



46 Smooth
ride from light-
weight mixer



56 Specs
and trends for
32 skid-steers



CONSTRUCTION EQUIPMENT®

Since 1949

Ideas and Insight for the Equipment Pro

May 2006
ConstructionEquipment.com



D-Series Shines

**Our exclusive Field Test
pits Deere's new
excavator against
its predecessor**

p. 28

► TRUCKS
BUSES
ENGINES
PARTS / SERVICE
FINANCE / LEASING



**INTERNATIONAL® PAYSTAR™ SERIES.
THEY HAVEN'T JUST BEEN AROUND THE BLOCK.
THEY BUILT THE BLOCK.**

Pull an International® PAYSTAR™ into the yard, and its reputation alone makes the earth tremble before you. Because behind its classic looks and rugged styling, lie the brute strength of up to 560 work hungry horses of big-bore power. Which is more than enough muscle to charge through even the toughest jobs. Rest assured, when the going gets tough, nothing's got your back like an International PAYSTAR. Let your International dealer show you the way.

www.InternationalDelivers.com



A NAVISTAR COMPANY

For more information, visit www.ConstructionEquipment.com/RS and enter 1



It's time.

It's said that getting things done is not a matter of time; it's a matter of priorities. Maybe that's true for most things, but when it comes down to maximizing productivity, getting the right things done faster is what separates the big winners from those who simply play the game.

Winners find ways to save time: the right combination of people and equipment to beat deadlines; the resources to creatively attack projects for optimum results; the systems to manage a job so that time is not only saved, but each hour becomes more profitable.

Topcon equipment is designed to do just that—create a better way to control your site, machinery and manage your resources so every second counts.

We know the value of your time. It's irreplaceable. Let Topcon help you make the most of it.

It's time.



3D-GPS+
Dual Constellations—GPS+GLONASS
Indicate, Automatic, Millimeter GPS™
Easy, smooth operation for all equipment



\$3 MILLION WAS LOST TO THEFT TODAY. HOW MUCH OF THAT BELONGS TO YOU?

BOBCAT ELECTRONIC SECURITY SYSTEM



Skid-Steer Loaders



Compact
Track Loaders



All-Wheel
Steer Loaders

When \$3 million in compact equipment is lost each day to thieves,* advanced theft protection is crucial. The Bobcat® deluxe instrument panel defends your machine with up to eight customizable security codes. Contact your dealer to add deluxe instrumentation to many existing Bobcat skid-steer, all-wheel steer, and compact track loaders.

* National Insurance Crime Bureau

One Tough Animal™



Bobcat®

COLUMNS & DEPARTMENTS

Editorial 11

Equipment's electronic age

Managers Digest 21

Free webcast explores intelligent compaction

Equipment Executive 71

The residual-value grid

Iron Works 94

Cline off-road truck

PRODUCTS

Market Watch 14



This month's primary machine introductions

Spotlight 67

Asset tracking/theft protection

Earthmoving Report 75

WA600-6 steps up to 502 HP

Paving Report 79

New design for Bomag pneumatics

Earthmoving Report 80

Graders reengineered from the ground up

Market Watch Lite 83

Small solutions to jobsite challenges

Innovations & Ideas 87

Classifieds

Advertisers Index

Cover photo by George Pfoertner®

FEATURES



COVER STORY: Field Test

28 Deere's 350D Proves Its Potential

After two days in the dirt with Deere's new Tier-3-compliant 350D LC hydraulic excavator, it was obvious that the new model's added brawn and refinement pay off in convincingly superior performance, compared to its 330C LC predecessor. We found the 350D's increased fuel efficiency of particular note.

FLEET MANAGEMENT

38 Profits Reward Contractors Who Adapt to 3D Grade Controls

Real challenges such as price, creating digital-terrain models, and motivating operators, face contractors who are considering the purchase of three-dimensional (3D) grade controls that allow the global positioning system (GPS) to guide an earthmover's blade. Early adopters of the technology are being rewarded for adapting their businesses with rising profit margins.



Contents

HANDS-ON TRUCKING

46 Paystar Mixer Offers Weight-Loss Lessons

Many of us could afford to lose some weight, as we'd look sleeker, feel better and maybe live longer. The same thing goes for trucks. That's the point of this 5600i lightweight mixer chassis from International Truck and Engine.

As it sits, this truck tips the scales at 23,040 pounds, which is several thousand less than a typical 10-wheel mixer with a 10-yard barrel, says the company.



SPECIAL REPORT

50 Fleet-Management Software Evolves

Public and private fleets may have many differences in the regulations, restrictions and region of their operations. But they share a common interest in maximizing the use of fleet-management software to reduce costs, increase staff productivity, and improve the quality of services they provide to their diverse clients and customers.



BUYING FILE

56 Controls Refine Great Skid-Steer Power

Even with a broad range of weights and horsepower represented within a fairly narrow segment of skid-steers available today, most equipment manufacturers are relying on the same features — operator stations, hydraulic performance,

and attachment versatility to differentiate their machines. The 32 models of mid-sized skid-steers — spanning just 600 pounds of rated operating capacity between 1,600 and 2,200 pounds — include machines with net engine horsepower ranging from 44 to 82.



CONSTRUCTION EQUIPMENT

May 2006 • Vol. 109, Issue 5

ConstructionEquipment.com

Research Equipment Online:



Access the industry's most complete source of information for researching equipment purchases, maintenance and management at

ConstructionEquipment.com.

Tune in this month for our web-based seminar on Intelligent Compaction, an in-depth look at federal and state efforts to demonstrate this new technology. Register online for this free event, to be broadcast May 17 at 1 p.m. CST.

Subscription Information

For subscription inquiries and address changes, please visit ConstructionEquipment.com (click on the subscription button) or call 800/446-6551.

Subscribe online at
www.getFREEmag.com/ce

25 Years of Awards

Celebrating 25 Consecutive Years of Editorial Excellence

- 11 Jesse H. Neal Awards
- 13 Robert F. Boger Awards
- 48 Regional ASBPE Awards
- 13 National ASBPE Awards
- 3 TABBIE Awards

Reed Business Information
Tad Smith: CEO; Jeff Greisch: President,
Chicago Division

 Reed Business Information

TEAMED FOR success



Faster cycle times, bigger payloads, lower fuel costs. That's what you get with TEREX and its line of performance-matched articulated trucks and hydraulic excavators. Featuring bigger beds, greater heap capacities and some of the highest horsepower in the industry, our trucks hit the ground running with speeds up to 32 mph. Our advanced excavators offer digging depths to 25' 6", exceptional break-out forces and bucket capacities up to 2.20 yd³. Plus, an advanced e-Pos System for increased fuel efficiency over competitive models. Add it all up and you have a force that can't be beat.

For details, contact your local TEREX distributor, visit terex.com or call 866.837.3923.



*Extend the value. Call 662-393-1232
for financing options.*



TEREX

866-837-3923 | www.terex.com

For more information, visit www.ConstructionEquipment.com/RS and enter 4

ONLY TRIMBLE HELPS YOU FINISH FASTER WITH FEWER MACHINES

GCS900 3D Automatic Control

Single GPS, Dual GPS, GPS with Laser Augmentation, ATS Advanced Total Station



Only one company has a complete solution to let you take the guesswork out of any kind of earthworks. Finishing projects faster means more profits, and more competitive bids. That's why the Trimble Grade Control System was designed from the dirt up to let you run every machine at higher speeds without sacrificing accuracy. To make a profitable improvement in your productivity, contact your Trimble dealer today for a demo or visit www.trimble.com/gcs.



www.trimble.com

For more information, visit www.ConstructionEquipment.com/RS and enter 5
Trimble Construction Division (800) 538-7800 (937) 245-5154 FAX: (937) 233-9441 © 2005 Trimble Navigation Limited. All rights reserved. TC-003 (11/05).

Editorial Staff

Rod Sutton, Editor in Chief

630/288-8130; rsutton@reedbusiness.com

Larry Stewart, Executive Editor

314/962-0639; lsstewart@reedbusiness.com

Walt Moore, Senior Editor

630/288-8132; wmoore@reedbusiness.com

Katie Weiler, Managing Editor

630/288-8142; kweiler@reedbusiness.com

Heather Burlingame, Senior Production Editor
630/288-8136; hburlingame@reedbusiness.com

Tom Berg, Truck Editor

Mike Vorster, Contributing Editor

Publishing Offices

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

Rick Blesi, Publisher

Dawn Batchelder, Marketing Coordinator

Lisa Hegel, eMedia Coordinator

Bruce Ksiazek, Director of Finance

Karen A. Ruesch, Production Director

Victoria Jones, Production Manager

Allison Ternes, Circulation Manager

Bill Patton, Creative Director

Mary Sondergaard, Art Director

Sales Representatives

Mary Adey, Regional Manager

630/288-8134; Fax: 630/288-8185

madee@reedbusiness.com

Michelle Lorusso, CBC, Regional Manager

813/926-2394; Fax: 813/926-2583

mlorusso@reedbusiness.com

Patricia Maroder, Regional Manager

630/288-8139; Fax: 630/288-8185

pmaroder@reedbusiness.com

Terry McGinnis, Regional Manager

801/273-8790; Fax: 801/273-8799

tmcginnis@reedbusiness.com

Mike Hancock, International

Quadrant House, The Quadrant,

Sutton, Surrey SM2 5AS, UK

Tel: 011 44 208/652 8248;

Fax: 011 44 208/652 8249

Reprints

Reprint Management Services, Reprints
800/290-5460, ext. 100

constructionequipment@reprintbuyer.com

Equipment's Electronic Age

Traditional news organizations face extraordinary competition these days. Daily newspapers struggle to keep readers who can access news at any time of the day or night and are moving away from traditional ink on paper. Broadcast news has turned to entertainment and opinion in order to keep viewers interested.

We see our mainstream siblings wrestle with this new reality and realize that we, too, must make some serious and significant choices in how we deliver the award-winning equipment information our subscribers have come to expect over the past 25 years or so. We know that our subscribers manage the nation's fleet by day, but they also watch TV, listen to radio, read, and use the Internet.

Recently, we began offering *Construction Equipment* in digital editions. Subscribers can receive their monthly edition in their e-mail box instead of their post-office box. Response, though minimal, has been higher than expected. But for those subscribers who have the technology and want their equipment information in that medium, we're happy to oblige.

This has always been our driving motivation: Determine what information equipment managers need and deliver it to them in the best possible manner. Our editorial history bears that out. Now, in the electronic age, our editors continue to deliver.

Last month, we broadcast a seminar at ConstructionEquipment.com that brought two industry experts together to provide valuable insight into shop-cost analysis. This month, we'll broadcast a seminar on intelligent compaction. This information is of great value to equipment managers, but it just doesn't work well on paper. We found another way to bring it to the industry.

Another example: We know our subscribers look to us first and foremost for new-product information. It's what we do, and nobody does it better. For those who want to be the first to know about any new product we become aware of, we have an electronic newsletter that includes all the new products from the previous four weeks.

Today's equipment managers can choose more than ink and paper when it comes to product information and management insight. We pledge to continue providing that information, to our traditional standards of high quality, in whatever medium you desire.

Drop me a line at rsutton@reedbusiness.com, or call me at 630/288-8130. I'd love to discuss how we're doing, and how we can continue to meet and exceed your expectations.

Rod

630-288-8130

rsutton@reedbusiness.com



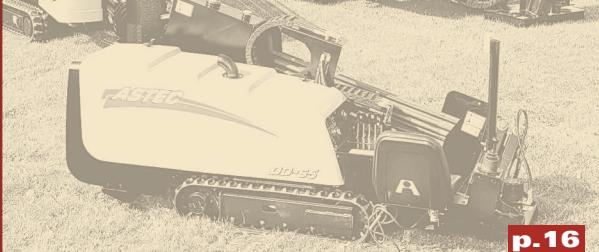
Rod Sutton, Editor in Chief

“Hotshot”

This excavator isn't afraid to strut its stuff. The new D-Series Excavators, from 24 to 85 metric tons, are bigger, tougher, and more powerful, with a boost in horsepower and beefed-up undercarriages. They also boast faster hydraulics, best-in-class metering, and superior digging force for bucket fill so aggressive it'll put a swagger in your operator's step. See your John Deere dealer, or call 1-800-503-3373 to find out how a fuel-efficient, Tier-III-certified D-Series Excavator can give you productivity worth bragging about.



www.JohnDeere.com/hotshot



P. 16

MARKET WATCH

By KATIE WEILER, Managing Editor

We're making it quicker for you to obtain more information on products by going to ConstructionEquipment.com/info. Once there, you'll be in our Buyer's Guide, where you can find manufacturer information as well as distributor listings. Sign up for our monthly MarketWatch eNewsletter at ConstructionEquipment.com

Bomag



With paving widths that range from 8 to 13 feet, the 3313 asphalt paver is ideal for driveways, parking lots and resurfacing jobs. This gravity-fed paver uses a 50-hp Cummins diesel and a single-motor hydrostatic drive system that provides speeds to 250 fpm. Dual, 3-

inch-diameter cylinders elevate the hopper bed during operation to move asphalt through the gates and to the screed.

For more information, visit ConstructionEquipment.com/info



Caterpillar

According to Cat, the CB-564D asphalt compactor, with 84-inch-wide drums, can be used in all phases of asphalt compaction, thus potentially reducing the need for multiple rollers on site. In addition, the 27,800-pound model can handle sub-base, base and surface courses. The CB-564D features automatic speed control (with an impact-spacing indicator), an electronic propel lever, vertical-yoke frame, 50/50 articulation, and a Cat 3054C diesel engine producing 130 horsepower.

For more information, visit ConstructionEquipment.com/info



JCB

The 426 and 436 wheel loaders, both fitted with a Cummins B-Series engine, have horsepower ratings of 152 and 177, respectively, and operating weights of 31,135 and 35,979 pounds. The two models, which have bucket options to 3.5 cubic yards, can be equipped with standard Z-bar linkage or with a high-lift configuration.

For more information, visit ConstructionEquipment.com/info



Komatsu

Torque rise in the 30-ton HM300-2 articulated truck grew from 30 to 40 percent with the transition to a Tier 3 engine, and the truck gained 16 horsepower. Komatsu beefed up the transmission's shafts to handle the extra grunt. The truck should come out of the hole more powerfully, and Komatsu estimates 11- to 12-percent improved productivity. Maximum GVW is increased to 113,360 pounds.

For more information, visit ConstructionEquipment.com/info



Haulotte

A new range of XL rough-terrain scissor lifts from Haulotte includes the HS 33/43/5388 RT XL. They have a 23 foot-11 inch long platform for jobs requiring long loads. Maximum load capacity is 1,544 pounds. Automatic leveling outriggers come standard. As an option, the machines can be equipped with dual-fuel engines.

For more information, visit ConstructionEquipment.com/info



Manitou

Manitou offers a remote boom control option and a 180-degree swing carriage option for the MT 6642 and MT 8044 telehandlers. The wireless hand-held controller raises, lowers, extends and retracts the boom. It also starts and stops the engine. A proportional trigger controls the speed of the boom. The swing carriage allows users to position a work platform parallel to a building. The remote control is priced at \$5,605.

For more information, visit ConstructionEquipment.com/info

Vögele America

The 2219T rubber-tracked asphalt paver is powered by a 190-hp Cummins diesel engine and features a four-speed-range hydrostatic drive system that provides speeds to 10 mph. Hopper capacity is 225 cubic feet.

For more information, visit ConstructionEquipment.com/info



Market Watch



JCB

Model JS175W is the first of what the company says is a new generation of wheeled excavators. The new model incorporates a high-speed travel mode, and it features independent deployment of the stabilizers and blade.

For more information, visit ConstructionEquipment.com/info



Astec

EarthPro Series of HDDs includes three models. DD-65 MiniMax offers 6,000 pounds of thrust/pullback force and is capable of up to 500 lb.-ft. of rotary torque. DD-1215 provides 12,000 pounds of thrust/pullback force with up to 1,500 lb.-ft. of rotary torque. DD-3238 has 32,000 pounds of thrust/pullback with 3,800 lb.-ft. of rotary torque.

For more information, visit ConstructionEquipment.com/info

Sakai

Model R2H-1 static, three-wheel compactor is "balanced" by using three equal-diameter drums designed to yield equal force (365 pounds) per linear inch across its 83-inch rolling width. Center-point articulation is designed to ensure precise tracking of front and rear drums and to ensure built-in drum overlap. The drums are machined for perfect concentricity, says Sakai, to provide a perfectly smooth finish.

