

 Reed Business
Information.

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maintenance mode



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control recoups
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5900i shoulders
more load



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Trenchers Trend Up

**Manufacturers innovate
at the large end of their lines
p. 44**

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Cover photo: George Pfoertner®

FEATURES

EXCLUSIVE REPORT: Giants

26 Contractors Shift to Maintenance Mode

Construction Equipment's Giants report an overall business outlook that reflects the desperation of economic news dominating North America when Giants surveys were on their desks this spring. Only 32 percent of Giants expect work volume to rise this year, and *Construction Equipment's* Giants re-search has never seen as much as 31 percent of firms expecting work volume to drop. Only 22 percent of firms expect business to be very good or excellent this year, and 38 percent of Giants forecast a fair to poor business year. Executive Editor Larry Stewart reveals where the greatest potential for pleasant surprises may be.



APPLICATION: Machine Control

34 3D Technology Puts Contractor Back in Control

After Larry Cox became a successful earthmoving bidder on the Heber Springs, Ark., sports-complex project, he decided it was time to make the machine-control equipment upgrade. That decision helped his earthmoving operation overcome "the worst" that weather has to offer.



HANDS-ON-TRUCKING

40 PayStar 5900i SBA Expands Capabilities



Check out this month's Hands-On Trucking ride — a 2008 International PayStar 5900i SBA long-wheelbase 10-wheel with a high-sided aluminum dump bed, with lots of frame space for two or three pusher axles, strong front and rear axles, and a gutsy Caterpillar C13 complete with a diesel particulate filter. All its aluminum is highly polished, and chrome covers about anything else not painted gloss black. Truck editor Tom Berg says driving it "is one of life's trucking pleasures."

BUYING FILE

44 Big Things Happening for Trenchers

Trenching is big business, and equipment manufacturers are responding by adding new and/or updated models to their dedicated trencher product lines, particularly at the larger end. To meet the demand, some manufacturers are even moving up into markets for which they have traditionally not been players. At the same time, trenching attachments for smaller and compact carriers (inset) also continue to evolve.



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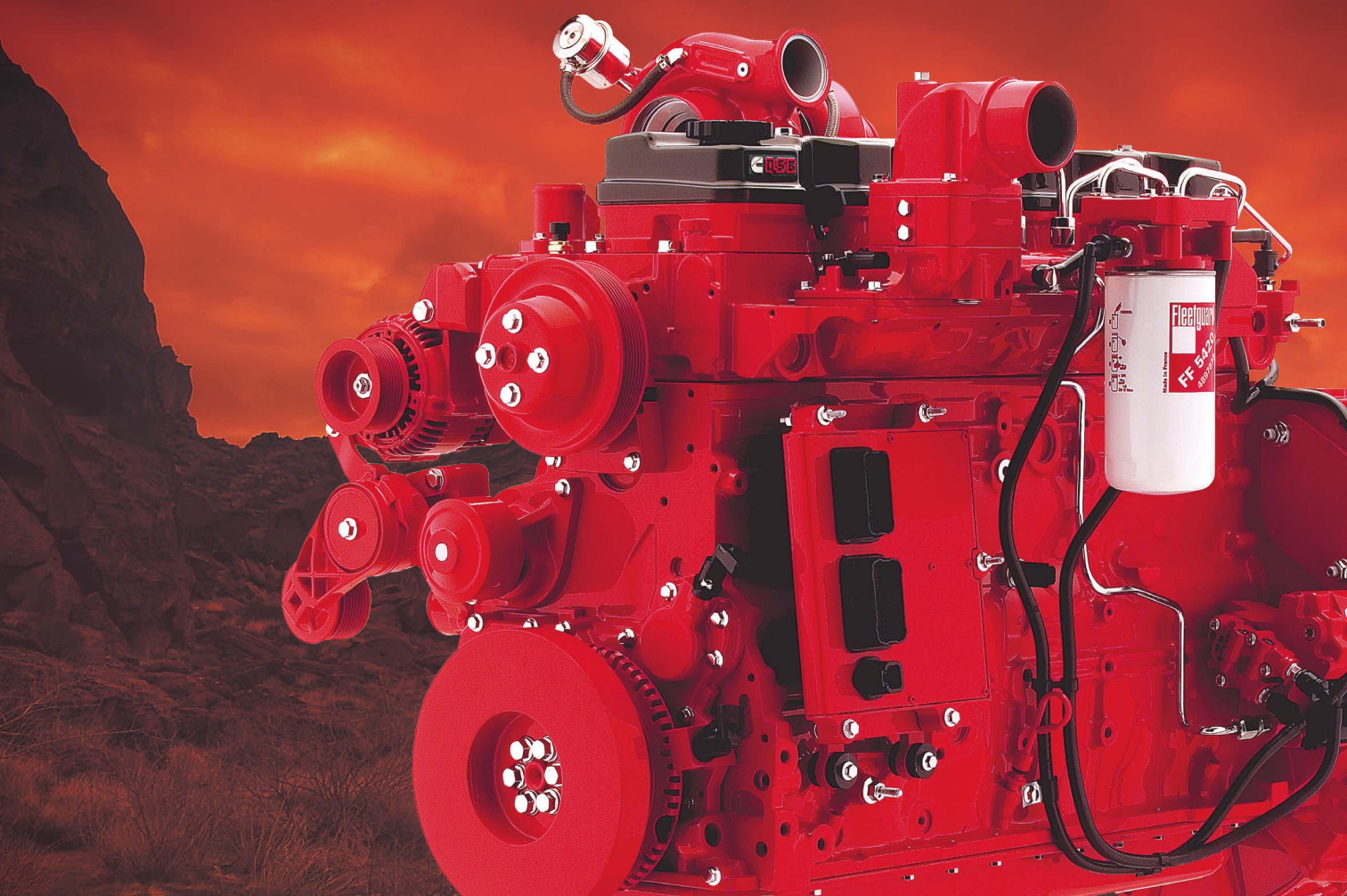
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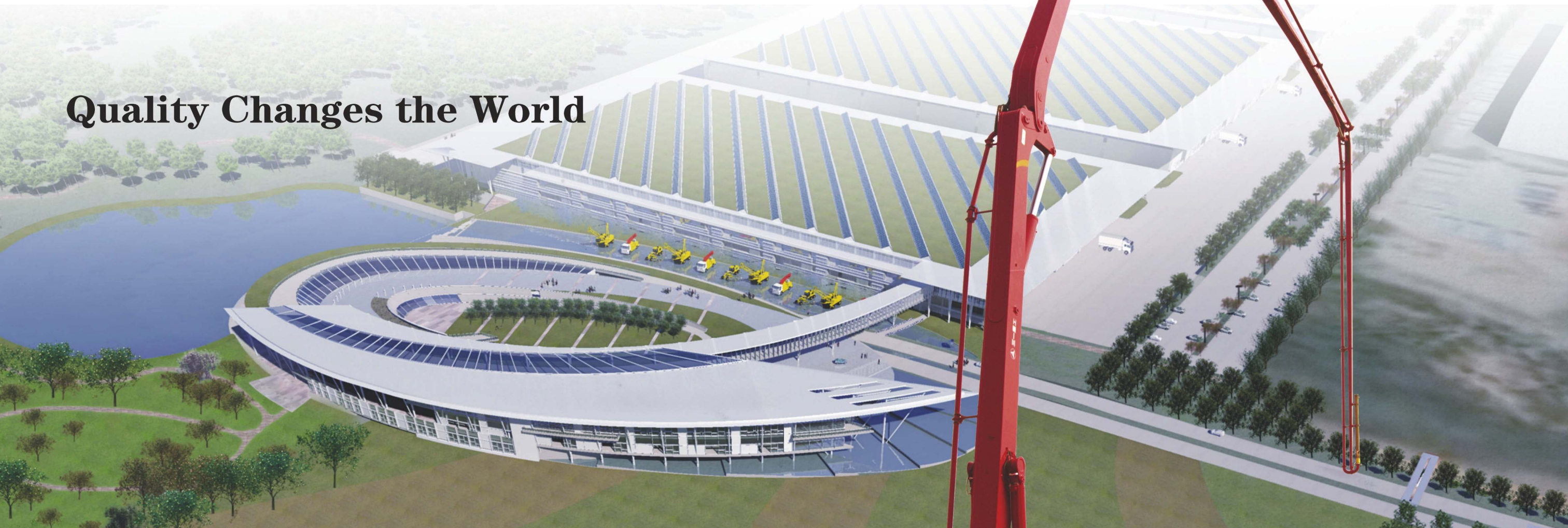


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Robbing Peter

What do you do in a tough year such as we've had so far? We were talking to an owner-operator who's been in the excavation business for 30 years, and he's never had a worse year. Not much in the pipeline, either.

Most large fleets aren't faring as poorly, but that's not to say they don't have extra machine time on their hands. Utilization isn't where they want it, and shop labor may be just as idle as the machines. According to our annual Giants report, those with estimated fleet-replacement values above \$25 million are using this extra time to go into maintenance mode.

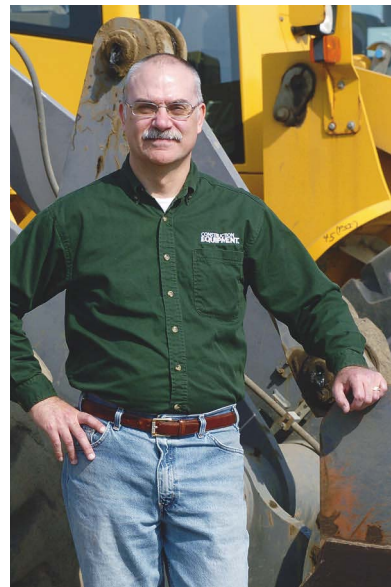
In a cyclical industry such as construction, companies are tempted to take full advantage of opportunities because they know the downside of the cycle is inevitable. This is a sound business move if the company has the fleet to accomplish all it sets out to build.

Yet this strategy will backfire if the fleet and fleet resources cannot keep up. The obvious corners that are cut are scheduled preventive maintenance and component replacements.

The less obvious corner, and more dangerous from a fleet-management perspective, is the reduction of fleet-replacement budgets. About one-third of Giants expect to spend less next year than they have this year. Corporate finance departments consider this a logical component of the cost-cutting strategies that need to be implemented, rightly so in most cases, in order to adjust to the current economic conditions.

But equipment managers must articulate to their managers the importance of staying on track with machine-replacement plans. The economy is indeed putting pressure on cost control, but other forces are putting serious pressure on residual values. If equipment scheduled for replacement is instead retained in the fleet, the organization risks losing asset value. Any reduced costs may be more than offset by the loss in residual values.

Construction Equipment and the Association of Equipment Management Professionals will address residual values in a webinar Oct. 3. If you've viewed one before, you know its value. If not, there's no better time to see how online education can help you manage your fleet. Register at ConstructionEquipment.com today.



Rod Sutton, Editor in Chief

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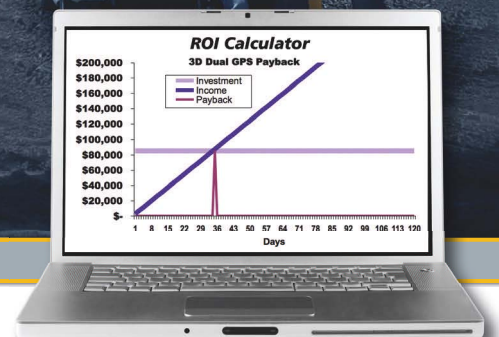
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MARKET WATCH

By KATIE WEILER, Managing Editor

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

◀ Link-Belt

Link-Belt 130 X2 has been added to LBX's line of excavators, available in long undercarriage or regular with blade rubber tracks. Tier III Isuzu engine offers 95 horsepower and carries a 2-year, 3,000-hour warranty. Upgraded hydraulic system improves hydraulic horsepower by 10 percent. Extended Maintenance System extends lube intervals to 1,000 hours for all attachment pivot points.

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▶ Sakai

ExactCompact technology is built into the control panel on two updated high-frequency, higher-force compactors. Once targeted impact spacing has been determined, the operators of the 79-inch-wide SW880 and 84-inch-wide SW990 simply adjust the ground speed until the green lights on the control panel are illuminated. Sakai's new Auto-Speed function memorizes the successful "green zone" settings to allow simplified, full-stroke lock-in at the forward-reverse control.

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◀ Case

Case has repowered its E series compact wheel loaders with a 3.2-liter Tier III Case engine. Models include the 21E, 121E, 221E and 321E. Loaders range between 54 and 82 horsepower with operating weights from 10,168 to 12,676 pounds. Bucket capacities range from 1.05 to 1.44 cubic yards. They feature Versa-Boom linkage for enhanced visibility and precise parallel lift.

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Schwing

The S 36 SX concrete pump is accompanied by the RZ4 four-section placing boom. The boom has a reach of more than 118 feet vertically and 104 feet horizontally, and it can reach tight areas. Standard features include a 740-degree slewing range, a 5-inch pipeline diameter, and an unfolding height of 29 feet. Its standard concrete pump provides 178 cubic yards per hour output at 23 strokes per minute.

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Komatsu

The 960E-1 AC electric-drive truck is the largest in Komatsu's line, with capacity to haul 360 tons and gross weight of 1,270,000 pounds. The 960E is powered by the Komatsu SS-DA18V170, which uses a unique dual-stage turbo air handling system to deliver 3,500 horsepower with what Komatsu says is the lowest brake specific fuel consumption at rated horsepower for this truck class.

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Gradall

Model XL 3100 III is one of five Gradall machines being introduced (other models are XL 3300 III, XL 4100 III, XL 4300 III and XL 5100 III). At 40,000 pounds, the XL 3100 III has a shorter rear swing, which makes it less likely to interfere with traffic and easier to maneuver. It has a maximum reach of 27 feet 5 inches, a dig depth of 19 feet 4 inches, and a maximum working height of 16 feet 3 inches. The XL 3300 III's four-wheel-drive, rubber-tire undercarriage is said to move easily in the dirt as well as on pavement. Boom movements are commanded using new electronic joystick controls built into the comfortable seating module. The XL 4100 III has a carrier tail swing that is 12 inches shorter than its predecessor, which reduces traffic interference when working on roadside applications. It is available in a 6x4 configuration at 47,500 pounds or 6x6 at 49,420 pounds.

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Market Watch

▶ Allen

The 4-foot-diameter MSP 425 riding trowel, which replaces the model SP425, features a new torque-converter clutch and an improved weight-to-horsepower ratio. Other features include manual steering and pitch controls; two 46-inch-diameter, five-blade, non-overlapping rotors; rotor speeds to 170 rpm; and electric-powered spray system for application of retardant.

