steel allows configuring the paver in a variety of widths exceeding 200 feet. The truss frame transitions from a 48-inch depth at the legs to a 66-inch depth in the center. The machine features Bid-Well's Rota-Vibe system, which delivers up to 5,000 vpm over the vibrating rollers' length to reconsolidate the top 2.0 inches of concrete.

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## BRON

The purpose-built BRON 400XHP Forestry Mulcher, or Brush Tractor, is designed for environmentally friendly removal of brush from seismic lines, from electric-line and pipeline sites, commercial sites, recreational trails and forestry fireguard situations. Wide tracks, says the manufacturer, provide stability and high flotation for sensitive environments. The machine is powered with a 440-horsepower, Tier-3-compliant Caterpillar diesel engine.

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## INDUSTRY NEWS

### Senior Editor Honored By Construction Writers

Walt Moore, senior editor for *Construction Equipment* and [ConstructionEquipment.com](http://ConstructionEquipment.com), was awarded the Construction Writers Association's (CWA) highest honor earlier this month. CWA gave Moore the Silver Hard Hat Award at its annual meeting in Washington, D.C.

The Award was conferred by CWA's board of directors for Moore's service to the construction industry. Testimonials noted Moore's "thoroughness and attention to detail"; his "dedication, knowledge, and perseverance to get the best information and transform this into very readable, interesting articles"; and his "distinct, down-home style of writing that lets

him communicate the most complex information imaginable."

Moore has been senior editor with *Construction Equipment* for more than 25 years, racking up 50 journalism awards, including several from CWA

and five Jesse H. Neal Awards. Moore created "Field Test," the industry's only independent testing of new construction equipment, and he also writes the magazine's Hands-on Earthmoving articles.

"I've always just done the job that's before me,"

Moore told attendees at CWA's annual meeting. "And if you think I've done that with distinction then I'm humbled, because you all do your jobs so well and with such dedication."



## MANUFACTURER NEWS

### JCB Set to Double Distribution

JCB plans to double its North American distribution network within the next four years or so, according to John Patterson, managing director/CEO for the British manufacturer. Patterson and other JCB officials spoke to a group of North American journalists last month.

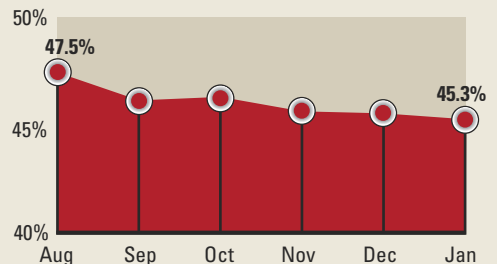
Although headquartered in England, JCB has a major manufacturing and training footprint in Savannah, Ga., a presence to be expanded later this year through a \$35-million investment in a 200,000-square-foot parts distribution warehouse. These two moves, Patterson says, are key to the company reaching its goal of 10 percent market share in North America.

Patterson says JCB wants 250 distributors compared to the current 130 dealers who operate 300 outlets. JCB will deploy a dealer development team whose first targets will be areas where JCB has no coverage.

## USED EQUIPMENT

### January Values Down 1.1%

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



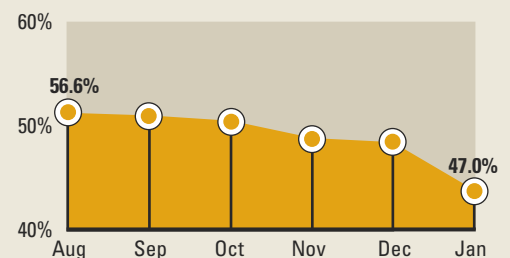
Note: Orderly liquidation value is expressed as a percentage of replacement cost (average cost paid for a new unit by large rental companies and dealers) for the average age of equipment within that category.

Includes 10 categories of equipment common to rental fleets.  
Source: Rouse Asset Services

Orderly liquidation values decreased across the major categories in January, dropping 1.1 percent from December. For the six months ending January, values were down 5.3 percent, led by compaction equipment and wheel loaders.

### Wheel Loaders

(Avg. orderly liquidation value as % of cost)



Wheel loader values have dropped 15 percent in the six months ending January, and average selling age is 77 months.



# Managers Digest

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## LETTER TO THE EDITOR

### Big Performane in a Small Package?

On the World of Concrete show floor, John Deere found a unique way to preview the 313 — smallest in its 300-Series skid-steer line that Deere officially introduced at Con-expo-Con/Agg 2008. The box made to look like die-cast-model



packaging suggests that Deere believes its “toy” skid steer packs a lot of potential into a 59-inch-wide package. Certainly performance may prove that message, but comparing speci-

cations suggests that the 45-horsepower 313 fits snugly in the middle of the 1,251- to 1,350-pound (standard operating load) skid-steer class.

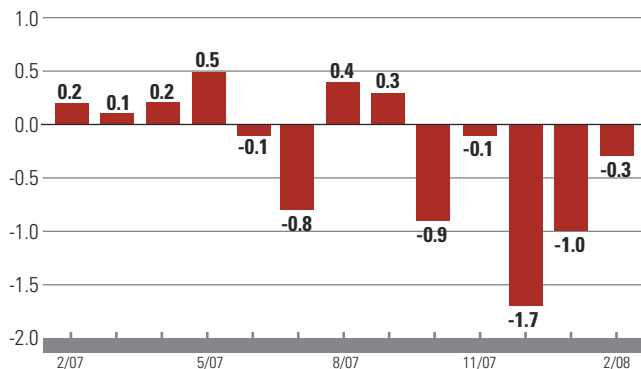
— LARRY STEWART

## STATUS & FORECAST TOTAL CONSTRUCTION SPENDING

Total construction spending fell 0.3 percent in February, which marks the fifth consecutive decline and overall is 8.5 percent below the peak level in March 2006. Construction volume, after subtracting project cost increases, declined about 15 percent over the same period. Total construction spending is expected to resume rising by the end of the spring due to an end to the housing decline and continued growth, although slowing in nonresidential markets. Spending will decline 0.7 percent in 2008 compared to 2007, and then rise 9.3 percent in 2009.

For more analysis, visit Economic Outlook at [Construction Equipment.com](http://ConstructionEquipment.com).

(% change from previous month)



Source: U.S. Department of Commerce

## MANUFACTURER NEWS

### • Hitachi to Build in Russia

It appears Hitachi Construction Machinery is moving to join Japanese-based rival Komatsu Ltd. in the local manufacture of giant excavators and shovels for the burgeoning Russian market. Via a joint venture being formed with Moscow-based Techstroycontract Ltd., Hitachi will start making excavator and shovel parts in Russia this year, confirms Hitachi, which will retain a majority stake in the venture.

### • Topcon Buys Sockia

Topcon and Sockia — both with corporate headquarters in Japan — combined effective Feb. 5. Topcon spent more than \$194 million on about 32 million shares of Sockia stock — about 94 percent of outstanding stock. Sockia will become a wholly owned subsidiary of Topcon Corporation after all steps are completed.

### • ASV Becomes Terex

Terex Corp. announced on Jan. 14, 2008, that it “had reached a definitive agreement to acquire A.S.V., Inc. through a tender offer followed by a merger.” The transaction is valued at about \$488 million, and it was completed on March 4, 2008. Headquartered in Grand Rapids, Minn., ASV manufactures compact rubber track loaders and undercarriage modules, the latter both in its own factories and in those of its subsidiary operation, Loegering Mfg.

According to Terex, Caterpillar will tender its stock and has given “strong assurances” that the Caterpillar/ASV agreement, under which ASV supplies track modules for certain of Caterpillar’s Multi-Terrain Loader models, will not be affected. Approximately 55 percent of ASV’s estimated 2007 revenue of \$205 million was derived from sales of compact track loaders, while OEM sales (primarily to Caterpillar and Vermeer) accounted for 34 percent, and sales by its Loegering operation accounted for the remaining 11 percent.

### • Husqvarna Acquires Soff-Cut

Husqvarna has acquired Soff-Cut International, based in Corona, Calif. In 2006, Soff-Cut reported sales of approximately \$35.4 million.



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\*Source: Michelin Research Center. Compared with XM27 tire.  
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# Managers Digest

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## MANUFACTURER NEWS

### Case Crowns Backhoe Champion

At Case's North American Rodeo finals at Conexpo in March, Nick Market of Windsor, Ontario, beat four other finalists to win the title of Case Rodeo Series North American Champion. Along with the title, Market was awarded the grand prize — a 50th Anniversary limited-edition Case 580 Super M Series 2 backhoe loader, valued at nearly \$120,000.

From a field of 4,200 loader/backhoe operators from across the United States and Canada, Market joined top-five finalists Jeff Coble, Dennis Drake, Corey Jessen and Tim Reynolds. An operator with Sherqy Con-



(Left to right) Dennis Drake, Jeff Coble, Nick Market, Corey Jessen and Tim Reynolds were the five finalists in the 2008 Case North American Rodeo Championships. Market walked away with the keys to a backhoe loader valued at \$120,000 for his win.

tracting in Windsor, Market has been operating backhoe loaders for nearly 30 years.

The rodeo completes Case's year-long celebration of the 50th anniversary of the first factory-integrated tractor backhoe loader manufactured by Case.

## INDUSTRY NEWS

### California Approves Cat Particulate Filter

The Caterpillar Diesel Particulate Filter System for off-highway machines has earned Level 3 Plus verification from the California Environmental Protection Agency Air Resources Board. The verification formally recognizes the Caterpillar passive filter system as effective and reliable in achieving at least an 85 percent reduction in particulate matter exhaust emissions. The system also meets the California 2009 regulation governing nitrogen dioxide emissions.

The verification governs wheeled machines in the 175- to 300-horsepower range, but Caterpillar expects it to be extended to tracked machines and the horsepower range extended as more field-test data is considered. Effectively, the verification allows owners of Caterpillar machines meeting Tier 1, 2 or 3 with a maximum 0.2 grams per horsepower-hour to retrofit with the filters and comply with California rules governing in-use, off-road heavy-duty diesel vehicles.

## JOB SOLUTIONS

### Artic Dump Cuts Costs

Sunrise Unlimited is working on a 50-acre residential development, consisting of 88 homes when completed. Company president Mike Aspinwall has found an 11-ton Hydrema 912C articulated dump truck with a Multi-Tip configuration — which allows the dump body to pivot 90 degrees left and right to unload material — changing his expectations for the cost of doing this work.

Sunrise has cleared the site, stripped and stockpiled thousands of yards of top soil, and installed more than 10,000 linear yards of sewer and stormwater pipe. Now they're focused on backfilling around

foundations and spreading topsoil around completed homes. In the past, the contractor used a skid steer, articulated loader, two tandem dump trucks and extra labor to complete these projects. Since purchasing the Perkins-powered Hydrema, they no longer require two tandem dump trucks, extra labor and extra equipment.

"The 912C is perfect for my specific construction and landscaping projects," says Aspinwall. "The housing units in this development are very close together. This project requires a piece of equipment that can fit between these houses and



(From left) Operators Jon Day, Nick Stewart and Eddie Hernandez (front); and Mike Aspinwall, president, Sunrise Unlimited; Gregg Swartz, JESCO; and operator Ed Hernandez, also with Sunrise Unlimited.

that has very low ground pressure. Low ground pressure is important because it reduces the chance of cracking curbing and leaving marks on finished concrete driveways."

The 912C has been also eliminating a lot of labor. Sun-

rise is using the 90-degree dump body to cover pipe trenches. "We can fill the dump with stone, sand or dirt, turn the dump body about 90 degrees, walk it along the trench and cover up our pipe," adds Aspinwall.





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An aerial photograph showing a red SANY truck-mounted concrete pump with a long, articulated boom extending over a construction site. The boom is positioned over a series of parallel concrete channels, likely for a bridge or elevated roadway. The truck is parked on a dirt road. In the background, there are some buildings and a body of water.

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## ***Ditch Witch Zahn:*** **Dedicated Versatility**

This new machine  
(or is it machines?)  
is designed to rival  
dedicated-machine  
performance without  
sacrificing versatility

By WALT MOORE,  
Senior Editor

**A**bout a year ago, *CE* editors borrowed an XT1600 from Ditch Witch and placed it in the capable hands of professional operator Scott Mennenga, an instructor at the Local 150 (Operating Engineers) training facility near Joliet, Ill. Mennenga was favorably impressed with the machine, which is designed to combine the capabilities of a mini-excavator with those of an attachment-handling compact track loader. The design challenge with the XT1600, said a Ditch Witch engineer with whom we worked, was to enable it to function competitively with any dedicated machine that it might replace. Compromises are inevitable when trying to make a machine do multiple jobs, he said, but quickly added that Ditch Witch worked hard to minimize those areas in the XT1600.

Now, it seems, the Ditch Witch design philosophy of minimizing compromise in

multi-task machines has advanced another step with the company's new Zahn. *CE* editors recently had the chance to spend a day with the marketing and engineering folks responsible for the Zahn — talking about the machine's unique design, visiting the Zahn assembly line and observing the machine (in various of its configurations) at work in the red clay of Perry, Okla., where the company is headquartered.

If you haven't yet seen the Zahn, it might best be described as essentially a power unit that can accommodate various work tools, which actually form the front end of the machine. The idea behind the Zahn, says Matt Collins, product manager for the Ditch Witch compact utility line, is to integrate the work tool with the power unit in a manner that allows the two basic components to function as a dedicated machine and, subsequently, to deliver dedicated-machine performance, com-



During *CE*'s visit, we used the Zahn in a number of configurations, including, from left, an R300 two-wheel-drive trencher, R300 vibratory plow, R300 high-lift tool carrier and an R230 dumper.



## TEST SET

### TRAVEL SPEED:

**R150...3.3 mph**

**R230 & R300...5.9 mph**

- New Model.....Zahn
- Type ..... R150, R230, R300
- Horsepower ..... 15, 23, 30
- Replaces ..... 1820 and 255SX

## REPORT FIELD REPORT FIELD REPORT FIELD REPORT



The Zahn R230 and R300 can be equipped with either air- or urethane-filled 18-inch tires, or with 20-inch urethane-filled tires. Zahn list prices vary, of course, with the power unit and work tool chosen. For example, an R150 with an independent-auger trencher might list for \$11,900, while an R300 might range from \$15,000 to \$23,000 based on front-end preference.