For more information, visit ConstructionEquipment.com/info



Baldor

The TS400 mobile generator is rated to produce standby power of 320 kW at 400kVA, and its prime power rating is 365kVA, providing 292 kW. It can deliver multiple voltages using a voltage changeover board for either single- or three-phase configurations. It has an auto-start feature, working in tandem with a transfer switch that allows for remote starting.

For more information, visit ConstructionEquipment.com/info



John Deere

Six new D-Series hydraulic excavators all feature Tier-3-compliant engines, as well as a long list of hydraulic, structural and cab changes. They range in operating weight from 54,244 to 185,520 pounds, and in horsepower ratings from 177 to 532. The 240D LC, 270D LC and 350D LC feature John Deere PowerTech Plus engines, while the three larger models, the 450D LC, 650D LC and 850D LC use Isuzu engines. All feature a sleek new cab with a brand-new monitor that allows programming hydraulic parameters for attachments, as well as operating and diagnostic parameters.

For more information, visit ConstructionEquipment.com/info



NEW HOLLAND



THE OPERATOR'S CHOICE

Ask any operator. They'll tell you that New Holland's long wheelbase and low center of gravity improve the ride and stability for unmatched operator comfort. Plus New Holland's Super Boom™ lift linkage and fast cycle times bring skid steer productivity to another level.

- **Maximum forward reach at maximum lift height** – patented Super Boom lift linkage
- **Outstanding stability and lift capacity** – longer wheelbase and low center of gravity
- **More comfort and better visibility** – the widest cab in the industry and no rear frame towers to block your view
- **A Super Boom to match your needs** – seven models with operating capacities from 1,250 to 2,800 lbs.

To see the Super Boom advantages or for information on the complete line of New Holland construction equipment, see your dealer or visit our website at www.newhollandconstruction.com



For more information, visit www.ConstructionEquipment.com/RS and enter 7

© 2006 CNH America LLC. New Holland is a trademark of CNH America LLC.

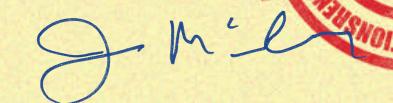
 **NEW HOLLAND**

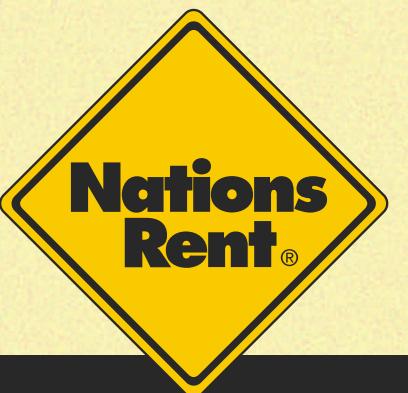


Think of me as your man on the inside.

In an industry where the margin for error is the size of a post-it note, it's good to have an edge. And as authorized dealers for many top brands, that's exactly what we give you. Call me and I'll set you up with the right equipment. At the right terms. Backed by warranty work, maintenance schedules and a whole lot more only a dealer can offer. Now, some will say that could give you an unfair advantage over the competition. But I have a hunch you won't be losing sleep over it.

We're an authorized dealer for many of the industry's top brands.


Jim McGinley General Manager
1-800-No Sweat®



ANY WAY YOU WANT IT. BUY IT. RENT IT. FIX IT.



**0% FINANCING*
+ 3-YEAR
WARRANTY** $=$ **LOWER
OPERATING
COSTS**

YOU DO THE MATH.

With special zero-percent financing for 36 months and a three-year/4,000 hour powertrain warranty on purchases made through June 30, 2006, there's never been a better time to add a Case 400 Series Skid Steer to your fleet. Powerful and productive, the 400 Series features the exclusive Case Power Reach feature** that maximizes reach at any height—so you can quickly and easily load farther back into trailers and to the center of high-sided trucks. Optional hydraulic self-leveling retains more material for even more speed on the jobsite. And with our exclusive "no tool" 10-second tilt ROPS, you'll shave additional minutes off daily maintenance, too. See all the other ways the 400 Series takes your business performance to a higher level. Visit the professional partners at your local dealer for a demo and full details on this special offer.

*For industrial use. Offer subject to CNH Capital approval. See your Case dealer for details and eligibility requirement. Down payment may be required. Offer good through June 30, 2006, at participating Case dealers in the United States. Offer subject to change without notice.

**Power Reach available on 435, 445 and 465 models only.

©2006 CNH America LLC. Case is a registered trademark of CNH America LLC. All rights reserved.

www.casece.com

For more information, visit www.ConstructionEquipment.com/RS and enter 9

MANUFACTURER NEWS

Cat to Introduce Electric-Drive Option on Mining Trucks

Caterpillar is currently testing an electric-drive option for haul trucks that uses alternating-current (AC) technology. Rather than test the system using only a simulator, the company installed the AC-drive system on its 797 haul truck to measure performance. The

plan is to offer the system on two models in the 150-ton-plus payload range. Specific models aren't known at this time. The AC system is meant to complement the mechanical-drive system and will be offered only when AC technology is the best solution for the

customer, says the company. The AC models use all common parts to create a fully integrated system, which Caterpillar claims differentiates its electric-drive trucks from the competitors'. With one company that manufactures and/or controls the

diagnostics, components achieve 100-percent communication. The integrated system also allows Caterpillar to provide bumper-to-bumper servicing for the customer. Through collaboration with Caterpillar, Mitsubishi

Electric — the leading supplier of AC technology, according to Caterpillar — will provide the power inverter. Caterpillar's 2,000- to 4,400-hp C175 ACERT engine will power the machine.

— Heather Burlingame

OLD IRON

A Compressor Goes Crazy

Crazy Horse Memorial Foundation still uses a 1958 Ingersoll Rand air compressor to help in construction of the largest sculpture in the world, which is being carved out of a mountain in the Black Hills of South Dakota. The Crazy Horse Memorial began in 1948 when sculptor Korczak Ziolkowski made it his life's work to create a tribute to Crazy Horse and be a symbol for American Indians. The 600-cfm compressor is currently being used by one of Ziolkowski's sons to power hand-held jackhammers.



DISTRIBUTOR NEWS

Single-Pass Bore Restoration

In the interest of saving downtime for its customers when restoring pin bores in the pivots of construction machines, Peterson Tractor Co. of Redding,

Calif., began using a line-boring machine that interfaces with a bore welder. The bore welder is attached to the boring machine's mounting fixture and, according to the tool's manufacturer, Climax Portable Machine Tools, this configuration ensures

proper alignment for both functions. According to Climax, the line-boring machine used, the BB5000, is a compact, flexible unit that installs in about 30 minutes.

"The ability to weld and machine at the same time makes us more competitive in the marketplace," says Jed Gibson, store manager.



TRAINING

Technicians Win Scholarships



Timmy Compton, AEMP's Technician of the Year, displays his award flanked by fellow finalists Gerald Schiffmacher, City of Peoria, Ariz., (left), and Graham McLaughlin, VDOT.

He has fabricated various tools and parts for VDOT, and his application noted seven innovations that he's developed since 1999.

The award is sponsored by John Deere Construction Equipment and the Foundation of AEMP. Deere awarded Compton a toolbox, and the Foundation presented him with a scholarship of \$1,000 to be used in continuing education.

"I'm overwhelmed," Compton said after the presentation. "The \$1,000 is a good deal."

In addition to Compton, two other finalists received toolboxes and \$400 scholarships: Gerald Schiffmacher, City of Peoria, Ariz.; and Graham McLaughlin, VDOT.

— Rod Sutton

Managers Digest

CONSTRUCTIONEQUIPMENT.COM NEWS

Free Webcast Explores Intelligent Compaction

Last month, *Construction Equipment* senior editor Walt Moore investigated the new technologies in asphalt compaction. Encouraged by Federal transportation officials eager for this European technology to be applied here, equipment manufacturers have integrated intelligent

compaction into their product lines. Now, demonstration projects have put the technology to the test.

ConstructionEquipment.com will host a free webcast event to explore the current state of demonstration efforts. Join host Rod Sutton, editor in chief of *Construction Equipment*

on May 17 for the web-based seminar "Intelligent Compaction: New Technology in Roadbuilding."

Presenters include Bob Horan, P.E., of SALUT Inc.; Matt Corrigan of the U.S. Department of Transportation's Federal Highway Admin-

istration, and John Siekmeier, P.E., of the Minnesota Department of Transportation.

Presentations will cover:

- An overview of intelligent compaction
- Highlights from the Federal Highway Administration's strategic plan for intelligent compaction

■ How intelligent compaction improves road construction

■ Federal plans to demonstrate intelligent compaction technology on a national basis

■ What Minnesota's own demonstrations have revealed.

To register, visit *ConstructionEquipment.com*.

How to Use ConstructionEquipment.com

Choose from the list of categories and subcategories to find all information the site has to offer on a specific type of equipment.

Backhoe Loaders >=14 feet

Introductions

Komatsu



Backhoe Loader feet Specification
Detailed dimensions and performance specs to Loaders >=14 feet.

Backhoe Loader feet Manufacturers
Find the suppliers of Backhoe Loaders >=14 feet, you will need them.

The Utility Division of Komatsu America has refined models in its backhoe-loader line with addition of available joystick controllers for

From Specifications in the horizontal-navigation bar, compare specs on 63 types of construction and forestry equipment at no charge.

CURRENT MODELS

| Manufacturer | Model | Compare |
|------------------|--------------|---------------------------------|
| Allmand Brothers | TLB-635 ESL | Select <input type="checkbox"/> |
| Allmand Brothers | TLB-426 ESL | Select <input type="checkbox"/> |
| Allmand Brothers | TLB-220 | Select <input type="checkbox"/> |
| Allmand Brothers | TLB-225 | Select <input type="checkbox"/> |
| Allmand Brothers | TLB-325 ESL | Select <input type="checkbox"/> |
| Allmand Brothers | TLB-6295 ESL | Select <input type="checkbox"/> |
| Astec | 660 TLB | Select <input type="checkbox"/> |
| Bobcat | B250 B | Select <input type="checkbox"/> |
| Bobcat | B100 B | Select <input type="checkbox"/> |

The screenshot shows the main navigation bar with categories like Equipment, New Products, Maintenance & Management, Specifications, Find Dealers & Manufacturers, and Magazine Archives. A search bar is at the top right. Below the navigation is a featured article about the Caterpillar AP-1000 asphalt paver, with a large image of the machine and text describing its features.

The search option provides results for all site content — from editorial archives to manufacturer and dealer information.

Manufacturer: Case Corp.

Address: 700 State St.
City: Racine
State: WI
Phone: 262 636-6011
Fax: 262 636-0876
Website: www.casece.com
Email:

Products (2 found)

Backhoe Loaders, Greater than/equal to 14 ft.
Cable Layers
Crawler Dozers
Crawler Excavators, Greater than 6 metric tonnes or 13,200 lbs.
Crawler Tractors
Directional Boring Equipment
Skid Steer Loaders
Telehandlers
Trenchers
Vibratory Plows
Wheel Loaders, Greater than 109 hp
Wheel Tractors

Dealers (727 found)

Neff Rental Union City CA
R. Beatty Diesel Inc., Erie PA
4 Machinery Corp., Waipahu HI

Filter de

Find the latest in equipment introductions, as well as news and links to recent machine-evaluation and new-product articles at *ConstructionEquipment.com*'s home page. Read information on maintaining and managing fleets, as well as magazine archives, in the horizontal-navigation bar.

From Find Dealers & Manufacturers in the horizontal-navigation bar, drill down to manufacturer contact information, the products made by the company, and dealers as available.

Time = Productivity = Profit



Outperforms Equipment In Its Class!

High Productivity



Whether you're paving a highway, residential street, parking lot or runway, you want more production. Reliable Power Pavers machines with quick width changes and easy loading keep you on line and productive. Please call us to learn about our full line of slipform pavers, placer spreaders, form riders, and texture/cure machines.

5838 W. Cedar Wapsi Road, Cedar Falls, IA 50613
Tele: 319-987-3070 Fax: 319-987-3074
E-mail: info@powerpavers.com www.powerpavers.com

**Power
Pavers** INC.

Our Commitment Shows

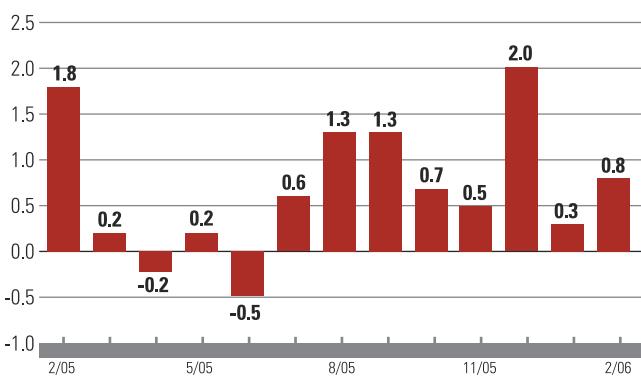
For more information, visit www.ConstructionEquipment.com/RS and enter 10

By JIM HAUGHEY, Director of Economics

↑ TOTAL CONSTRUCTION SPENDING

Spending increased 0.8% in February and is back on track with the expected 7-8% increase for the full year. Surprisingly, the residential sector, including remodeling, accounted for more than 90% of the February gain. Recent Reed Construction Data starts trends indicate that activity at nonresidential building and heavy/engineering jobsites will be expanding enough in the next few months to offset most of the growth decline now underway in the residential market.

(% change from previous month)

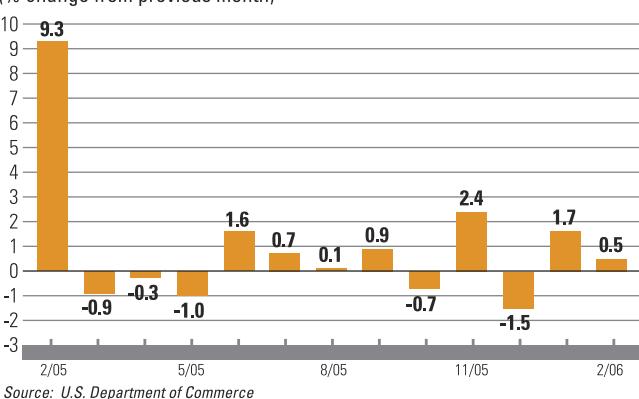


Source: U.S. Department of Commerce

↑ HIGHWAY CONSTRUCTION SPENDING

Highway construction spending is expanding at around an 8% annual pace, about the 8.7% annual gain anticipated for both this year and 2007. This growth rate is the result of annual increases in federal highway funding below 8% and about 10% annual gains in other funding sources, primarily state, municipal and toll funds. Spending on pavement is unchanged from a year ago, and bridge spending is up 5.7%. Spending on related lighting and rest facilities is more than 30% higher.

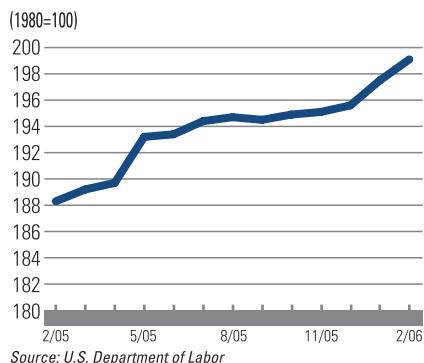
(% change from previous month)



Source: U.S. Department of Commerce

↑ CONSTRUCTION EQUIPMENT PRICE INDEX

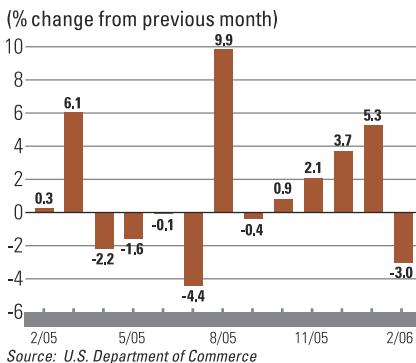
Construction equipment prices increased 0.8% in February and are 5.7% above February 2005. Improved manufacturing and distribution margins in an increasingly tight-supply market account for most of the increase. Manufacturer order backlogs have declined slightly since last fall, but they will remain high enough at least through yearend to maintain sales margins. Higher materials, credit and logistics costs have also contributed to the price increase.