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◀ Hyundai

The 181,880-pound R800LC-7A is Hyundai's largest excavator and is now powered by the new Tier-3 Cummins QSX, generating 460 net horsepower at 1,600 rpm. Hydraulics have been optimized to improve response time and the system performs faster and saves fuel. Equipped with a mass-excavator 23-foot-7-inch boom and 9-foot-8-inch arm, the R800LC-7A can handle a 5.91-cubic-yard bucket.

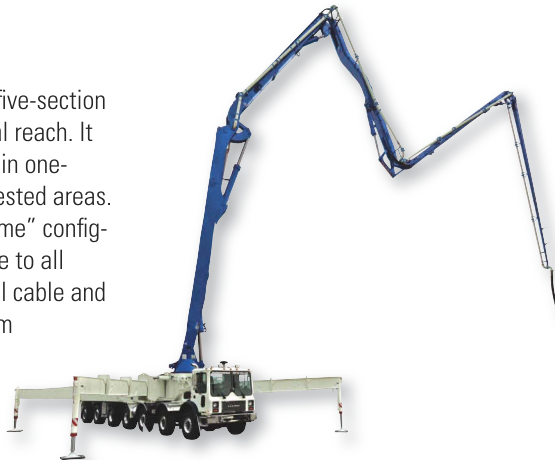
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▶ Putzmeister

BSF 58Z-Meter concrete pump is a five-section Z-fold boom with 189 feet of vertical reach. It features 180-degree working range in one-sided support mode for use in congested areas. It can deploy in both "Z" and "A-frame" configurations. Twin pipes deliver concrete to all boom sections and fully proportional cable and remote controls enable precise boom positioning.

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◀ Sakai

The new 58-inch-wide SW652ND oscillates or vibrates on both drums simultaneously. A double-drum oscillating roller that doubles as a double-drum vibratory roller, the SW652ND controls each drum independently and achieves the required compaction faster on both thin and thick lift asphalt applications. The model offers a high frequency of 4,020 vpm. The more gentle oscillation mode offers a new drum motion designed to neither over-compact the mat nor fracture the aggregate.

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◀ Bri-Mar

The Bri-Mar DI-100 and DI-100-6 dump inserts are available for both 6- and 8-foot beds and hold 2 cubic yards and 1.5 cubic yards, respectively. They are designed to aid in the removal and transport of stone, dirt, mulch and debris. The dump insert fits in the back of any pick-up truck and quickly converts it into a dump truck.

According to the company, the insert uses a heavy-duty hydraulic scissors lift, powered by a Monarch electric/hydraulic system with a 20-foot remote. Rated lift capacity is 6,000 pounds.

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Greg Pate, Pate-Campbell Properties

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MANUFACTURER NEWS

Astec Family Acquires Supplier

Asphalt milling drum supplier JR's Welding is joining the family of one of the major OEMs that it has traditionally served.

Multi-line, multi-brand equipment manufacturer Astec Industries announced Aug. 7 that it has entered into a definitive agreement to acquire the assets and key personnel of JR's Welding, of Norwalk, Ohio. Incorporated in 1998, JR's Welding supplies the asphalt milling industry with proprietary wear components.

JR's Welding will relocate to As-

tec's base in Chattanooga, Tenn., as will company leaders Jeff Rule and Jeff Rule Jr. The transaction is ex-

pected to close this quarter.

"As an addition to our existing Roadtec equipment rebuild program, this will allow Roadtec to further our efforts in competitive rebuilds of milling drums," says Jeff Richmond, president of Astec's

Roadtec company.

JR's Welding has been a supplier to both Roadtec and competitive makes of milling machines.



A supplier of asphalt milling drums such as this, JR's Welding is being acquired by mainline equipment manufacturer Astec Industries.

CONTRACTOR NEWS

Pasadena Fined for Fleet Violation

The California Air Resources Board has fined the City of Pasadena \$23,250 for failure to complete emissions inspections on its fleet of diesel vehicles.

According to Pasadena public information officer Ann Erdman, a 2006 audit by CARB found that the city had failed to complete diesel smoke checks in 2005.

"The inspector gave the city 45 days to complete all smoke checks for 2005," says Pasadena fleet management administrator Doug Lee. "The city complied with the audits requirements by completing all smoke tests for 2005."

But Pasadena failed another CARB inspection in 2007, resulting in a \$31,000 fine. The fine was

later reduced to \$23,250 because the city had completed the first audit's requirements.

Under the terms of the agreement, city employees are required to attend a class on the Periodic Smoke Inspection Program and the Heavy Duty Vehicle Inspection Program at Los Angeles Trade Tech, a CARB-approved college.

"Upon completion of the class, the participants were tested and certified to perform the inspections," Lee says.

Most of the fine will be directed toward the California Air Pollution Control Fund, and the rest will go to the Peralta Community College Dist. to fund emissions education.

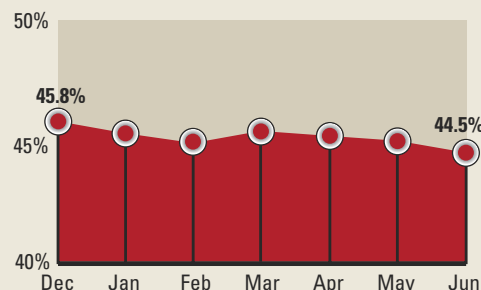
— ANDREW BALTAZAR

USED EQUIPMENT

June Values Index Declines

The Rouse Value Index

(Avg. orderly liquidation value as % of cost)



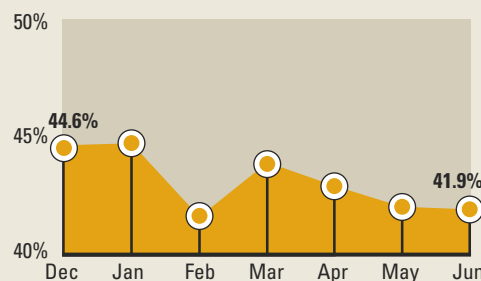
Note: Orderly liquidation value is expressed as a percentage of replacement cost (average cost paid for a new unit by large rental companies and dealers) for the average age of equipment within that category.

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

Orderly liquidation values in June continued to slip after rebounding in March, falling 1.0 percent over May. For the six months ending June, values were down 2.7 percent. Excavators and wheel loaders declined the most; telescoping-boom AWP's and skid steer loaders recorded increases.

Excavators

(Avg. orderly liquidation value as % of cost)



Heavy earthmovers have seen values decline since December. Excavators have fallen 5.9 percent in the past six months. Average selling age is 74 months with values averaging 41.9 percent of average new cost.

Managers Digest

For more headlines: ConstructionEquipment.com

INDUSTRY EVENTS

Intermat 2009 Courts Quarry Professionals

Intermat 2009, the international machinery show scheduled April 20 to 25 in Paris next year, is courting new business sectors. In addition to 650,000 square feet of exhibit space displaying more than 1,300 exhibitors of general construction equipment, the triennial show will include an exhibit village for the Quarry Professionals Association, a special program for quarry professionals and buyers, and will host quarry visits before the show. Show organizers have also mounted a special effort to attract



forklift manufacturers and exhibitors of components and accessories. For information about the show, go to <http://en.intermat.fr>.

INDUSTRY NEWS

GM, Navistar Drop Their Midrange Truck Deal

Significant market-place and economic changes" have caused General Motors and Navistar International to drop the deal in

which Navistar would have bought GM's medium-duty truck business, the two builders said in separate announcements on Aug.

20. A memorandum of understanding was announced in December, but it has expired and the two companies decided not to renew it.

Sales of commercial trucks have dropped seriously in the last two years, darkening prospects for a profitable operation of the business by Navistar and probably lowering the amount of money GM might have gotten for its range of midrange

trucks. In May, GM executives said they hoped to close the deal by the end of June, but another source said the deal's many facets and details made it the most legally complex GM had ever attempted.

The proposed deal also might have exacerbated the souring relations between Navistar and Ford Motor, which began deteriorating because of a dispute over warranty claims on V-8

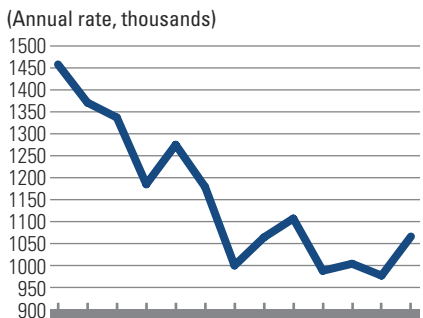
diesels that Navistar built for Ford's Super-Duty pickups. Furthermore, the deal with GM might have jeopardized the Blue Diamond joint venture under which Navistar assembles Ford's F-series Class 6 and 7 conventionals and builds a Class 3 and 4 low-cabover truck with Ford and International badges, though Navistar said Blue Diamond would not be affected.

— TOM BERG

STATUS & FORECAST HOUSING STARTS

Housing starts fell to an annual pace of 1 million last December and have fluctuated near that level in the first half of 2008. A few months below the 1 million level are likely this summer, but virtually all of the decline at the jobsite is now behind us. Materials and equipment use at housing jobsites will be rising by yearend. Nonetheless, home prices will continue to drop and foreclosures to rise well into next year.

For more analysis, visit Economic Outlook at ConstructionEquipment.com.



Source: U.S. Department of Commerce

MANUFACTURER NEWS

Cat Forms Alliance with CleanAIR

Caterpillar selected CleanAIR Systems, an emissions control manufacturer, as its strategic alliance partner for emission retrofit products. These products are installed into existing applications in order to reduce hydrocarbons, nitrogen oxides and diesel particulates in exhaust.

The alliance encompasses CleanAIR's proprietary technology, custom engineering, as well as flexible manufacturing of diesel particulate filters, oxidation catalysts, three-way catalysts and selective catalytic reduction catalysts. Caterpillar will provide system integration, engineering and

marketing support, as well as assistance to enable CleanAIR to meet growing demand from its customers. The agreement allows Cat dealers to meet customers' air-quality requirements with products customized for particular applications. Find out more at www.cleanairsys.com.

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Managers Digest

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RENTAL NEWS

ARA Forecasts Construction-Rental Dip Into Next Year

The American Rental Association's State of the Equipment Rental Industry report forecasts U.S. construction-rental revenues for 2008 and 2009 to decline to levels at or slightly above those experienced in 2005 and 2006. The same trend holds true for general tool rental revenue in the U.S. Total rental revenue in the U.S. and Canada, including party and event rentals, is expected to grow in 2008 and 2009, although at a much slower pace than previous years.

ARA will host a Webinar in late July to provide an economic update and to invite all association members to participate in the survey to gather statistical data for the 2008 State of the Equipment Rental Industry report. This session will be available to all ARA members. Additionally, for members who purchased the 2007 report, another Webinar focusing on the state of the economy is slated for October.

The State of the Equipment Rental Industry report, commissioned by ARA and Rental Management magazine is available to ARA members for \$695 and to prospective and non-members for \$2,995. Contact American Rental Association at 800-334-2177, ext 245, or www.ararental.org.

Look for the Perfect Fit in Replacing Screens

Easy in-line replacement for a worn-out vibrating screens is usually not an option. While the basic operation concept is the same, motor mounts are going to be different, the footprint will be different, and usually the size — height, width and length — will be different.

To maintain 650,000 tons of annual sand and gravel production in one of General Materials' three Oklahoma City plants, the company wanted to replace the vibrating screener they used to classify and clean gravel with minimal alteration to the production line. The screen they bought came from SMICO — a company that stresses meeting the customer's needs which includes, when required, customized design.

"We've got four decks on it, so we're able to process the gravel, wash it and rinse it in a pretty small area," says Mark Finch, operations manager. "It worked out pretty handy for that, and the manufacturer was able to tailor the new screener to the same footprint as we had on our old one."

The 50-year-old manufacturer addresses quality questions on custom screen manufacture by directing U.S. manufacture with four quality-control checks: at engineering, design, following production, and a test run before shipping.

"Really this one seems like it's doing a better job cleaning," Finch says. "I think we've got some of the cleanest rock that we've ever had."



Custom dimensions in a SMICO MVC 495F vibrating screen allowed General Materials to replace a plant's screen, wash and rinse operations with little alteration to an existing plant.

MANUFACTURER NEWS

That Old Roller Work? If So, Europe Awaits You

Operating an old roller can actually pave the way to an exciting new experience for a lucky contractor.

In celebration of Bomag's 50th anniversary last year, Bomag Americas has launched the "Rollin' with the Oldies" contest in search of the oldest operating Bomag roller in North America today. The owner of the vintage compactor will win a trip for two to Bomag's world headquarters in scenic Boppard, Germany.

The winning machine must be in oper-

ating condition, and only ride-on single- or tandem-drum rollers are eligible. The manufacturer's original name or nameplate must be adhered to the machine and must be visible and legible. In addition, the serial number and model number must be original and legible.

The contest runs through Sept. 30, 2008, and is open to all contractors in the United States and Canada. Contractors can enter by visiting their Bomag distributor or by going online to www.gobomag.com/oldies.

Every contractor who enters will receive a free gift. Photos of entrants and their machines will be posted on the contest website.

CORRECTION

In our Buying File of double-drum vibratory asphalt compactors (July 2008), a photo caption incorrectly identified the use of an Asphalt Manager monitor on a large Bomag compactor. The photo was of a standard monitor.

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Exclusive Report: Giants

By LARRY STEWART, Executive Editor



Contractors *Shift to Maintenance Mode*

Plunging contract volume douses business expectations and fleet spending

Construction Equipment's Giants reported an overall business outlook that reflects the desperation of economic news dominating North America when Giants surveys were on their desks in late spring. Oil rising to \$133 per barrel and diesel fuel on its way to more than \$5 per gallon were pushing prices of everything. A ton of steel rebar could cost more than \$1,000. With consumer confidence shaken, loss of single-family housing starts accelerated after a disappointing 2007. Commercial-construction growth had begun to weaken.

More than half of CE Giants (firms that own more than \$25 million worth of construction equipment) reported increased work volumes in 2007 — which is good but significantly less than 82 percent and 74 percent that

actually worked more in 2006 and 2005 than the previous years. Only 15 percent of Giants forecast work volume to drop early in 2007, but when asked last May about how 2007 had actually gone, 21 percent of Giants recorded falling 2007 work volume.

Highway-and-heavy contractors, the predominant vocation on the Giants list, had taken a body blow. Twenty-three percent had seen 2007 work volume drop, while only 17 percent had expected it. The second largest Giant vocation — materials firms — had been blindsided. Twenty-four percent forecast reduced work volume for 2007, but 58 percent of the largest quarries, cement and asphalt makers were stunned by falling revenue last year.