Terry Golay, product test technician, demonstrates the four-wheel-drive Zahn dumper equipped with the self-loading option. The largest of the two dumper front ends has a payload capacity of 3,000 pounds.





The Zahn's InterChange connection (right) engages the work tool (above), and the tool is secured via flip-up, threaded latches at the front of the InterChange frame.



pared with using work tools simply as attachments mated to a coupler.

Most of the three Zahn power units — R150, R230 and R300 — are shipped to dealers in what might be called a generic configuration, that is, as two-wheel-drive units with no work tools. Then, in the dealer's shop, the Zahn is equipped to meet a particular customer's specific needs. This design approach, says Collins, simplifies manufacturing, requires far less dealer inventory, and gets exactly configured machines into customer hands more quickly.

A walk through the Zahn assembly area illustrated the machine's basic design philosophy, as well as the basic similarity of the three power units. Starting with an identical base frame, all three power units are equipped with an engine, two-wheel hydrostatic propel system (with traction-assist and

cruise-control), auxiliary hydraulic system (with all valves and piping), operator's console, manual parking brake, 11-gallon fuel tank, and a no-maintenance articulation joint with an actuating cylinder.

Variations in the basic power units include a different engine for each model and, for the R230 and R300, a larger hydrostatic pump and a second auxiliary-hydraulic pump. The engines, all gas powered and air cooled, are a one-cylinder Honda IGX440 for the R150, a two-cylinder Kohler CH235 for the R230, and a two-cylinder Kohler CH750S for the R300 — rated at 15, 23 and 30 horsepower, respectively.

## Dedicated trenchers

The articulation joint on all the power units terminates in a flat vertical plate with a four-hole bolt pattern. If the power unit is to be used solely as a trencher, then the trencher (a choice of two is available) is bolted directly to the plate. These hydraulically powered trenchers, which use a third support wheel for balance, can cut to depths of 36 inches, to widths of 4 to 8 inches, and can be equipped with one of three head-shaft drive motors to yield the speed/torque combination best suited to the customer's typical jobs.

The standard trencher uses a head-shaft auger, which is driven by the chain motor and is positioned on the side of the chain. The optional trencher uses a patented, independent auger that is positioned under the chain — a location that allows it to sweep more spoil away from the chain, and, consequently, to keep the trench cleaner. Although the independent auger does require a small additional drive motor, its superior efficiency, says Collins, likely will make it the predominate choice among buyers.

Compared to conventional designs, says Collins, the two-wheel-drive Zahn trenchers, that is, those with the trencher bolted directly to the power unit's articulation joint, provide several significant advantages. The articulation joint allows the machine to easily maintain a smooth, curved trench around obstacles, and it also takes the work out of moving the machine around the jobsite. Given that the operator rides on a platform at the rear, visibility to the trench is enhanced, he says, and the machine also reaches the jobsite faster, since its travel speed no longer must be slowed to accommodate an operator on foot. Top speed for the R150 is 3.3 mph, and for the R230 and R300, 5.9 mph.

Plus, says Collins, hydraulic oper-



ation of the trencher, compared with mechanical operation, eliminates complexity, simplifies maintenance, and allows easy reversal to clear the chain. And as an added benefit, the new Zahn trenchers also can be fitted with the company's Roto Witch attachment, which allows boring under sidewalks and other obstacles to reduce restoration.

The Zahn R150 is available only as a trencher, with either the conventional head-shaft auger or the new independent auger. Although the R230 and the R300 have possibilities other than working just as trenchers, these two models — in their two-wheel-drive, dedicated-trencher configuration — are replacements for the Ditch Witch model 1820, an 18-horsepower pedestrian trencher with a mechanical trencher-drive system.

Truth be told, the new Zahn two-wheel-drive trenchers could probably easily replace the heart of the Ditch Witch pedestrian trencher line (models 1030, 1230 and 1330), but the company has avoided making this move, given the popularity of these existing machines. The 1030 and 1230, with respective horsepower ratings of 11 and 13, have mechanical trencher drives, and the 13-horsepower 1330 uses a hydraulic trencher drive. (For a look at how the performance of the R150 and 1330 compared in a quick, unofficial traveling/trenching evaluation conducted on site, check out the sidebar, "Side-by-Side.")

### Adding capability

So far, we've considered just a portion of the Zahn's capabilities. If, instead of bolting a trencher directly to the articulation plate, another component — the InterChange connection — is bolted to the plate, then the Zahn becomes a four-wheel-drive machine capable of using an integrated trencher, plow, backhoe, dumper, stump grinder,

tiller or tool carrier.

The InterChange connection is a beefy, U-shaped frame that has wheels at its forward corners and two hydraulic motors to drive these wheels. The two added drive wheels are quickly plumbed into the propel system by connecting hoses to an existing manifold in the power unit, thus placing the front motors in series with those driving the power unit's wheels. The front wheels also benefit from the traction-assist feature, which fixes the displacement of oil directed to each side of the machine. According to Collins, a Ditch Witch dealer can install the InterChange connection to an R230 or R300 power unit in about 45 minutes.

At the rear of the InterChange connection frame is a self-aligning dowel that indexes with any of the seven integrated tools when pushed onto the frame. Two flip-up, threaded locking devices (one on each side of the frame at the front) then secure the tool. The process requires only a 5/16-inch wrench. We watched Terry Golay, Ditch Witch product test technician, install the dumper on the InterChange connection in about five minutes.

When any of the integrated work tools is locked in place, auxiliary-hydraulic hoses are quickly attached via a connector panel at the front of the power unit. The panel also contains an electrical outlet, and an optional case-drain connection is available. The two gear pumps supplying the auxiliary system produce a combined flow of 12 gpm, and the auxiliary system operates at a relief pressure of 3,000 psi.

### Front-end details

Of the seven front ends available for the Zahn, five attach directly to the InterChange connection. The two that

don't, the trencher and the plow, require an intermediate component — the "low-lift tool carrier." This extremely robust component mates the tool to the InterChange connection frame and provides hydraulically activated linkage for lift and tilt functions (for tool positioning).

The four-wheel-drive trencher,



**Dual wheels are optional. The trencher (and plow) is mounted to the InterChange connection via the low-lift tool carrier.**

with a maximum digging depth of 48 inches and a digging-width range of 4 to 12 inches, is equipped with the Ditch Witch independent auger. According to design engineer Jacob Hamburger, the four-wheel-drive trencher has the added advantage of using all its weight in the trenching process, since it uses no trailing wheel for support. And four-wheel-drive, he says, allows the machine to traverse rougher terrain.

The Zahn's vibratory cable plow has an operating depth of 20 inches and can pull in material up to 3 inches in diameter. The new Zahn plow, which replaces the Ditch Witch 255SX pedestrian plow, also can vary its blade pitch via the low-lift-tool carrier. Options include a reel carrier, sod cutter and skid shoes.

The low-lift tool carrier can itself be fitted with a coupler to accommodate certain attachments, for example, the trencher that a customer might have





**An optional backfill blade for the Zahn trencher assists in restoration.**

for a Ditch Witch SK350 mini skid-steer — or for that matter, any of the SK350's attachments that don't require a high lift height. But for a more utilitarian machine, the Zahn's high-lift-tool-carrier front end is probably the better choice.

The high-lift tool carrier front end has the appearance of that of a small wheel loader, and its coupler accepts more than 40 of the attachments approved for the SK350. The high-lift tool carrier, with a hinge-pin height of 73 inches, uses a four-bar linkage that provides generous dump and roll-back angles and has a self-leveling feature. A kickstand at the rear of this front end

permits it to be stored in an upright position and facilitates its installation on the InterChange connection frame.

The dumper front end is available in two sizes. The larger accommodates 20 cubic feet and a payload of 3,000 pounds, and the smaller, 12 cubic feet and 1,800 pounds. The frame of the larger dumper uses an extra set of wheels to balance and support the weight of the payload. A self-loading mechanism for each dumper is an option that can be retrofitted.

The backhoe front end, sized to leave a flat-bottom trench at a 61-inch dig depth, has a swing arc of 170 degrees. The backhoe also has an integral backfill blade and stabilizers. The stump grinder, with a weight of 1,730 pounds, has an 8-inch working depth and uses a 20-inch-diameter cutting drum with 12 teeth. The tiller, almost equal in weight to the stump grinder (1,732 pounds), uses 24 tines on a 19-inch-diameter drum.


While the trencher, plow, backhoe and tool carrier front ends are familiar territory for Ditch Witch, says Collins, the tiller, stump grinder and dumpers take the company beyond its core businesses and open up the prospect of at-

tracting new customers.

"The door opens when the customer moves into the four-wheel-drive Zahn," he says, "because now the oncededicated trencher takes on the flexibility of performing other tasks — and performing them well."

Kevin Smith, Ditch Witch product planning manager, says he is pleasantly surprised at how quickly customers have adopted the four-wheel-drive Zahn.

"We expected the two-wheel-drive to predominate," says Smith, "because that's the configuration of the current [trencher] product. But buyers seem to have recognized the versatility of the four-wheel-drive platform."

And if you're left wondering about the name — Zahn — it's the last four letters of Malzahn, as a tribute to Ed Malzahn, the inventor of the Ditch Witch trencher and the entrepreneur who developed The Charles Machine Works (a/k/a Ditch Witch) from a tiny Oklahoma blacksmith shop into a global company. 

**See three video clips of the Zahn at "Videos On-Demand" on our website, [ConstructionEquipment.com](http://ConstructionEquipment.com).**

## Side-by-Side

To lend a bit of perspective to the potential advantages of the Zahn trencher — compared to a current, comparable machine in the Ditch Witch pedestrian range — Jacob Hamburger, design engineer, and Terry Golay, product test technician, traveled an R150 and a 1330 from the parking lot of the Ditch Witch test center (left photo) to a "jobsite" a couple hundred feet distant. The ride-on Zahn quickly got the jump on the walk-behind 1330, which needed a fair amount of persuasion from Golay when making turns (center photo). At the jobsite, the R150 waited for the 1330 to arrive, then both machines began trenching at the same time and worked for about 10 minutes at the same depth (right photo). At the end of the run, we estimated the Zahn had opened about 25 percent more trench.







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*Barbara Smith  
Albian Sands Energy, Inc.*



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## Special Report: Conexpo-Con/Agg 2008

By CONSTRUCTION EQUIPMENT EDITORS

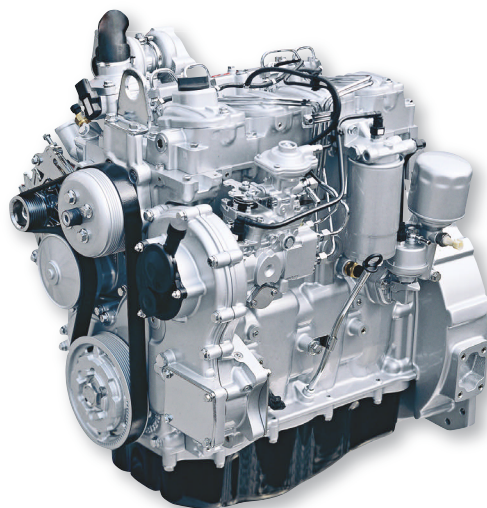
# Innovations Abound at the "Big Show"

Conexpo-Con/Agg 2008 outshone its siblings with an impressive array of product intros. Here's just a sampling, with more available at [ConstructionEquipment.com](http://ConstructionEquipment.com)

### ► Fiat Powertrain Technologies F-Series Engines

The new F-Series engines from Fiat Powertrain Technologies (FPT) — using an inline, four-cylinder design and having a displacement of 3.2 liters — are designed specifically for off-road and stationary applications. Meeting Tier-3 emissions standards and available in horsepower ratings of 74, 82 and 87 (at 2,500 rpm), the F-Series models feature two valves per cylinder, cast-iron cylinder head, mechanical fuel-injection, and structural or non-structural architecture. The new engines also may be configured with either an internal or an external EGR (exhaust-gas-recirculation) system and, further, as either turbocharged or turbocharged-and-aftercooled.

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### ◀ Caterpillar D7E Electric-Drive Dozer

Caterpillar claims its 59,000-pound D7E track-type tractor's electric drive system will deliver 25 percent more material moved per gallon of fuel than the D7R Series II. A 235-horsepower Cat C9 diesel drives a generator to produce electricity that ultimately powers two AC electric drive motors, which are connected to a differential steering system, final drives, and a low-sprocket undercarriage. The electric drive train has 60 percent fewer moving parts compared to previous D7s. The drive eliminates gears to shift and is said to perform much like a hydrostatic drive, albeit with faster response to load demands. It is expected to be available in 2009.

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## ► Liebherr L 586 2plus2 Wheel Loader

Liebherr's L 586 2plus2 wheel loader has a tipping load of 45,040 pounds, making it the largest hydrostatically driven wheel loader in the world. Trading on its 25 years of experience building hydrostatic wheel loaders, the company claims its drive systems reduce fuel consumption by as much as 25 percent, compared to mechanical-drive machines; reduce tire wear by 25 percent; and experience virtually no brake wear. It is powered by a 340-horsepower (at 1,800 rpm) Liebherr D 936 L engine.

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## ► IHI CL35 Compact Track Loader

The first compact track loader IHI/CES has manufactured is the CL35, with a rated operating capacity (50 percent of tipping load) of 2,310 pounds. The 7,826-pound CL35 is powered by a 67-horsepower Yanmar diesel. With a radial lift path, the loader arm generates 5,710 pounds of breakout force and 6,474 pounds of bucket breakout force.

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## ► Miller Electric PRO 300

The PRO 300 diesel welding generator has been improved by using fewer and more robust electronic components. An optional 4-cylinder, 24-horsepower Deutz engine provides more power for using larger electrodes and gouging with carbons up to 1/4-inch diameter, the company says. More power also compensates for less oxygen when working in higher elevations. The unit offers better E6010 performance for downhill pipe welding, as well as better MIG, flux cored and TIG arc starts. It provides 20 to 410 amps of welding power, as well as 12,000 watts of peak generator power.