Source: U.S. Department of Labor

↓ MANUFACTURING CONSTRUCTION SPENDING

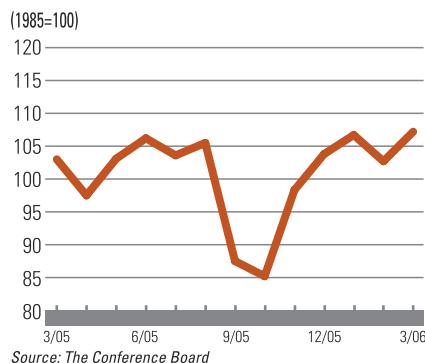
Although manufacturing construction spending fell 3% from January to February, production capacity needs are expanding rapidly enough to ensure a third consecutive year of double-digit construction spending growth in 2006 and nearly that much growth next year. Manufacturing capacity has increased 3.5% since it began expanding 18 months ago, but it has not kept up with production schedules. The capacity utilization rate has pushed above 80%.



Source: U.S. Department of Commerce

↑ CONSUMER CONFIDENCE INDEX

The Conference Board's index has remained slightly above 100 for the past year (except for post-Katrina), but it is expected to rise about 10% higher over the next year with stable to slightly lower energy prices and an improving labor market. Yet this increase will still leave the index 10% below the sustained high level at the end of the last business expansion when the unemployment rate was more than 1.5% lower.



Source: The Conference Board

For the full text of this month's economic analysis, check Magazine Archives/Economics at ConstructionEquipment.com



Enough power to make your blood pump and the ground quiver.

Doosan's new DL and DX lines are experts at getting things moving. These babies deliver class-leading power and technological innovation, making them the toughest heavy construction equipment around. Doosan is durable, with quality parts that test well beyond the industry average. Doosan is reliable, with a strong commitment to complete lifecycle care, plus an easy-to-use online support and parts-ordering system. That's why Doosan's the fourth largest manufacturer in the world.

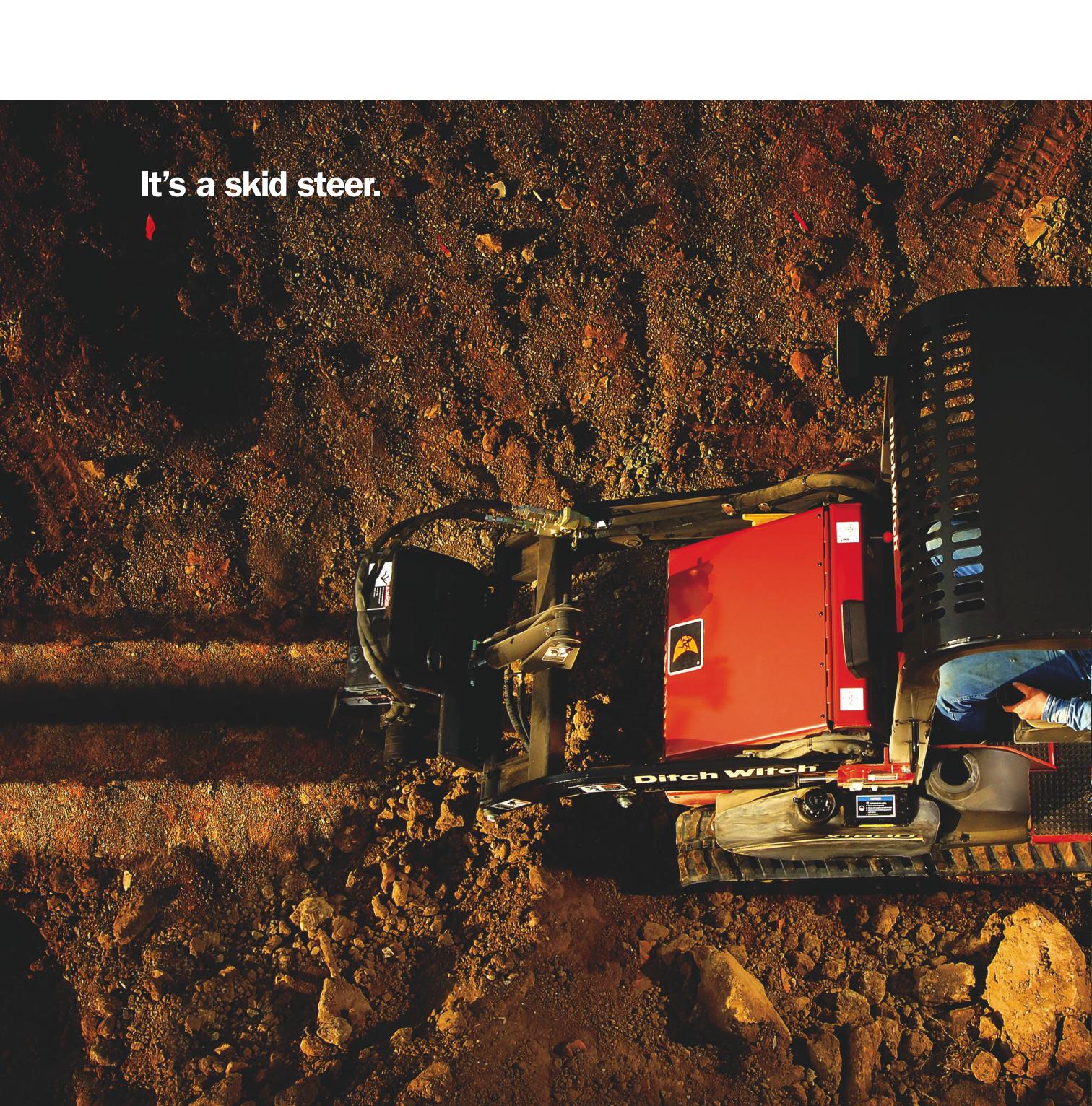
Doosan. Up to the job.



©2006 Doosan Infracore America Corp.
All rights reserved.

For more information, visit www.ConstructionEquipment.com/RS and enter 11

To locate your nearest dealer or inquire about joining our network, call 770.831.2200, email InfoNow@dhiac.com or visit www.dhiac.com



It's a skid steer.



It's an excavator.

It's the XT850 MegaTool.

This excavator-tool carrier, all-in-one unit allows you to tackle virtually any type of light- to medium-duty construction task, underground or aboveground. And the versatile, diesel-powered workhorse can drive more than 70 compact utility attachments and hold up under even the most extreme jobsite conditions.

Plus with its compact frame, zero turning radius, and dual-pivot, 260° excavator sweep, the XT850 MegaTool is a landscaper's dream. You can dig against a footing or wall, or dig several trenches without having to move the entire unit. For more information, give us a call at 1-800-654-6481 or log on to ditchwitch.com.

\$24,978*
Limited time offer.

 **Ditch Witch®**
GROUNDBREAKING™



350D EXCAVATOR

Cover Story

FIELD TEST FIELD TEST FIELD TEST FIELD TEST FIELD TEST

Deere's 350D Proves Its Potential

This new D-Series hydraulic excavator not only convincingly outworked its predecessor, but was ever so easy on fuel — and on the operator

By WALT MOORE, Senior Editor



Above: Auxiliary tanks used to check fuel consumption during the trenching comparison were fitted with an integral lifting system and a load cell to facilitate weighing and precise measurement.

Although Deere's most pressing need for overhauling the top end of its hydraulic-excavator range was to bring these machines into Tier-3-emissions compliance, the company went well beyond just switching engines in the resulting new models — the D-Series. *Construction Equipment* recently had the chance to observe the results of Deere's effort by working with the company to compare the performance and features of a new D-Series representative, the 350D LC, with those of its predecessor, the 330C LC. After two days in the dirt with these machines, it was obvious that the 350D's added brawn and refinement pay off in convincingly superior performance.

The D-Series models, which replace C-Series models introduced in 2002, include the 240D LC, 270D LC, 350D LC, 450D LC, 650D LC and 850D LC. The new models range in operating weight from around 54,000 to 186,000 pounds, and in net horsepower from 177 to 532.



Wearing a safety harness that's tethered to the lifting eye on the bucket of an excavator (with engine running), Andy Nicolas takes trench measurements as Gary Tindall records.



TEST SET

- Type Hydraulic excavator
- New Model 350D LC
- Operating Weight 77,300 lb.
- Net Horsepower 271
- Replaces Models 330C LC and 370C LC
- Available March 2006
- Estimated List Price \$349,800

TEST FIELD TEST FIELD TEST FIELD TEST FIELD TEST



When developing the D-Series, Deere resized some of the new models to more closely match customer needs and the competitive environment. For instance, while the 270D and 450D are direct size replacements for their 270C and 450C predecessors, the new 240D is a bit larger than its 230C predecessor, and the 650D and 850D are significantly larger than their 600C and 800C forerunners.

The new 350D, our test machine, also is significantly larger and more powerful than its 330C predecessor. Its operating weight of around 77,300 pounds is some 4,500 pounds greater than the 330C's 72,800 pounds, and its 271 net horsepower is a notable jump from 330C's 246. So, by comparing the 350D with the 330C, were we comparing apples and oranges?

Deere says not. The company considers

the 350D the direct replacement for the 330C, as well as for the larger 370C. The 350D was designed to split the gap between these two former models, says Mark Wall, product marketing manager for excavators, and provides the 330C user with a machine more in line with competitive-model specifications.

On the other side of the coin, the added capability of the 350D, says Wall, makes it a more-than-competent replacement for the 370C, which used the identical engine and implement hydraulic system as the 330C. The 370C, however, was fitted with a beefier undercarriage and more counterweight.

On site in chilly Arizona

The site for our 350D/330C comparison was Deere's expansive Sacaton, Ariz., demonstration/training facility — winter headquarters

The 330C LC (top, left) waits its turn at the trench as the new 350D LC (above) opens a 12-foot-deep cut in tough, Arizona-desert soil, part of an exercise to evaluate the relative capabilities of the two machines. The 350D, along with two other new D-Series machines, the 240D and 270D, is manufactured in Deere's Kernersville, N.C., facility. Three larger D-Series models come from Japan.

for the company's professional operators and trainers who spend most of the year at Deere's companion facility in Coal Valley, Ill., near Moline. On hand from Deere for the evaluation were Wall; excavator instructors Andy Nicolas and Brian Ruppert; and test engineers Gary Mauritzson and Gary Tindall. Operators for the comparison were Marv Epperly and Mike Boyle.

The weather was unseasonably cool for early March in Arizona — downright cold, in fact, when the wind

plenty tough to dig. Auxiliary fuel tanks on both machines allowed precise monitoring of consumption during the trenching comparisons.

For the over-end and over-side lifting comparisons, the machines handled a large section of concrete pipe rigged with a lifting hook. And for evaluating operator-ear and bystander sound levels, Mauritzson and Tindall employed good equipment and careful procedures, but since these numbers were not collected under strict laboratory

double-digits, with a significant edge also in over-side picks. Sound checks showed substantial reductions, both at the operator's ear and for the bystander. But we caution the reader that all the numbers presented are specific to the Sacaton evaluation.

Engine and cooling features

At the heart of the 350D's design is the new 9.0-liter John Deere PowerTech Plus diesel engine, which features a four-valve design, cooled EGR (exhaust gas recirculation), variable-geometry turbocharging, air-to-air charge-air cooling, a common-rail fuel system and a new electronic control module. The 330C used the conventionally turbocharged 8.1-liter John Deere 6018H diesel with air-to-air charge-air cooling.

Complementing the new engine is a new hydraulically driven cooling fan that replaces the 330C's conventional belt-driven fan. The new fan runs only on demand, says Deere, an efficiency that translates into less noise and less parasitic horsepower drain. Positioned between the engine and the coolers in the 350D's left rear fender, the fan, in normal operation, pulls in ambient air through perforated side sheets and across the coolers for engine coolant, hydraulic oil, charge-air, fuel and the air-conditioning system.

To keep coolers and side sheets clear in applications in which airborne debris can be a problem, an optional control system periodically reverses the fan's airflow (or the operator can initiate this feature on demand). If the optional reversing-fan feature is not chosen, an access panel on top of the fan shroud allows using an air wand to easily clean the coolers.

Hydraulics and structures

The two variable-displacement hydraulic pumps driven by the 350D's new engine have essentially the same

Serviceability

Refinement of D-Series serviceability includes fluid-sampling taps for engine oil and hydraulic fluid that are readily accessible and allow for drawing dynamic samples. Engine oil and fuel filters are remotely mounted in the pump compartment for accessibility, and the fuel filler's new position makes it easier to use. The 500-hour engine-oil change interval remains, but the hydraulic-oil change interval has been extended from 4,000 to 5,000 hours.



Andy Nicolas taps dust out of the 350D's externally mounted cab-air filter. (Note the open door of the compartment just below the cab window.) This filter was positioned inside the C-Series cab, behind the seat, and not as easily serviced.

started gusting across the desert. The soil in which the machines worked during the trenching comparison was a tough-to-dig desert soil that weighed an estimated 2,100 to 2,200 pounds per cubic yard. Although the soil seemed almost powdery as it boiled out of the bucket at the top of the trench, gingerly touching the bucket teeth at the end of a trenching run and finding them probably hot enough to scorch your finger proved that the material was

conditions, we consider them unofficial. We'll tell you what the decibel differences were between the two machines, but not the absolute readings.

Our report includes detailed side-bars for the specific test events, but for a teaser version here, the 350D exhibited a double-digit advantage in trenching productivity and a similar advantage in fuel efficiency (cubic yards produced per gallon). The 350D's advantage in over-end lifting was also in

Trenching Comparison

For the trenching comparison, both machines were fitted with a 13 foot-1 inch (4-meter) digging arm and a 54-inch-wide bucket with a rated capacity of 2.3 cubic yards. Both machines have only one work mode, but three power modes, and were operated in their maximum-power (HP) mode, which provides a 100-rpm increase in engine speed when hydraulic-system pressure reaches a preset level.

Operator Marv Epperly opened two trenches with each machine, digging for 20 minutes per trench at a target depth of 12 feet. (Total linear distance for the four measured trenches exceeded 325 feet.) He worked as fast as the machines allowed, and did not take time to dress the bottom of the trench.

Cycles, cycle time and repositioning time were tracked electronically, and each cycle was recorded in three segments — dig, swing and dump and return to dig. Production and fuel-consumption data were processed immediately after each run, and the results for each machine's two runs could vary no more than 5 percent. (This criterion prompted us to open a third trench with the 350D.)

The magnitude of the differences in production and fuel efficiency between the two machines was unexpected, given that pressure and flow in the implement-hydraulic systems of both are essentially the same. The data indicate, however, that the 350D's nearly 24-percent advantage in production capacity



Watching the 350D at work, we took note that it could bail dirt in some really tough digging — yet remain quite stable. As we noted before, consider the results in the summary chart as specific to the Sacaton comparison.

was the result (in round numbers) of having been about 15 percent faster and 8 percent better at filling its bucket.

By way of explanation, we rely on the Deere crew's observations, as well as our own. Most obvious to us, was that the 350D is an extremely flat-footed digger. Not once did we see the machine get light in the back end, the result, we assume, of its increased weight. By contrast, the 330C did frequently lift off the rear of its tracks, requiring the operator to ease up on digging power. This could explain much of the 350D's bucket-fill advantage and faster cycle time.

The 350D's speed advantage was probably the result, mainly, of its ability to pull through tough digging more steadily and consistently than the 330C. Added to this is the speed the 350D gains through its boom and arm oil-regeneration systems and its 9-percent gain in swing torque (the result of gearing changes), which allows faster swing acceleration.

Truth be told, for us, the most notable finding in this exercise was the 350D's fuel efficiency. Basically, it delivered about 24 percent more production on the same amount of fuel used by the 330C. Obviously, Deere has done a good job with its new PowerTech Plus engines, and we assume that the lion's share of the 350D's fuel economy is the result of the new engine's efficiency. Add in the 350D's improved hydraulic efficiency, and the new machine, based on the Sacaton results, seems to be a fuel miser compared to its predecessor.

Comparative Trenching Data *

| | 330C LC | 350D LC |
|--|---------|---------|
| Calculated production rate (cu. yd./hr.) | 478 | 592 |
| Production advantage | — | 23.8% |
| Cycles per minute | 4.23 | 4.86 |
| Cycle-time advantage | — | 14.9% |
| Bucket-fill, average, (cu. yd.) | 1.88 | 2.03 |
| Bucket-fill advantage | — | 8.0% |
| Calculated fuel consumption (gal./hr.) | 11.69 | 11.66 |
| Fuel efficiency (cu. yd./gal.) | 41 | 51 |
| Fuel-efficiency advantage | — | 24.4% |

*Based on a two-run average for each machine

flow as those used in the 330C, and pressures in the new machine's various hydraulic circuits remain essentially the same as those for its predecessor. Although the basics remain the same, Deere has done some refining in the 350D's implement-hydraulic system, and the overall result seems to be a

notable increase in digging performance — along with a contribution to improved fuel economy.