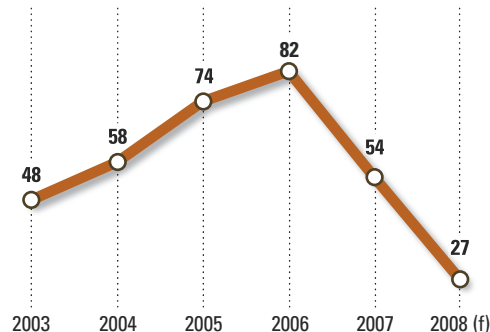
Beleaguered construction Giants, further depressed by this spring's relentless economic

◀ The percentage of firms spending more on maintenance and repair have declined as expected when work volume is falling, but maintenance spending has lost much less ground than fleet replacement. Giants such as Iowa's mass earthmover, McAninch, are shifting to maintenance mode.

Construction Giants in Freefall

Percent of Giant Contractors reporting increased work volume

All Giants



Base: 375

Source: Construction Equipment Giants Studies

Recessional housing construction in 2007 sparked work slowdowns for 21 percent of Giants — only 15 percent were expecting it. Spreading economic malaise early this year combined with daily reminders at the fuel pumps of rising commodities and materials prices to breed unprecedented pessimism about 2008 work volume. Thirty-eight percent of highway-and-heavy contractors and 58 percent of materials-producing Giants expect work volume to fall.

Top Construction Giants

Company	Fleet-Replacement Value (millions)	Overall Giants Rank
Kiewit	\$2,200	11
Great Lakes Dredge & Dock	\$1,065*	24
Quanta Services	\$1,000*	27
Granite Construction	\$875	30
Elmo Greer & Sons	\$475	49
Las Vegas Paving	\$433	58
Fluor Corp.	\$427*	60
Weeks Marine	\$402	62
Bechtel Corp.	\$400	63
Skanska USA	\$400	67
The Walsh Group	\$400	68

* Construction Equipment estimate. Source: Construction Equipment Giants list, 2008

See the complete Giants list at www.ConstructionEquipment.com/community/862/Giants/23402.html

Top 10 Materials Giants

Company	Fleet-Replacement Value (millions)	Overall Giants Rank
Martin Marietta Aggregates	\$2,861	5
Lehigh Heidelberg Cement Group	\$2,850*	6
Lafarge North America	\$2,638*	7
Vulcan Materials Co.	\$2,397*	9
Oldcastle Materials	\$2,192*	12
Cemex North America	\$1,675*	15
MDU Resources	\$1,200	21
Holcim US	\$874*	31
Buzzi Unicem USA	\$469*	54
Titan America	\$300	95*

* Construction Equipment estimate. Source: Construction Equipment Giants list, 2008

See the complete Giants list at www.ConstructionEquipment.com/community/862/Giants/23402.html

About CE Giants

The *Construction Equipment* Giants list represents as closely as possible all firms that own fleets with replacement values of \$25 million or more. Equipment-replacement values are compiled by *Construction Equipment* magazine using information provided by the individual companies. When figures are not provided (identified with an asterisk), *Construction Equipment* estimated fleet value. If you feel your firm qualifies as a Giant, please write to Larry Stewart, *Construction Equipment*, at lstewart@reedbusiness.com or phone 314-962-0639.

Exclusive Report: Giants



Twenty-four percent of Giant miners — usually accurate forecasters — were surprised by unexpected volume growth last year. And if the globe's developing economies continue to grow despite Western stagnation, some miners will again pound the haul roads more than expected.

slide, sank the 2008 Giant forecast to unprecedented lows. Only 32 percent of Giants expect work volume to rise this year, and 37 percent of firms expect volume to remain the same as in 2007. *Construction Equipment's* Giants research has never seen as much as 31 percent of firms expecting work volume to drop in the past 15 years.

Giants seem to be remembering the slump early in this decade, with the 22 percent of firms expecting business to be very good or excellent this year approximating forecasts of 2002 and 2003. Likewise, the closest we've been to 38 percent of Giants forecasting fair to poor business was percentages in the mid-thirties in 2002 and 2003.

Highway-and-heavy contractors and materials firms set the tone. Just 22 percent of Giant highway-and-heavy contractors forecast work volume to increase this year, and 38 percent of them expect volume to fall. Only 8 percent of Giant materials firms expect to work more in 2008, and 58 percent of them are braced for reduced volume. These Giants' forecasts have never plumbed such depths.

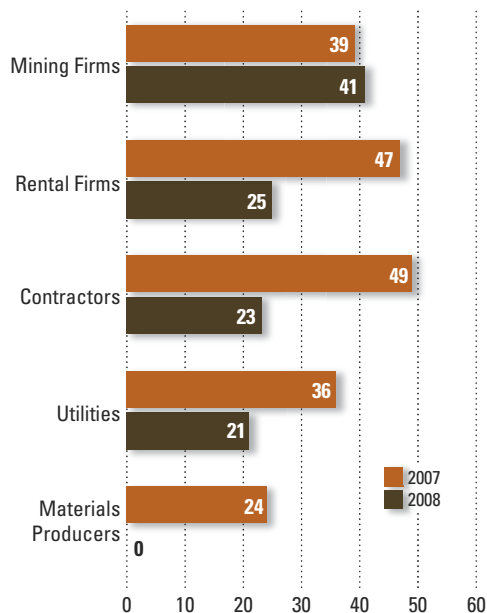
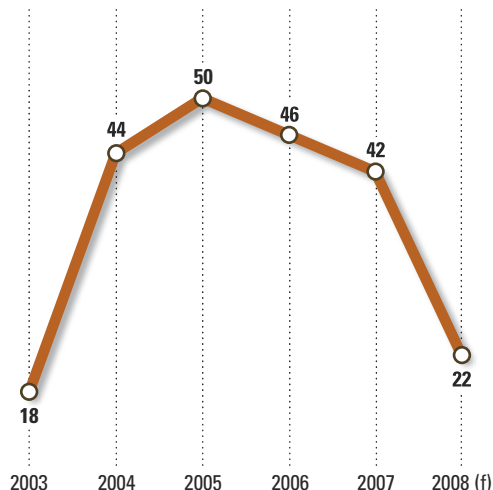
Twenty-three percent of Giant contractors expect very good or excellent business in 2008, and 40 percent forecast a fair-to-poor 2008. Ominously, no Giant materials producers expect excellent business results this year, and 58 percent expect a bad year.

There's no way to paint 2008 in anything like rosy economic hues, but since oil prices fi-

Business Outlook Grim

Percent of Giants forecasting an excellent or very good business year

All Giants



Base: 373

Source: Construction Equipment Giants Studies

The 22 percent of Giant firms expecting very good or excellent business this year approximates outlooks during the slump of 2002 and 2003. The closest we've been to 38 percent of Giants forecasting fair to poor business was in '02 and '03. Only 19 percent of highway-and-heavy contractors expect booming business in 2008, and no Giant materials producers expect excellent results. Giant general builders are much more upbeat.

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Exclusive Report: Giants

nally stopped climbing mid-summer and Washington delivered some important housing stimulus, there may be reason to hope that construction-dependent Giants overreacted in the spring's bunker mentality.

Moderating crude-oil prices (down \$32 per barrel in mid-August to \$113) dropped fuel prices and encouraged a rally in consumer confidence. And just as some predicted sharp-

remainder of the year much more positively than heavy-construction Giants. Reed Construction Data (RCD), an operating division of the company that publishes *Construction Equipment*, Reed Business Information, reports non-residential starts were down 6.2 percent between September and February compared to the same months in 2006 and 2007. But non-residential starts were even with 2007 totals in March, April and May. Year-to-date value of construction starts, excluding residential contracts, through June 2008 totaled \$139.4 billion, a 4.8-percent drop versus the first half of 2007. But starts in the month of June were 10.9 percent higher than in May.

June's \$21.1 billion in non-residential building starts sets a new record for this sector, although the nearly 20-percent pace of construction-materials inflation means that inflation-adjusted starts have declined from the year ago peak. RCD warns that inflation-adjusted nonresidential starts June to August are likely to appear weak compared to the exaggerated peak in 2007.

Sixty-five percent of general-builder Giants forecast work volume to increase this year and 56 percent of them expect 2008 business to be excellent — the most encouraging projection of any Giant vocation. General builders' volume-growth predictions have declined gradually over the past five years, but their business-quality forecast has remained consistently strong.

The percentage of Giant firms that decreased equipment spending almost tripled from 2006 to 2007, and this year's forecast of fleet-spending increases is lower than it has been in 15 years. Just 25 percent of Giant contractors expect to spend more this year on equipment, and 36 percent expect to spend less. Not surprisingly, materials-producer Giants are more pessimistic about fleet-replacement budgets than any other Giant vocation. Only 12 percent plan to spend more on equipment this year, while 56 percent expect to cut equipment spending.

Percentages of Giants increasing spending on rental equipment over the past three years have declined just as steeply. Firms spending more on maintenance and repair have declined

Top 10 Rental Giants

Company	Fleet-Replacement Value (millions)	Overall Giants Rank
The Cat Rental Store	\$5,500*	1
United Rentals	\$4,200	2
Hertz Equipment Rental Corp. (HERC)	\$3,000	4
Sunbelt Rentals	\$2,314	10
RSC Equipment Rental	\$1,696*	14
GE Commercial Finance	\$1,200	20
NES Rentals	\$1,000	26
Maxim Crane Works	\$840	33
H & E Equipment Services	\$799	34
All Erection & Crane Rental	\$596	41*

* Construction Equipment estimate. Source: Construction Equipment Giants list, 2008

See the complete Giants list at www.ConstructionEquipment.com/community/862/Giants/23402.html

ening deceleration of single-family-housing construction in the last half of the year to dollar and unit volumes 30 percent below 2007's depressed levels, President Bush signed the American Housing Rescue Act into law July 30 to stimulate housing demand.

The Housing Rescue Act includes a refundable tax credit of up to \$7,500 for first-time homebuyers, as well as provisions aimed at preventing some foreclosures and making housing more affordable. It's early to gauge how effective the legislation might be, but some homeowner/investors are likely to jump at housing bargains with any improvement in consumer confidence or other signs that we've reached the bottom of the housing market.

It should be noted that extraordinary conditions have masked the strength of non-residential construction, and *Construction Equipment's* general-builder Giants forecast the

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Exclusive Report: Giants



Process innovations such as this remote-controlled Bobcat unloading cement barges at Holcim's New Orleans terminal may be the key to many materials-producing Giants' survival if their projections for the coming months are accurate.

See the List

A list of Giants with fleet-replacement values of \$100 million or more can be found at www.ConstructionEquipment.com/community/862/Giants/23402.html. See Giants' rental expectations and more Top 10 lists in the associated online story.

as you would expect with reduced work volume, but maintenance spending has lost much less ground than fleet-replacement spending. Giants are moving into maintenance mode as their replacement budgets have been cut.

Nevertheless, half of Giant miners, 38 percent of utility firms, and 36 percent of rental firms expect to spend more on new fleet this year than in 2007. Mining and utility Giants' business results in 2007 were better than forecast, and much better than other vocations'.

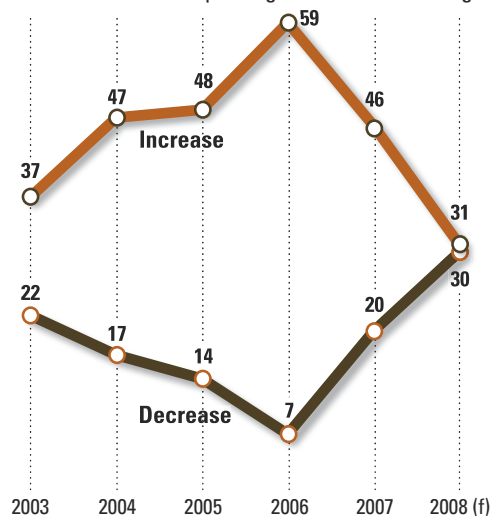
More Giant miners (44 percent) are expecting an increase in work volume this year than in 2007, but a hefty 30 percent is bracing for a fall. These usually accurate forecasters may be in for another surprise, though. Only 39 percent of Giant miners forecast growing work volume in 2007, yet 63 percent of them reported increases when asked about 2007 in this year's survey.

Global mineral and energy demand is being maintained by consumption in what some analysts are referring to as the BRIC countries — Brazil, Russia, India, and China. Developing economies' growth despite economic slowdown in the industrialized West could mark a change in global economics. Since industrialization, the BRIC and other developing economies have generally been coupled in a train pulled by the engines of North America and Europe. When western economies slowed, the BRIC economies slowed. Mining Giants' anticipation of reduced volumes this year is predicated on that history. If developing powerhouses such as Brazil, Russia, India and China continue to grow regardless of malaise here and in Europe, global mineral demand could sustain volumes for Giant miners.

The BRIC appetite for energy and construction materials is likely to keep fuel and steel prices high, as well. But the value of the U.S. dollar relative to foreign currency stabilized somewhat mid-summer, reducing oil speculation that had been helping drive fuel

Fleet Spending Growth Stalls

Percent of Giants expecting the indicated change




Base: 373

Source: Construction Equipment Giants Studies

Just 25 percent of Giant contractors expect to spend more this year on equipment, and 36 percent forecast fleet spending to fall.

inflation. Stable energy costs should relieve a bit of inflationary pressure on all goods, but if BRIC economies continue to grow, fuel, food and commodity prices, if they stabilize, are likely to do so at high levels. For example, the steel industry isn't looking for any real drop in crucial rebar costs until 2009.

There are other challenges to face before the year's end. Falling user-fee revenues are expected to drop the Highway Trust Fund balance too low to fund authorized spending on the federal road program, SAFETEA-LU, in 2009. Without congressional innovation, the country would have to cut planned spending by 30 percent. At press time the House of Representatives had passed a measure that addresses the issue, but the Senate continued to struggle for a transportation-funding solution in a pre-election August.

The remainder of 2008 will be tough. How tough will be determined in part by the stamina of the BRIC economies and resolve in Washington to keep transportation funds moving into the economy. 



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3D Technology *Puts Contractor Back in Control*

Decision to upgrade to machine-control system helps Arkansas earthmoving operation overcome 'the worst' that weather has to offer

I can see clearly now, the rain is gone. Uplifting song from the '70s or not, the tune no longer holds, well, any water for Larry Cox. It doesn't have to, thanks to the earthmoving contractor's decision to upgrade to a 3D machine-control system. Rain be damned, he and his crew never again lose an accurate "view" of the jobsite.

The patriarch of Cox Construction in Heber Springs, Ark., Cox can only shudder at the thoughts of the situation he, his three sons, and his four other on-site employees would be in otherwise.

Not long after Cox Construction got to working on the earthworks, storm drain and water trunk line for what in small-town Heber Springs is a major, legacy-type project — a multi-million-dollar sports complex — the skies above opened up. That was the late summer of 2007.

"It's been terrible," says Cox. "It went to raining the first of September, and we've worked two or three days a week, or none at all, up until about two weeks ago. I think we've worked two weeks' straight this time."

He was speaking almost a year to the day after he and his crew got to work on the job, which had already been delayed at the start while the project's owners absorbed a 90-day waiting period to obtain an endangered species permit. Cox was originally to begin work in May 2007.