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## ► JLG FS80LiftPod

According to JLG, its new FS80 LiftPod is "the most portable aerial work platform in the world." Each of the LiftPod's five modules (base, mast and carriage, platform, power pack and work tray) is designed to be "carried by one person and can be assembled in around 30 seconds." The LiftPod is a practical alternative to a ladder and typically can be transported in the back of a utility vehicle. The 63-pound base of the LiftPod is made of high-strength steel and its mast (44 pounds) and platform (30 pounds) of lightweight aluminum. The unit's power pack (15 pounds) can elevate and descend with a worker an average of 20 times before recharging is required. The LiftPod has a platform height of 7 feet 8 inches, a platform size of 24x20 inches, and a platform capacity of 300 pounds.

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## ► Bobcat Suspended Undercarriage

Responding to customer requests for a smoother ride from compact track loaders, Bobcat developed a roller suspension system, which is currently available as an option for the T320 compact track loader and will become available for more of the company's rubber-track models later this year. In the new suspension system, the rollers are suspended by high-strength-steel leaf springs as a means of reducing vibration. In addition, the system used track idlers that have been raised to make the machine easier to turn. A further advance built into the new suspension system is provision for a larger area around the sprocket to facilitate cleaning.

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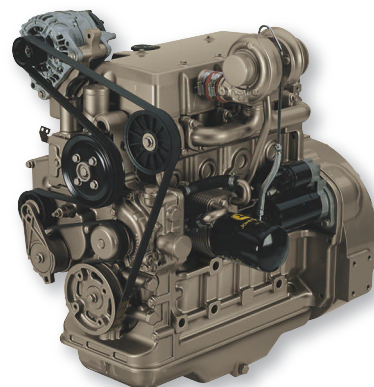




## ◀ JCB 409 Wheel Loader

The JCB compact wheel loader range has been extended with the launch of the 75-horsepower model 409. Weighing 12,831 pounds, the articulated machine uses a hydrostatic transmission that drives through mechanical axles to provide all-wheel drive. Using a standard 1.3-cubic-yard bucket, the 409 has a straight tipping load of 10,480 pounds, and a full-turn tipping load of 8,628 pounds. (When equipped with pallet forks, says JCB, the 409 can handle a 5,500-pound load.)

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## ▶ John Deere Diesel Engines

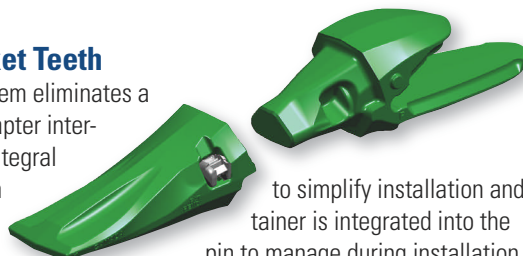
To achieve compliance with Interim Tier 4 off-highway emissions required in 2011 for engines 174 horsepower and up, John Deere Power Systems will not use selective catalytic reduction, but rather will add a diesel oxidation catalyst/diesel particulate filter unit to its Tier-3 PowerTech engine to achieve the 90-percent diesel particulate reduction required. Selective catalytic reduction requires the vehicle be fitted with a separate tank, a urea injection system, and a legislatively required tamper-proof diagnostic system. For the required 50-percent reduction in oxides of nitrogen, Deere will increase the percentage of cooled exhaust gas recirculation.

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## ▶ ESCO Ultralok Bucket Teeth

ESCO's new Ultralok Tooth System eliminates a separate pin from the tooth/adaptor interface. Each tooth/point has an integral hammerless locking mechanism replacement. The Ultralok re-tooth, so there is no separate and removal. It will be offered in seven construction sizes. The tooth-and-adaptor line will supply 6- to 75-metric-ton excavators and 3- to 12-cubic-yard wheel loaders. Key to the Ultralok system is that the adapter carries the load, and the pin simply retains the tooth on the adapter during most of the duty cycle.

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to simplify installation and tainer is integrated into the pin to manage during installation



## ▶ Manitou MHT 10160 Telehandler

Manitou North America has introduced the MHT 10160 rough-terrain telehandler, which has a rated maximum capacity of 36,000 pounds. The new telehandler's capacity at its maximum lift height (31 feet 10 inches) is 15,430 pounds. Capacity at its maximum forward (18 feet) is 9,260 pounds. The MHT 10160 uses a 175-horsepower, Tier-3-compliant Mercedes diesel engine and features a two-speed hydrostatic transmission.

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## ▶ Wacker Compact Track Excavators

Ranging from 1.4 to 8.0 tons, a new line of five compact track excavators has been introduced to the U.S. market. Models 1404, 3503, 38Z3, 50Z3 and 8003 are powered by Yanmar diesel engines with horsepower from 24.3 to 69.5, respectively. Maximum digging depths range from 7 feet 4 inches to 14 feet 1 inch. The largest model in the line — the 8003 — is available as a canopy or full cab work platform with air conditioning. Standard features include high output hydraulics, rubber tracks, dozer blades, boom-mounted working lights and a control pattern selection system.

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## ▶ Caterpillar Towed Scrapers

Caterpillar entered the towed-scraper business when it acquired E-Ject Systems in January. The company's four pull-type scrapers are now available in North America exclusively through Cat dealers, and will be sold under the Caterpillar brand beginning in October. There are two sizes — 17 and 22 cubic yards — and two configurations — standard two-wheel pans and an advanced design with four wheels. All models come with brakes as standard equipment, and feature 6.5-inch pins and tapered roller bearings inside the tongue and hitch. The E-17XW and E-22XW four-wheel scrapers each have a parallel linkage that enables the cutting-edge angle to be adjusted for most efficient loading. A walking-beam suspension on the scrapers holds the blade more level.

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## ▶ Godwin HS300 Submersible Pump

Godwin Pumps kicked off its Heidra hydraulic submersible line with a 12-inch model HS300 hydraulic-powered submersible pump. Capable of flow rates to 6,000 gpm and heads to 200 feet, the Heidra 300 is a self-contained, hydraulic powered submersible pump with a diesel-driven hydraulic power unit. The Heidra 300 is a cast iron pump with cast chromium steel impeller designed for general pumping with solids up to 3-3/4 inches diameter. An integrated steel cage on the pump end protects the pump while submerged.

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## ▶ Link-Belt RTC-80130 Series II Rough-Terrain Crane

The new Link-Belt RTC-80130 Series II 130-ton rough-terrain crane is the largest rough-terrain Link-Belt has ever produced, it says. The new crane uses a five-section, 162-foot formed boom that is constructed of extra-high-tensile steel and has one double-acting, single-stage hydraulic cylinder with integrated holding valves. Five boom modes vary the extension of the telescoping sections, and wear pads with Teflon inserts self-lubricate the boom sections. Maximum boom tip height is 171 feet. The unit can be transported in two loads, with the main load less than 94,000 pounds, including the boom, both winches, three-piece fly and tires attached.

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## Dana Spicer Hydrostatic Transmission

Dana Spicer 369 shift-on-the-fly hydrostatic transmission is designed for mid-sized construction, mining and material-handling vehicles. The transmission is composed of a single hydrostatic motor featuring a transfer case with low- and high-gear ratios, integrating the drive-train system into the engine's controller area network to improve shift quality and reduce acceleration jerk during vehicle operation.

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## ▶ Volvo Hybrid Wheel Loader

Volvo Construction Equipment promises that the L220F Hybrid wheel loader will offer 10 percent fuel savings as well as performance and environmental gains when deliveries begin late in 2009. The heart of the parallel-hybrid system is an ISG, Integrated Starter Generator, fitted between the Volvo D12 engine and transmission. The ISG allows the diesel engine to be turned off when stationary and then almost instantly restarted by rapidly spinning the engine up to optimum working speed using a burst of energy from the high power battery.

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## ▶ Voegle Vision Series Asphalt Pavers

Voegle Vision Series asphalt pavers includes the 10-foot tracked 5200-2, 10-foot wheeled 5203-2, 8-foot tracked 5100-2, and 8-foot wheeled 5103-2. Machine slope and hood have been designed so operators can see sides, hopper and conveyors in the back, without having to move around. Operator's station swings out from both edges of the machine, and the control console slides from one side of the platform to the other, and also swivels and tilts. Independently operated hopper wings can be dumped individually or at the same time.

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## ▶ Atlas Copco HB 10000 Hydraulic Breaker

Standing 14 feet high, Atlas Copco's HB 10000 hydraulic breaker is the most powerful unit in its line. It weighs 10 metric tons, and delivers about 12,000 ft.-lbs. at the tip of the tool — 50 percent more impact energy than the company's HB 7000. It fits on excavators in the 85- to 140-metric-ton class. Featuring PowerAdapt, AutoControl and other Atlas Copco technology, the breaker is designed for primary rock breaking in quarries and is a viable alternative to certain drilling-and-blasting applications.

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## ▶ TransTech Model SDG Soil Density Gauge

TransTech Systems' Model SDG Soil Density Gauge, similar to the company's PQI Asphalt Density Gauge, brings non-nuclear, impedance-based density and moisture measurements to soil applications. The SDG, says TransTech, is quick to set up, captures data in seconds, and is suitable for soil compaction jobs, such as sub-bases, embankments, fills, foundations, dams, landfills and utility cuts. Unlike sand-cone or rubber-balloon tests, which can be time-consuming and are subject to yielding results that can be influenced by the operator, the SDG offers readings taken in seconds by any member of the staff.

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## ▶ Terex TA30 Articulated Truck

Terex TA30 articulated dump truck features the company's independent front suspension system with integral wet disc brakes. Suspension was developed in conjunction with Timoney Mobility Systems in Ireland, and is a parallel-linkage coil-spring system. Powered by a Cummins QSM11 350-horsepower diesel, the truck can haul 30.9 tons.

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## ▶ Komatsu WA250PZ-6 Tool Carrier

Komatsu WA250PZ-6 tool carrier replaces the WA250PT-5. It has an operating weight of 26,808 to 27,778 pounds and a heaped bucket capacity of 2.5 to 3.0 cubic yards. The machine is powered by a Komatsu engine with 138 net horsepower. Others in the Dash 6 updates include the WA200PZ-6 and WA320PZ-6.

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**Paul Young** - Project Superintendent - Clark Companies



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## John Deere 764 High-Speed Dozer

John Deere's new 764 High-Speed Dozer (HSD) is an articulated, rubber-tracked dozer that combines the speed of a grader with the flotation of a crawler dozer. It will grade and push moderate dozing loads at about double the speed of a similarly sized crawler. Deere says it will bluetop to 1/8-inch at up to 6 mph, and travel at 18 mph. The 764 HSD weighs in at 32,000 pounds and is powered by a 200 horsepower Deere PowerTech 6.8-liter engine.

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## Astec Double Barrel Green System

Astec says its Double Barrel Green System reduces the mixing and compaction temperatures of asphalt without sacrificing the quality of the pavement. The new system is considered a warm mix process. However, unlike other warm mix technologies, the process does not require the addition of expensive commercial additives, Astec says. Instead, water is injected into the mix along with the liquid asphalt cement. Water causes the liquid asphalt to foam and expand in volume, yielding a temperature that is about 50 F less than traditional hot mix asphalt.

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## Doosan DL Wheel Loaders

Doosan has added four new wheel loaders to its DL series: DL200TC, DL250TC, DL300 and DL450. Bucket capacities range from 2.6 cubic yards to 6.3. Engine and fully automatic ZF transmission communicate to provide smooth operation and traction. Lower gear speeds extend component life, and improved power train efficiency allows for fuel economy. Centralized remote hydraulic checkpoints and accessible filters and electrical components ease maintenance tasks.

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## Snap-Tite Quick Disconnect Coupling

Snap-tite developed the QUIKX-CHANGE quick disconnect coupling to survive hydraulic surge and pulsating flow of various work tools like hydraulic hammers, shears, and concrete crushers. The coupling mounts on the excavator's dipper stick, connects under static pressure, incorporates what Snap-tite calls a "dry-break" disconnection, and enables one man to change the work-tool hydraulic lines in five minutes or less with minimal effort.

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## Wirtgen W150 Milling Machine

Wirtgen W150 milling machine replaces the W1500. Optional milling drums of 4 feet, 4 feet 3 inches, or 5 feet are available for applications such as milling large surfaces, removing pavement layers at full depth, or leveling. Cutting depth is 0 to 13 inches. Cummins six-cylinder diesel delivers 350 horsepower. Four-fold, full-floating and height-adjustment system ensures that the machine aligns parallel to the pavement during milling and transport.

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## ▶ MOBA Grade Control

Backwards-compatible to prior MOBA products, the GS-506 grade-control system for graders and dozers likewise uses five sensors to control the blade. In this case, rotation, long-slope, and cross-slope measurements are combined with the new MOBA SonicSki+ ultrasonic sensor and/or the new LS-3000 laser receiver. The SonicSki+ utilizes extended side-shift functions, has a working range up to 4 feet, and can be used over a string line or curb edge due to the use of six transducers. The LS-3000 receiver offers a full 360-degree detection range for grading of large areas. For the machine operator, an integrated shield combined with manual contrast control allows for clear reading in all light conditions.

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## ▶ Caterpillar Machine Target

The MT900C active machine target offers additional support for Caterpillar AccuGrade advanced tracking sensor systems for use on graders and dozers. The machine operator can conduct real-time fine-grading operations with increased accuracy without the fear of losing instrument lock. The target uses a 360-degree ring of infrared light-emitting diodes (LEDs) to allow tracking from any horizontal direction. The infrared LEDs emit one of 16 programmable IDs that allow the instrument to lock on and track the correct target, which is particularly important in dusty site conditions.