Among the 350D's hydraulic refinements is the regenerative use of hydraulic fluid in the boom-down and arm-in circuits. Essentially, fluid exhausting from a particular circuit is

channeled directly to another activated circuit, without first returning to the reservoir. This directly added fluid helps speed the activated function, relieves the hydraulic pump of having to move that volume of fluid and, consequently, helps to conserve fuel. Another significant refinement, says

Deere's Wall, is the change in hydraulic-valve porting, which reduces backpressure in the valve by as much as 50 percent and, as a result, adds to overall hydraulic efficiency and reduces heat in the system.

In the major-structures department, the 350D's boom and digging arm have been "tweaked" in design, says Wall, but remain essentially the same as for the 330C. Larger D-Series models, he says, have significant changes in boom and arm design to

accommodate much higher digging forces.

A structure that has been substantially overhauled, however, is the 350D's undercarriage. Much beefier in design than that of the 330C, the 350D's new undercarriage uses larger track frames, larger rollers, larger front idlers and heftier track links. Much of the 350D's weight gain resides in these larger undercarriage components.

Another source of the 350D's added weight is a larger carbony, which is that massive lower structure that houses the swing bearing and attaches to the track frames. We measured the overall height of the carbony at the center of each machine and found the 350D's to be more than an inch deeper, which translates into considerably more mass. Also, a much larger counterweight is a third source of the 350D's higher operating weight. The new counterweight has been made taller, however, and adds just 2 inches to the 350D's overall length, compared to the 330C.

Also taller — by 4 inches — is all of the 350D's sheet metal on the revolving frame. These redesigned panels give the 350D a more massive appearance, but add nothing to the overall height of the structure behind the cab, since the



Brian Ruppert gave us a convincing demonstration of the effectiveness of the 350D's reversing fan. After backfilling trenches in extremely dusty conditions, he activated the system, and we could hear the fan spool down, pause, and then come rapidly up to maximum speed in the opposite direction, blasting out a cloud of dust.

height of the engine hood has been reduced accordingly. But the new sheet metal is not only cosmetic; the added space it affords allows a larger fuel tank (166 versus 148 gallons) and a larger hydraulic tank (51.5 versus 42 gallons). As with the 330C, all the sheet metal is set back about an inch from the edge of the revolving frame, giving the panels a bit of added protection from jobsite hazards.

Comfortable new cab

According to Wall, much of the refinement and many of the new features evident in D-series models resulted from insights provided by customer-advocate groups, which were invited to evaluate the D-series design as it progressed through the engineering process. No doubt, some of the features in the new D-Series cab were the result of this process.

For example, most operators, when traveling with an excavator, use just the tips of their boots on the bottom edge of the travel pedals, thus using their boot heels as a fulcrum point to precisely meter the travel function. But you can't operate this way if the space between the seat base and the pedals is

Lifting Comparison

For the lifting comparison, the machines handled a large section of concrete pipe weighing 19,400 pounds and having an attached lifting hook. With the boom fully raised, the operator (Mike Boyle) increased the lifting radius (center of swing bearing to lifting hook) by arming out until the rear roller lifted from the track rail (over-end) or the rollers on one side lifted from the rails (over-side).



In the over-side lifting exercise, operator Mike Boyle armed out until the rollers just lifted from the rails on the opposite track. We then measured the radius (center of the swing bearing to center of the lifting hook).

Comparative Lifting Data*

| | 330C LC | 350D LC |
|------------------------|---------|---------|
| Over-end radius (ft.) | 23.5 | 29.0 |
| Advantage | — | 23.4% |
| Over-side radius (ft.) | 21.5 | 22.5 |
| Advantage | — | 4.7% |

* Based on a two-pick average for each machine



BIGGER = BETTER?

WHATEVER.

The MPH122 recycler/stabilizer.
High 19.7-inch cutting depth.
Efficient, 442-horsepower engine.

So you think bigger is always better? You obviously haven't tried BOMAG. Featuring a 92-inch center-mount rotor and the highest cutting depth of any recycler/stabilizer in its class, the MPH122 outperforms the so-called "big boys" with a lower horsepower, more economical unit. And the dual steering wheels and controls, and adjustable seat, ensure the experience is not only productive, but comfortable as well.

At BOMAG size doesn't matter. Performance does! Call today for more information on our complete line of recyclers/stabilizers.



Learn more at gobomag.com/recyclers

BOMAG
COMPACTION PRODUCTS

800-78-BOMAG

constricted. So, to ensure enough foot room, Deere made the new cab 3 inches longer. And to improve the view, the front window and roof-hatch glass are larger, and a one-piece glass on the right side is, says Deere, 47 percent larger than that in the C-Series cab.

A notable refinement that's evident when you first sit in the new D-Series seat (air-suspension and heated cushions are optional) is the design of the pilot control levers, which are 2 inches shorter than those in the C-Series cab. That might not sound like a significant change, but the benefits are many: easier entering and exiting the cab; more room between the levers when you're in the seat; no hitting your legs with the levers in the maximum lateral position; and improved metering of hydraulic functions.

The jewel in the crown of the new D-Series cab, though, has to be the monitor. The new monitor, which can be programmed to report in 24 languages, has a normal display of such

routine items as fuel level, fuel consumption, engine temperature and clock. But set the system to report operating conditions or diagnostic data, and the intelligence of the device begin to show. You can, for example, set the pressure and flow requirements of four hydraulic attachments, and when a particular attachment is installed, clicking on the appropriate icon instantly adjusts the hydraulics.

The monitor also tracks a host of maintenance items, allowing you, for example, to set service intervals. The system then tracks operating hours against the service-interval target, and alerts the operator when one hour remains. Pull up the diagnostic mode, and you have access to 32 functions that help troubleshoot various systems, all without the assistance of a laptop computer. Probably 98 percent of potential malfunctions, says

Deere's Brian Rup-



The D-Series monitor has considerably more capability than that used in the C-Series. The user can employ the system for checking operating parameters, setting hydraulic requirements for multiple tools, tracking service intervals and for performing diagnostic investigation.

pert, can be determined simply through the monitor.

Bigger, faster, stronger and quieter

During our visit to Sacaton, we were invited to briefly sit in on a dealer training session for the D-Series machines. Instructors Wall and Boyle continually emphasized the characteristics of D-Series models (compared to the C-Series counterparts) by saying, "they're bigger, faster, stronger and quieter."

Based on our experience with the 350D, which we assume is representative of the potential of other D-Series models, we couldn't say it any more succinctly. 

Comparing Sound Levels

Based on sound-level checks done by test engineers Mauritzson and Tindall using SAE (Society of Automotive Engineers) guidelines, the 350D proved a much quieter machine, both inside the cab and for the bystander. According to Mark Wall, Deere's product marketing manager for excavators, the 350D's quieter operation results from a number of design changes. To begin, he says, the new PowerTech Plus engine is quieter than the 330C's engine by virtue of its block design and fuel system. Sound also is reduced significantly by using an on-demand, hydraulically driven cooling fan in the 350D, versus the 330C's conventional fan. In addition, says Wall, refinement of the 350D's hydraulic system results in quieter operation, as does its new dual-pass muffler and more effective isolation mounts under the cab.

Presented here are the differences in decibel readings recorded under various conditions. In all instances, the 350D was quieter by the decibel number shown. Keep in mind that very small reductions in decibel readings equate to significant sound reductions.



Although recording sound levels at 50 feet with the machine actually working was not part of the recommended checking procedures, we were curious. On average, the 350D was about 6 dB(A) quieter.

| | |
|--|------------|
| ■ Bystander at 50 feet, right side, high idle, no load: | 7.7 dB(A) |
| ■ Bystander at 50 feet, left side, high idle, no load: | 12.7 dB(A) |
| ■ Operator ear, high idle, no load: | 7.5 dB(A) |
| ■ Operator ear, low idle to high idle (for 10 seconds) to low idle, no load: | 6.3 dB(A) |
| ■ Operator ear, traveling and operating hydraulic functions, no load: | 4.2 dB(A) |



ALL SCIENCE. NO FICTION.

INTRODUCING THE NEW MACK® GRANITE® MP ENGINE SERIES.

TAKE A TOUR AT WWW.MACKTRUCKS.COM

For more information, visit www.ConstructionEquipment.com/RS and enter 14

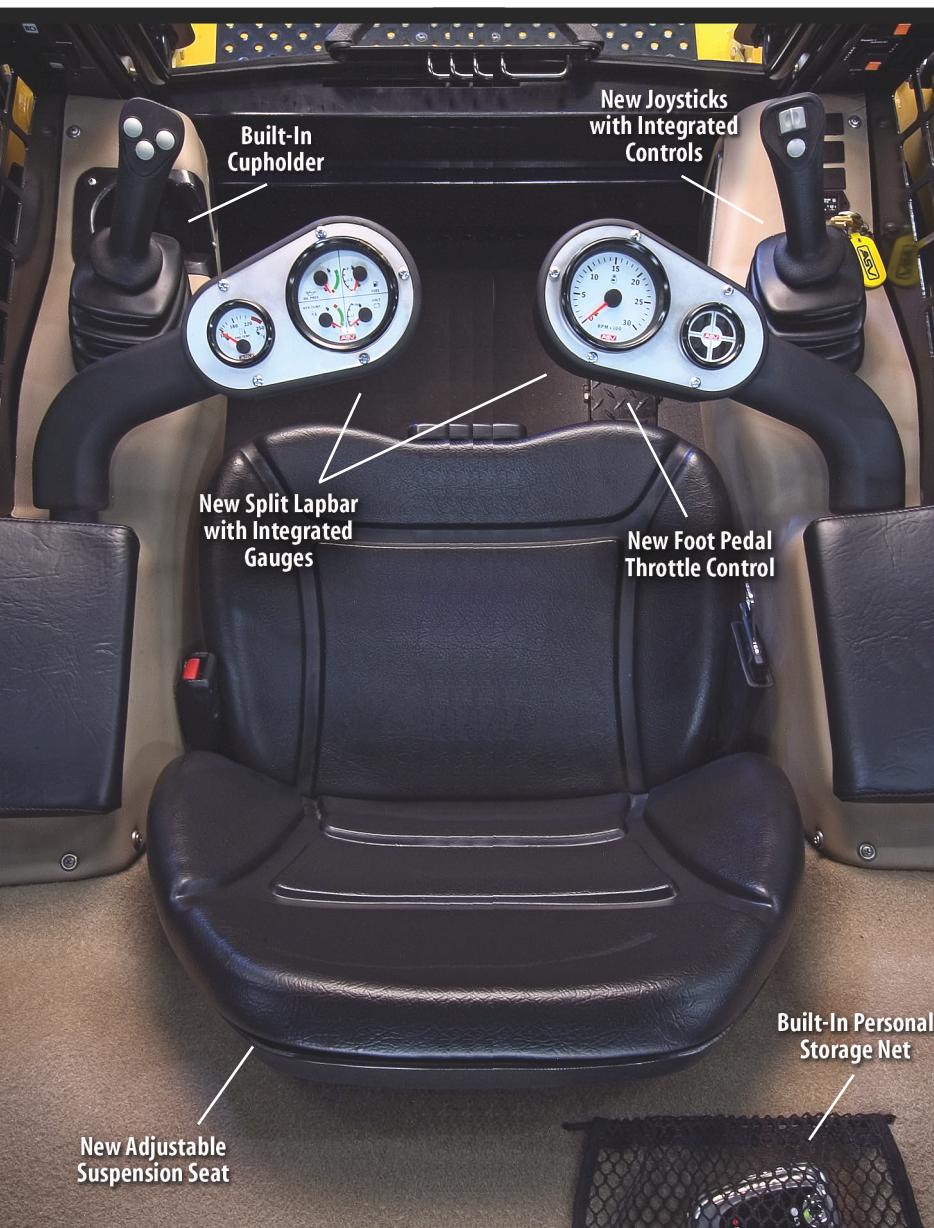
©2006 Mack Trucks, Inc. All rights reserved.



INTRODUCING THE NEW Posi-TRACK™ SR-80



NEXT GENERATION RUBBER TRACK LOADER



THE NEW Posi-TRACK SR-80 defines the *next generation* rubber track loader. It's a completely new Posi-Track built on ASV's long-standing heritage for leadership and innovative technology.

The SR-80's 20-inch wide tracks gives you exceptional traction and flotation with only 3.15 psi ground pressure and multiple levels of suspension. And for the first time, separate wheel carriages provide *independent suspension for both sides of each track*.

Enjoy the comfort and precision controls of a plush new SR-Series cab. You can feel great at the end of the day and even look forward to getting back into to this state-of-the-art operator station tomorrow.

See the new Posi-Track SR-80 soon at your local ASV dealer, or see it now at www.ASVI.com.

© 2006 ASV Inc. All Rights Reserved

ASV

By LARRY STEWART, Executive Editor

Profits Reward Contractors Who Adapt to 3D Grade Controls

Challenges such as price, creating digital-terrain models and motivating operators don't slow early adopters' investment in automatic grade controls

Electronic controls guide blades on Sweeney Excavation's Caterpillar D8R dozer and John Deere 650J dozer, both working a huge earthmoving job for Pulte Homes. System accuracy converted skeptical senior operator Dave McKosky into the firm's grade-control troubleshooter.

Despite some real challenges to using three-dimensional (3D) grade controls that allow the global positioning system (GPS) to guide an earthmover's blade, early adopters of the technology are being rewarded for adapting their businesses with rising profit margins.

Caterpillar greased the skids for adoption of the technology early in 2004 when its joint venture with Trimble announced availability of AccuGrade. Electronic grade controls shifted from being strictly an aftermarket product into the role as a manufacturer-installed option. Grade control could now be easily purchased — and financed — along with the machine.

Komatsu has subsequently drawn a supply agreement with Topcon. Deere is taking a different tack, and should soon begin selling machines wired to support either Trimble or Topcon grade-control hardware.

At present, it's probably easiest to cash in on electronic-grade-control's benefits on commercial and residential development projects, where a contractor can often forego most grade stakes without alarming the project owner. Acceptance of the technology in public infrastructure work such as road building lags a bit, but word of the quality and speed of grade-control-assisted earthwork is traveling swiftly among engineers. And GOMACO's success with Leica's automatic grade control is proving lasers on robotic total stations can deliver accuracy adequate for concrete paving faster than string lines.

Fine grade control, whether it uses GPS with laser augmentation or lasers and total stations, whether it controls the machine's blade automatically or simply indicates to the operator how to position the blade, requires project plans converted into 3D digital models. The design community is organized around providing plan sets — either on paper or 2D digital files. So somebody has to build 3D models to drive grade controls.





It's a hurdle that has proven to be worth overcoming.

"Terramodel is a fairly easy program to work with," says Bill Hartley, head of surveying at Delaney Construction in Albany, N.Y. A little bit of training from a programming provider helped him get comfortable with the 3D modeling software quickly. "Most people should be able to pick it up in a couple days.

"And using Trimble's Sitevision Office program, you can drive the virtual project with a dozer on screen to check it. Anything that isn't right — holes in the model or surfaces that aren't smooth — stands out pretty clearly."

Hartley has been using the system on everything from commercial development to landfills and airport taxiways since 2001. He says the most complex conversions can require up to two days to complete a digital-terrain model.

"Before I could pull the trigger on buying the systems, I had to make sure I was able to design a road and load the model on the dozer's grade control," says Russ Chrisman, owner of RC Excavating near Green Bay, Wis. "Our Trimble rep sent me a 45-day trial version of the Terramodel software and a 52-page PowerPoint that described how to get started."

Chrisman learned in the evenings of a

couple of weeks how to translate two-dimensional plans into digital 3D models.

"In a week I was feeling pretty good about the system. In two weeks I was ready to place an order. It really was easier than I thought it would be."

Chrisman launched his business four seasons ago with two dozers and an excavator, taking the first year to track time spent handling grade stakes.

"In the first year, the three of us had 892 hours out of the machines setting stakes," Chrisman says. Then he outfitted the dozers with SiteVision. "Now we've got under 100 hours per year invested in staking."

Breaking dependence on grade stakes has benefits beyond saving staking time. Electronic grade controls put an entire project's model in the memory of a computer in the machine's cab. It gives operators lots of options.

"What you're doing with the technology is really empowering the whole team," says Dennis Batye grade manager for site-prep firm, Top Grade Construction in the San Francisco Bay area. "They all feel like part of the team. They have all the data they need to do good work. If they run into a problem on one part of the site, they can go out and find other work to do."