"We lost all that summer," he says, "and

then it went to raining. I think the completion date, with all of the rain days, is right now the end of October. With my part, I'm about 75-percent complete . . . and it's been a year."

A homegrown Arkansas product, Cox has been working construction since 1967, and with his own business since 1972. "He's lived and breathed this business for 40 years," says friend and equipment supplier David V. Dow. And, as such, Cox thought he'd seen it all.

"This is the worst," he says. "I have never seen it rain like this. It's a total of somewhere around 35 to 40 inches. We got out yearly rainfall the first two months of this year, and last year we went over probably by 10 inches."

As Cox spoke, north-central Arkansas had finally returned to the sunny "99-degree days" of mid-summer norm, and some spots on the 40-acre Heber Springs jobsite were finally drying up, but not them all. A future soccer field was still covered in water, and "we've got a parking lot cut out and all of the topsoil's stripped off of it.

"It's just a nightmare."

Time to move

After Cox became a successful earthmoving bidder on the Heber Springs sports-complex project, he decided it was time to make the machine-control equipment upgrade for which he had enjoyed an ongoing dialogue with Dow at Trench Safety and Supply.

"He came back to us and said, 'I've got this



Photos: Topcon Positioning Systems

Machine operators, such as Lance Cox aboard a Champion motor grader, can determine precise location at all times with the 3D system's in cab display.

2D system; I'd like to step up to a full-blown GPS system now," recalls Dow, whose company, a Topcon dealer, promptly facilitated Cox with a Topcon GR-3 satellite receiver base station, GR-3 survey rover, and a 3D machine-control system for his Champion 720 motor grader.

Dow, who has authored a soon-to-be-published "A-to-Z" book on machine control, points out that two- and three-dimensional systems both measure the distance between a grade reference and the earthmover's cutting edge. But whereas a 2D system does so with a string line or laser beam, 3D systems measure from the GPS and GLONASS satellites, compare that information with the project's digital terrain model (DTM) and make adjustments accordingly.

Cox has since added, in the past few months, the GPS and GLONASS machine control to one of his two tractor-and-pan combinations on the Heber Springs job. It's part of the catching up his family-owned-and-run operation is trying to do.

"We're running two tractors-and-pans (18-cubic-yard combos) out there and the grader cannot keep up with them to keep grade," says Cox, "so we decided to put the machine control on the one pan so that he



Lance, left, and Matthew Cox join father Larry on the site of what will soon be a multi-field sports complex in Heber Springs, Ark. A third son, Jason, also works with the Cox Construction crew, while family matriarch Connie handles office duties.



The land in Heber Springs, Ark., on which a multi-field sports complex is being built naturally has numerous slope changes. Here, earthmoving contractor Larry Cox stands on a low point, checking grade with his satellite receiver rover.

Application: Machine Control



Finally at work on a multi-field sports complex in Heber Springs, Ark., this Champion motor grader operated by Cox Construction leaves behind a smooth grade, thanks to 3D machine control.

knows where he's at all the time and he can help grade. The pan can do it faster than the grader.

"I wish I had it on all of them."

Weather delays aside, Cox has his mind made up on 3D, not even through the first project.

"There are two great benefits," he says. "One is you don't have to have a surveyor. The second is you can go anywhere on the project, at any given time, and you know where you're at. You know your grade; you know your alignment."

This has become key to Cox at least keeping his proverbial head above the water at work on the sports complex, comprised of eight baseball or softball fields, five soccer pitches and four parking areas.

"There's not a field out there that is the same elevation — every one of them is different," says Cox. "And they've got four of the ball fields back to back, and there's not one of those that is the same either."

Once the site info is loaded into the control box of each machine and into the survey rover, it's job-on for contractors like Cox, notes Dow. "On a daily basis, he'd set up his base station, which takes all of about five minutes, maybe less, and he can begin moving dirt. And his guys are going to know at all times precisely where they are relative to grade."

"In the past, Larry would have been dependent upon a surveyor to stake his job," says Dow, vice president of Trench Safety, based in Memphis, Tenn., with a location also in North Little Rock, Ark. "And he couldn't really start work until that surveyor staked the job. So, we would have had the hurdle of, 'How quickly is that surveyor going to be able to get to my job?

How quickly is he going to be able to stake it to the point that I can start moving dirt?'

"Once the job was underway, he would have been very dependent upon his operators, and it would in essence be simply eyeballing as those guys moved dirt. In many instances, he would have even had to have assigned a grade checker to each piece of equipment to walk along the machine constantly checking, constantly communicating to the operator: You know, 'You're high; you're low; no, no, no, that's too much; no, you didn't move enough.' It would have been a trial-and-error process, very laborious, not very exact . . . pretty crude in retrospect."

Indeed, while the conditions around he and his crew may, thanks to the weather, be crude, the manner in which they work is no longer, says Cox.

"When you're looking at that control box, it tells you everything that a surveyor used to put on stakes," says Cox, who knows full well what all the rain would have meant otherwise. "If you're staking it, a lot of times the marks rub off the stakes or the rain will get it where you can't read it. You don't lose anything with the machine control."

Always in position

Developed by the job's contractor itself or an outside engineering/surveying firm, the DTM resembles a wire mesh model, detailing the elevations throughout the site. It incorporates data compiled from the job's computerized design and modeling constructed via such popular software as AutoCAD and AgTech.

"In some cases, the DTM can actually be created within that software," says Dow. "In other instances, you will export a point file, and then import that point file into a program like Topcon's Office 3D, where you'll actually create the DTM."

Out in the field, the contractor uploads the DTM into a control box on his assorted GPS equipment. "Typically, today it would be via a compact flash card," says Dow. "The operating system inside the control box recognizes that compact flash card, and you can copy or import that file into the control box and it's going to provide that detailed positional

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Application: Machine Control



The Topcon 9168 control box, above, displays detailed elevation data for the jobsite. This data is imported via a compact flash card, shown being inserted, below, into the top of the control box.



information.
“The GPS system will know the precise position of the left and right corners of the cutting edge and, in real time, the control box will compare that information with the DTM and will show it on the screen. For example: The left corner of the blade is a foot high; the right corner is a foot low. The operator will have that information on the screen. He’ll also have the option of sending that information to the hydraulic systems of the grader or dozer and moving into auto mode. At that point, the operator’s primary role is just driving the machine, with the control box controlling the hydraulics and, in turn, the position of the blade.”

Without 3D, says Cox back in Heber Springs, “we’d be so far behind we couldn’t even see daylight. You’d have had to go out and set hubs and grade stakes probably two or three times on each field.

“It’s pretty tough, especially when you’re dealing with a complex job like this one out here. We would have to have probably four or five laborers just running stakes for the grader. If we had done it the old way, we’d have to have two, maybe three motor graders out there running also.”

Conversely, with 3D, an element of job proprietorship was put back into Cox’s hands. “The main thing was being able to have the control — not having to have somebody to help you set grade — and it’s so much faster,”

he says. “You don’t have to have anybody on the ground running hubs, uncovering hubs, or anything like that.”

The response of contractors like Cox to 3D “has almost been universal,” says Dow. “Once these guys get this technology and they realize what it does for them, they’re like children in a candy store. It just changes everything: It makes them so much more productive; it makes them so much more precise; they get finished with their projects so much quicker.

“And a great example is Larry. This was a huge expenditure for his company, and he very quickly saw the benefits to the point that he could justify in his mind spending additional money,” says Dow. “Almost every contractor that we’ve dealt with on this equipment has started small. They might buy a survey rover and a base station, and a system for a motor grader or a dozer, and then fairly quickly they come back saying, ‘We need to put systems on additional pieces of equipment.’


“The usage of this equipment is becoming sufficiently widespread that these guys realize they can’t be competitive without it.”

In Heber Springs, who knows if the rains of 2007 will be remembered in the decades to come? It won’t matter anyway, says Dow.

“For that community, this project is big: It’s big in terms of the dollars; it’s big in terms of just the physical size; it’s big in the sense that — and I think this is pretty neat — it’s going to become the focus of a lot of families in that part of Arkansas,” he says. “This is going to be a real focal point for the community. The kids will be playing on these ball fields in 30 and 40 years.”

For the contractor trying to level those fields today, the future is likewise clear — thanks to 3D.

“Today, you couldn’t drag that equipment out of their hands,” says Dow. “If you said, ‘Larry, I’m picking it all up right now,’ he’d looked at you and in no uncertain terms tell you that you weren’t walking off with his equipment — that he just had to have that equipment.

“It just literally changes the way people move dirt.” 

A man's profile is shown in a blue denim shirt, looking upwards. On top of his head, a small yellow excavator and a grey skid steer loader are balanced, as if they are weighing him down. This visual metaphor represents the 'heavy load' of construction equipment purchases on one's mind.

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PayStar 5900i SBA **Expands Capabilities**

New axle setting shoulders more weight and aids maneuverability, while the truck lives up to its “premium” billing

Let's see... Here's an online ad for an '82 International PayStar down in Texas, apparently an oil-field rig with what looks like a 25,000- or 50,000-pound winch ready to pull hefty, skid-mounted pieces of drilling and extraction equipment over a rear-set roller onto a long, steel flatbed. Its Cummins 400 almost certainly smokes nicely (didn't they all in those pre-emission days?), and specs include “6 and 4” double-stick manual gearboxes, 20,000-pound steer axle, 50,000-pound tandem with a 6.80 ratio and a wheelbase of 280 inches. Think of the work that thing has done in its 24 years of life. And, wouldn't it be a handful to drive?

By contrast, check out this month's Hands-On

Steer axle's center is 47 inches behind the bumper, compared to 30 inches for the PayStar 5900i's axle-forward version. The long 10-wheeler's frame has room for at least two pusher axles.

Trucking ride — a 2008 PayStar long-wheelbase 10-wheeler with a high-sided steel dump bed, with lots of frame space for two or three pusher axles, strong front and rear axles, and a gutsy Caterpillar C13 complete with a diesel particulate filter. All its aluminum is highly polished, and chrome covers about anything else not painted gloss black. This, too, could do a lot of construction-related hauling, and accomplish it in style and effortlessly, too, because it's also got a thoroughly modern Allison automatic transmission.

One specification the two trucks share is a setback front axle, generally available throughout the PayStar's history, but something missing until recently from the latest iteration of the builder's 5000i series of vocational trucks. The builder announced it about a year





Premium is as premium does, and International does it in great "truckee" style with PayStar's nicely trimmed interior and completely outfitted instrument panel.

ago and the 5900 SBA, as this model is called in International's data book, is now in production at the vocational-truck plant in Garland, Texas, joining the originally available axle-forward version.

The rearward setting of the steer axle alters the balance of weight among all axles and can make the truck more legally useable in certain geographical areas. Mostly it's axle-weight states with peculiar formulas for certain configurations — "tri-axe" setups with a single, high-capacity pusher or "quads" with two pushers, for instance. However, some bridge-formula states encourage multiple pusher and tag axles, and the axle-back design is better able to take up a sizeable share of the load. A side benefit is greater maneuverability for a given wheelbase because there's more room for the front wheels to cut toward the frame. The 5900 SBA thus expands possible applications and allows dealers to resume selling a premium model into that specialty market.

And, of course, customers have another vehicle to choose from, which right now might not matter too much because business in general is painfully slow. That doesn't mean nothing is happening, and there are some operators who are ready to acquire this type of truck. If they are already International customers, and even if they're not, they and their drivers will be pleased with the latest PayStar. It is truly a premium truck, with a stout and roomy aluminum cab that can be trimmed as richly as any reasonable trucker would want, a firm but smooth ride, terrific driveability, and easier maintenance that comes from a longer engine

compartment compared to the WorkStar 7000 series.

Driving a modern and nicely appointed PayStar is one of life's trucking pleasures, in my opinion; so is wheeling its brother, the 9900i highway tractor. They share the cab and interior and basic hood design, but of course the rigors of on/off-road work changes many other things in the 5000i series. That this one had an Allison was disappointing to me, because wheel time in PayStar axle-forward trucks and tractors showed that they are also easy and even fun to shift when set up with manual transmissions. And shiftability is one of the tests of a truck model's value, not just to the driver but to the owner, because hard shifting irks the driver and leads to various driveline damage.

Nonetheless, an Allison is what I had and what I happily drove. This was actually back in March, during the Conexpo-Con/Agg show in Las Vegas. Athena Campos, International's vocational segment marketing manager; and Melissa Gauger, mechanical engineer/marketing manager for severe service trucks, had driven me to McCandless International Trucks north of the city where the long truck was waiting. Gauger pulled it out of the lot to the dealership's offices, and I looked over the vehicle and then shot some photos.

My lens found the Cat C13, among the engine options in this line and which early this year was not remarkable. But now it is because come 2010, Cats will disappear. As we've reported, Caterpillar is leaving the truck-engine business at that time. About then, Cat dealers



Caterpillar C13 is among engine options in current PayStar trucks, but International's own MaxxForce 13 is coming soon, and Cat meanwhile is getting out of the truck-engine business by 2010. Then the only vendor engine will be Cummins' ISX.

SPECIFICATIONS

Truck: International PayStar 5900i SBA, conventional-cab vocational chassis with setback front axle

Engine: Caterpillar C13 Acert, 430 hp @ 2,100 rpm, 1,550 lbs.-ft. @ 1,200 rpm

Transmission: Allison automatic 4500-RDS wide-ratio 6-speed w/overdrive 5th and 6th

Front axle: 20,000-lb. Meritor MFS-20-133A wide-track on 18,000-lb. taperleafs and 2,000-lb. rubber auxiliary springs

Rear axles & suspension: 46,000-lb. Meritor RT-46-160P w/locking rear differential and 4.56 ratio, on 46,000-lb. Hendrickson HMX-460-54 walking beam

Wheelbase: 248 inches

Brakes: Meritor S-cam w/ Meritor-Wabco ABS

Fuel capacity: 100 gallons

Body: Warren 18-ft. steel

Hands-On Trucking



The diesel particulate filter doubles as a muffler, but its bulk pushes the body back almost 2 feet and extends the truck's overall length. There are other ways to mount the DPF, though.

will begin selling an International-built, Cat-branded on/off-highway truck which well could be based on the 5000i series. So maybe this is a preview of that; we'll see.

The Cat fired up readily and idled easily, smokelessly and odorlessly. Gauger climbed into the passenger seat and I punched D for Drive, released the parking brake and we headed out, using a variety of city streets and boulevards, stopping and starting and letting the Allison do the work. It's amazing how an automatic or automated mechanical gearbox completely changes the character of a truck and vastly expands the list of people who could drive it — your stock-broker brother-in-law who's burned out from the rat race or a 40-something neighbor lady whose kids are grown and gone and needs to earn some extra dough, for example. If they both like to drive, they could drive this truck.