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## ▶ Topcon Fast Grading System

Topcon's newest machine-control system, 3D-MC<sup>2</sup>, is claimed to increase the travel speed of dozers by more than 200 percent while maintaining grading smoothness. With new sensor technology — a combination of inertial sensors and gyros — the calculation of positioning is sped up by a factor of 10. This reduces the inherent latency of traditional GPS technology and allows for faster, accurate positioning in real time. According to Topcon, 3D-MC<sup>2</sup> breaks down the "last barrier" of grading productivity — speed — and will change the role of the dozer on the jobsite.

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## ▶ Trimble Connected Community

As part of the Trimble Connected Site portfolio of construction solutions, Connected Community allows heavy and highway contractors to build information portals; share information; and collaborate on any project between head office management, site office teams, field crews, subcontractors, suppliers, engineers and clients. The Web-based set of networking tools pulls together site-positioning systems, grade-control systems, and equipment-asset systems formerly independent of each other.

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## ▶ Leica Tracking Devices

RedLine family of tracking devices from Leica includes GNSS sensors for on-machine, vehicle and pole rover applications, a ground-based robotic tracker, and new software applications to speed construction measurement and layout tasks in every project phase. RedLine sensors are designed for construction use — light for measurement and layout, and tough enough for 3D machine control — and all sensors can be used for multiple construction tasks at every phase, including on-board machine-control applications.

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## **Sterling 360** Scoots Through Circles

So do several other recently driven low-cab-forward trucks,  
and for that and other reasons they ought to be more popular

It was a dark and chilly day, the kind you expect in mid-March in a place like Cleveland, Ohio, where winter sometimes just won't go away. Yet I was smiling because driving this Sterling 360 was outright fun. It is a slick, quick and nimble truck that deserves more sales than it gets, and that goes for all imported and domestic low-cab-forward vehicles sold here.

Execs at all the importers thought that the entry into the market by Ford and International, with their jointly built (in Mexico) LC and CityStar, would boost interest in LCFs, but

it hasn't happened. A big majority of buyers still prefer conventionals, partly because most drivers think a hood and engine out front is safer in a frontal collision (it is) and that a conventional rides better (not necessarily). And conventionals usually cost less, which could be the biggest reason for their popularity.

LCFs — informally called cabovers — prevail in most overseas markets because of urban congestion and stricter length laws. The 360 is typical. It is Sterling's version of Mitsubishi Fuso's made-in-Japan FE145, a Class 4 LCF rated at 14,500 pounds. There are lighter and heavier versions, and they're sold here because they're what Fuso makes and there is a place for them in big cities.

The 360 is in Sterling's lineup so dealers have something to sell besides heavier

**Sterling nameplate is oval while the truck's "360" name suggests a circle, and this truck will turn them with alacrity. It's badge-engineered from the Fuso FE series.**







**Left: Interior has good gauges and controls, the steering column tilts and telescopes, and dash-mounted shifter (to the right of the steering wheel) keeps the floor clear for center passenger's legs.**

**Below: The door is wide and step is only 11.75 inches from the pavement, so getting into the roomy cab is easy.**

duty conventionals.

Sterling gets the 360 from Fuso because it's a sister company, through common ownership by Daimler AG of Germany and its American arm, Daimler Trucks North America (formerly Freightliner LLC). Fuso administrative and support functions that have been handled out of New Jersey are being taken over by Sterling at its headquarters near Detroit, which will remove some overhead costs in what has been a stubbornly low-volume operation.

This 2008-model truck was on the lot at Valley Freightliner-Sterling-Western Star in Cleveland a year ago March, actually. Salesman Andy O'Donnell said he had sold a couple of 360s with dump bodies to a local park district. People there like the trucks because they're compact and easy to run on sidewalks and maneuver around buildings and other obstacles.

Compactness comes primarily from the no-nose design; all the space that would be taken up by a conventional's hood, fenders and everything underneath in effect becomes payload area on an LCF's chassis. Put another way, a cabover provides several feet more room for a body and load in any given overall length than any comparable conventional. And the LCF's wheelbase will be shorter, aiding maneuverability.

The cab tilts up to reveal the engine, and a mechanic can just step around a front wheel and do his service and repair work while standing there. It sure beats crawling under a truck

or leaning under the hood into the crowded engine compartment of a typical midrange conventional. O'Donnell demonstrated that the 360's cab tilts easily; just pop the lock behind the cab, grab a hold and raise it. It can be done with one hand, and the lift mechanism locks in place so wind won't push it back down.

The engine is a Fuso 4M50, a 4.9-liter (299-cubic-inch) inline 4-cylinder turbodiesel running through an Aisin 6-speed automatic transmission. The engine makes up to 175 horsepower (Fuso advertises it as 185) and 391 pounds-feet of torque. It's more than enough for city duties, and should easily keep up with normal stop-and-go traffic. On the freeway, it begins running out of steam at about 65 mph; it'll do 70 or more, but has to work harder at it than big-cubic-inch domestic I-6 or V-8 diesels, which is no surprise, but economy with an I-4 should be better.

After some driving and a stop for snapping photos, I observed that "360" implied a compass's full 360 degrees. So I made O'Donnell and Susan Gallik, an exec at Sterling's P.R. agency who had arranged this demo, wait outside in the cold while I spun the truck in a circle — two or three of 'em, actually — in a wide driveway. I didn't put a tape on the resulting tire tracks, but the circle's radius was rather short.

With these trucks you get the sensation that you can almost T-bone yourself. I could've tried if we had been pulling a trailer, but as it





# Hands-On Trucking



**Above: Economical and adequately powerful inline 4-cylinder turbodiesel is readily accessible after the cab is tilted forward.**



**The 14-foot American stakebed body uses composite floor and sides.**

was, the 14-foot American stake-side flatbed body was all that was behind the cab.

The body was interesting in itself, as it was constructed partly of composite plastics that should last almost forever. Its floor was smooth-surfaced plastic that hadn't yet been blemished with a load. Because the body was empty, I couldn't make a judgment on the truck's behavior under load.

The cab was more than big enough for all three of us, and everyone had plenty of hip-, shoulder- and leg room. The dash-mounted transmission selector leaves the flat floor completely clear ahead of the center passenger. The cab is so wide that there's room for a "stuff" tray just to the driver's right, and the driver's seat has a fold-down armrest. On each door is a


raised horizontal bar that acts as an arm rest, at least when the window's down.

Power windows and door locks are standard, as is a tilt-telescoping steering column. Interiors are attractively trimmed with comfortable two-tone cloth-faced seats and easy to use gauges and controls that are pretty much straight from the Fuso FE. Sterling says it has packaged certain features and pre-engineered the chassis for various vocations, so ordering is simple.

Most FE and 360 cab exteriors are painted a rather common white, as this one was, but cabs are also available in more distinctive red, green, blue, silver and black.

LCFs can have a good ride, even with the steer axle right under the driver and passengers, because the springs are long and compliant. The ride is bus-like, with a lot of vertical motion when going over bumps and through potholes. The streets we traversed on Cleveland's south side had a lot of broken and bowed concrete — typical for an old city in a cold climate — and those springs got a good workout. The ride was sometimes bouncy, but it wouldn't have been much better — only different — in a conventional. On smooth freeway pavement the 360 rode fine.

Entry into a low-cab-forward truck takes a little practice, but is pretty easy on this one due to its setback steer axle and the wide step ahead of it. That step is less than a foot from the pavement and doors are claimed to be the widest in the LCF segment, so the first part of the climb isn't bad, and then you just slide sideways onto the seat. In getting out, you can just turn to the left (or right if you're the passenger) and hop down. I'm describing all this because most Americans have never been in a cabover.

Conventionals — many of them based on the domestic Big Three's pickups — still take about 80 percent of the midrange commercial truck market because they are very competent in their own right, as I've noted in other Hands-On Trucking articles. But I liked LCFs when I drove them while working my way through college more than 40 years ago, and still do. People who run them for their clear advantages usually stick with them, and so might you if you'd give one a try. 





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# Buying File: Asphalt Pavers

By LARRY STEWART, Executive Editor

## Commercial Pavers Outgrow Their Name

As asphalt surfacing jobs have grown, small pavers gained highway-class features and beefed up from 16,000 to 25,000 pounds and beyond

In an age when strip malls can be measured in miles and the pace of commercial development can forestall the economic impact of a significant housing downturn for more than a year, improving the productivity of paving parking lots and streets has become a priority. New-machine introductions over the past six months by five of the seven paver manufacturers with machines weighing between 15,000 and 40,000 pounds suggests that a lot of commercial paving is challenging traditional boundaries of the machine category.

"We've always limited ourselves — and AEM (Associated Equipment Manufacturers)

has even classified — 19,000 pounds as being the top of the commercial paver class," says John Hood, manager of product development and sales for Bomag's paving and milling products. "Typically what we've always done as commercial paver manufacturers is try to stay below 16,000 pounds. Once you exceed that weight, you're required to add fume-extraction systems."

Carlson decided to enter the complete-paver business at less than 19,000 pounds. The industry's only aftermarket screed manufacturer showed its CP-90 at Conexpo-Con/Agg 2008. The prototype on the show floor weighed 20,000 pounds, but Carlson marketing manager Tom Trivers promised production models due late this year would hit the streets at about 18,500 pounds.

"Most commercial-paver customers want to be able to put a small paver and one or two rollers on one trailer," Trivers explains. "With equipment like that, sometimes they can finish a couple of projects in a day."

Of course, Carlson developed a completely

**Half of the 8-foot asphalt-paver models between 25,000 pounds and 40,000 pounds are new or upgraded in the past six months, including the brand new, 33,000-pound LeeBoy 9000. LeeBoy integrates its electrically heated Legend screed using a CAN bus that reduces wiring needs. The digital network facilitates dual-joystick steering using Sundstrand's Plus 1 technology.**





new electrically heated screed for use exclusively on the company's first paver, but Trivers insists that a lot of engineering time was spent fitting a robust material-handling system to the commercial machine.

"We want to offer a small commercial machine that's completely rebuildable," he says. "So we adapted the conveyor chains, slats and augers out of a 10-foot Roadtec paver for this application."

Look for Carlson's CP-90 to be available in the third or fourth quarter of 2008, at a suggested retail price of about \$150,000.

In 2004, the 25,000-pound LeeBoy 8816 penetrated deep into a weight class where the few paver options were all built by makers of highway-class machines. Now the Volvo PF161 and PF2181, the Terex CR352, and Volvo Titan 3870 are also vying for the 150 or so sales per year in the 20,000- to 30,000-pound range.

"Commercial pavers may show up on a jobsite with the paver, the roller, all the plates, and the hand tools all on one truck, but there is a segment of the industry that has evolved beyond that," says Bomag's Hood. "When you start talking about 20,000-pound machines, the transportation costs change tremendously. By the same token, the compaction tools that you see behind this size machine are larger so you can't really put the paver and the roller on one trailer anyway."

Bomag stepped over the 19,000-pound threshold with a 20,500-pound model introduced at Conexpo, the BF6615.

"It does change the classification of the contractor somewhat, but what you trade off with that (heavier machine) is an increase in productivity," Hood continues. "In the case of the 6615, twice the productivity of any other machine we offer, plus improved mat quality."

Bomag's track-mounted BF6615 comes



with the company's first electrically heated screed and independently controlled, reversible conveyors and augers to refine control of the head of material in front of the screed. The Mega-Feed system mounts remote augers on the front of the screed extensions. The augers extend and retract with the extensions and refine control of material all across the screed. Digital grade control is easily integrated to the electronic-over-hydraulic control schemes.

Bomag's commitment to preventing paver downtime led the company to install dual redundant, all-hydraulic control panels on both rear corners of the tractor. These alternate operators' panels are below the seats for the normal operating stations. Bomag's message might be paraphrased: 'We're not expecting problems with our electronics, but if manual controls reassure skeptical customers, we can squeeze an extra set of levers on the paver.'

One of the defining features of the BF6615,



**Top photo:** Bomag's 20,500-pound 6615 is one of the first asphalt pavers by a traditional commercial-paver manufacturer that is heavier than the traditional 19,000-pound boundary defining the large end of the paver category. It employs Bomag's first electrically heated screed with bolt-on, 400-Brinell hardened steel screed plates and a Mega Feed system that includes augers mounted to the front of the extensions (inset).

## The Cost of Ownership

Weight	List Price Track / Tire	Hourly Rates Track / Tire
< 25,000 pounds	\$94,083 / \$119,236	\$59.19 / \$80.54
25,000 to 34,999 pounds	\$341,143 / \$319,713	\$196.84 / \$177.65

Hourly rates start with monthly ownership cost divided by 176 (hours per month) and add hourly operating cost. Inputs used to derive the costs include diesel fuel at \$3.38 per gallon, mechanic's labor at \$44.79 per hour, and interest rate of 4.75 percent.

Source: "Contractors Equipment Cost Guide," published by Equipment Watch - (800) 669-3238



# Buying File: Asphalt Pavers

and all of today's plus-sized commercial pavers, is a heavier material-handling system designed to be easily rebuilt. Hood points to the 6615's bolt-on, 400-Brinell hardened steel screed plates and replaceable auger flighting.

The BF6615 goes head-to-head with the Volvo PF161 (a Blaw-Knox model carried over

from Volvo's purchase of the Ingersoll Rand Road Construction Group), which is a wheeled machine with diesel-heated screed choices.