In concrete paving, where exacting grade

"Before I could pull the trigger on buying the systems, I had to make sure I was able to design a road and load the model on the dozer's grade control," says Russ Chrisman, owner of RC Excavating. He practiced with Terramodel software in the evenings, and was ready to place an order within two weeks.

Fleet Management: Electronic Grade Controls



A.S. Horner averaged about 1,200 cubic yards per day in full-production mode using a stringless 3D laser-control system developed by GOMACO and Leica when replacing hangar aprons at Kirtland Air Force Base.



Joel Jenson, of Kerr Contracting, checks elevations on a project. Early detection of discrepancies between actual elevations and initial surveys have helped Kerr avoid conflicts and earn partner status with developers.

the paver.

"The trimming aspect is great. We save a lot of time moving the trimmer from one lane to the other. As soon as we're done trimming, we just select the next lane in the program and we're good to go," says Steve Melton, the contractor's PCCP paving superintendent. "We don't have to deal with jumping over or resetting stringline or making sure we're at grade. The machine and computer tell us exactly

requirements replace GPS grade control with lasers and total stations, there are many advantages to having the entire site plan digitized and stored in the computer on a trimmer or paver. A.S. Horner measured the benefits while replacing 120,000 cubic yards of aprons around three large hangars at Kirtland Air Force Base in Albuquerque. They used a stringless 3D control system developed by GOMACO and Leica on both the trimmer and

where we're at and how far we need to go to get where we need to be."

The paver grade control relies on three total stations, in this case set up 328 feet apart along the length of each pour. Two prisms on the paver are the tracking targets for the total stations.

As the paver moves, it is constantly being tracked by the total stations and information is relayed back and forth between the total stations and the controller on the paver by radio signals a rate of up to eight times per second. In milliseconds, the controller takes real-time coordinate data and compares it to the design plan. The paver controller uses this information to guide the paver and control its grade.

Before the paver passed beyond one total station's laser range, control would leap frog to the next total station. The paver only pauses slightly in these transitions.

"You shoot your total stations into position before the switch is made and you're good to go," Melton said. "The new station takes over for the last one and just keeps right on tracking the paver."

The stringless system achieves the smoothness requirements for the apron pavements, and sets up in about a third of the time as string-lines. With time savings like these, A.S. Horner averaged about 1,200 cubic yards per day in full-production mode.

Users warn that grade-control investments will fail if people in the field don't use the technology correctly. For example, GPS grade-control accuracy improves as the controller receives signals from more satellites. Systems display a scale that indicates grade accuracy, much like the bars that show cell-phone signal strength. Chrisman says, "you can wind up with a real mess on your hands if the accuracies get too far out and the operator thinks, 'it's good enough,' and keeps right on working."

Chrisman was able to hand-pick the few operators for his small company, and he touts their eagerness to learn the systems. In a larger construction firm, success can be determined by how well managers help users appreciate the significance of the technology placed in their hands.

"We named the guys who are using our

Virtually a Dust Free Operation



- hydraulically powered vacuum attachment
- dust control without messy, bulky, impractical water sprinkler system s to continually refill
- protects the operator
- minimizes silica dust contamination
- eliminates airborne particulate ejection (above 10 micron) during the sweeper operation
- can be used in conjunction with gutter broom option as well

www.paladinbrands.com

- patent pending "Volumizer" feature: bucket will hold considerably more debris volume with less recirculation
- positive no tools required brush height adjustment
- high dump design holds sweeper head clear of dumping bucket
- 26" diameter convoluted brush for effective sweeping action
- general purpose light material bucket with bolt-on cutting edge



www.paladinbrands.com

Sweepster
2800 North Zeeb Road
Dexter, MI 48130
(800) 456-7100

www.paladinbrands.com



PALADIN LIGHT CONSTRUCTION
For more information, visit www.ConstructionEquipment.com/RS and enter 22

Fleet Management: Electronic Grade Controls

systems the 3D Grade Control Team and got them matching jackets," says Batye.

"You have to choose the people involved with your 3D grade-control systems carefully," Batye warns. "You need highly motivated people who want to make the program work at all costs. If the people aren't properly motivated, as soon as there's any little problem they will shut it [grade controls] down, and your program is sunk."

Batye suggests that there's a risk involved in taking 3D grade controls to your best operator. Any employee is likely to accept the technology, even if they don't really want it, because managers are making such a fuss. But, Batye says, really good operators are also most likely to shut the system down at the slightest problem. They can cut the grade without it.

"People using the system need to understand the construction process," Batye says. "But they probably shouldn't be your best operators."

This isn't to say that your best operator can't be made a

believer.

"We spent a long time researching GPS machine control," says Bob Sweeney, president of Sweeney Excavation in Hamden, Conn. "So I took several key people to ConExpo 1999 and 2002 to have them learn first hand about the latest Trimble technology and to create some buy in."

"I have a senior operator who I respect a lot. I really wanted to get him on board."

"To be honest, I wasn't really thrilled about learning a new way to grade," says Dave McKosky, Sweeney's senior operator. "It's something I've been doing longer than many of my younger co-workers have been alive."

To ease the veteran operator's mind, Sweeney staked the first couple of jobs on which he asked McKosky to use the grade controls. McKosky would grade a stretch, then climb down to measure it. Before long he was operating the system with his usual professionalism.

Sweeney knew he had made a convert when McKosky called him and said, "I've got to tell you this is amazing. This catch basin is .687 low — not .6 — it's .687!"

GPS is changing workers' jobs. Project superintendents have relied on grade checkers and surveyors to measure work progress. But now superintendents can carry GPS rovers or mount them in their pickups. The rover displays whether any surface underfoot is high, low or on grade.

Digital grade control has made an earthmoving-management team out of foreman/surveyor Dave Kruskamp and operator Leroy Brechtelsbauer at Fisher Contracting in Midland, Mich.

Kruskamp traded tapes, rods and transits, for Topcon's HiPer+ GPS receiver. He creates point files for layout and 3D surface models for the dozer controls using Topcon's Office-3D.

Brechtelsbauer can crawl the site with his bulldozer after a day's work to measure elevations.

"He can e-mail the file to me and I can figure the amount he's removed or how much he has to go on my laptop computer or right on my rover with Topcon's Pocket-3D," Kruskamp says.

When scraper and excavator operators need guidance, Brechtelsbauer runs his dozer over their work areas to see if they're above, at, or below grade. This saves the time and expense of having Kruskamp come to the site.

"If we don't have anyone on the job to do layout, I can set stakes off a corner to give the earthmoving crew an idea of where they have to go and what they have to do," says Brechtelsbauer. "It saves a lot of time for everybody and gives us a lot more accuracy."

Being able to measure elevations easily can be worth even more than improved productivity, though. Automated GPS grade control enables Kerr Contractors, a Woodburn, Ore., sitework firm, to practice a business philoso-



Digital grade control put operator Leroy Brechtelsbauer on the earthmoving management team at Fisher Contracting. When foreman/surveyor Dave Kruskamp is not on site, Brechtelsbauer can crawl the site with his D6 and e-mail the elevations to him for calculating the day's production.



MORE EQUIPMENT MORE INDUSTRIES

ASTEC INDUSTRIES, INC.



**AMERICAN AUGERS • ASTEC, INC • ASTEC MOBILE SCREENS • ASTEC UNDERGROUND
BREAKER TECHNOLOGY • CARLSON PAVING • CEI ENTERPRISES • HEATEC
JCI • KOLBERG-PIONEER • OSBORN • ROADTEC • TELSMITH • TRENCOR**

1725 Shepherd Road • Chattanooga, TN 37421 Tel: 423.553.5934 Fax: 423.899.4456

astecindustries.com

For more information, visit www.ConstructionEquipment.com/RS and enter 17

Fleet Management: Electronic Grade Controls



Stanley Construction has two Cat D6 dozers with GPS grade controls that are making new operators more productive. Al Stanley credits the image on the monitor screen. "The operator . . . sees the slope and how his blade is oriented. He's no longer dependent on his experience to be able to translate what that stake says."

phy centered on identifying problems at a project's outset. When the firm started work on a Lowe's and Target site, for example, owner Brent Kerr checked existing grades with a Topcon rover.

"We were there the first two days and figured out with our GPS that the site is a half a foot to a foot higher than what the plans show," says Kerr. "The job was originally an import job, now it's an export job. It was 40,000 cubic yards of import, now it's 70,000 yards of export."

Taking positive steps to discover and resolve these issues at startup is improving the contractor's relationship with owners.

"It helps create another level of trust and dependability where they're depending on us," Kerr said. He follows early consultation with monthly progress reports showing earthwork quantities. "We're considered an equal player — the mainstay."

Grade-control systems are even expanding some contractors' scope of business. Top Grade Construction, for example, wasn't into big earthmoving projects before the firm started investing in grade-control systems. But they had a motor grader and soil compactor. When the firm started using an automatic total station for 3D grade control, Batye realized it was carrying them to a level of productivity and quality that could make the company competitive on larger earthmoving projects. He wrote a business plan that included buying 627 scrap-

ers and going after jobs in the million-cubic-yard range.

"That's just underneath the big-iron jobs," says Batye. "We're not going to take a 10-million yard job from the big dogs like Granite, De Silva Gates, or Independent, but we *can* take a million-cubic-yard job from them. We're competitive because of the technology."

Automated grade-control users are also finding that the systems ease the strain of hiring productive operators. For example, Stanley Construction in Huntsville, Ala., uses Topcon's System Five 3D-GPS+ on the company's Cat D6 dozers. Working in the field and training new operators, Al Stanley, vice president of project management, is seeing GPS make his new operators proficient and his experienced operators more productive.

"Operators can actually see what they have to do," Stanley explains. "They can see the slopes they are working on. They can see cuts and fills."

"What I've found with operators is if you can't picture it in your mind, you really can't fix it. If you can't picture a 3:1 slope or a ditch line, there's no way that you can grade one."

"GPS puts that picture, that visual image, right in front of the operator in real-time so that as he moves, he sees that image. He sees the slope and how his blade is oriented in relation to it. He's no longer dependent on his experience to be able to translate what that stake says."

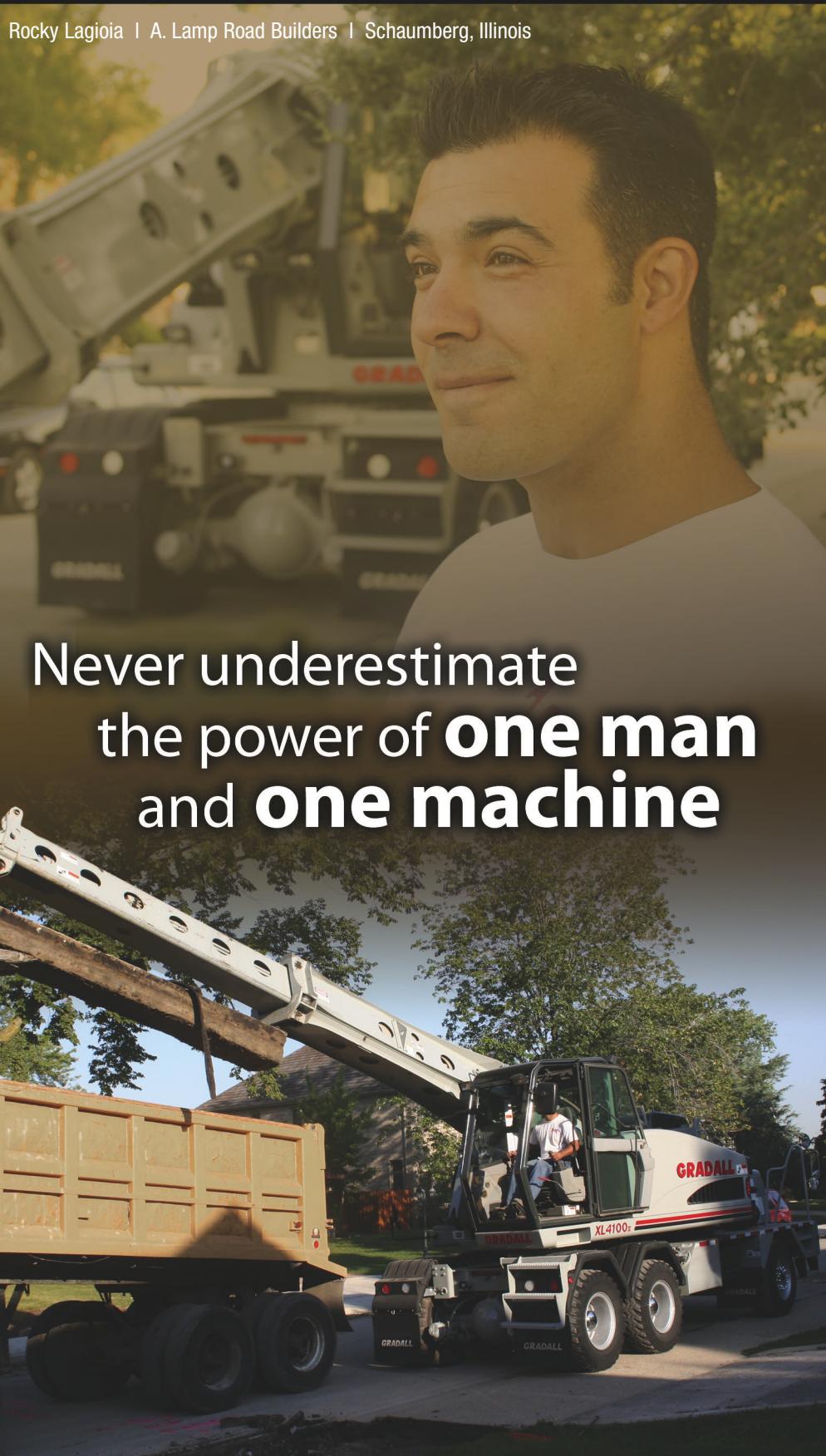
Batye's Top Grade Construction has spent \$2.5 to \$3 million on 3D grade-control technology in the past four years. Hartley tries to add a 3D unit to the Delaney fleet each year, depending on the type and size of jobs coming in. Chrisman equipped his first two machines with an initial investment of about \$150,000, and he didn't hesitate to put 3D grade control on a third dozer. He's considering adding GPS to his excavator.

All of these firms, and names such as American Infrastructure, McAninch, and Sukut, are investing to expand use of electronic grade controls because the systems work. They're overcoming the challenges because there is more money to be made with the technology than without. 



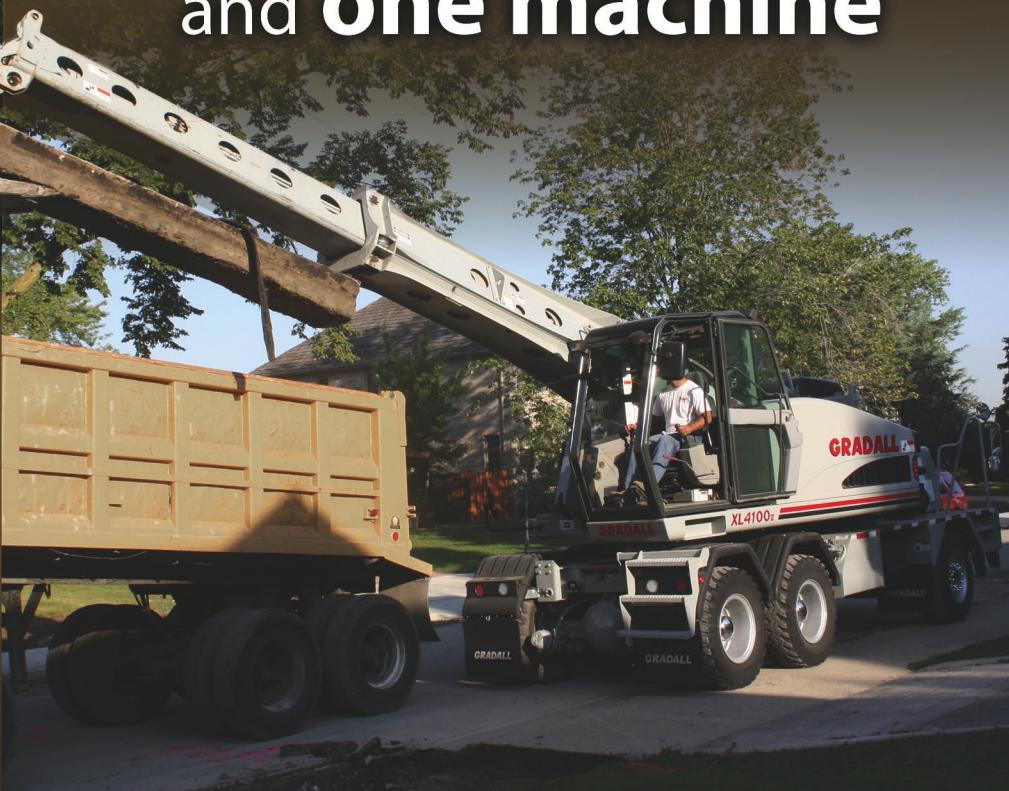
www.gradall.com

Rocky Lagioia | A. Lamp Road Builders | Schaumburg, Illinois



Never underestimate
the power of **one man**
and **one machine**

With our proven versatility and greater boom power, one man and one machine can now handle a wider range of bigger jobs. One Gradall® excavator now efficiently handles the jobs of many men and many machines. Even some jobs that are impossible for any other machine. Expect more with a new Gradall demo. Call 330-339-2211, or visit www.gradall.com.