Yeah, they'd still need a bit of training because the PayStar is a big and heavy truck and must be respected as such. Gauger had arranged a test load consisting of about 10 tons of crushed stone, bringing gross weight to about 46,400 pounds. It required the Cat to work but not sweat. Acceleration was quick, especially because of the uninterrupted-power feature of a fully automatic transmission, and brakes were strong when the stop signs and traffic lights came up.

The truck's long wheelbase told me to give it some room in turns, but I was leaving way too much during hard-right turns on city streets. That's because the setback front axle's tight wheel cut had me bending the corners quicker than expected. Soon I was spinning the steering wheel sooner and using only the curb lanes of each street.


Freeway travel was even easier. We took Interstate 15 northeast to the Las Vegas Speedway, then swung over to Las Vegas Boulevard which arrows more directly north and intersects with I-15 about 10 miles up. This includes about a mile and a half of 3 percent upgrade which the Cat-Allison team handled well while Gauger and I enjoyed the stark desert scenery. From there it was back south on the interstate to the dealership.

The Allison has electronic controls and six

basic ratios, including overdrive 5th and 6th, and these worked well with the 4.56 axle ratio to give the truck some reasonably long legs. Revs were at 1,700 or so at 65 mph — much faster than for a highway engine, but about what Cat prescribes for a vocational model. At lower road speeds the transmission's planetary gear sets provide many more ratios to aid performance, even as its torque converter is locked up to reduce slippage much of the time. Allison's vocational Rough Duty Series includes a case with PTO mounting provisions, but otherwise is no stronger mechanically than highway versions. Any warranty is shorter to reflect the tougher life an RDS is likely to see.

Even with the automatic, the PayStar had all the characteristics of a premium truck, and more. Interior trim was not the top-of-the-line Eagle, but more than fancy enough for me with practical grey cloth-and-Vinyl coverings, and included power windows. The instrument panel was attractive and complete, with the wide, two-segment flat panels sporting a wood-grain finish; many gauges telling me what was happening to the engine and other systems; while electro-mechanical switches to the right controlled locking differentials and other mechanisms. On the floor was a control box for the Warren dump body, which I left alone.

The box sat nearly 2 feet behind the cab to allow enough room for the 18-inch-diameter diesel particulate filter. The cab guard was notched to make some room, but the box could be mounted closer if a cove were built into the bed's corner for the big single exhaust. Or order a horizontal frame-mount DPF with one or two tail pipes, or let the tail pipe exit down below. In any case, the DPF versus body situation needs some careful thought before you'd wrap up any order form.

From my point of view, the PayStar provides true value for the \$3,000 or so extra it costs over a similarly equipped up WorkStar. It's as nice to drive as anything out there, and will probably hold up as well as any other premium truck. My quick search of ads on the Net showed PayStars as old as 1978. Maybe International should hold a contest to find the oldest one still working. It might prove something. 



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Buying File: Trenchers

By MIKE ANDERSON, Senior Editor

Although the HT220 is not the compact machine typically produced by Ditch Witch, the machine does reflect the quality, productivity and durability customers have come to expect from the brand, says the company.



Big Things *Happening for Trenchers*

Trenching equipment continues to forge a path with new product introductions

It's understandable why someone trying to sell utility equipment these days would steer clear of listening to or reading the daily business news. The plunge of the new housing market is, as the mass message goes, reason for people to stay in bed and pull the covers over their heads. But it's not all doom and gloom for Greg Adkins when he hears the news.

Adkins is trencher product manager for Ditch Witch, and he's been hearing plenty about plans for wind farms, big wind farms, billions of dollars worth of wind farms. That, indeed, could be considered get-out-of-bed-at-the-crack-of-dawn news for Ditch Witch, which pushed its trencher product line upward in model size with last year's introduction of the 220-horsepower HT220 and is about to go another step up with the 300-horsepower HT330, which is set for introduction in the latter half of this year. Both the HT220 and the

HT330 are built to Ditch Witch specifications by Tesmec, which specializes in larger trencher technology.

"There's a ton of infrastructure that has to go on with any of those wind farms," says Adkins. "There's no overhead transfer of power; everything's underground. And probably one of the biggest things about wind farms is that they like putting them up in solid rock conditions."

That, Adkins teases about the yet-unveiled HT330, will be a good fit.

Following a path rivals have already forged, Ditch Witch is expanding from its rubber-tired utility trencher market to the world of the larger track trencher — a connection that hinges at or just above the 100-horsepower size. Utility market rivals Vermeer, Ditch Witch and Astec each offer one four-wheel-drive unit in the 115- to 120-horsepower range, where the crossover to track trenchers begins in ear-

nest. Ditch Witch and Vermeer, for instance, offer both wheeled and tracked versions of their models in that range.

For Astec, which has its Trenchor family of machines to compete against the likes of Trench-Tech, Tesmec and Vermeer in the large and behemoth trencher market, the most recent addition was actually at that “hinge” point — the 115-horsepower, four-wheel-drive RT1160. The productivity of a hydrostatic trencher drive featuring a two-speed motor with variable chain speeds in either range is combined with the operational ease of electronic controls and an open operator’s platform. “We’re trying to fill some of the gaps that Case didn’t fill in the marketplace,” says Bob Wren, training manager with Astec Underground. “We want to satisfy as much of the rubber-tired market as we can. We’re trying to expand into the marketplace where we need to be to meet our competition.”

Wren, a 26-year Case veteran who harkens back to the Case Davis days, followed the former Case trencher line to Astec upon the 2003 acquisition of the line.

“A lot of our utility contractors, even today, are putting PVC and cable and wire in the ground for same price they did 10, 12, 14 years ago. The only way they can make any money is to do it efficiently — faster — so machine productivity is very important,” says Wren. “Product reliability is a big thing, too. A machine that’s going to go out there and stay on the job five days a week and work 8-10 hours a day, that’s what the contractor’s got to have.

“The RT1160 has all the comforts that a machine operator could ask for — suspension seat, flat platform, electric-over-hydraulic controls. Everything that every utility contractor has asked us to have on a tractor, this one’s got it,” says Wren. “But those components have to be reliable and, in the atmosphere that a trencher or a cable plow works in — the dust, the dirt, the rain, the snow, the ice, the mud, the clay — the nature of the beast is difficult on components. You start putting electronic components and computers on machines that work out there in the tough environment, they have to be reliable.”

Astec will be offering a cab for the RT1160

by the end of the fourth quarter, says Wren.

Astec has its Trenchor line covering the large end of the trencher offering, topped off by the industry’s largest model, the 450,000-pound, 1,200-horsepower T1860. Indeed, the Astec product covers the largest range.

But if there’s a single brand name that comes closest to running the gamut of the trencher offering, it’s Vermeer, from the smallest gas-powered walk-behind to the 600-horsepower T1255 Commander 3. And while the 120-horsepower quad-track RTX1250 was garnering attention over the past year, the company was introducing an innovative new model at the larger end, too.

For the T1155 Commander 3, Vermeer co-developed with Rotary Power a 16-liter headshaft motor that eliminates the need for two trencher motors. The resulting location of the cab between the cross conveyor and trencher attachment emulates the styling on Vermeer’s smaller Commander 3 trenchers.

“We have one larger model, the 1255, on which we had to put the cab behind the cross conveyor, which restricts visibility somewhat,” says Dean Whitten, solutions specialist with Vermeer. “We wanted to get back to what the customers really love, that being the visi-

The Cost of Ownership

Trencher Size	Avg. List Price	*Hourly Rate
76 - 130 horsepower	\$80,462	\$65.48
131 horsepower and up	\$561,166	\$286.57

* Hourly rate represents the monthly ownership costs divided by 176, plus operating cost. Adjusted operating unit prices used in the calculation are diesel fuel at \$4.73 per gallon, gasoline at \$4.11 per gallon, mechanic’s wage at \$44.79 per hour, and money costs at 4.75 percent.

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



A larger elevating cab located between the cross conveyor and trencher attachment provides operators of most large Vermeer track trenchers with enhanced visibility to the trench.

Buying File: Trenchers

Chain Trencher Specifications (100 horsepower and up)

Model	Operating Weight (lb.)	Max. Cutting Depth	Cutting Width (in.)	Engine Model	Gross Engine Power (hp)	Wheels or Track	Max. Travel Speed (mph)
Astec RT1160	14,439	7'0"	7 - 16	Deere 4045T	115	4WD	11.5
Ditch Witch HT115	17,650	7'10"	6 - 24	Deere 4045TF275	115	Track	4.7
Ditch Witch RT115	13,630	7'10"	6 - 24	Deere 4045TF275	115	4WD	9.4
Vermeer RTX1250	18,055	6'0"	6 - 18	Cummins QSB4.5-TAA	120	Track	n/a
Vermeer RTX1250 w/Tires	13,120	6'0"	6 - 18	Cummins QSB4.5-TAA	120	4WD	n/a
Vermeer T455	23,000	6'0"	8 - 24	Deere 4045T	125	Track	2.5
Astec T560	30,000	8'0"	10 - 24	Cummins 6CTA8.3	185	Track	1.9
Tesmec TRS700B	29,000	8'0"	8 - 24	Cummins 6BTA5.9 Elite	185	Track	2.2
Vermeer T555 Commander 3	32,000	8'0"	6 - 24	Deere 6068HF285	185	Track	1.8
Vermeer T558 Commander 3	52,000	6'0"	6 - 24	Deere 6068HF285	185	Track	2.15
Tesmec TRS750	39,683	6'0.4"	7.9 - 24	Cummins 6BTA5.9	215	Track	2.3
Ditch Witch HT220	42,990	8'0"	12 - 24	Cummins QSB5.9	220	Track	2.3
Astec 765HD	55,000	8'0.2"	10 - 18	Cummins 6CTA8.3	250	Track	2.0
Trencor T765	65,000	8'0"	12 - 30	Cat C-9	250	Track	2.0
Tesmec TRS900 EXT	50,000	8'0"	12 - 26	Cummins 6CTA8.3-260	260	Track	3.3
Vermeer T755 Commander 3	75,000	10'0"	14 - 36	Cat C9 ACERT	275	Track	1.7
Port Industries 2500 Hydramaxx	38,000	7'6"	11 - 22	Cummins M11	330	4WD	22
Tesmec TRS1065	78,000	6'0"	9 - 24	Cat C-9 DITA ATAAC	335	Track	3.9
Tesmec TRS1075	85,000	10'0"	14 - 36	Cat C-9 DITA ATAAC	335	Track	3.3
Tesmec TRS1085	95,000	8'0"	18 - 28	Cat C-9 DITA ATAAC	335	Track	3.1
Trench-Tech TT-2350	85,000	10'0"	12 - 36	Cat C9 ACERT	350	Track	n/a
Trencor T1060	85,000	12'0"	12 - 36	Cat C9 ACERT	350	Track	2.0
Vermeer T855 Commander 3	102,000	12'0"	16 - 36	Cat C9 ACERT	350	Track	2.14
Vermeer T858 Commander 3	100,000	8'0"	14 - 30	Cat C9 ACERT	350	Track	2.33
Tesmec TRS1100	85,000	12'0"	16 - 36	Cat C-10	365	Track	2.8
Tesmec TRS1175 D-7	119,000	12'0"	16 - 42	Cat 3406C DITA	402	Track	3.0
Vermeer T955 Commander 3	119,000	12'0"	16 - 42	Cat C13 ACERT	415	Track	1.5
Vermeer T1055 Commander 3	128,000	14'0"	26 - 42	Cat C13 ACERT	415	Track	1.2
Tesmec TRS1275	142,000	1'2"	26 - 48	Cat C-12	425	Track	3.0
Trench-Tech TT-2450	125,000	12'0"	12 - 40	Cat C13 ACERT	440	Track	n/a
Trencor T1360	148,000	12'0"	16 - 42	Cat C13 ACERT	440	Track	2.0
Trench-Tech TT-2550	195,000	18'0"	16 - 48	Cat C15 ACERT	540	Track	n/a
Vermeer T1155 Commander 3	170,000	16'0"	28 - 42	Cat C15 ACERT	540	Track	1.41
Tesmec TRS1475	198,000	16'0"	28 - 48	Cat C-16 DITA ATAAC	600	Track	1.62
Vermeer T1255 Commander 3	245,000	18'0"	30 - 48	Cat C18 ACERT	600	Track	1.25
Trencor T1460	185,000	18'0"	14 - 54	Cat C18 ACERT	630	Track	1.0
Trench-Tech TT-2650	234,000	20'0"	16 - 54	Cat C18 ACERT	635	Track	n/a
Tesmec TRS1675	232,000	24'0"	28 - 60	Cat 3412E	760	Track	2.1
Trencor T1660	250,000	25'0"	14 - 60	Cat C27 ACERT	800	Track	1.0
Trencor T1660M	325,000	25'0"	16 - 72	Cat C27 ACERT	800	Track	1.0
Trench-Tech TT-2850	315,000	24'0"	28 - 60	Cat C27 ACERT	875	Track	n/a
Trench-Tech TT-2950	360,000	30'0"	42 - 54	Cat C27 ACERT	950	Track	n/a
Trencor T1860	450,000	35'0"	36 - 96	Cat 3512	1,200	Track	0.75

Source: Spec-Check Verified Expanded Specs (as of July / 08)

bility to the trench from having that cab in between the working unit and the conveyor of the spoil. By doing so, we needed to develop one big motor, so that we could put one large motor on one side of the head shaft and not have two like the 1255 has — a 10-liter on each side.”

As standard, the 540-horsepower T1155 Commander 3 comes wired to accept telemetrics to monitor engine hours and location, as well as laser and GPS systems for machine control. The latter, says Whitten, is becoming a bigger customer want in both the sewer market and, when the machine adds a terrain leveler attachment, the mining industry.

As a new product offering, the T1155 Commander 3 is dependent upon shifting needs of established users of both smaller and larger models, says Whitten.

“The reaction is like any new machine: It’s always slow starting when you’re throwing another model into the mix,” he says. “People who have 1055s are looking at this very strongly because they may want a little larger machine, but their 1055s are still in very good shape or almost new — in that three- or four-year timeframe — and you have to wait on trade cycles. We understand that.”

By comparison, says Whitten, it’s not a matter of replacing machines for current T1255 Commander 3 customers, but rather considering adding the T1155 Commander 3 as an easier-transported complementary piece to work on slightly smaller projects.

For Ditch Witch, the innovations continue as the product line grows. The HT220 features a flywheel gearbox that delivers horsepower to the attachment on demand while protecting the hydraulic system from shock.

“Most of these units are designed to dig in rock, and when you have rock, you have a lot of dynamic shock load going back to the headshaft,” says Adkins. “By having the flywheel effect there, whenever you have these shock loads, that keeps the shock from going back into the hydraulic and drive system itself. It allows the flywheel to take most of that abuse.