The BF6615 weighs 5,000 pounds more than the next model in Bomag's line, and Lee-Boy's 8816 with electric screed is about 5,000 pounds heavier than the BF6615. The tracked

## Commercial-Paver Specifications

	Operating Weight* (lb.)	Basic Screed Width Min.      Max.	Hopper Cap. (tons)	Engine HP	Transport Width*
Salsco 5013	3,060	3' 0"      6' 0"	—	10	4' 0"
Puckett 540	7,000	8' 0"      12' 0"	4	28	8' 6"
Neal 5500	7,200	5' 3"      8' 3"	4	38	5' 3"
Gehl 1448	7,775	8' 0"      12' 0"	4	36	8' 5"
Puckett 560	8,250	9' 0"      13' 0"	6	38	9' 9"
Mauldin 550E Track/Tire	8,300/7,800	8' 0"      13' 0"	5.5	23	8' 5"
Mauldin 690F Track/Tire	9,700/9,300	8' 0"      13' 0"	6	38	8' 5"
Puckett 580	10,000	8' 0"      13' 0"	6.5	38	8' 6"
Bomag 3313	10,000	8' 0"      13' 0"	6	50	8' 6"
LeeBoy 1000F Track/Tire	10,000	8' 0"      13' 0"	5.5	37	8' 6"
LeeBoy 700F Track/Tire	10,000	8' 0"      12' 0"	5.5	37	6' 6"
Gehl 1648	10,600	8' 0"      13' 0"	6	48	8' 6"
Vögele Super 700	11,685	3' 8"      10' 6"	5.5	57	9' 5"
LeeBoy 5000	12,000	5' 0"      9' 0"	5	37	5' 6"
LeeBoy 7000	12,000	8' 0"      13' 0"	6	56	8' 6"
Mauldin 1500 Track/Tire	12,300/11,800	8' 0"      13' 0"	6.5	50	8' 4"
Mauldin 1550-C	12,500	8' 0"      13' 0"	6.5	60	8' 6"
Bomag 814	15,400	8' 0"      14' 0"	8	85	8' 6"
Bomag 4413	15,500	8' 0"      13' 0"	7.5	60	8' 6"
Bomag 815	15,700	8' 0"      15' 0"	8	85	8' 6"
LeeBoy 8500	15,700	8' 0"      15' 0"	7.5	74	8' 6"
Mauldin 1750-C	15,700	8' 0"      16' 0"	8	80	8' 6"
LeeBoy 8515	15,900	8' 0"      15' 0"	7.5	74	8' 6"
LeeBoy 8510	17,200	8' 0"      15' 0"	7.5	85	8' 6"
Carlson CP-90	18,800	8' 0"      15' 0"	—	84	8' 6"
Blaw-Knox Volvo PF161 Tire	20,350	8' 0"      19' 0"	9.8	107	8' 3"
Bomag BF6615	20,500	8' 0"      15' 0"	9	99	8' 6"
LeeBoy 8816	25,000	8' 0"      15' 6"	10	130	8' 6"
Blaw-Knox Volvo PF2181 Tire	27,650	8' 0"      21' 0"	11	158	8' 2"
Terex Cedarapids CR352 Tire	28,760	8' 0"      18' 0"	9	165	8' 8"
ABG Volvo Titan 3870	28,880	6' 7"      16' 5"	13.2	99	9' 9.7"
Terex Cedarapids CR362	31,450	8' 0"      18' 0"	9	165	8' 6"
Blaw-Knox Volvo PF4410	31,500	8' 0"      25' 0"	8.5	158	8' 2.5"
Vögele 5103-2 Tire	31,700	8' 0"      13' 6"	12	170	8' 4"
Vögele 5100-2	32,600	8' 0"      13' 6"	12	170	8' 4"
LeeBoy 9000 Tire	33,000	8' 0"      15' 6"	11	173	8' 6"
Barber-Greene BG-230D Tire	35,310	8' 0"      20' 2"	—	130	8' 8"
Caterpillar AP800D Tire	35,310	8' 0"      20' 2"	—	130	8' 8"
Roadtec RP 170 Tire	36,500	8' 0"      15' 6"	11	174	8' 6"
Caterpillar AP600D Tire	37,251	8' 2"      14' 5"	—	174	8' 5"
Roadtec RP 175	38,800	8' 0"      15' 6"	10	174	8' 6"
Caterpillar AP655D	39,727	8' 2"      14' 5"	15.5	173.5	8' 11"

\* With basic screed  
All models are track mounted unless designated "Tire"  
Source: Spec-Check.com



8816, at 25,000 pounds and 130 horsepower, sits alone in a gap bordered on the low end by the big Bomag and Volvo's PF161, and the Volvo PF2181 at 27,650 pounds and 158 horsepower on the high end.

All four are eight-foot machines, but it may be indicative of the difference between up-sized commercial pavers and down-sized highway pavers to note that screed widths of the Bomag and LeeBoy hydraulically extend to 15 feet and 15 feet 6 inches, respectively. Widths of the PF161 and PF2181 stretch to 19 and 21 feet. It would be hard to support any definitive conclusions from such a comparison, but it does suggest that there is a transition here in the mid-20,000-pound range from what has traditionally been known as a commercial-class machine, and eight-foot pavers that are also being spoken of as "commercial class."

Eight-foot machines range up to Cat's brand new AP600D and AP655D, which exceed 40,000 pounds when equipped with the heaviest of their screed options. Until LeeBoy's 8816, this range of machines had been the exclusive territory of highway-class paver manufacturers.

Once again demonstrating its ambition, LeeBoy introduced a 33,000-pound wheeled paver at Conexpo. The 9000 pits LeeBoy's electric Legend screed head-to-head against wheeled pavers from Vögele and Caterpillar.

Half of the 14 asphalt-paver models arrayed between 25,000 and 40,000 pounds are brand new, or significantly upgraded in the past six months. Highway-class features are becoming common, and sophisticated upgrades are readily available. Terex 300-Series pavers, for example, both use the same conveyor slats and chains as the highway-class 400-Series machines.

Separate conveyor and auger drives, which can be adjusted to fine tune the flow of material to the screed, are fairly universal. With individual drive and material monitoring for each conveyor and each auger, mix can be spread in the auger tunnel while conveyors are stopped. Conveyance and spreading can be run fully automatic so the paver operator can focus elsewhere, or the system can be run completely manual. Such finite control of the conveyance has made the flow gates obsolete on many

machines.


Electric screed heat is coming to dominate pavers in this size class. Uniform heating across the entire screed, reduced fumes, and increased reliability of modern electric heating systems offer benefits that are hard to ignore.

Three of this year's new paver introductions employ controller area network (CAN) bus systems for managing the on-board electronics. It is a digital technology that can significantly improve wiring-harness reliability. LeeBoy's 8816 has been a CAN-bus-controlled paver, and the 9000 uses the same type of system. Vögele's 8-foot Vision pavers and the Caterpillar AP600D and AP655D also integrate CAN bus systems.

This automotive-style design distributes computing power to each of the devices on the paver that relies on digital input or provides digital information. A single wire connects all of the computers on-board. This electronic approach is facilitating use of digital gauges and sophisticated electronic diagnostics on the new LeeBoy, for example. The CAN bus also allows what LeeBoy calls Plus 1 steering control with dual joysticks.

Even with the CAN bus' promise of simplified wiring, there are those who fear downtime with digital technology's application to an asphalt paver. Of course, that represents a marketing opportunity.

"The paver industry seems to be moving toward larger and more expensive units with high-tech features," says Steve Kirst, Gehl paver product manager. "It is important for the Gehl Company to continue to serve the market sector that is looking for the simple to operate, easy to service, more compact pavers."

So there appears to be room for all kinds of paver design in today's stretched commercial-paver market. 

## Web Resources

Specifications	ConstructionEquipment.com
Bomag	<a href="http://www.bomag-americas.com">www.bomag-americas.com</a>
Carlson	<a href="http://www.carlsonpavingproducts.com">www.carlsonpavingproducts.com</a>
Caterpillar	<a href="http://www.cat.com">www.cat.com</a>
Gehl	<a href="http://www.gehl.com">www.gehl.com</a>
Mauldin	<a href="http://www.4amauldin.com">www.4amauldin.com</a>
Neal	<a href="http://www.nealequip.com">www.nealequip.com</a>
Puckett	<a href="http://www.puckettmfg.com">www.puckettmfg.com</a>
Roadtec	<a href="http://www.roadtec.com">www.roadtec.com</a>
Salsco	<a href="http://www.salsco.com">www.salsco.com</a>
Terex Roadbuilding	<a href="http://www.terexrb.com">www.terexrb.com</a>
Vögele America	<a href="http://www.wirtgengroup.com">www.wirtgengroup.com</a>
Volvo	<a href="http://www.volvo.com/constructionequipment">www.volvo.com/constructionequipment</a>
VT LeeBoy	<a href="http://www.leeboy.com">www.leeboy.com</a>



# Gallery of Asphalt Pavers



## BOMAG

### Heavy-Duty Commercial Paver

The BF 6615 crosses the traditional 19,000-pound boundary defining commercial pavers. The 20,500-pound machine has 9 tons of hopper capacity and a basic screed width that stretches to 15 feet for handling high-volume parking lots and streets. Heavier material-handling components and bolt-on, 400 Brinell steel screed plates are intended to make the paver more durable and easy to rebuild. It has Bomag's first electrically heated screed, a feature contractors are coming to expect on high-volume work.

**Number models:** 6

**New models:** BF 6615, BF 814, BF 815 and 4413

**Product-line features:** Independent, hydraulically controlled screed extensions on the BF 6615 and 4413 are assured of a consistent head of material at the strike-off plate because of the Mega-Feed dual-auger system. Remote augers mounted on the extensions' leading edges extend with the screed's wings.

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## CARLSON

### Screed Maker Builds First Paver

The industry's only aftermarket screed manufacturer, Carlson, is getting into the asphalt-paver business with the Conexpo 2008 introduction of the CP-90, its first complete paver. Carlson is billing this machine as "completely rebuildable," with 3/8-inch Hardox conveyor-floor plates and a 12-inch-diameter auger made with replaceable segments. The 18,800-pound CP-90 is powered by an 84-horsepower Caterpillar C3.4 diesel. Still in prototype stage, the new paver is expected to go into production late in 2008. Suggested retail price should be around \$150,000.

**Number of models:** 1

**New models:** CP-90

**Product-line features:** The new EZ Mat Screed, electrically heated of course, was developed exclusively for the CP-90, and will only be available on the Carlson machine. Standard paving width is 8 feet, but the unit can pave widths from 4 to 15 feet.

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## CATERPILLAR

### Biggest Commercial Pavers

Caterpillar's new wheeled AP600D and track-mounted AP655D are eight-foot machines that weigh about 40,000 pounds each. Independent conveyor and auger controls can be adjusted to maintain the desired head of material at the screed. Cat's Advisor Monitoring System is an interactive interface providing the operator with project planning calculators, start-up checklists, engine operating parameters and other key information. The Advisor simplifies troubleshooting by listing and explaining fault codes. Product Link — Cat's wireless information system — reports operating hours and location as standard equipment.

**Number of models:** 3

**New models:** AP600D and AP655D

**Product-line features:** Both new pavers can be fitted to Cat's AS2252C or AS3251C screeds, which feature CAN bus electronic systems that interface with the Advisor display on the tractor to simplify diagnostics. The CAN bus reduces the number of wires and connections to improve electrical-system reliability.

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# Gallery of Asphalt Pavers



## VÖGELE

### No Flow Gates Required

Vögele's new Vision 5100-2 and 503-2 eight-foot pavers have no material-flow gates because independent conveyor and auger drives automatically or manually adjust material flow to maintain the head of material in front of the screed. Augers and conveyors are reversible. Hydraulic cylinders keep the self-tensioning conveyors adjusted. Vögele, the paver with a German name and Chambersburg, Penn., design and manufacture, offers an optional hydraulic front apron that prevents forward spillage. As the hopper closes, the front apron rises. It's a proven design from Vögele's European line.

**Number of models:** 3

**New models:** Super 700, Vision 2100-2 and Vision 2103-2

**Product-line features:** Wiring harness is simplified by Controller Area Network (CAN) bus design using single wires for most circuits. Vögele's Niveltronic Plus automated grade and slope control system is supplied directly by Vögele so the machine and grade controls are matched. Wiring and connections are integrated into the tractor and screed.

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## MAULDIN

### Extensions Power Glide

The Silver 16 Screed in the 1750-C features single-stage extension, stretching the basic screed width from 8 to 15½ feet on what Mauldin calls its new "Power-Glide" guides. The machined and polished chrome rods ride in replaceable bushings that allow the screed and extensions to be rebuilt to original tolerances. Ultrasonically controlled material feed maintains optimal head of material in front of the strike off. The unit comes from the factory wired for screed automation. The 1750-C is powered by an 80-horsepower John Deere diesel.

**Number of models:** 5

**New models:** 1750-C

**Product-line features:** Mauldin recently increased its production capacity by moving to a new 20,000-square-foot manufacturing facility. Mauldin also acquired Pavement Services Inc., a South Dakota manufacturer of specialty asphalt-construction equipment.

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## GEHL

### Yanmar Power Boost

Gehl refit its Power Box asphalt pavers in 2007 with higher-horsepower Yanmar direct-injection engines. The engine in the 1448 Plus paver, at 36 horsepower, boosts power 44 percent compared to its predecessor, and the 1648 Plus paver at 48 horsepower is 19 percent more powerful. A separate cooler is dedicated to the drive system in the 1648 Plus for increased cooling capacity.

**Number of models:** 2

**New models:** 1448 Plus and 1648 Plus

**Product-line features:** Manual screw jacks adjust the crown and mat profile, and the screed is heated with propane burners. The 1448 Plus uses engine exhaust to heat the screed, although a propane-heated screed is optional.

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# Gallery of Asphalt Pavers

## NEAL

### Conveyors Feed Path Paver

Neal re-entered the asphalt-paver business in February when it introduced the 7,200-pound Model 5500 paver. It stands out from the other path pavers in this size and capability range because the 5500 has slat-chain conveyors to carry material from the hopper to the screed, while the others are gravity fed. Conveyors will run automatically, sensing the head of material in front of the screed, or they can be adjusted manually.

**Number of models:** 1

**New models:** Neal 5500

**Product-line features:** Neal's 38-horsepower 5500 paves widths from 5 feet 3 inches to 8 feet 3 inches, pushing dump trucks with 1,500 square inches of track on the ground.

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## PUCKETT

### More Capacity, Less Transport Width

Puckett added the 10,000-pound model 580 to its 500-Series asphalt pavers, using an 8-foot basic screed to deliver up to 13 feet of paving width while reducing the transport width to 8 feet 6 inches. The Puckett 560 offers the same maximum paving width, but transports at 9 feet 9 inches wide. The new 580 will pave as narrow as 2 feet wide.