By TOM BERG, Truck Editor

Paystar Mixer Offers Weight-Loss Lessons

International's 5600i is as nice to drive as it is lean at the scales, which bodes well for driver and owner



The biggest weight cutter is the McNeilus Revolution body with its fiberglass drum. It saves 2,000 pounds compared to a steel drum.

Many of us could afford to lose some weight, as we'd look sleeker, feel better and maybe live longer. The same thing goes for trucks, because lighter tare weight makes for easier driving, greater fuel economy and, if weight laws are enforced in the operating area, allows more legal payload and therefore more profit.

That's the point of the lightweight mixer chassis displayed by International Truck and Engine at the World of Concrete show in Las Vegas last January. As it sits, this truck tips the scales at 23,040 pounds, which is several thousand less than a typical 10-wheel mixer with a 10-yard barrel, according to the company's product planners.

Obviously, this truck could be filled closer to capacity than with a heavier chassis, depending on operating requirements and the state in which it runs. Weight laws comprise



Paystar 5000i is bigger than it looks in pictures, and the grey skies on this cloudy day in Fort Wayne seems to shrink the truck more. But size doesn't always mean mass, for this truck scales at only 23,040 pounds.

a whole 'nother subject which I'll mostly bypass here, except to say that they always determine how a truck is set up.

This 10-wheeler has a setback front axle, and it could theoretically operate in most states, says Bill Sixsmith and Frank Raney, severe-service product planners who had a big hand in the truck's creation. In practice, only a few jurisdictions allow a lot of concrete to be carried on three axles — New York City and the state of Texas come to mind — but we can still learn some lessons from its basic specifications.

Paystar is back!

The specs list begins with International's Paystar 5000i chassis — a 5600i, to be exact, which has the setback steer axle (a 5500i has a forward-set axle). It has a lightweight aluminum cab, which saves several hundred pounds over the 7000 series' steel cab.

Yes, the Paystar name is back after several years of disuse. It applies to the severe-service 5000i series, and is part of a revival of "star"-suffixed names that will be applied to various products in coming months. Remember Loadstar, Cargostar and Transtar? They may or may not reappear, but the Prostar, a new highway tractor due out next January, was just unveiled.

Under the big hood of this 5600i is a Cummins ISL, a heavy-duty in-line six based on the midrange ISC. It weighs about 500 pounds less than a bigger-block ISM, yet delivers healthy horsepower and torque, though the torque peak occurs at slightly higher revs than with a bigger engine.

Wait — why not use International's own DT 570, a direct competitor to the ISL? Because the 570's higher-power ratings will disappear in 2007, when stricter exhaust emissions limits take effect. So, like Kenworth, Peterbilt and Mack, International will use the ISL for lightweight heavy-duty applications.

As you can see, the 10 wheels were all polished aluminum discs, which in the 22.5-inch size save about 330 pounds versus 10 steel wheels while adding some class to a truck's appearance (this truck was built partly for show, after all). They're bolted to steel-and-iron Centrifuse brake drums, which slash nearly 400 pounds compared to iron-only drums,



The cab is roomy and nicely trimmed. Instruments and controls are handsome while being easy to read and use.



The engine's not International's own DT 570, but a Cummins ISL. It's lightweight, but makes hefty power and torque.

according to supplier figures.

You'll note from the specs box that the front and rear axles seem aimed only at strength. The steer axle's capacity is 22,000 pounds and the tandem's is 44,000 (though that's a little less than the usual 46,000-pound tandem often found on such a truck). The main frame's rails are 12 inches high and an outside C-channel reinforcer adds even more beef. So no corners were cut here in the name of weight-cutting.

The biggest weight-saver of all, though, is the McNeilus Revolution body with its fiber-glass drum, which saves 2,000 pounds compared to a steel drum, according to its maker. Almost any mixer could use that, and would gain a half-yard in capacity, McNeilus advertises. The Revolution, introduced several years ago in Las Vegas, is understandably becoming popular.

A simple 10-wheeler should be an easy truck to drive, and this one was. In my experience, 10-wheelers ride rough, but this one did not. Ask Larry McCombs, a driver-mechanic at the International Technical Center in Fort Wayne, Ind., who was my guide for this drive. He rode shotgun perched on a cardboard box

Hands-On Trucking

TEST SET

Truck: International 5600i, BBC 114 inches, premium conventional daycab with light-weight mixer specifications, GVW 66,000 lb.; tare weight 23,040 lb.

Engine: Cummins ISL, 8.8 liters (538 cubic inches), 330 hp @ 2,100 rpm/345 hp @ 1,600 rpm, 1,150 lbs.-ft. @ 1,300 rpm

Clutch: Spicer EP1552 Easy-Pedal Plus, 15.5-in. dual-disc, w/ceramic facing and 7-spring damper

Transmission: Eaton Fuller RTO(F)-11909ALL 11-speed w/double-low range and overdrive

Front axle: 22,000-lb. International I-220S w/Sheppard (2)M-110/M-80 Dual Power steering, on 23,000-lb. multileafs

Rear axles: 44,000-lb. Meritor RT-44-145, w/locking axle differentials and 4.88 ratio, on 46,000-lb. Chalmers 854-46H-HS walking beam w/high stability restrictor cams and eight torque rods

Wheelbase: 222 inches

Front tires & wheels: 445/65R22.5 Michelin XZY-3 front, 11R22.5 Michelin XDE rear, on polished aluminum discs

Brakes: Bendix Spicer Extended-Service S-cam w/Motor Wheel Centrifuse drums & Meritor Wabco ABS

Fuel tank: 60-gal. polished aluminum

Body: 10/11-yard McNeilus Revolution w/fiberglass drum

and a couple of pieces of foam padding, as this truck had no passenger seat — there's another 75 or so pounds saved — and the jump seat that he would've otherwise used was off in another truck.

As we cruised down the I-469 loop southeast of the city, I commented that even without any load in the drum, the truck rode pretty well, though that was easy for me to say from the smooth-working National air-ride driver's seat. "Yeah, it actually does," McCombs said, making me feel less guilty. Then again, the cab's rear sat on Link air bags, a really nice feature for a vocational truck. Because of that, and due to a generally compliant ride from the axle suspensions fore and aft, he'd not been battered on the bowed concrete streets we'd previously been over, either.

Of course, we had spent as much time standing on the ground during this excursion as driving, as it takes time to pose the truck and photograph it. Pictures of the Paystar don't show its size too well. This is a tall truck, and it was imposing the first time I approached it and began getting in. Its first

step is well above the pavement and the next two are also good legfuls, but there are plenty of handles so I never felt in any danger of falling.

Interior amenities

The feeling inside is at once spartan and deluxe. There's no doubt that this is a work truck, but it's a pleasant place to work. The 5000i is International's premium vocational series, and it shows in the roominess of the cab and how the interior is finished. Walls are covered by plastic panels, which help keep road noise out. The instrument panel is nicely laid

out and attractively trimmed, while gauges and controls are businesslike yet easy to see and operate.

The windshield and windows, including a 52-inch-wide rear window, are big, so outward visibility is good. It would've been better if a peep window had been built into the passenger door, but it really didn't bother me because the mirrors were good and I was able to either see or anticipate whatever traffic came alongside.

Among the driveline specs is an Eaton Fuller 11-speed LL with a Low-Low range gear set. But because the barrel was empty, I seldom used more than two gears in Low range and was otherwise in High. The Cummins ISL is rated at 330 horsepower at its redline but could make as much as 345 in its "sweet spot," around 1,600 rpm. As you'd expect, we moved out briskly and got to cruising speed quickly. In top gear, the engine spun at an indicated 1,775 rpm at 60 mph and 1,900 at 65 mph. The engine's growl was pleasing to my ears, but not at all loud.

By the way, this truck was spec'd with a push-button starter switch, just like the old days, instead of the usual key start. That surprised McCombs and me. We also wondered why its steering column lacked an adjustment lever or pedal for the steering column, as 5000i's usually have this feature. No matter, as I quickly got accustomed to where the steering wheel was and thought no more about it.

I was further surprised by the truck's tight turning radius, but maybe shouldn't have been, as this is sometimes a byproduct of a setback front axle, even with big duplex tires. I could hang right turns from the curb lane straight into the new street's curb lane without wide swings. U-turns were also easy. The Sheppard dual power steering provided a solid feel and kept the big front tires headed steadily in whatever direction they were aimed.

While builders and owners think a lot about cutting tare from a vehicle, they seldom demand the same from drivers. McCombs is a slim guy, but as I said up front, some of us could stand to lose a little. If I could drop that 30 pounds I gained since I quit smoking more than 20 years ago, I'd contribute to the weight-saving quest. Yup, I'll get right on it. 



Raise your expectations.

For higher profits you need higher productivity. That's where Kenworth performs best. The trucks work hard and owners appreciate the durable, comfortable cabs. It's said that when you "think success" you succeed. We say "think Kenworth."



KENWORTH. The World's Best.



ISO 9001 © Kenworth Truck Company, A Division of PACCAR
For more information, please call or visit your local Kenworth dealer or visit us at www.kenworth.com.

Special Report: Software

By MIKE BORDENARO, Contributing Editor

Fleet-Management Software Evolves

Systems continue to improve, giving equipment managers even more examples of technology's ability to provide management advantages



Lee County, Fla., licenses its software package to manage its fleet.

Public and private fleets may have many differences in the regulations, restrictions and region of their operations. But they share a common interest in maximizing the use of fleet-management software to reduce costs, increase staff productivity, and improve the quality of services they provide to their diverse clients and customers.

It is an interest fleet managers share with many executives who use every tool possible to maximize the value of fleet resources. Looking at the ways fleet-management software improves operations can reveal processes and applications that immediately help managers relieve some of today's business pressures.

Masterful approaches

Rudy Payton is assistant director of equipment services for the City of Fort Worth, Texas, the Association of Equipment Management Professionals' 2005 Public Fleet Master Award winner. He oversees a fleet of 4,200 units, including 1,400 pieces of heavy equipment. His department currently uses an aging main frame-based fleet-management system, but he's in the market for a new, server-based system.

"Many software firms have good products, but the question is, do they have a product that fits your needs?" says Payton, who will have chosen a system by press time.

Dave Greenlee, fleet manager for Alyeska Pipeline Service Co. in Anchorage, the AEMP Private Fleet Master Award winner, concurs.

"First, determine what you want to get out of a system," says Greenlee. "Then look at the characteristics of many, and then visit fleet managers who are using the programs you like."

Payton says it is important to know the number and type of reports produced by software programs. "Our in-house system has 60 reports we run on a daily and weekly basis," he says. "Yet we have seen some systems with only 25 standard reports, while others have up to 90 canned reports." The better software vendors allow for easy creation of custom reports as part of the initial installation, Payton says. He also is interested in the programs that will help automate generation of reports.

"We created a website as part of the city's

Data Explosion

Intranet to update our clients about the status of their vehicles," Payton says. "We manually update the information at 10 a.m. and 2 p.m. so they have a very good feel of what is happening." Payton is looking to ensure his new software will be able to automatically post those reports. "That frees up my people to do more long-range analysis," he says.

Another improvement that will benefit Payton is the ability for clients to create their own reports through a web interface. "Instead of my staff being bogged down with 15 or 20 requests a day to generate data for clients, I can put them to work on other projects," he says.

Prices for programs suitable for his staff of 126, including 96 mechanics, can range from \$100,000 to \$150,000, according to Payton. Although he does have a direct calculation of potential return on investment, Payton says that a major goal is to use the ability to track data on engine types, drive trains, tires and other items in order to create future specifications to consolidate inventory and reduce training expenses.

Greenlee maintains an annual license with Maximus' Fleet Focus for Alyeska and its subcontractor, ASRC Energy Services Pipeline, Power and Communications Inc. The license allows them to obtain software upgrades and a preset amount of service, which can include creating new reports.

"This year, Maximus provided us with a data clean-up to help transition to the upgraded software, which included a new Shop Scheduling module," Greenlee says. "We had been scheduling in a different module, but the new one will help us be more efficient."

Greenlee's three large shops have wireless connectivity that permits each mechanic to use a laptop that easily connects to the system for easy schedule tracking and information sharing. Although he doesn't track time saved due to the use of the new system, Greenlee says there was a decided improvement in morale among mechanics after they were equipped with software and hardware that allowed them to spend more time on their craft and less time with administrative duties.

Fleet-management software

allows all types of information to be tracked and analyzed through preprogrammed and custom reports. To compare potential programs, review the general categories of information tracked, specific information able to be recorded, and available off-the-shelf reports. Selected lists of data to be tracked and standard reports are listed below.

Typical Categories of Information Tracked

- License & Permit Tracking
- Capital Cost
- Replacement Modeling
- Equipment Availability & Tracking
- Work Order Administration
- Warranty Administration
- Shop Resource Planning
- Recall/Campaign Management
- Billing
- Labor & Personnel Management
- Preventive Maintenance Forecasting
- Parts Inventory Control
- Purchasing
- Commercial Repair Tracking
- Fuel & Fluid Management

- Accident Tracking
- Motor Pool Management
- Graphic Data

Typical Information Tracked For Specific Equipment

- Year
- Make
- Model
- Class
- Color
- Serial No.
- License No.
- Status
- Gross vehicle weight
- Site
- Department
- Monitor group
- Transmission size
- Engine size
- Tire size 1 & 2
- Comment Fields
- Last work order number and date
- Last meter reading
- PM schedule/cycle/next due
- Warranties on equipment
- Equipment Acquisition, Disposal, Billing Information

Software savings

Marilyn L. Rawlings fleet manager for Lee County, Fla., and AEMP president, has an annual licensing agreement with CCG Systems, makers of Faster. Rawlings pays approximately \$5,000 a year for the licensing fee for software used by her 30-person staff to manage a 1,400-vehicle fleet, including 300 pieces of heavy equipment. "If I didn't have the software, I would need another four or five people on my staff," she says. "I consider that \$5,000 a year to be very inexpensive labor."

Lee County had obtained the software before she came on board, so Rawlings didn't have to budget for the initial setup costs, which she estimates at between \$80,000 and \$150,000, depending on fleet size and performance needs. Yet, she says, "for someone who hasn't had a system, the initial costs can be intimidating. But in the long run, the return on investment is incredible."

As she sees value, Rawlings adds specific

modules, such as a graphic package she purchased this year for approximately \$2,500. The new capability allows digital photos to be included in an equipment file.

"Documenting body damage is the big goal, but it also helps when talking with government officials who sometimes don't know the difference between an excavator and a backhoe," Rawlings says. "If the module cost \$50,000, I wouldn't have added it, but at the price we paid, it was valuable."

Lee County recently started tracking parts inventory with a bar-code system that feeds data into Faster. Minimum and maximum stocking levels are being adjusted to reduce surplus parts in the warehouse with the goal to establish a "just-in-time" parts warehouse rather than a "just-in-case" warehouse, according to Rawlings.

"We significantly reduced obsolete inventory in the parts room and received \$30,000 in vendor credits and anticipate more savings in the future," Rawlings says.

The bar-code module costs \$2,400, and another \$2,000 to \$3,000 buys a single bar-code reader, a printer, labels and other supplies.

Fuel-system integration

Rawlings also values Faster's ability to integrate with her RNI fuel-monitoring system from Automotive Computers and Equipment. The system allows wireless readers at pumps and transmitter rings in fuel tanks to interact. If a person tries to pump regular gas into a diesel-powered vehicle, the system will shut down the pump. The system costs about \$250 per vehicle for transmitter rings and \$9,000 per fueling station for hardware and wiring, according to Rawlings. She says the fuel-usage tracking is imported automatically into Faster,

where she can note potential issues if fuel usage is inordinate.