“You’re in dirt and all of a sudden you encounter some rock: If you actually watch your chain, you’ll see it can stall very briefly, and the horsepower of the engine has to overcome that

initial shock. What the flywheel does on there is allow that increase of horsepower to almost be instantaneous to the headshaft, so there’s no stalling of the chain.”

As for the consideration of models sized beyond the soon-to-arrive HT300, the availability of services throughout the Ditch Witch dealer network will have a lot to do with that, says Adkins. “We have to grow it at a rate where our dealers can support the equipment.

“I like to see our line growing,” he says. “At what rate? Our main emphasis is making sure that we can develop a product and still support the customer. We can build whatever we want, but if we can’t support the customer, we’re not doing him a favor.”

And the news of the day isn’t all bad, agrees a competitor who’s lived through more than his share of cycles.

“Many utility companies have a five-year plan, just like everybody else does,” says Astec’s Wren, “and there’s a lot of service work, maintenance work and replacement work out there . . . even with the downturn in housing.” 

Trencher Parts Suppliers Update Product Lines, Too

In compiling material on the trencher market, Buying File also received news from companies that service the trencher industry:

- Trenching parts from Underground Tools Inc. (UTI), including a new wide selection of rock chains (pictured), are manufactured to provide the longest wear life possible while providing aggressive productivity. Lab-tested and field-proven to meet or exceed OEM specifications, the heat-treated steel and carbide UTI trencher products include cutting systems, sprockets and chains, all coupled with the DirtSmart technical service. UTI, with 75 years of combined experience, provides parts for assorted makes and models of trenchers.
- A manufacturer of replacement chain and complementary wear components for trenchers, Ballantine, now offers its premium Trench-All Chain for the Tesmec, Trencor, Trench-Tech, Vermeer and Ditch Witch trencher brands. The Trench-All Chain line is designed specifically for high-horsepower trenchers and the severe digging conditions they encounter. Alloy heat-treated and induction-hardened pins provide wear resistance and bending strength, while alloy heat-treated rollers stand up under impact loading with sprockets, and alloy heat-treated sidebars provide superior hardness and tensile strength. Pins tumbled in Molykote reduce friction between the bushings and pins.



Gallery of Trenchers (100 hp and up)



DITCH WITCH

Trencher Family Continues To Grow Upward

The Ditch Witch trencher product line continues to expand upward. Following the Tier-3 update last year to the 220-horsepower HT220, then the company's largest hydrostatic trencher offering, Ditch Witch is following up later this year with the 300-horsepower HT300. Pushing maximum digging depth 2 feet beyond the 8 feet of the HT220, the larger machine will likewise feature Ditch Witch's exclusive flywheel gearbox drive, designed to deliver high horsepower to the trencher attachment on demand while protecting the hydraulic system and other components from shock. Both units will have a standard cross conveyor.

Number of models: Soon-to-be 4

New models: HT220, HT300 (coming this year)

Product-line features: The HT220 was built to provide exceptional digging in both rock and dirt for large installations — 12 to 24 inches in width and 4 to 8 feet in depth. Operator wear and tear is minimized by standard trencher stabilizers that isolate machine vibration when digging in rock.

Visit ConstructionEquipment.com/info and enter 161

ASTEC

RT Family Reaches Beyond 100 HP

The flagship of the Astec utility trencher lineup, the four-wheel-drive RT1160 was introduced last year following feedback from customers, especially utility contractors, who called for ease of operation and operator comfort in a 115-horsepower, Hydra-Shift package. The ground drive, backfill blade and plow controls are



located in the armrests of the full-suspension swivel seat. Front steer, rear steer and crab steer are standard and, combined with a 21.5-foot outside turning diameter, provide enhanced machine maneuverability. The hydrostatic trencher drive boasts a two-speed motor with variable chain speeds in either range. Beyond the Astec RT family of utility trenchers, parent company Astec Underground offers large track trenchers, mostly under the Trenchor brand.

Number of models: 3

New model: RT1160

Product-line features: As with the RT960 at a shade under 100 horsepower, the RT1160 can be equipped to meet the specific needs of the customer. Options include a trencher, backfill blade, backhoe, reel carrier, cable plows, hydraborer units and rock saws. For added versatility, the RT1160 also offers an optional tilt frame.

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VERMEER

Expanding Product Lines Offer More Choice

With the addition of the 120-horsepower RTX1250 and XTS1250 quad-track models atop the ride-on trencher family, Vermeer connected the worlds of smaller ride-on trenchers and larger track trenchers. The 1250 models are the RT ride-on trencher family's 100-horsepower-plus entries, leading up to an 11-model track trencher family that begins with the 125-horsepower T455 and runs up to the 600-horsepower T1155 Commander 3. The newest changes are offered in the 540-horsepower T1155 Commander 3, which by utilizing a single 16-liter trencher motor allows the cab to be located between the cross conveyor and attachment for improved operator visibility to the trench. The motor was designed specifically by Rotary Power for this new Vermeer trencher model, introduced in 2007. The cab itself is 40-percent larger than those on earlier units of comparable size.

Number of models: 13

New models: RTX1250, XTS1250, T1155 Commander 3

Product-line features: The T1155 Commander 3 is pre-wired to accept telematics for the monitoring of engine hours and location, as well as most laser systems for grade control. An optional remote attachment control allows an operator or technician to start and stop the engine, raise and lower the boom, and rotate the chain while not in the cab.

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TESMEC USA

Mechanically Driven Units Join Trencher Line



As part of a product-line expansion, Tesmec has added two mechanically driven trencher models to complement its traditional hydrostatic offering, including the M5 unveiled at Conexpo/Con-Agg 2008. Powered by a 440-horsepower Cat C13 ACERT engine, the M5 utilizes a torque-converter-drive transmission with a deeper stall ratio, which allows higher digging chain pull force and lower digging chain speeds than industry norms. Coupled with a mechanical trencher load control system, this unit working in hard rock has, according to Tesmec, exceeded the production of competitive machines boasting 36-percent more engine power. A remote pendant control has also been added to the M5 to aid in changing digging teeth.

Number of models: 12

New models: TRS775, TRS975, TRS1375 Bucket Wheel, M3, M5

Product-line features: Ranging from 220 to 760 horsepower, the TRS hydrostatic trencher family was also updated at Conexpo-Con/Agg 2008, where the 300-horsepower TRS975 was unveiled with a flywheel gearbox,

wider conveyor and variable speeds. A new double K-boom option, coupled with single and double boom offerings, provides a full range of trenching width options.

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GUNTERT & ZIMMERMAN

Line Offers Chain Trencher Alternatives

As an alternative to chain trenchers, Guntert & Zimmerman offers four base wheel trencher models, designated as the Eagle 4500, 5500, 6500 and 7500 with digging depths of 4, 5, 6 and 7 feet, respectively, and assorted digging width ranges from 14 to 30 inches. Additionally, side-shift models are available in the 4- and 6-foot width classes. At the top end, a trapezoidal trencher model expands the digging-width range of the 7-foot-class machine from 12 to 72 inches, as compared to 18 to 30 inches offered by the Eagle 7500 wheel trencher.

Number of models: 7

Product-line features: The wheel trencher's roll-up crumb shoe allows the starting of trenches close to existing structures and pipelines. Available as options from Guntert & Zimmerman, cross slope control helps keep the trench plumb when operating on a side slope and automatic grade control helps operators keep a constant uniform depth.

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TRENCH-TECH

Massive Machines Provide Big Savings

Powered entirely by Caterpillar engines, Trench-Tech's updated six-model large trencher family ranges in operating weight from 75,000 pounds to as much as 340,000 pounds, topping off with the TT-2950 model designed especially for large-diameter pipeline work. Stretching in engine output from 350 to 950 horsepower, the TT-2000 Series machines today have substantially increased maximum cutting widths, up to 78 inches on the largest model. Maximum depths have likewise been increased, from 24 to 30 feet. According to Trench-Tech, the company's mechanically driven trenchers offer significant fuel savings, and the cost of replacing teeth can be cut by as much as 65 percent.

Number of models: 6

New models: TT-2350, TT-2450, TT-2550, TT-2650, TT-2850, TT-2950

Product-line features: Now available as an option on designated Trench-Tech models, the trench safety vision system additionally provides machine operators with views from up to three cameras mounted around the machine. Images are displayed in the cab on a 7-inch color LCD screen.

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Gallery of Trenchers



TRENCOR BY ASTEC

Large Trenchers Boast Load Control System

A wheel trencher version of the T1360 is the newest addition to the Trenchor by Astec product family. With the ability to dig up to 9 feet deep and 66 inches wide, the T1360W incorporates history and design from the Trenchor 930 and 850 Capitol wheel trenchers with the newly styled Trenchor T1360 mechanical-drive chain trencher. The Tier-3 Caterpillar C13 engine transmits its 440 horsepower via a proven four-speed power-shift transmission. The chain case housing is designed as part of the support structure for the wheel, which allows all driveline parts — drive shafts, chains and bearings — to be accessible for service without requiring the removal of attachments.

Number of base models: 7

New model: T1360W

Product-line features: A Windows-based load control system rapidly regulates the digging and track speeds of Trenchor trenchers to maintain performance and reduce engine stalls and machine wear. While at 200 gallons, the high-volume hydraulic system only operates the tracks, conveyor and wheel lift to keep the pumps and motors cooler. Optional equipment includes automatic laser control for grade and steering.

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PORT INDUSTRIES

Hydramaxx Products Provide Trenching Choice

Port Industries offers not only the 39,000-pound, 425-horsepower Hydramaxx 2500 ag chain trencher, but also the 2400 and 2600 ag bucket wheel trencher models, the 2450 pipeline bucket wheel trencher, and the 3300 ag self-contained plow. The 2500 model features an updated dirt auger to increase bearing life, while the 2400, 2450 and 2600 incorporate a new conveyor design that allows excavated material to be placed a greater distance away from the trench. The 3300 has been enhanced with hydraulics and undercarriage upgrades. Each of the 2400, 2450, 2500 and 2600 have redesigned engine and main frame covers for easier maintenance and visibility.



Number of models: 5

Product-line features: Espousing high mobility, the Hydramaxx dirt-trenching machines offer digging depths of up to 7 feet (on grade) and digging widths ranging from 10 to 34 inches.

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Smaller Trenching Solutions

While dedicated trenching contractors will stick to dedicated trenching machines, particularly at the larger end, there's also an industry demand for trenching attachments on smaller machines

ASV

With their low ground pressure and rubber tracks, ASV's most compact track loaders can be equipped with a hydraulic chain trencher for the installation



of underground wiring and gas services with minimal or no damage to surrounding turf. The 512-pound trencher attachment on the ASV RC-30 (now the PT-30) offers a trench width of 4 inches to a maximum depth of 30 inches. The chain trencher uses a single-side auger discharge.

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CEAttachments

Trenchers offered by CEAttachments feature a 50,000-pound digging chain, self-aligning boom, sealed tapered roller bearings, and a removable double-flighted spoil auger. Manual side shift is standard on the Lowe Manufacturing-produced trenchers distributed by CEAttachments. Hydraulic side shift is optional, and various digging chains are available for trenching in conditions ranging from loose soil to hard rock. Operating on hydraulic flow ranging 8 to 40-plus gallons per minute, trenchers offer 24 to 60 inches of depth and 4 to 12 inches of width.



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Toro

The line of trencher attachments for Toro's Dingo compact utility loaders features two unique models. For fast, efficient trenching in soft to medium soil conditions, the high-speed model delivers auger speed of 187 rotations per minute at a hydraulic flow of 11 gallons per minute and 442 foot-pounds of torque at 3,000 pounds per square inch of pressure. Producing an auger speed of 120 rpm, the high-torque trencher (675 foot-pounds) features a heavy-duty drive system.



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Bobcat

With digging depths ranging from 24 to 60 inches, Bobcat offers eight trencher attachment models specifically for use with the company's mini track loaders, skid steer loaders, compact track loaders, all-



wheel-steer loaders, compact excavators and utility work machines. Hydraulic side-shift capability enables the Bobcat attachments to trench close to a building or fence. With the removal of the auger, the trencher attachments can work even closer to an obstacle.

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Caterpillar

With three model sizes for use on the company's skid steer and multi terrain loaders, Caterpillar trencher attachments are available from the factory with the chain installed in a choice of 21 different chain type and width configurations. As with the mid-sized T9B model, the newest and smallest T6B model works with standard flow hydraulics. For work-



ing near structures, the T6B has optional manual or hydraulic side shift, up to a maximum 22 inches to the right of center.

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John Deere

A built-in skid shoe provides proper auger depth control for each of John Deere's three compact trencher attachments, which are also equipped with indicators for proper digging control. As part of Deere's



Worksite Pro attachment lineup, the skid steer attachments come in boom lengths of 36, 48 and 60 inches, each offering a standard trench width of 6 inches. A spring-loaded boom reduces shock loads on the hydraulic motor and skid steer. The standard heavy-duty crumbler assists with loose soil removal, while a replaceable spoil auger will mound the spoil to one side.

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Construction Tires

BANDAG

Optimized for use on radial casings, Bandag's newly expanded line of Continuum brand OTR re-tread materials features an aggressive lug pattern for superior traction. The C1073 model for sizes 2100R25, 2100R35, 2400R35, 2400R49 and 2700R49 is designed for use on tires for rigid dump trucks and haul applications.

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BRIDGESTONE

The L315 on/off-highway wide base tire is designed for axles carrying heavy loads — up to 12,300 pounds at 120 psi — such as front-discharge cement mixers with front-wheel and all-wheel drive. Sporting a lug tread and open-shoulder design, it has hundreds of biting edges that enhance drive traction in mud and on gravel. The 30/32-inch tread depth and its tough compounds help lengthen tread life and resist cuts, chips, tearing and irregular wear.

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Equipped with rubber in the most critical areas, Terra-Tires skid steer flat proof tires are very track friendly. They are available in 10x16.5-inch and 12x16.5-inch sizes. Unlike other skid-steer tires, Terra-Tires have enough tread and side wall to prevent the tracks from sliding around the tires. Cracking and holes in the tread are less likely thanks to Terra-Tires' larger-than-usual hole spacing. More material at the base of the tread increases the tires' ride quality, loading characteristics and life expectancy.

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SOLIDEAL

Combining the benefits of a solid tire with the ride of a pneumatic tire, the new SolidAir Aperture skid-steer tire improves driving comfort by 40 percent compared with a solid tire. In addition to long life and excellent traction, SolidAir is fully puncture-free, the company says. As a result, it can eliminate downtime normally caused by flat pneumatic tires, while maintaining a high level of comfort for the machine operator.

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Supporting Grade Control Improves Profits

Kokosing Construction's machine-control group maximizes efficiency and accuracy of GPS grade-control

In 1992 when Tim Truex started with Kokosing Construction in the company's electrical department, the Ohio contractor had a few grade trimmers that used touch sensors to follow a stringline. Truex got pretty good at troubleshooting those systems and keeping them operating properly. He and the company's commitment to supporting automatic grade control systems have grown dramatically as Kokosing has stayed near the cutting edge of adopting the technology.