**Number of models:** 3

**New models:** Puckett 580

**Product-line features:** Sprocket drive and automatic tensioning of the track are standard features on all Puckett Pavers. With a product line comprised of just three pavers weighing 10,000 pounds or less, Puckett's stated mission is to manufacture "quality, simple-to-operate, and dependable small asphalt pavers."

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## VT LEEBOY

### A New Challenge to Road Pavers

VT LeeBoy broke the under-19,000-pound commercial-paver mold several years ago when it introduced the 25,000-pound 8816 paver. With introduction at Conexpo-Con/Agg 2008 of the 33,000-pound 9000 wheeled asphalt paver, the formidable commercial-paver builder goes head-to-head with big-paver brands such as Barber-Greene, Blaw-Knox, Caterpillar, Cedarapids, Roadtec and Vögele. The 9000 and the 8816 are CAN bus-controlled pavers, with reduced wiring needs that facilitate digital gauges and sophisticated electronic diagnostics. The CAN bus also allows what LeeBoy calls Plus 1 steering control to provide a responsive, highly maneuverable, and easy-to-operate paver for high-volume commercial and street paving.

**Number of models:** 9

**New models:** 9000

**Product-line features:** LeeBoy moved to Cummins power for the 8816, and the new 9000 is the first LeeBoy powered by a Caterpillar diesel. All LeeBoy pavers — including the less-than-18,000-pound 8500, 8510, and 8515 — offer LeeBoy's electrically heated Legend screeds and dual-joystick steering using Sundstrand Plus 1 technology.

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# Gallery of Asphalt Pavers



## ROADTEC

### Tier 3 Engines Boost Power

Late in 2007, Roadtec introduced two new eight-foot pavers compliant with Tier 3 emissions standards — the RP-170 rubber-tired machine and RP-175 on rubber tracks — to replace the RP-150 and RP-155. Caterpillar C6.6 engines increased horsepower 12 percent, and Roadtec added 40 percent more fuel capacity, putting 95 gallons on board the RP-175 and 90 gallons on the RP-170. New, hydraulically driven cooling fans reduce paver noise.

**Number of models:** 2

**New models:** RP-170 and RP-175

**Product-line features:** New slide-out seat design and operator control layouts on Roadtec's 10-foot models are on the new 8-foot machines.

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## VOLVO

### Sorting Out the Ingersoll Rand Brands

Volvo now offers the wheeled Blaw-Knox PF3172, PF2181, PF161 and Titan 3870. Volvo will also co-brand the tracked Blaw-Knox PF4410 in the commercial-paving class. The Blaw-Knox machines are all mid-sized pavers that were part of the acquired Ingersoll



Rand Road Machinery group. They're marked by an exclusive offset-bogie front suspension that distributes front-end weight more evenly for better traction. Optional Blaw-Kontrol II offers the choice of a mechanical grade sensor,

mobile reference system, Ultra IV sonic averaging system, or UltraEye V ultrasonic grade sensors.

**Number of models:** 3

**Product-line features:** The 20,350-pound PF161 carries a 16-inch-diameter auger, unmatched by any machine up to 10,000 pounds heavier. Hydrostatic direct traction drive eliminates about 70 percent of mechanical drive-train components.

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## SALSCO

### Mini Paver Stretches to 6 Feet

Salsco's Model 05013 Mini-Track Paver is a 3,060-pound tracked machine with capacity to pave from 3 feet to 6 feet wide for bike and cart paths, utility trench, patching, sidewalks, shoulders and the like. Total width of 54 inches, and a turning radius of 6 feet, put the small paver almost anywhere. Track gauge can be adjusted hydraulically.

**Number of models:** 1

**Product-line features:** The screed on the 05013 Mini-Track will pave crowns and inverts. The hydrostatically driven machine can pave 50 feet per minute. It is powered by a 10-horsepower Yanmar or Hatz diesel engine through a Sunstrand hydraulic pump and Char-Lynn motor.

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## TEREX

### Big-Paver Features

Terex | Cedarapids eight-foot models CR352 and CR362 employ the maker's patented three-point suspension, which applies two hydraulic cylinders to isolate vertical movement of the drives from the rest of the paver. Wheels or tracks roll over irregular base without significantly changing screed height. The 300-Series pavers also use the patented Frame Raise System that raises the rear of the paver hydraulically for greater clearance under the augers, screed and frame. The system can adjust auger height to fine-tune the head of material, it helps position the paver around curbs and other obstructions, and it adds clearance for transitions on and off trailers.

**Number of models:** 2

**Product-line features:** The 300-Series Terex pavers use a lot of the same material-handling wear parts as the 400-Series highway pavers — things such as roller chain and slats that determine how long the machine will work between rebuilds.

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## Light Equipment

### ALLMAND

Allmand's Night-Lite PRO-Series light-tower packages offer geographic-specific features, such as the International version, which uses two Schuko receptacles and a 6-kilowatt, 220-volt, 50-hertz generator. An International version also meets the requirements of the Canadian Standards Association (CSA). The "Arctic Special" features an engine-block heater, heavy-duty battery with heated blanket, tube-type tires, remote oil drain, CSA-approved wiring harness, and a heavy-duty enclosure with a full floor and 90-degree air-inlet duct to prevent blowing snow from entering the cabinet.

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### ATLAS COPCO

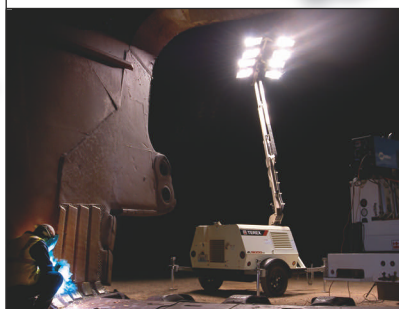
The Atlas Copco QAX-24 generator is rated at 24kVA and features a three-cylinder, turbocharged Deutz diesel engine that is positioned under an acoustically treated, weather-proof canopy for reduced-sound operation in sensitive areas. According to the company, the new generator is easy to use, having just six buttons for operation, along with a standard hour meter, voltmeter and ammeter. The QAX-24 uses a "Zincor" steel housing and powder-coat finish to resist corrosion, and its high-capacity fuel tank allows 13-hour operation. The 2,000-pound unit has a fixed towbar that is designed to provide balanced maneuvering.

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### THOMPSON

The TSC and HTC Series pumps from Thompson are compressor-assisted, dry-prime trash pumps that range in size from 4 to 12 inches and are designed to handle solids up to 3.35 inches in diameter. An engineering feature in these pumps prevents fluid from entering the venturi and eventually spilling on the ground. Thompson's Enviroprime system is designed to extend pump life by separating air and water and, through the use of hard-iron components and high-efficiency impellers, to reduce operating costs. The pump series provides flow rates to 6,250 gpm and head capabilities to 172 feet.

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### TEREX

The hydraulically powered mast used with the Terex AL8000 HT light tower provides 28 feet of vertical height, 20 feet of horizontal reach and 359 degrees of powered rotation. In addition, the light bar on the unit tilts 180 degrees vertically, and each light also pivots in two perpendicular directions. The standard light tower is equipped with four 1,000-watt lights and a 13.6-horsepower Kubota diesel engine to provide 10 kW of electrical power. Options include eight 1,000-watt lights and a 34.5-horsepower Isuzu engine that produces 26 kW of electrical power.

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## MULTIQUIP

The model GDP-5H high-cycle generator from Multiquip simultaneously produces standard 60-Hz power and 180-Hz power for "high-cycle" concrete vibrators. According to Multiquip, the unit typically can handle up to three of the company's 2-inch high-cycle vibrator heads, or two of its 2.625-inch vibrator heads. The generator is powered via an air-cooled, single-cylinder Honda GX-160 gas engine that features overhead valves and an electronic ignition.

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## SUBARU ROBIN

The Subaru Robin Semi-Trash Series pumps employ deeper impeller vanes, along with a larger volute discharge opening, to pass water containing suspended particulate matter and small solid objects. The new pumps, available with either 2-inch (model PKX201ST) or 3-inch (model PKX301ST) inlets and outlets, have the capacity to move 153 and 246 gpm, respectively. The 2-inch model can accommodate solids to 1/4 inch in diameter, and the 3-inch model can handle solids to 3/4 inch in diameter. The new pumps use Subaru Robin air-cooled, four-stroke-cycle gas engines of 4.5 and 6 horsepower, respectively.

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## INGERSOLL-RAND

The Ingersoll Rand MVS-6 Mobile Security System from Doosan Infracore Portable Power allows remote monitoring of jobsites and equipment yards. It uses a self-contained hybrid power system of solar and diesel technology to ensure six months of uninterrupted monitoring, and the unit can be remotely controlled via software that connects to the system's day/night imaging camera. The user can remotely control the pan, tilt and zoom functions of the camera, while also accessing recorded images. A motion detector initiates camera operation, and wireless communication allows networking multiple units to secure large areas. The MVS-6's standard lighting package, two 1,000-watt lamps (inset), allow it to function also as a conventional light tower.

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## WACKER

Wacker has expanded its lighting-products range with the LB-1 Light Balloon, which is designed to provide glare-free illumination. The 1,000-watt, metal-halide light balloon is packaged with a 120-volt portable ballast and a tripod. The balloon is constructed of heavy-duty translucent nylon that diffuses light

evenly, and the top of the balloon features an aluminum-coated Kevlar fabric that directs light downward. The tripod can be adjusted to a height of 13.5 feet and can be anchored with tie-downs or with stakes through the leg tips.

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## Avoid the Trap of Delayed Replacement

These three lessons will keep you from falling prey to the notion that delaying machine replacement comes without risks and cost

When work volumes fall, asset managers may try to save cost and reduce risk by delaying replacement and extending the life of their existing fleet. This reduces capital expenditure, lowers fixed owning costs, and provides flexibility in case the market changes even more. Yet you must compensate with resources needed to manage a fleet that is more expensive, less productive, and less reliable.

Delaying replacement and extending life is a short-term fix to a long-term commitment. Equipment has a finite life that may be extended through rebuilds or continuing repairs, but in the final analysis, it has to be replaced at some stage. Funds captured from the depreciation component of your rate must be reinvested in your fleet, or you will create serious future problems.

The accompanying table on page 68 shows an example fleet of 12 mid-size dozers. We'll use it to help us understand the implications of delaying replacement by three years.

The second column shows hours each dozer had worked at the end of 2007. Fleet age is well spread with an average machine age of 7,125 hours. Two units are over the expected maximum life of 10,000 hours; four are between 8,000 and 10,000 hours; and three units are between 6,000 and 8,000 hours.

Over time, the units will age and more will go into the red and orange zones. Although some of the older units can be rebuilt or undergo extensive repairs, we will have a fleet that is almost entirely in the red zone by 2010. We will need a capital expenditure binge to reinstate a fleet average age of about 7,000 hours.

**Critical lesson No. 1:** You cannot deny the inevitable need to replace equipment.

Now, notice how fleet availability drops with age. The forecasts for 2008, 2009 and

2010 show that the fleet is expected to work fewer hours each year. This is based on the assumption that availability will drop 5 percent each year or 100 hours for each 1,000 hours of age over 6,000.

This is a reasonable assumption, but it quickly adds up. Average availability drops from close to 90 percent in 2008 to less than 77 percent estimated for 2010. The reduction in hours available per year represents a loss of about 14 percent in productive capacity across the fleet and is more than could be replaced from the full-time addition of another machine.

**Critical lesson No. 2:** Delaying replacement and increasing average age reduces overall fleet availability and significantly impacts ability to do work.

Hourly cost of repair parts and labor increases as a machine ages. Understanding this and factoring it into your analysis is critical to quantifying the impact of delayed replacement. If you do not, then it is difficult to prepare repair parts and labor budgets for an aging fleet. It cannot be done by using experience based on a younger average age, and it is extremely dangerous to assume that the future will look much like the past.

The budget numbers in our example are based on the actual growth in hourly cost for a fleet of well-run and well-maintained mid-sized dozers. Unit 1 has a 2008 budget of a little less than \$33,000, which drops to \$30,600 in 2010. Changes in availability tend to mask the problem. In 2008, we expect 1,300 hours for the \$33,000 budget, or a rate close to \$25.40 per hour. In 2010, we want 1,053 hours for a budgeted cost of \$30,600, a rate more than \$29 per hour. Units 11 and 12 are clear; availability stays at 2,000 hours per year, and it is obvious that



**Mike Vorster**

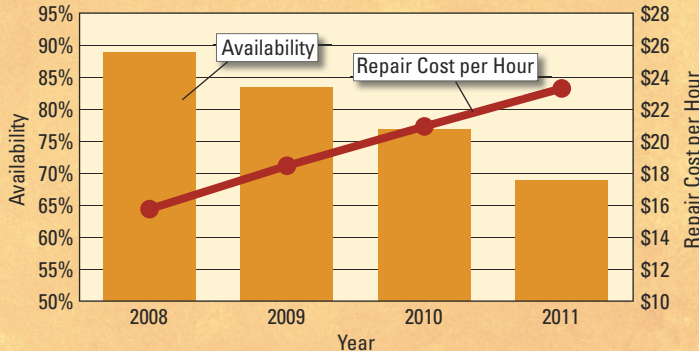
David H. Burrows Professor of Construction Engineering and Management at Virginia Tech. See [ConstructionEquipment.com](http://ConstructionEquipment.com) for full archives of "Equipment Executive."

*Pay me now in terms of a new machine, or pay me later in terms of increased repair parts and labor cost.*



# Equipment Executive

## The Trap



Left unchecked, a strategy of delayed replacement will cause availability and repair costs to deteriorate.

both total and hourly costs are expected to increase as the units age.

The impact on the fleet overall is alarming. The hourly repair parts and labor cost increase by more than \$5 per hour, from \$15.75 in 2008 to \$20.78 in 2010. Had we kept the age and thus the hourly repair parts and labor cost at 2008 levels, we would have been able to deliver the hours planned for 2010 at a cost of approximately \$92,000 less than the budgeted cost for the aging fleet.

**Critical lesson No. 3:** Pay now in terms of a new

machine, or pay later in terms of increased repair parts and labor cost.