An added benefit, Rawlings says, is that she can turn off a vehicle's fuel privilege "with the push of a button." If preventive maintenance is scheduled and an operator doesn't bring in the vehicle, she can prevent it from fueling from the County's pumps. "When they call to say there's a problem, I say, 'Bring it in, and we will look at it.'" This gives mechanics the opportunity to run the PM while Rawlings pushes another button to reactivate fueling privileges.

Rich Deeds fleet manager for Brubacher Excavating in Bowmansville, Pa., also enjoys the benefits of a fuel-monitoring system integrated with his fleet-management software. The process is operating so smoothly that he plans on migrating his operation to a severity-based maintenance system, which triggers PMs based on fuel-usage calculations. In 2002, Deeds moved from a fleet-management software system he developed on his own to Connect Plus, which was developed internally by Kenworth and Peterbilt, until the unified companies released the program for purchase by others.

"The software has the capability to create severity-based PMs," Deeds says. "It is a matter of making time to adjust the specifics of each machine. There are scientific formulas based on displacement of engines, amount of oil, type of drive train, and other parameters that allow accurate fuel-usage calculations."

The program will allow for variation in calculations based on whether equipment is pushing bulk dirt, performing fine grading, or other issues. Using Connect Plus will allow Deeds to make his calculations with confidence, although there is always some finessing required.

"For example, you have to be careful about some trucks that idle a lot," he says. "They don't use much fuel, but it is hard on the oil so you have to compensate your calculations in the program."

Deeds says he's confident moving to the new PM process because Connect Plus has interacted well with Gas Boy, his fuel-monitoring program. If someone transposed numbers

Typical Reports

- Equipment Reports
- Preventative Maintenance Due
- Preventative Maintenance Table Listing
- Equipment Meter Report
- Equipment List with Cost Information
- Equipment List with Meter Information
- Average Equipment Age by Class
- Equipment Usage Report
- Fuel Transaction Report
- Vehicle Replacement by Date
- Equipment Master List
- Straight Line Depreciation Report
- Equipment History Cost and Quantity
- Valid Meter Report
- Meter Exception Report
- Parts Inventory Report
- Parts Issued Report
- Vendor List
- Vendor Purchase Order List
- Back Order Parts by Vendor
- Parts Warranty Report
- Parts Audit Trail
- Parts Inventory Movement Report
- Work Order Reports
- Work Order Estimate
- Downtime by Status
- Work Order Status Audit Report
- Maintenance Type Performance Report
- PM Labor Percentage Report
- Indirect Labor Summary
- Technicians Efficiency Report
- Average Hours and Dollars for Repairs
- Scheduled vs. Non-Scheduled Repairs
- Average Work Order Completion Time
- Repair Reason Frequency
- Equipment Financial History Report

THERE IS SOMETHING YOU CAN DO ABOUT YOUR FUEL BILL.



GET A VOLVO.

Many of our customers tell us they are cutting their fuel costs by as much as **30%** when compared with Volvo's top three competitors. They have found that the most fuel efficient, most productive construction equipment you can put on a job is from Volvo. We want to show you how it's done. Visit your Volvo dealer.

MORE CARE. BUILT IN.

www.volvoce.com

VOLVO

Special Report: Software



A bar-code system reduced parts inventory for Lee County, Fla.

nature of Connect Plus, which charges a monthly fee for secured Internet access by as many people to as many pieces of equipment Deeds desires. Brubacher has approximately 225 pieces of heavy equipment with as many as 360 in the summer, including rentals.

"But we also have 1,000 other units, such as generators and pumps, that are on the system," he says. "The price for other software that charges by unit was up to three times as much as Connect Plus." Deeds paid approximately \$20,000 for the initial setup and custom reports and pays a preset monthly usage fee.

Deeds moved from his in-house program to Connect Plus when he decided to automate

entering the mileage or the amount of gas used, Connect Plus will create an alert, according to Deeds. Connect Plus will indicate if it is likely that there was a human error, if an hour meter stopped working, or some other error occurred. "If needed, we can generate a work order to have the problem fixed right away," Deeds says. He appreciates the web-based

and improve tracking of dispatch functions. "It would have cost a lot of money to have a dispatch module integrated into our software, plus it was time to look at something web-based."

Installing a wireless Internet connection in field supervisors' laptop computers allows Deeds to e-mail a dispatch schedule to them every day. The supervisors can mark their pieces of equipment as either "up" or "down," report problems, request unscheduled maintenance requirements, and make other comments before responding to the central system.

"Most programs have more capabilities than you will use and it will be missing something you wish you had," Deeds says. "And many of the programs are designed around municipal-fleet management."

Although Connect Plus most closely suited his needs, Deeds is still looking to make adjustments to meet his requirements. "I am not happy with the downtime information," he says. "Anybody can click a piece of equipment up or down, but not why it is up or down. We will pay extra to have that improved for us, if it is not fixed in an upgrade of the software."

Fleet-management software is not a cure-all, but the technology can be an effective tool to help increase efficiency when fine-tuned for each specific application. 

This article first appeared in Equipment Manager, the official publication of the Association of Equipment Management Professionals (AEMP).

Who's Who: A Sampling of Equipment-Management Software

Bender Engineering Inc.

(800) 255-5675
www.maintstar.com
Product: Maintstar

CCG Systems

(800) 753-2783
www.ccgsystems.com
Product: Faster

Caterpillar

www.cat.com
Product: Maintenance Control System

Cheetah Advanced Technologies

(800) 323-7662
www.cheetahware.com
Product: Cheetah

Computerized Fleet Analysis

(800) 437-6001
www.cfasoftware.com
Product: CFA Fleet Maintenance

Maximus

(800) 629-4687
www.maximus.com
Product: FleetFocus

McFadyen and Associates

(919) 341-8595
www.Mcfadyentechnical.com
Product: Iron IQ

MicroWest

(800) 969-9699
www.microwestsoftware.com
Product: AMMS

RTA (Ron Turley & Associates)

(800) 279-0549
www.rtafleet.com
Product: R.T.A. Fleet Maintenance

Rushton International

(801) 281-4466
www.rushtonintl.com
Product: Sabre32

SquareRigger Corp.

(800) 677-3139
www.squarerigger.com
Product: Vehicle Tracker

TMTSoftware Co.

(919) 493-4700
www.tmtsoftware.com
Product: Transman



THE KNOWLEDGE TO MAKE YOUR FLEET MORE PROFITABLE

FleetHawk fleet management system has the data you need to really build your construction company. It gives you the power to deliver site supplies on time and on budget, cut operating costs, streamline work shifts, boost on-the-job hours, protect vehicles from theft and more. Get FleetHawk and get your business moving in the right direction.



FLEET
HAWK

1-877-867-7145
www.skytel.com/fleethawk

Buying File: Mid-Sized Skid-Steers

By LARRY STEWART, Executive Editor

Controls Refine Great Skid-Steer Power



Cab and control refinements put a variety of weights, horsepower and hydraulic capabilities at your fingertips in 1,600- to 2,200-pound skid-steer loaders

K-Force hydraulics improve available hydraulic horsepower on all of Bobcat's mid-sized skid-steer loaders by 8 percent, providing better breakout force and attachment power.

Even with a broad range of weights and horsepower represented within a fairly narrow segment of skid-steers available today, most equipment manufacturers are relying on the same features — operator stations, hydraulic performance, and attachment versatility to differentiate their mid-sized machines.

The 32 models of mid-sized skid-steers — spanning just 600 pounds of rated operating capacity between 1,600 and 2,200 pounds — include machines with net engine horsepower

ranging from 44 to 82, and operating weights from 5,500 pounds to 7,700 pounds. With standard hydraulic-pump flows ranging from 15.5 to 23 gallons per minute and pressures from 2,400 to 3,450 psi, hydraulic horsepower stretches from 23 to nearly 43. Bucket breakout forces for mid-sized skid-steers run the gamut from 2,900 pounds to more than 7,500 pounds, and arm lifting forces from 2,800 to more than 6,800 pounds.

Within a narrow size class, other types of construction machines — backhoe-loaders,

wheel loaders, excavators — don't show such wide spreads in performance. When brochures for these more homogeneous machine types wax eloquent about the comfort of their cabs and convenience of their controls, it seems like an indication of parity between competitors' basic performance specifications.

Perhaps skid-steer manufacturers are telling similar stories about their control systems and cab ergonomics, even when their specifications span broad gulfs in performance, because of the difference in size of the skid-steer market.

There are 281,700 skid-steers at work in the United States, according to *Construction Equipment's* 2003 Universe Study. That's 27,000 more units than backhoe-loaders, the next most populous machine type, and 1.6 times as many wheel loaders. Apparently there are enough skid-steers sold in enough different applications to support various combinations of weight, horsepower and hydraulic performance. So manufacturers cite controls and cabs as the most significant issues affecting sales.

"Outstanding operator comfort is a key to high productivity because it allows the operator to work longer hours," says Jim Hughes, Case brand marketing manager for skid-steer loaders. "Operator comfort results from a combination of features. Flip-back controls provide easy entry and exit. Side-mounted instrumentation and accessory switches are within easy reach without obstructing the operator's view to the work area. Low-effort servo hydrostatic controls help reduce operator fatigue and increase controllability to make novice operators good and good operators better."

Bobcat has added control features, such as speed control, to reduce operator stress. Selectable Joystick Controls allow the operator to dial in a desired ground speed, which the machine will maintain with minimal control effort. For example, an operator using a planer attachment for long shifts can simply select the ground speed that suits the attachment and milling conditions, and the machine will run at that speed whenever he pushes the joysticks forward. The operator does not have to feather the controls to hold the machine at a desired speed.

Pilot-operated hydraulic controls — joy-

sticks that trade mechanical linkages for low-pressure pilot hydraulic systems as their means of moving valve spools that are under system pressure — are becoming quite common even on mid-sized skid-steers. When asked about the one technology most affecting sales of 1,600- to 2,200-pound machines, Volvo's Bill Sauber says, "all-hydraulic pilot controls for smooth, low effort steering and loader hydraulic function."

Kelly Moore, product manager for skid-steer loaders at Gehl, says hands-only controls with his company's T handle drive lever are a significant advantage. Like many skid-steer lines, Gehl machines have various alternate control choices, and Moore says Gehl's mid-sized models will offer twin joystick controls soon.

"But the original hands-style control system with our T handle on the left that functions as the drive control is the most prevalent choice," Moore says.

Komatsu offers three control patterns, ranging from traditional hand and foot controls to two variations of the increasingly popular all-hand controls. All three control patterns use Komatsu's Proportional Pressure Control (PPC) joysticks and are fully hydraulic.

Caterpillar's Kent Pellegrini amplifies the benefits of refined pilot-hydraulic controls.

"By providing [pilot-hydraulic] joysticks on our skid-steer loader, we can improve material handling capability and in turn provide profits back to the customer," says Pellegrini, skid-steer and multi-terrain-loader industry



The ROPS/cab on Case's 400 Series tilts in 10 seconds for open access to the engine and major hydrostatic components under the operator's compartment. Case 400 Series skid-steer loaders have a single location for all daily service checks.

Average Skid-Steer-Loader Costs

| Rated Operating Cap. (lb.) | List Price | Hourly Rate* |
|----------------------------|-----------------|----------------|
| 1,601 to 1,750 | \$27,297 | \$22.82 |
| 1,751 to 2,200 | \$31,090 | \$25.30 |

* Monthly ownership cost (based on list price and 5.125 percent interest) plus operating expenses (including fuel at \$2.49 per gallon and \$40.18 per hour for mechanic's wages) divided by 176 hours.

Source: www.EquipmentWatch.com, 800-669-3282

Buying File: Mid-Sized Skid-Steers

manager at Cat. "Controlling the load through the joysticks when handling expensive paving stones, slate stone or trees has a very smooth load-placing affect. Having the ability to feather the joystick controls to place the load will reduce the amount of broken hardscaping materials. The end result saves you the cost of expensive broken stone."

Hydraulic performance enhancements

Mid-Range Skid-Steer Specifications

| Model | Standard ROC* (lb.) | Bucket Dig Force (lb.ft.) | HP | Standard** Flow (gpm) | Oper. Wt. (lb.) |
|------------------|---------------------|---------------------------|------|-----------------------|-----------------|
| Bobcat S160 | 1,600 | — | 56 | 16.9** | 6,115 |
| New Holland L160 | 1,600 | 3,712 | 44 | 15.5 | 5,534 |
| Gehl 4640E Turbo | 1,650 | — | 60 | 19** | 6,200 |
| Mustang 2054 | 1,650 | 5,000 | 47 | 18.5** | 6,050 |
| Bobcat S175 | 1,750 | — | 46 | 16.9** | 6,220 |
| Case 420 | 1,750 | 4,129 | 56 | 18** | 5,813 |
| Caterpillar 232B | 1,750 | 4,059 | 49 | 15.6 | 6,661 |
| Caterpillar 236B | 1,750 | 5,484 | 70 | 22 | 7,007 |
| John Deere 317 | 1,750 | 5,500 | 57 | 17** | 6,300 |
| Komatsu SK818-5 | 1,750 | 3,530 | 47 | 16.1** | 6,402 |
| Thomas 175 | 1,750 | 4,250 | 56 | 16.6 | 7,000 |
| New Holland L170 | 1,765 | 3,712 | 50 | 17.7** | 5,540 |
| Bobcat S185 | 1,850 | — | 56 | 16.9** | 6,220 |
| Volvo MC80B | 1,850 | 7,532 | 65.2 | 20.3 | 6,824 |
| Gehl 4840E | 1,900 | — | 60 | 19** | 6,480 |
| Komatsu SK820-5 | 1,900 | 3,530 | 54 | 16** | 6,480 |
| John Deere 320 | 1,950 | 5,500 | 62 | 19** | 6,435 |
| JCB 190 | 1,985 | 4,387 | 70 | 20** | 7,717 |
| Case 430 | 2,000 | 5,413 | 74 | 21** | 6,875 |
| Caterpillar 242B | 2,000 | 4,059 | 57 | 15.6** | 6,802 |
| Caterpillar 246B | 2,000 | 5,484 | 78 | 22 | 7,142 |
| Caterpillar 248B | 2,000 | 5,484 | 76 | 33 | 7,321 |
| Komatsu SK1020-5 | 2,000 | 5,038 | 70 | 21** | 7,573 |
| Mustang 2066 | 2,000 | 5,820 | 60 | 21.5 | 7,480 |
| Volvo MC90B | 2,000 | 7,531 | 80.5 | 20.3** | 6,985 |
| Bobcat S205 | 2,050 | — | 61 | 16.3** | 6,655 |
| Thomas 205 | 2,100 | 4,850 | 56 | 20 | 7,200 |
| Bobcat S220 | 2,200 | — | 75 | 20.7** | 7,483 |
| Case 440 | 2,200 | 6,198 | 82 | 21 | 6,980 |
| Gehl 5640E Turbo | 2,200 | — | 82 | 23** | 7,380 |
| Mustang 2076 | 2,200 | 5,820 | 80 | 21.5** | 7,480 |
| New Holland L180 | 2,200 | 6,034 | 59 | 19.3** | 7,095 |

* Rated operating capacity ** Optional high-flow version available

Source: www.spec-check.com

Twenty-two of the models in this size range are available with optional high-flow hydraulic pumps. Hydraulic horsepower with standard pumps runs the gamut from 23 to 43 horsepower, and high-flow options take the maximum up over 78 hydraulic horsepower. For more specifications, visit ConstructionEquipment.com.

sometimes accompany new skid-steer loaders because, as Bob Beesley, product manager for skid-steers at Komatsu points out when asked about recent, crucial technologies, "the introduction of new attachments is allowing ever more applications [of skid-steers]. This can be measured by the increased number of 'package deals' and the sale of attachments."

Twenty-three out of the industry's 32 mid-range skid-steer models are available with optional high-flow hydraulic pumps. Eighteen of those high-flow pumps boost flow by 50 percent or more over standard flow rates. This optional upgrade makes the machine a more aggressive loader, but its primary purpose is to drive hydromechanical attachments such as breakers, brooms and cold planers.

Standard pumps on most of the mid-range machines develop theoretical hydraulic horsepower (calculated by multiplying flow times relief pressure and dividing by the constant, 1714) between 30 and 40. But the fact that there are some standard machines at 23 or 24 hydraulic horsepower and some as high as 43 hydraulic horsepower is strong evidence of the diversity of customer expectations. In fact Caterpillar, for instance, fields the 232B at 28 hydraulic horsepower, the 236B and 246B at nearly 43 hydraulic horsepower, and the 248B at more than 78 hydraulic horsepower.