The company had six laser-controlled systems in 1998 and beta tested ATS grade control that year. As they embraced the technology, company leaders invested in creating a machine-control group as part of Kokosing's electrical department within its equipment-maintenance operation in 1999. Some company surveyors were moved into a newly formed data-prep group within the surveying department in 2000.

Kokosing beta tested global-positioning-system (GPS) grade control in 2001, and by the end of the year had several GPS units in operation mostly on crawler dozers and

motor graders. In 2004 they began exploring other applications of GPS grade control, such as on excavators and scrapers.

Today the company operates 22 dozers, 10 motor graders, three excavators and one scraper equipped with machine control, plus 16 base stations. Kokosing also owns 35 of Trimble's Cross Check units mounted on haul trucks for tracking and managing haul productivity.

"Electronic grade control ultimately gives the owner a more consistent finished product at a more controlled and productive level for the contractor," says Truex.

"From some Ohio districts, we're starting to see bid specs that call for us to provide the state inspectors with rovers to use for quality control checks," he adds. "Sometimes they're taking grade data off the memory card in our machine-control systems to support their quality control points."

Kokosing's machine-control group evolved to support positioning systems' competitive advantages. As technicians have been replaced or have moved on from the four-person team, the company has placed priority on new hires with advanced degrees in some

PROFILE



Tim Truex and Rodney Pew

Kokosing Construction Co.

Headquarters:
Fredericktown, Ohio

Specialty: Highway and heavy, industrial, underground utilities, asphalt paving, marine

Fleet Value: \$350 million

Fleet Makeup: 1,143 pieces, including 92 dozers, 93 excavators, 38 scrapers, 40 on-road dump trucks, and 386 pickup trucks

Support Staff: 213 maintenance-division personnel

Machine Control Group:
Four technicians

Market Range: Ohio based, currently working in seven states including Hawaii



Photos: Mark Mitchell Photography

Kokosing's machine-control support group includes (from left) Brian Gott and Kevin Thomas, machine-control technicians; Tim Truex, mid-sized electrical department manager; Rodney Pew, electrical coordinator; and Matt Davis, machine-control technician.

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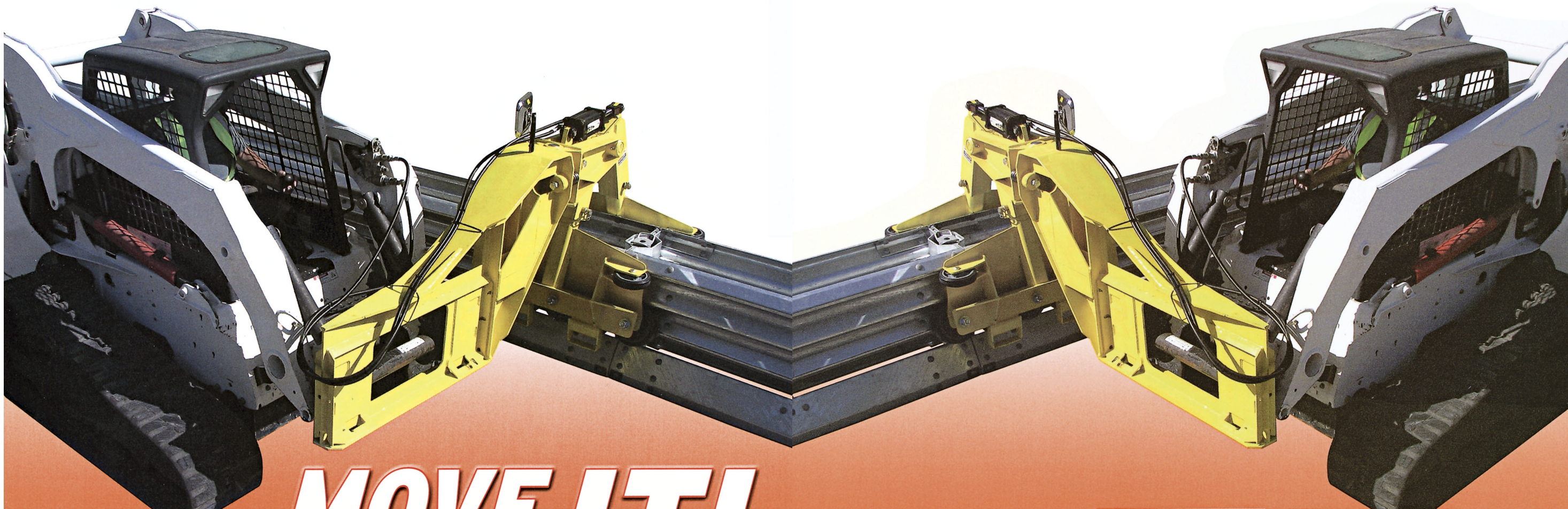
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form of electrical or electro-mechanical engineering. The company has upgraded training.

The electrical group supports two-way radios, office communications equipment, PLC and MCC controls, heavy electrical installations, and inspects overhead cranes. They also backstop heavy-equipment technicians dealing with electrical issues. "Anything new and electronic having to do with equipment, we get involved with," says Truex.

Four people in the machine control group have the ability to do hardware installations. Kokosing can completely install grade control on a bare motor grader in about two days at a significant cost savings. With the ARO (Accugrade Ready Option) that Caterpillar now offers, they complete the installation in one day.

"With an ARO machine, you still have to run some cabling and components, but the overall installation is quicker," says Rodney Pew, electrical coordinator.

The four machine-control technicians log 30 to 70 percent of their time working on machine control systems, depending on the season.

"We have one guy who does complete paving-equipment rebuilds," says Pew. "He completely rewires pavers in the winter when construction work slows down and we're doing major equipment maintenance."

"But those four guys' first priority is machine control," says Pew. "As machines or components come into the shop, they do a complete check-out procedure on them. We've set up a test stand that we can plug a component into, and we have a highway design behind the shop that we can run the equipment through to make sure it is operating properly."

"We make sure the firmware and software has all of the latest updates from Trimble," Pew adds. "You need to make sure these are the latest version or the equipment won't be at maximum productivity. The time to do it is when the equipment is not being utilized for production, typically over the winter months. Controlled conditions here in the shop allow for quick updates and an opportunity for preventive maintenance and equipment checkout."

Kokosing commits to training each of its employees at least 40 hours each year. Truex and Pew admit that some of the machine-control group's training has been trial and error because of the newness of the technology. But it's not necessarily less

valuable than their classroom work.


"We start off with motivated and customer-service-driven people who have good mechanical and hydraulic backgrounds, and half of their training is OJT, on-the-job training," says Truex. "The other half of their training comes mostly from Trimble in the classroom, but they also learn from conducting our in-house training."

"Just knowing the machine-control system is not enough," he continues. "If machine control is on a machine, most grade problems get blamed on the machine-control system — it's hard to find the real cause of a problem."

"Our operators train the machine-control technicians about how the machine control systems interact with the machines. It helps them determine if a problem is with the machine-control system or the machine itself."

Another significant role the machine-control technicians play is making sure operators get maximum value — grade accuracy and efficiency — from their systems. This requires a third level of insight into how machine control works.

"The technicians also need to know how to read plans, grade charts, and understand road design to know if the operator is setting up the machine right," Pew adds. "We had our technicians take a plan-reading class with the Ohio Contractors Association (local AGC chapter). They can read Ohio DOT blueprints so they know what grade numbers mean. It really helps when they're talking with our survey people about problems that operators might have getting to grades."

"My four machine-control guys are no different than the field mechanics keeping that equipment running on the job. Having in-house machine control technicians allows Kokosing to be very responsive to machine-control needs," says Truex. "They've paid for themselves over and over by keeping our equipment productive." 



Photos: Mark Mitchell Photography

Truex and Pew explain to operator Galen Peck (left) how the number of satellites in contact with the GPS antenna affects moment-to-moment grade-control accuracy.

How to Manage the Equipment Account

The sum is not the total of the parts. Each segment of the equipment account must be understood and managed



Mike Vorster
David H. Burrows
Professor of Construction Engineering
and Management at
Virginia Tech. See
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Most organizations separate and manage equipment costs by running an "equipment account." This is usually one large account debited with all the actual costs of owning and operating the fleet and credited with all the "revenue" generated by billing the jobs. The balance is deemed good when "the shop makes money" and bad when "the shop loses money."

It is not that simple. We must look further if we are to manage the equipment account with any degree of confidence.

We discussed whether or not the equipment account should make a profit in January, and we emphasized the need to focus on cost recovery rather than revenue in October 2006. The equipment account does not "make money" or "lose money." Any gain or loss is the difference between the actual cost of running the fleet and the internal cost-recovery charges levied against the jobs for the use of the equipment. It is an internal measure of performance and only indicates how actual costs compare to estimates we made when we set the internal cost-recovery rates.

Balancing the account as a single overall number is not difficult. We spend money on machines and we charge machines to jobs in an ongoing effort to recover the total cost of the fleet. Experience and a modicum of good management will ensure that the account will balance. If there is a small gain, we carry it forward, contribute it to company results, or redistribute it as a credit to the jobs. Losses are different. Organizations agonize over negative impact on company results or job profits.

We cannot easily act based on a single value for a loss or gain on the account. Too many variables exist; you have to have more detail to analyze. Our sample table helps understand what needs to be done.

We've set up our sample equipment account with a horizontal row for each individual unit and with a

subtotal for each class, each group, and each operating fleet. Classes are made up of units with the same capability, capacity, and cost-recovery rate, such as mini-excavators. Groups summarize classes by type of machine, such as hydraulic excavators. Operating fleets summarize groups by region or major responsibility center in the company.

Vertical columns separate costs into owning costs, operating costs, and fuel, three major and different cost types. Each column provides an overall gain or loss for that cost, and overall gain/loss is in the cell at the lower right of the table.

Our analysis of the situation starts with two critical steps. First, we must ensure that the time that each unit works on a particular job is correctly recorded. Second, we must set a cost-recovery rate such that each class, group and operating fleet is balanced within itself.

It is not a trivial task to ensure that the administrative procedures used to record time worked for each unit are functioning correctly. It is relatively easy to record hours worked for major pieces, but it requires diligence, discipline and a keen focus to ensure that appropriate time is recorded for trailers and support vehicles. A defined and well-implemented method must exist to record time for every unit that accrues cost in the equipment account. If we do not do this, the

whole system becomes a farce. Some machines or classes will pay their way, but others will be perceived as provided free for all or some of the time.

It is impossible to administer a cost-recovery process unless you ensure that your team fully and correctly records the time that machines are used.

When these procedures are functioning correctly, we can turn to the hourly, daily or monthly cost-recovery rate itself. The principle here is that the cost-recovery rate for each class must be set at a level that enables each class to balance itself. One class should

A defined method must exist to record time for every unit that accrues cost in the equipment account. If we do not do this, the whole system becomes a farce.

Equipment	Owning costs			Operating costs			Fuel	Total
	Code 1.1	Code 1.x	Total	Code 2.1	Code 2.x	Total	Code 3	
Unit 1								
Unit 2								
Unit X								
Class A								
Group								
Operating fleet								
Total fleet			G/L Ow			G/L Op	G/L Fi	G/L T

Gain or loss by unit, class, group or fleet

Gain or loss on the equipment account

Gain or loss by major cost category

not subsidize another. It is wrong and dangerous to assume all is in order when haul trucks show a \$400,000 gain and pavers and asphalt rollers show a \$380,000 loss. The equipment account might have made \$20,000, but this was due only to a completely random balance between grading and paving.

Experience shows that front-line production groups frequently subsidize groups that receive less care and attention. Good work done to extend component lives and reduce operating costs in the wheel loader group can be lost if we balance our account by using a gain in that group to offset losses in trench rollers and skid steers.

If we approach the problem as set out above, we can determine if a gain or loss in the equipment account is due to under-reported hours or understated cost-recovery rates. Let's look at our major cost categories to see how these provide us with important information.


Owning costs. Owning costs exhibit two characteristics that we can use to our advantage. First, they occur on an annual basis and are largely independent of the number of hours worked. Second, they are relatively easy to estimate and unlikely to vary unexpectedly as the year progresses.

Annual owning-cost budgets are thus fairly easy to determine, and we arrive at the hourly owning-cost-recovery rate by dividing this annual amount by an annual target for hourly utilization. Budget variances are thus extremely sensitive to changes in utilization. The gain or loss on owning costs for a class, group or operating fleet gives a good indication as to whether or not utilization targets have been met. Equipment managers can influence but, in the final analysis, do little to improve utilization. This

portion of the equipment account is thus a partnership between equipment and operations, who work together to improve utilization and therefore balance owning costs experienced and owning costs recovered.

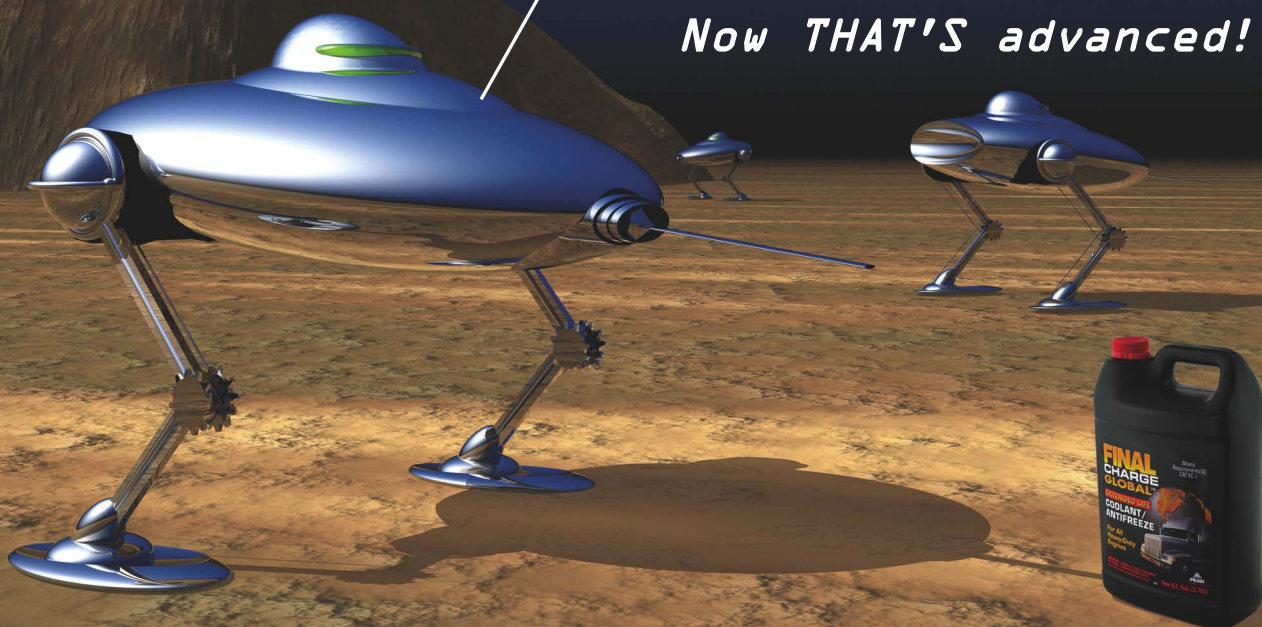
Operating costs. Operating costs are different. They are largely proportional to the number of hours worked, but are as uncertain and unpredictable as the cost and quantity of labor, parts and materials needed to keep individual units up and running. Budget variances thus do not arise because of changes in utilization. They arise because more than anticipated is spent on labor parts and materials. This portion of the equipment account is the direct responsibility of the equipment manager, who needs to look at the efficiency of equipment operations and work with project teams to improve the application and operation of the equipment.