The accompanying chart plots the availability and repair cost per hour values from the table and extends the aging process out to 2011. The situation continues to deteriorate with projected availability falling below 70 percent and repair costs increasing to more than \$23 per hour.

The need to delay replacement for solid business, financial and strategic reasons is often difficult to challenge. Capital expenditure needs to be reduced from time to time.

The equipment manager must demonstrate the three lessons learned. First, know how your fleet age is distributed across units and be able to show that delaying replacement does not eliminate the need for capital investment. Second, know how availability and reliability decline with age, and be able to quantify that an old fleet is not as capable of producing completed construction as a well-balanced fleet. Third, and probably most important, have the data to determine how hourly cost of repair parts and labor increases with age. Otherwise, the temptation to delay capital expenditure will be overwhelming. **CE**

## Sample Fleet of Mid-Sized Dozers

Unit #	End 2007	2008		End 2008	2009		End 2009	2010		End 2010
	Hrs wkld	Hrs	Budget	Hrs wkld	Hrs	Budget	Hrs wkld	Hrs	Budget	Hrs Wkld
1	13,000	1,300	\$32,984	14,300	1,170	\$31,997	15,470	1,053	\$30,670	16,523
2	12,000	1,400	\$33,393	13,400	1,260	\$32,735	14,660	1,134	\$31,633	15,794
3	9,000	1,700	\$32,796	10,700	1,530	\$33,470	12,230	1,377	\$33,326	13,607
4	8,000	1,800	\$31,990	9,800	1,620	\$33,223	11,420	1,458	\$33,491	12,878
5	6,000	2,000	\$29,464	8,000	1,800	\$31,990	9,800	1,620	\$33,223	11,420
6	9,000	1,700	\$32,796	10,700	1,530	\$33,470	12,230	1,377	\$33,326	13,607
7	7,500	1,850	\$31,472	9,350	1,665	\$33,007	11,015	1,499	\$33,499	12,514
8	8,000	1,800	\$31,990	9,800	1,620	\$33,223	11,420	1,458	\$33,491	12,878
9	7,000	1,900	\$30,879	8,900	1,710	\$32,729	10,610	1,539	\$33,457	12,149
10	3,000	2,000	\$19,864	5,000	2,000	\$26,264	7,000	1,900	\$30,879	8,900
11	2,000	2,000	\$16,664	4,000	2,000	\$23,064	6,000	2,000	\$29,464	8,000
12	1,000	2,000	\$13,464	3,000	2,000	\$19,864	5,000	2,000	\$26,264	7,000
Totals		21,450	\$337,755		19,905	\$365,036		18,415	\$382,721	
Ave Hours	7,125	1,788		8,913	1,659		10,571	1,535		12,106
Availability		89%			83%			77%		
\$/hr			\$15.75			\$18.34			\$20.78	

As machines perform work over the three years in our example, they age. By the end of 2010, none of the machines is able to perform at 100 percent availability, and average age has climbed to 12,106 hours.

**Red** = More than 10,000 hours  
**Orange** = 8,000 to 10,000 hours  
**Yellow** = 6,000 to 8,000 hours



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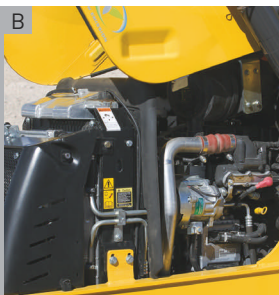


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# Earthmoving Report

By LARRY STEWART, Executive Editor

## John Deere's 764 HSD Changes The Shape and Speed of Grading

The 200-horsepower articulated dozer offers an unprecedented view to the blade on a machine that can grade at 6 miles per hour

John Deere says a significant portion of its customers are looking for a grader with greater flotation and better maneuverability, and a faster dozer that won't damage pavement. In responding with the 764 High-Speed Dozer, Deere offers those buyers an articulated-frame dozer that can grade accurately at up to 6 miles per hour and offers operators an amazingly good view of the work at the blade.

"Applications for this machine include site preparation, road building — anything where you're spreading material, especially that last foot of material on the jobsite," says Keith Berning, manager of product marketing at Deere. "It's not designed to do the stump grubbing, the heavy digging and pushing work that you might do with another dozer. Finish grading work is where you're really going to see the greatest benefit of the 764 HSD, capitalizing on its speed to do that job twice as fast as what you can do with a current crawler."

Deere unveiled a prototype of what the company is calling "the first new machine form the construction industry has seen in decades" in March at Conexpo-Con/Agg 2008, and promised production units of the rubber-tracked 764 HSDs for sale in 2009.

The 764 HSD weighs in at 32,000 pounds and is powered by a Tier 3 John Deere PowerTech 6.8-L engine rated at 200 horsepower. Four 24-inch-wide tracks put 4,989 square inches of track on the ground.

"With total ground pressure of about 6 psi, it's a little higher than a low-ground-pressure crawler, which might be around 4½ or 5 psi," says Berning. "A motor grader is going to be up in the 40-psi range."

Berning says customers who have worked the 764 HSD

### Key Specs: John Deere 764 HSD

Engine	John Deere PowerTech 6068
Horsepower	200 net horsepower
Weight	32,000 pounds
Track-on-Ground	4,989 square inches

Source: John Deere

**The 764 High-Speed Dozer has about 15 more net horsepower and the same blade size as the company's 850J hydrostatic-drive crawler dozer, but weighs about 10,000 pounds less. The HSD's 6 psi ground pressure is more than 1 psi less than the conventional 850J crawler.**

**Left: Deere's 764 High-Speed Dozer combines a grader's speed with a crawler's flotation. It will grade to plus or minus 1/8-inch accuracy and doze moderate loads at twice the speed of a similarly sized crawler. Rubber tracks allow a top travel speed of 18 mph without damaging pavement.**





agree the machine will deliver a grade to plus or minus 1/8-inch of accuracy at 6 mph (faster, in some conditions). That's about as fast as a motor grader and twice as fast as the Deere 850J, which carries the same-sized blade and can work at the same level of precision.

The 764 HSD is available with Deere's "plug-and-play" Integrated Grade Control, meaning the dozer arrives from the factory pre-wired and ready to add the operator's favorite laser/GPS system.

Rubber track units — jointly developed with track-maker Camoplast ([www.camoplast.com](http://www.camoplast.com)) for traction and durability in this unique application — are crucial to the high-speed dozer roading at speeds of up to 18 mph. Not only do the rubber tracks protect pavement, but each track module has a hydraulic shock absorber, which also acts as a track tensioner, to keep the machine stable at transport speed. (The suspension automatically locks out and becomes rigid to improve fine-grading performance when the 764 HSD is grading.) Drive torque is delivered to the rubber track belt with a combination of positive contact using a sprocket and friction to deliver long belt life. The undercarriage is backed by a 3,000-hour wear assurance program.

Hydrostatic drive not only offers infinite control of speeds from 0 to 18 mph, but it also works to distribute power evenly to each track under changing load conditions. When the machine articulates, the inside track slows and outside track speeds up automatically to improve turning, reduce slippage, and preserve the track. While turning, the four shorter tracks are swept over less ground than two long tracks, extending life and improving performance compared to machines with just one pair of tracks.

The operator's station is mounted close to the 12-foot, six-way dozer blade on the tractor's front frame. The operator's station turns to follow the blade when the tractor turns, giving the operator an unprecedented panoramic view of the blade all the time.

The 764 HSD features familiar John Deere crawler controls. Two right-hand levers handle blade functions, while the left controls perform steering and forward-neutral-reverse direction changes. But the cab also includes a steering wheel for more-comfortable control of the machine at road speeds.

A rear hitch and two hydraulic circuits plumbed to a bulkhead at the rear of the machine allow the dozer to pull implements like scrapers, discs, box blades and compactors. With a



**Mounting the cab on the tractor's front frame puts the operator close to the six-way dozer blade and looking straight down to the blade through the cab's broadest stretch of glass even in turns.**

suspended tractor, the hitch chosen is designed for pulling rather than weight transfer. The tractor will require dolly-type implements.

"The hitch and auxiliary hydraulic ports will help customers get more work done on the jobsite with one machine," Berning says. "It even creates the opportunity to finish grade and seal in one pass."

While the 764 HSD is an entirely new machine form, it was developed with reliable, rugged components from other Deere-engineered products with years of experience on the job — about 60 percent of its parts come from other machines in the Deere line. The power train, hydraulics, blade and C-frame are from John Deere crawlers; while the cab, engine, controls and articulation joint come from Deere four-wheel-drive loaders.

Deere's Quad Cool system helps keep the cooling elements clean and is less susceptible to plugging. Coolers are arranged in a cube, side by side around the fan rather than stacked in front of it, to allow easy cleaning access to both sides of each cooler. The standard hydraulic fan automatically reverses direction at regular intervals to eject debris that might have been drawn up against the coolers, minimizing manual cleaning time.

Suggested retail price of the 764 HSD is expected to be similar to Deere's 850J — a conventional crawler dozer with similar horsepower but weighing 10,000 pounds more — at about \$330,000.

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# Shop and Field Safety

# WEBCAST

Wednesday, June 4, 2008 1 p.m. CST

## MODERATOR:

**Mike Anderson**, Senior Editor, *Construction Equipment*

## PRESENTERS:

**Roger Thompson**,

Director of Facilities, Programs & Planning,  
Bucher, Willis & Ratcliff Corporation, Kaukauna, WI

**Jack Butler**, Owner,

Butler Cranes and More, Lexington, OH

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## Rental-Friendly Roller Moves Forward

**Bomag updates single-drum model with features common throughout family**

**I**t may be a member of the Bomag heavy compaction product family, but the BW124-40 Series vibratory roller was right at home being launched at The Rental Show 2008.

With a 47-inch drum, the smallest of Bomag's heavy single-drum rollers is "a perfect machine" for the rental market, says Dave Dennison, product manager, Bomag Americas. Beyond avoiding transport restrictions, "it's got the ability to be used in confined areas — utility installations, landscaping jobs — applications that are really in that rental niche."

Rolled out at the American Rental Association's annual February trade show, held at the Mandalay Bay Convention Center in Las Vegas, the smooth-drum BW124DH-40 and the corresponding padfoot-drum BW124PDH-40 feature noticeable design enhancements from the predecessor BW124-3 Series that go beyond the new Tier-3 Deutz three-cylinder diesel engines. These include ROPS/FOPS with a sun canopy as standard and a more vertically opening hood.

"It's not a truly 90-degree-opening hood, but we're closer than we were. It was improved over the old model and gave us more access to the engine compartment," says Dennison. "It brings us more in line with the rest of the family."

While not a new feature, "the ability to outfit these machines with a blade also increases the versatility of the machines and reduces reliance on other equipment," says Dennison. "Because of that machine's size and its utilization in utilities or



**Bomag has redesigned the 47-inch single-drum vibratory roller model to provide more standard features popular in the rental industry and among cost-conscious contractors. With their compact design, the new BW124-40 Series rollers are versatile and maneuverable, yet offer capabilities similar to larger models.**

trench work and in landscaping, it's definitely a benefit to have the blade, whether it's for rental or contractor."

With a vibratory system generating 18,540 foot-pounds of centrifugal force, the BW124-40 Series will compact granular and mixed soils, as well as semi-cohesive and cohesive materials. A dual amplitude option is available.

No-spin rear differentials and standard drum drive combine for maximum gradeability of 55 percent. The bolt-on, maintenance-free center joint provides 35 degrees of articulation and 12 degrees of oscillation for full drum contact on irregular terrain.

A single travel lever provides simple control for travel direction and speed, topping out at 5.6 miles per hour. While adding the Tier-3 engines, the updated BW124-40 rollers maintain an ISO-rated output of 44 horsepower.

Bomag Americas also recently rolled out the updated 66-inch BW177-40 and 84-inch BW211-40 Series single-drum vibratory rollers.

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### Basic Specifications

	BW124DH-40	BW124PDH-40
Operating weight (lb.)	7,010	7,120
Height* (in.)	97.3	97.3
Drum width (in.)	47.2	47.2
Maximum speed (mph)	5.6	5.6
Engine	Deutz D2011 L03i	Deutz D2011 L03i
ISO output (hp)	44	44
Centrifugal force (ft.-lb.)	18,540	18,540
Amplitude (in.)	0.067	0.063
Frequency (vpm)	2,460	2,460
Pad feet (#)	—	70

\* To top of ROPS/FOPS canopy



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## Aerodynamic LoneStar Sports 'Wild Styling'

International says this truck is unlike anything on the road today. The chrome-laden Class 8 tractor will definitely turn some heads

**W**ild styling is the most compelling feature of International Truck's new LoneStar heavy tractor, but the retrogressive V-shaped grille and smooth hood and fenders are also highly aerodynamic and will save owners 5 to 15 percent in fuel compared to traditional square-nosed trucks, the builder claimed during unveiling of the vehicle at the Chicago Auto Show in late February.

"This truck is unlike anything on the road today," says Daniel C. Ustian, chairman of Navistar International, parent of the truck builder. Its swept-back nose was inspired by streamlining on International D series trucks of the late 1930s, he explained, and the chrome-laden Class 8 tractor will grab attention for its owner, who is likely to also be its driver. Oval-shaped air cleaners and side skirting aid "management" of air to reduce drag, but add to the classic look.

LoneStar is based on the ProStar aero highway tractor introduced last year, so has exceptional comfort and quietness for drivers along with easy maintenance and high maneuverability.

A wheel cut of 50 degrees allows tight turns in confined quarters. This is possible because, although the steer axle appears to be set forward (a design that appeals to buyers who like classic trucks), it's actually set back somewhat from the leading edge of the bumper and frame, making room for the wheels to sharply cut left or right.

Executives emphasized that LoneStar is primarily a highway tractor, and most will probably be sold with sleeper boxes with unique interiors, including a wood floor and a couch that folds down into a bed. But the new model will also be offered as a daycab, which opens its potential as a vocational truck. Its 11-inch-high frame rails are stout enough to tote a dump box, and that's what's in several computer images created by designers at International's technical center in Fort Wayne, Ind., said an engineer involved in its planning.