Fuel. Fuel is included as a major cost type for three reasons. First, it is a substantial portion of the equipment account. Second, it currently represents an exceptional buying risk that cannot be lumped together with other operating costs; it must be managed separately. Third, fuel usage represents the gold standard in so far as equipment usage is concerned. Fuel is to hourly equipment cost as payroll is to hourly labor cost. We need to know the fuel-budget variance for each unit, class, group and operating fleet.

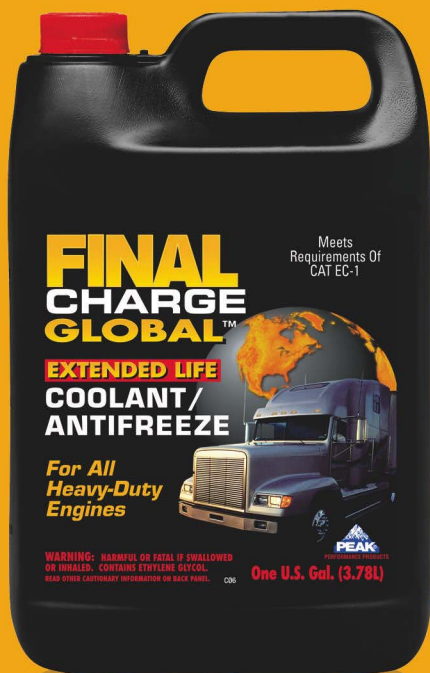
Each of these three cost types must be tracked and managed for each of the machine categories. Although the equipment account should balance across the fleet, each of the subaccounts must balance in order to ensure overall fleet finances are in efficient working order. 

This sample equipment account will help analyze the variables within the overall account.

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Articulating Cranes Lift Big in Small Spaces

Auto Crane adds a new line of versatile, multi-jointed cranes

Introduced at Conexpo-Con/Agg in Las Vegas last March, Auto Crane's line of articulating cranes joins the company's offerings of telescoping cranes and crane service bodies. The new product line — including 18 different models — is more flexible, more intuitive, and easier to control than other models, according to Auto Crane product manager Kyle Whiteis.

"The controls on each side of the crane are identical in their positioning," Whiteis says. "What your right hand controls on the driver's side of the crane is what it controls on the passenger side. In some other models, hydraulic design dictates that the controls mirror each other, which can create confusion. That's not the case with these cranes."

Designed to fit and maneuver within a variety of space limitations at construction and mining sites, the articulating cranes come in models with lift capacities

Auto Crane designs its new line of articulating cranes with space limitations in mind. Equipped with multiple joints, the flexible boom makes the crane ideal for lifting in confined areas.



from 31,800 to 332,700 foot-pounds. At maximum reach, the cranes can lift up to 1,990 pounds for the smallest model and 12,480 pounds for the largest.

"Articulating cranes are very popular overseas, where roads are often more narrow and operating space is limited," Whiteis says. "The geometry of these cranes allows them to be used in more confined environments."

Because of its lightweight and compact build, made possible by its use of high-tensile-strength steel which weighs less than traditional steel, the new crane enhances the payload capacity of the truck carrying the crane.

When used for demanding applications, the rack-and-pinion rotating system can provide high torque, and the bushings in the rotation system are made of advanced composite material, lengthening service life.

In addition to the cranes' compact and sturdy design, Auto Crane built in several safety mechanisms. The rotation cylinders, for example, are protected by a load holding valve and flow controls, which ensure safe and precise operation. Also, flanged load holding valves prevent erratic crane movements and falling loads by locking the hydraulic cylinders in place if the hose fails.

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Articulating-Crane Specifications

Model	Max. Horizontal Reach	Max. Vertical Reach Hydraulic	Max. Capacity (lb.)	Crane Weight (lb.)*
AC5-32	16'	25' 8"	4,260	1,420
AC6-46	17'10"	27'7"	5,800	1,984
AC7-55	18'1"	27'11"	6,327	2,028
AC8-59	18'1"	27'11"	6,970	2,249
AC10-69	19'6"	31'	9,480	2,380
AC11-72	19'6"	31'	9,700	2,400
AC15-101	20'2"	31'6"	12,240	3,240
AC20-142	20'5"	32'6"	19,840	4,240
AC24-155	20'8"	32'7"	19,970	4,880
AC33-226	19'6"	32'5"	25,800	6,720
AC36-234	19'6"	32'5"	26,685	6,720
AC46-312	26'1"	39'8"	31,750	8,800
AC50-332	26'1"	39'8"	32,510	8,890

*Crane weight does not include outrigger

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Market Watch Lite

By KATIE WEILER, Managing Editor

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

▶ Doosan Infracore Portable Power

The Ingersoll Rand BXR-60H weighs 158 pounds and provides 3,417 pounds of centrifugal force. Its plate size of 19x14 inches gives the machine a maximum compaction depth of 13 inches. The larger BXR-200H weighs 518 pounds and offers 7,053 pounds of centrifugal force; it compacts to a depth of 18 inches.

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◀ VMAC

The VR140 underhood air compressor is designed for the 2008 Ford 6.8L Triton V10 Gas F250-F550 Super Duty trucks. It boasts up to 150 cfm/175 psi of power and is driven by the truck's engine. The compressors use a small air/oil separator tank mounted on the truck's frame rail, with the rest of the components mounted under the hood. The system weighs about 200 pounds, and it has the capacity to run most pneumatic tools. It is engineered with a belt-driven, rotary screw compressor.

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▼ Nye

The XCP3 mechanical pulverizer attachment incorporates a biomimetic crushing jaw modeled after "bone-crushing wolf teeth," featuring canine fangs for grasping and puncturing material while at the same time protecting the nose plate. The jaws are welded in place, not pinned, so they cannot fall out and jam the crusher. Other features include a pinch plate for grabbing and pulling rebar and an optional ripper shank for picking, prying, lifting and flipping heavy slabs. Nye pulverizers require no extra hydraulics.

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▶ Thurman

DiamondBack truck scale offers the greatest load capacity and overall weigh-bridge strength of any steel-deck scale that's ever carried the Thurman brand name. While boasting a load capacity of 90,000 pounds, it is still designed to experience the least possible bending when a load is applied, claiming a deflection ratio measured at 1:1260. Inside each compartment is a 75,000-pound, alloy-steel, double-ended shear beam load cell. Each steel-deck module is built with nine massive structural steel I-beam supports.

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Market Watch Lite

Earthwave Technologies

Fleetwatcher 3.4 includes a new manual entry of hour meter, low-battery alert, and enhanced idle alert. Users attach a device to their machines, and it collects and transmits usage data through a GSM wireless data network to Fleetwatcher's Internet-based application. Online interface allows users to view and manage all data.

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Firestone

The FD835 On/Off-Highway radial drive is the first of a new generation designed to deliver superior traction and exceptional mileage in severe service. The aggressive block tread pattern, more than an inch deep, is siped to cut through rain for solid wet-surface handling. An extra-deep open shoulder provides traction on soft surfaces, including mud and snow. It is available in the 11R24.5 size with an "H" load rating, and is usable to 65 mph.



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Atlas Copco

The CC 2500 Combi Cutter hydraulic demolition attachment has a maximum operating pressure of 5,075 psi and is designed for carriers in the 22- to 35-metric-ton weight class. Universal jaws open to a width of 34.6 inches and are suited for heavily reinforced concrete demolition, building demolition, secondary reduction and more. Steel-cutting jaws open 16.8 inches wide and are used for steel-structure demolition, secondary reduction and material separation. Both deliver a cutting force of 330 tons.

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Market Watch Lite

◀ Lincoln Electric

Ranger 225 GXT welder generator puts out 10,500 watts peak generator power and now comes with a fully enclosed case that protects the unit and lowers noise levels. Three engine doors allow easy servicing. With 9,000 watts of continuous generator power, the AC generator will meet high-frequency needs such as a plasma cutter or inverter welder, the company says. The Ranger carries a three-year warranty.

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▶ Atlas Copco

Built for deep-hole exploration drilling and in-pit grade control applications, the Secoroc RC 50 hammer offers 15 to 20 percent higher penetration rates over similar-sized hammers. The RC 50 features Quantum Leap air cycle, which enables high frequency reverse circulation drilling for all rock formations. Wear and tear is minimized thanks to the piston bearing and sealed areas.

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▶ ProGrind Systems

ProGrind Pro 50 series wood chipper attachment mounts on excavators. A 440-hp Cat C13 powers the chipper head. Designed to chip all sizes of trees, the chipper also mulches the area with chips.

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▶ Nye

Built entirely from extra-thick quenched and tempered alloy plate, Nye's XSH5 heavy-duty stump harvester attachment features an oversized replaceable "tiger tooth" with improved geometry for splitting wood both with and against the grain. The use of serrated edges on the side plates provide better grip and control to slice through stumps, grub out roots and split large hardwood logs both lengthwise and crosswise. Ripper fangs are built in to hook and back-pull logs and stumps. Both quick-coupler and pin-grabber models are available.

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◀ E-Z Drill

The downsized version of E-Z Drill's Model 210B On-Grade concrete drill, Model 110B operates on the subgrade and fits in a 3-foot patch. A minimum of 50 cubic feet per minute air source is required to run the totally pneumatic system, which can drill holes from 5/8 to 2 inches in diameter to a depth of 12 inches. E-Z Drill's patented roller bearing feed system eliminates carriage friction during drilling, allowing an operator to drill faster with a smaller drill motor. Dual-purpose guide wheels slide horizontally along the concrete slab and can be flipped down to transport the 170-pound machine.

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▼ Ramrod

The Ramrod Model 950, 1150 and WB1500 remote-control-ready compact utility loaders are perfect for low clearance or dangerous situations. The loaders are available in either wheels or tracks and are well suited for construction, industrial and mining applications. Options offered on the remote are joystick or paddle controls, and wireless or tethered connectivity.

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Market Watch Lite



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The LS-B100 series of machine control sensors provides tighter accuracy and a greater working range than Topcon's LS-B2 and B4 models. Capable of on-grade matching and wireless transmission, the sensors are best suited for dozers, excavators and backhoes. Other features include plumb indication, four selectable dead bands, and universal pole clamp.



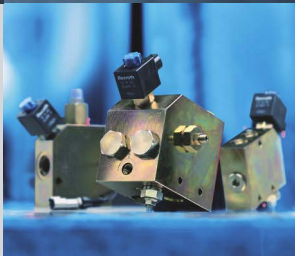
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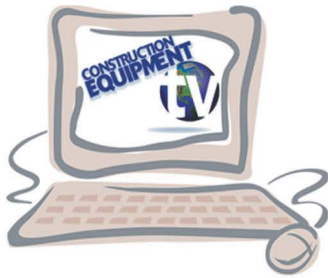
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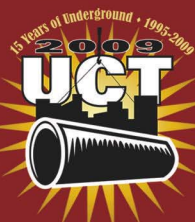
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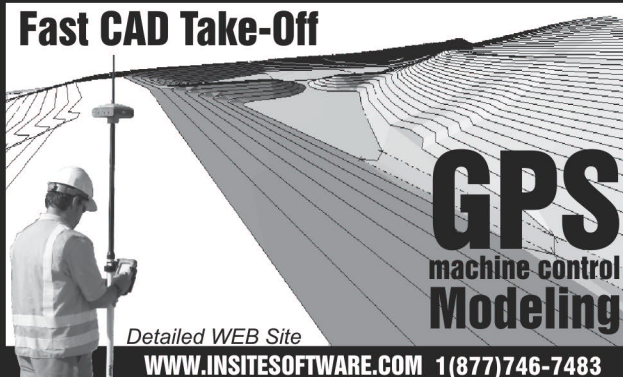
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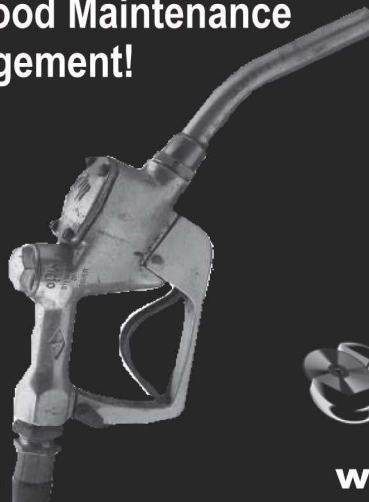


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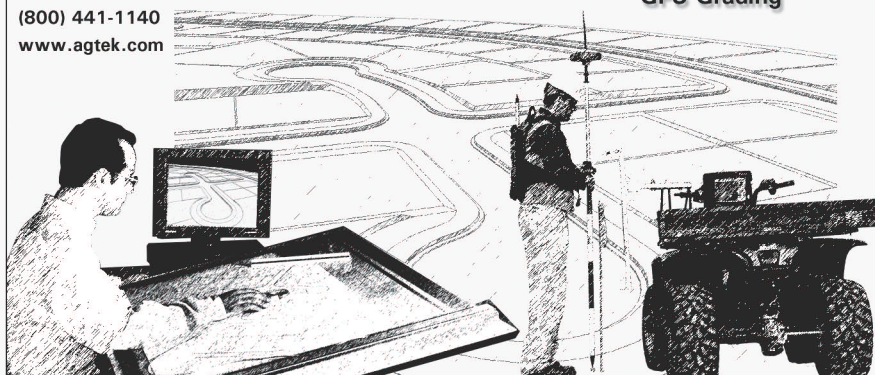
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Four articulated models and two all-wheel steer models with bucket capacities from 0.3 – 1.0 cu. yd.

- **Excavators**

Five new models from 1.5 – 8 tons (including two units with zero tail swing). Offering digging depths from 7'4" – 15'.

- **Wheel Dumpers**

Three new models with payload capacities of 2,204 lbs – 13,228 lbs.

See your Wacker Neuson dealer to buy or rent. To sign up for a free demo, please visit www.wackergroup.com/FreeDemoUSA



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