The tractor displayed at the auto show had an International-designed air-ride front suspension, but the standard suspension will have parabolic leafs, either single or multi,



**Most LoneStars will have poshly outfitted sleeper boxes. But daycab versions will also be offered, raising the possibility of vocational variants, even if they are not now in International's plans.**

**Hot-rodded '39 International D-series pickup displays the V-shaped grille that inspired LoneStar's frontal styling, though with considerably more chrome.**

which would work in dump-truck and other vocational service. Stronger front suspension and axle components up to 16,000 pounds in capacity could be easily added to the chassis without much affecting its tight wheel cut. And up to 22,000-pound front ends could be engineered in, though the wide wheels and tires used with them would have lesser cutting ability.

A dump trucker would probably want a vocational-type rear tandem suspension, whether mechanical or air, and the stout frame could accommodate this without much change. Such suspensions are commonly of 46,000-pound capacity. Western transfer dumps sometimes use tandems with less capacity, along with other highway type components, because their loads are split between truck and trailer. Many owner-driven dumpers tend to be stylish, and the LoneStar would indeed be an eye-catching rig.

LoneStars will be available with Caterpillar C15 and Cummins ISX engines and a variety of drive-train components. International dealers are now taking orders for LoneStars, and production at the company's Chatham, Ont., plant will begin in August.

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# Market Watch Lite

By KATIE WEILER, Managing Editor

## ▶ Ditch Witch

Ditch Witch FM25 mixes the drilling fluid in horizontal directional drilling operations. A variety of set-ups are possible, and transport is



easy, says the company. It is powered by a 25-horsepower Kubota diesel engine. Venturi wet hopper has steeper sides for fast, thorough fluid mixing, available in 500- or 1,000-gallon tanks.

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## ▼ Topcon

Topcon targeted accurate and simple operation with its RL-100 Series slope lasers. A new encoding system provides remarkable grade repeatability of 5 arc seconds. All-electronic operation makes setup easy, and its high-contrast



display makes entering grade quick and simple. Available in single slope (RL-100S1) and dual slope (RL-100S2) models, both instruments feature up to 25 percent grade range and up to 2,500 feet of operating range. The RL-100S2 also includes remote-

control operation from up to 1,000 feet away.

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## ▶ DeWalt

The DeWalt heavy-duty demolition hammers (D25899K, D25901K and D25941K) are equipped with spring-loaded dust seals aimed at keeping contaminants from entering the tool. The D25901K and the D25941K have a comprehensive electronics package designed to provide the ability to start the tool softly on contact and to maintain opti-



mum performance under load. The D25901K also is equipped with a variable impact control dial (19 settings) that allows matching performance of the tool to the specific application and to control the rate of aggregate removal. A one-step, 12-position chisel rotation allows repositioning the chisel's angle in 12 different orientations using one hand.

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## ▶ ACS

ACS wheel loader pipe grapple forks handle long and bulky pipe, clamping to large- or small-diameter pipe.

Forks are available with optional poly-lining on the clamp arms to protect the pipe from damage. They are also available in both coupler and pin-on equipped.

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## ◀ VMAC

A hydraulic above-deck air compressor from VMAC delivers up to 40 cubic feet per minute at an operating pressure of 150 pounds per square inch to power impact guns, air ratchets, hand-held chisels, air chucks

and hammer drills. By measuring only 17x18x24 inches, the rotary-screw Predatair40 also saves in deck space and payload. The compressor can operate at 100-percent duty cycle, and includes its own cooling system and a remote LCD digital control box.

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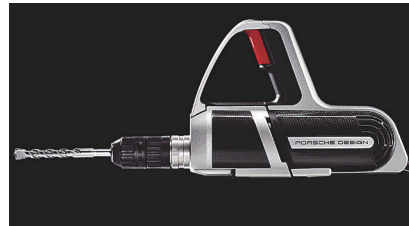




## ► Metabo

The new Metabo Porsche Design P'7911 Multihammer is said to combine all the essential functions of a drill with those of a pneumatic hammer to create a tool that can be used in concrete, stone, wood and steel. With the handle mounted on top of the tool, forces acting on the P'7911 are almost perfectly balanced, says Metabo, resulting in an easy-to-use tool. The new 705-watt, 6-amp Multihammer has 133 inch-pounds of torque and can drill up to 3/4-inch opening in concrete.

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## ► Qualcomm

GlobalTRACS Lite equipment-management system is about half the cost of "the more robust" GlobalTRACS system, according to the manufacturer, and provides operational and location information.

Both systems can be viewed through the same web interface. GT Lite was also designed to allow fleets with

compact equipment to add telematics. A battery backup feature allows the system to communicate for five to six days if power supply is cut. The system uses digital cellular technology, not analog. Standard one-year charge is \$495 with a flat monthly fee of \$18.

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## ► Knaack

Monster Box Series includes the Piano Box (Model 1000), Chest (Model 1010) and Cabinet (Model 1020), all of which are designed to provide durable, secure storage on jobsites. Monster Box models use heavy-duty tubular-steel framing, a four-point crane-lift system, an integrated UL-rated drill-resistant lock, and the Power Pass electrical pass-through.

The Piano Box has a storage capacity of 48 cubic feet, the Cabinet 52 cubic feet, and the Chest holds 31 cubic feet.

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# Market Watch Lite

## Delta

The tall, sloped lid of Delta's new JOBOX Industrial Slope Lid Chest converts to a work table. The storage unit's Site-Vault security system features a three-point lock design that creates up to 50 percent more lock strength than two-point locks. Lock hooks engage from the side, increasing the difficulty of prying them open. EZ-Loader skid bolsters allow front-to-back and side-to-side loading with a forklift.

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## Atlas Copco

TEX pneumatic, hand-held breaker series is ideal for concrete- and asphalt-breaking applications, and the breakers feature vibration-reduction and other ergonomic upgrades for enhanced operator comfort and productivity. Models in the new series include the 34-pound TEX 140PS and 42-pound TEX 180PS, and each incorporates Atlas Copco's SOFSTART two-step trigger. Requiring 53 and 55 cfm of air, respectively, the TEX 140PS/TEX150PE and TEX 180PS/TEX 190PE deliver approximately 1,500 blows per minute.

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## Dewalt

Dewalt's new line of portable generators (models DG3000, DG4400B, DG6300B, DG7000B) have rated AC outputs of 2,920 to 6,550 watts and are equipped with CARB-compliant, Dewalt commercial-grade engines. The DG4400B, DG6300B and DG7000B can use a cordless, battery-start option, which uses the same cordless battery system at the core of Dewalt 18-volt tool platform. These new units are equipped with the company's maintenance-free, brushless alternator.

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# Market Watch Lite

## ► Filter Minder

Filter Minder variable-output pressure sensors monitor vacuum, pressure and differential pressures, and give an output proportional to restriction. In addition to air and fuel filters, sensors can monitor emissions-related crankcase ventilation and diesel particulate filters. Electronics of the sensor are protected from the monitored media, so they can be used in severe-duty applications.

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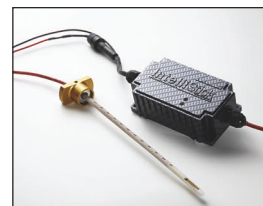
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## ► IntelliStick

IntelliStick is a dipstick replacement designed to monitor and report the condition of automotive engine oil in real time. According to the manufacturer, the system "electronically monitors anti-wear conditions in engine oil and continuously scans for water/coolant and fuel intrusions."



The system's sensor, says the company, "communicates with any Microsoft Windows-based Bluetooth-enabled PDA, cell phone or laptop." The product is designed to provide a continuously updated picture of engine-oil condition, and to promote optimum drain intervals.

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## ▶ **Kaeser**

With a 28-gallon fuel tank, the M57 Mobilair Utility Mount portable compressor provides 10 hours of uninterrupted operation for road maintenance, striping and other site work. A four-cylinder diesel engine combined with Kaeser's energy-saving Sigma Profile air end produces more air with less horsepower. The unit's design includes an easy-to-read curbside instrument panel protected by an aluminum hinged lockable door, as well as forklift slots and a single-point lifting bail.

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## ◀ **Stone**

A 220-volt power option is now available on the 1.5-, 2- and 3-horsepower motor-driven concrete vibrators from Stone. With 115-volt power as standard, the concrete vibrators are also available with a range of interchangeable and reversible flexshafts and eight high-amplitude heads ranging in diameter from 3/4 to 2.5 inches, including a rubber head for epoxy-coated rebar applications. For easy flexshaft changes, Stone concrete vibrators feature a mold-injected nylon quick-disconnect system.

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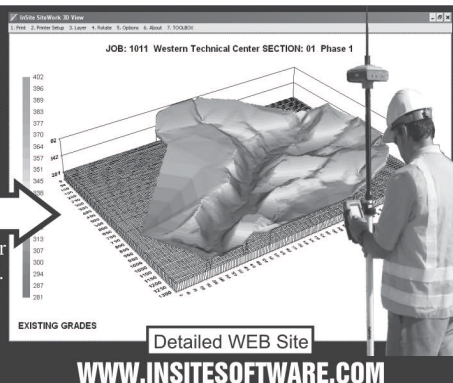
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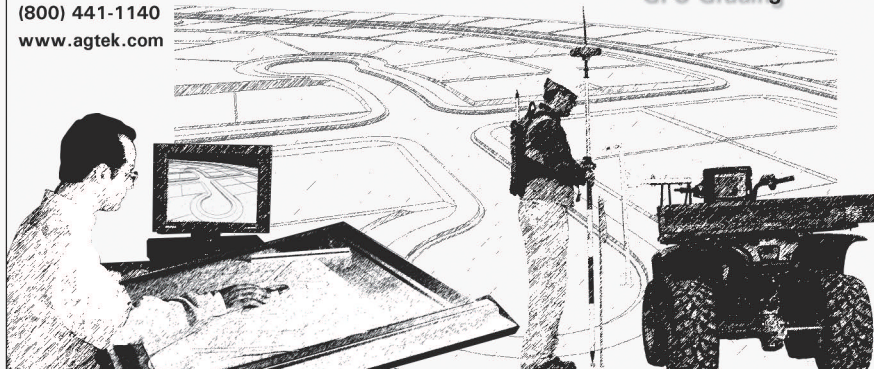
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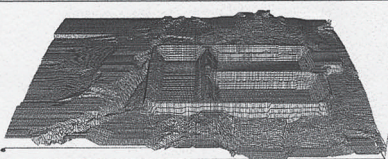
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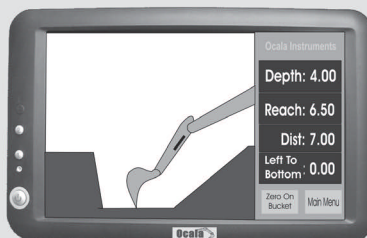
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## The Champion 100T Grader

Champion's 100T was the world's largest grader ever sold commercially. Was it too big for the market?

In 1975, Dominion Road Machinery Co. of Goderich, Ontario, Canada, builders of the renowned Champion line of motor graders, took a bold step when it introduced the world's largest production-model grader. Originally designated the Champion 80T, this monster of the grading world tipped the scales at 180,000 pounds. With its wide, 24-foot blade and a GMC V16-71T diesel engine rated at 700 bhp, it was intended for use in surface mining operations to maintain roads for the largest haulers, or to reclaim vast areas of land.

In 1977, Dominion Road Machinery Co. became Champion Road Machinery, and the following year, the 80T grader was upgraded to the 100T and nicknamed the "Big Mudder." Changes included several modifications for increased strength, which raised its weight to 202,000 pounds. The same GMC engine was retained, but an optional Cummins VT-1710 at 700 bhp was also available. While huge in size, the 100T still boasted all the versatile blade movements found on smaller graders including blade power side shift and tilt, front wheel lean, and 45-degree circle rotation either left or right. Overall length was 50 feet 3 inches, width 14 feet 9 inches, and height to top of cab 17 feet 11 inches.

Only a few 100T graders were sold for work in surface coal mines, including locations in Illinois and the Appalachians, and also in the Canadian oilsands operations. Low sales numbers forced Champion to drop the 100T from its product line, and the last one was shipped in 1985 before even 10 had been built. Champion sold the manufacturing rights of the model 100T to Dom-Ex Corp. of Hibbing, Minn., in 1989, and continued successfully with the rest of its line. Volvo purchased Champion Road Machinery in 1997, and today markets a line of modern graders under the Volvo brand name.

Champion Road Machinery and its predecessor companies had been one of the oldest in the grader industry, building pull-type graders in Canada since 1892. The company had even earlier American roots going back to 1875 when Samuel Pennock of Kennett Square, Pa., patented a two-wheeled



**The 100T was a hydraulically operated grader with an articulated frame and tandem rear wheel drive. An 8-speed power-shift transmission provided a top speed of 35 mph.**

grader for pulling behind a team of horses. He went on to improve the grader idea and invented and patented a four-wheel pull-type in 1877 known as "The American Champion." The Champion label stayed with the company and became part of its name in later years. Known as S. & M. Pennock & Sons since 1878, the firm prospered and enlarged its factory to manufacture graders and other road building equipment. After reorganization, the American Road Machine Co. was founded, and a sales organization was established in Canada. That led to a Canadian company obtaining the rights to manufacture and sell Champion machines in Canada starting in 1892.

Corporate changes continued with the Canadian company, changing its name to the Good Roads Machinery in 1897, then Dominion Road Machinery Co. in 1915. It became an independent Canadian company in 1929, and by the early 1930s was the sole manufacturer of Champion graders. Today Volvo's graders are still manufactured at the original Goderich factory.

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*Read more about the evolution of construction equipment in Keith Haddock's fully illustrated book, *The Earthmover Encyclopedia*, now available in bookstores. Also, consider a membership in the Historical Construction Equipment Association, [www.hcea.net](http://www.hcea.net). And be sure to visit [ConstructionEquipment.com](http://ConstructionEquipment.com) for past Iron Works features.*



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Mark Baumann, job site foreman,  
Progressive Contractors, Inc. (PCI),  
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over. "They hit hard, are easy to start and run real well. We are putting 40 to 50 hours a week on each rammer and we haven't had any trouble" said Baumann.

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