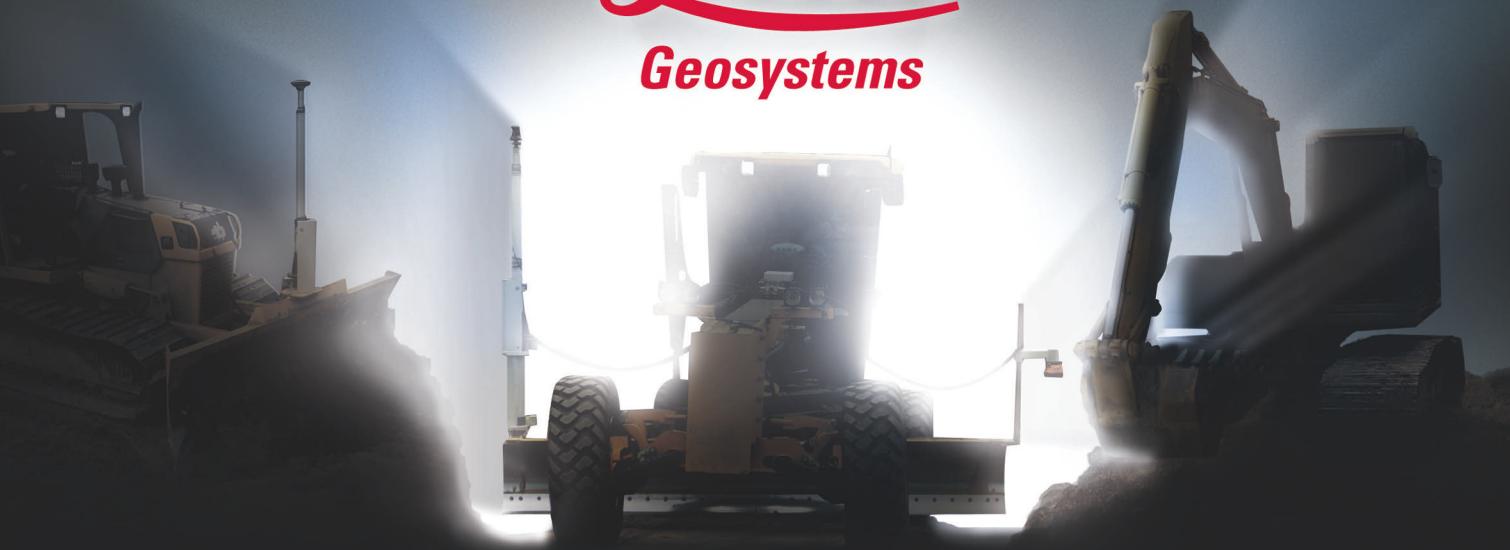
With such a range of hydraulic performance from which to choose, and differences in designs of loader arms and wheelbases, there's likely to be a mid-sized skid-steer matched to almost any job. Buyers will have to consider their needs, and then go out and try a lot of machines to make sure they align the perfect combination of capabilities, features and cost. 

Web Resources

| Specifications | ConstructionEquipment.com |
|----------------|--|
| Bobcat | www.bobcat.com |
| Case | www.casece.com |
| Caterpillar | www.cat.com |
| Gehl | www.gehl.com |
| JCB | www.jcb.com |
| John Deere | www.deere.com |
| Komatsu | www.komatsuamerica.com |
| Mustang | www.mustangmfg.com |
| New Holland | www.newhollandconstruction.com |
| Thomas | www.thomasloaders.com |
| Volvo | www.volvoce.com |

The dawn of a new era in machine control

Leica
Geosystems



Move dirt faster, more accurately and more efficiently with machine control solutions from Leica Geosystems.

Experience a new era in machine-control productivity with Leica Geosystems. Trusted worldwide for its innovative positioning technologies, Leica Geosystems can help you optimize site productivity with a complete range of integrated user-friendly machine control solutions. From simple laser-based construction systems to state-of-the-art 3D GPS systems, you'll discover unprecedented accuracy, reliability and productivity – even on the most challenging construction sites.

Benefit from the new era in machine control, brought to you by Leica Geosystems. For more information contact your local Leica Geosystems dealer or call 1-800-367-9453.

www.leica-geosystems.com

- when it has to be **right**

For more information, visit www.ConstructionEquipment.com/RS and enter 24

Leica
Geosystems

Gallery of Skid-Steer Loaders

BOBCAT

Less Noise, More Hydraulic Horsepower

Bobcat introduced its K-Series skid-steers at World of Concrete this year with the new SmartFAN, a thermostatically controlled, hydraulic fan drive that runs just fast enough to meet cooling demand. It saves fuel and generates up to 30 percent less noise. The hydraulic system in the K-Series mid-sized machines now emulates Bobcat's large-frame loaders, using a dedicated charge pump that provides an 8-percent increase in hydraulic horsepower.

Mid-sized skid-steer models: 5

New models: Vertical lift path S175, S185 and S205

Product-line features: The dual-path cooling system draws air from above the engine compartment through the oil cooler and radiator. Bobcat says the design reduces dirt and debris restrictions in the cooling system and minimizes debris in the engine compartment.

For more information, visit ConstructionEquipment.com/info



JCB

Single Arm for Safer Operators

The single loader arm on the right side of JCB's loader continues to be its primary point of distinction in a crowded skid-steer-loader market. The single loader arm allows the user to enter and exit the machine through a door on the left side. The operator doesn't have to clamber over a potentially slippery bucket or attachment, and never climbs in or out of the machine under a load or the lift arm.

Mid-sized skid-steer models: 1

Product-line features: Servo, pilot hydraulic joysticks can be configured for hands-only control or foot-and-hand control. The attachment quick coupler is standard equipment.

For more information, visit ConstructionEquipment.com/info



CATERPILLAR

Lifts Rated Capacity At Low Idle

All of the Caterpillar mid-size skid-steer loaders can lift their rated operating load with the engine at low idle, so the machines retain their lifting torque even if the operator slows the engine to place materials gently. Cat added an optional high-flow hydraulics package for the 242B to meet the demands of powered work tools.

Mid-sized skid-steer models: 5

Product-line features: Caterpillar offers vertical- and radial-lift skid-steer loaders in the 1,601- to 2,200-pound range so machines can be tailored to lifting or digging, material handling or loading. All Cat skid-steers come standard with pilot-hydraulic joystick controls. Daily service checkpoints are grouped in one location behind a rear door that can be opened without removing any access panels and with the boom down.

For more information, visit ConstructionEquipment.com/info



Productivity runs in the family.



The right equipment for any job. Count on the Mustang line of construction equipment to dig deeper, lift more, and power through any task. From skid-steer loaders and track loaders to compact excavators and telehandlers, it's all in the family. No wonder Mustang is the compact construction equipment of choice. Put the performance and versatility of Mustang to work for you. And keep tough jobs in the family.

To locate your nearest dealer, visit www.mustangmfg.com or call 800-562-5870.



Gallery of Skid-Steer Loaders



VOLVO

Volvo Engines, Big Breakout

In February Volvo launched its B-Series skid-steers, replacing Perkins diesels in its mid-sized skid-steers with Volvo Tier-2 powerplants whose 16-valve, cross-flow heads improve air intake for improved torque at low speed. The ROPS/FOPS is redesigned with larger front and rear openings to improve the operator's view forward, above, and to the rear and sides. The B Series offers buyers a choice of foot-and-hand mechanical controls or pilot-hydraulic hand controls.

Mid-sized skid-steer models: 2

New models: MC80B and MC90B

Product-line features: Loader arms have been engineered to reduce stress points. Volvo buckets are also upgraded to match machines better and improve breakout force and dump angles. At over 7,500 pounds, the MC80B and MC90B's bucket breakout forces are significantly greater than any other mid-sized skid-steer's.

For more information, visit

ConstructionEquipment.com/info

NEW HOLLAND

Reach Higher and Farther

New Holland says its SUPERBOOM models reach higher and farther. The SAE standard for measuring rated operating capacity is one-half of the tipping load. Tipping load is measured with the bucket at the point where it is farthest from the machine. That point is higher and farther out on New Holland SUPER-BOOM machines than on most other loaders.



Mid-sized skid-steer models: 3

Product-line features: New Holland mid-sized machines have among the largest wheelbases in their size ranges. That, along with a standard suspension seat, helps these New Hollands deliver a comfortable ride.

For more information, visit ConstructionEquipment.com/info

MUSTANG

Better View, More Control Choices



To improve the operator's view, Mustang re-engineered its ROPS/FOPS enclosure for the 2054 (and 2044, in a smaller class) with a larger rear window and redesigned side screen. Hand controls require 18 percent less control effort.

The 2054 and 2044 have two new control options: dual lever with foot controls and T-bar with foot controls.

Mid-sized skid-steer models: 3

Product-line features: Gehl provides skid-steers to Mustang, but the two lines are hardly identical. Gehl's 4640 and 4840 have no Mustang counterpart, and Mustang's 2054 has no comparable Gehl model. Even those models that share a basic platform (chassis and hydraulic pumps) retain significant distinctions such as Mustang's unique loader arms and Yanmar, instead of Deutz, engine.

For more information, visit ConstructionEquipment.com/info



CASE

Better Cooling, Starting, Faster Ground Speed

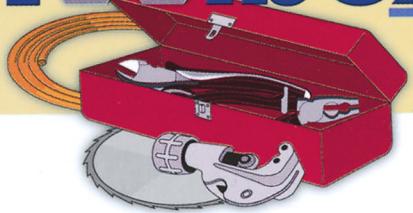
The 400 Series 430, 440 and larger models introduced in 2005 feature a Tier 2 engine with a 95-amp alternator and new cooling package to balance control of engine and hydraulic temperature. Radial-piston drive motors with two-speed ground drive are also available, as is factory-installed air conditioning on the 430 and larger models.

Mid-sized skid-steer models: 3

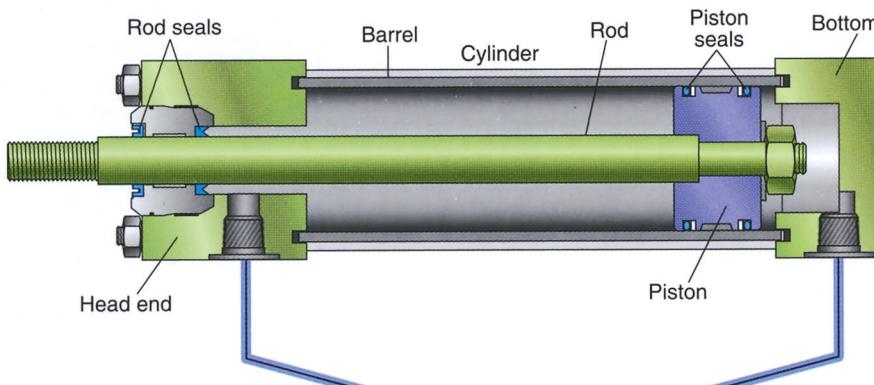
New models: 420, 430 and 440

Product-line features: Standard low-effort servo-hydraulic controls and optional ride control are said to reduce operator fatigue.

For more information, visit ConstructionEquipment.com/info

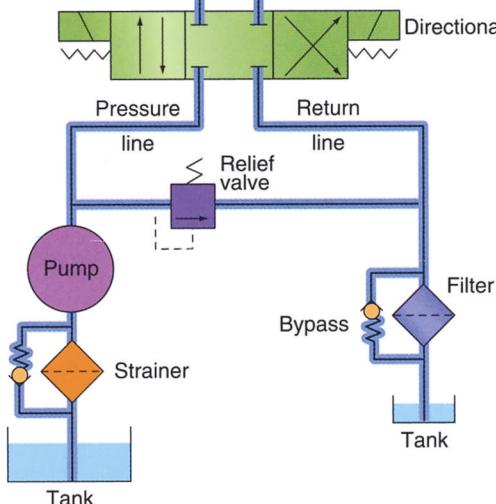


Seals Save Cylinders



Valve Protector

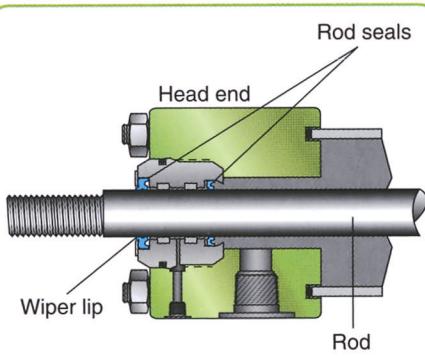
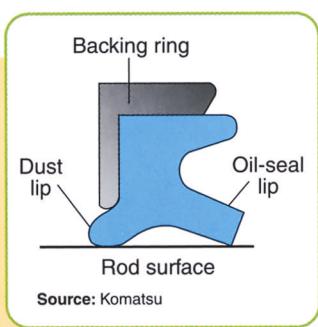
Most hydraulic systems use a return-line filter, so the cylinder is the first line of contamination protection for valves. Dirt that sneaks by rod seals into the system scours at least one valve before it reaches a filter.



Source: Vickers

Dull Dust Seal

Install the final dust seal with its dull edge outboard. This wiper lip is designed to repel all but the very finest dirt. The sharp edge is an oil seal. Special seals with a sharp wiper lip can be used to protect cylinders working in very wet conditions.



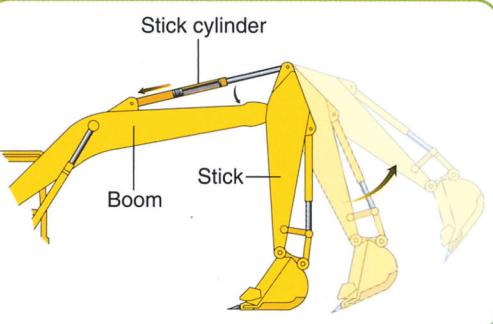
The Front Line

Rod-seal failures are typically visible because they drip. Even before it affects performance, seal leakage is unacceptable because it ushers dirt into the hydraulics. Weeping oil also compromises safety, the environment, and appearance.



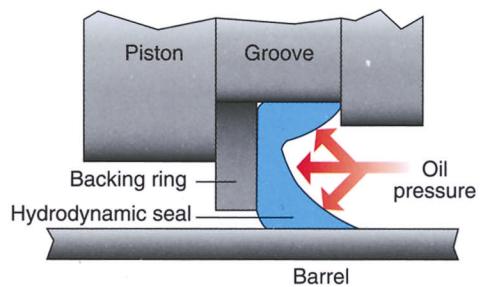
Avoid Side Loading

Grease cylinder mounting points to preserve seal life. If the clevice that retains the eye of this stick cylinder is dry and bound up, when the cylinder retracts to extend the stick, as the stick pivots on its boom pin the cylinder rod wants to swing in a downward arc. The piston scrapes the barrel and the rod exerts force on one side of the head. The seals, and eventually the rod and piston, will be worn oval. None will last for a satisfying length of time.



Oil-Assisted Seal

The open cup of a U-cup or V-cup seal faces the pressure side, so oil presses the lip against the sealing surface. They're frequently installed in sets as piston seals. In double-acting cylinders, two sets are used, each facing a pressure side of the piston.



Source: Vickers

Hot Oil Cooks Seals

An increase in operating temperature of 25 degrees Fahrenheit can cut seal life in half, according to Chicago Rawhide, a division of bearing manufacturer SKF that makes seals. It's the temperature under the lip of the seal that matters, and it can be as much as 50 degrees hotter than sump temperature.

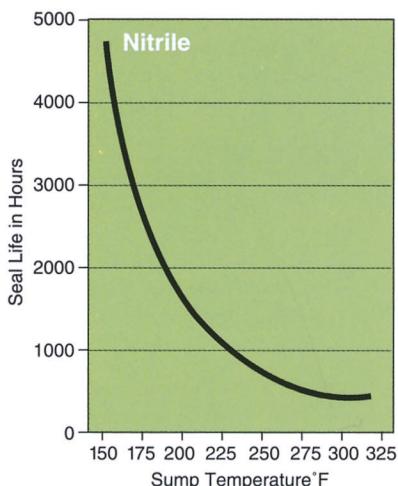
If the oil is not suited for the application, lip temperature will climb and shorten seal life. Other factors that raise hydraulic temperature include extreme ambient temperatures, low hydraulic fluid level, dirty oil coolers, or problems with engine cooling.

QUICK TIP

Need A Breather

Hydraulic systems that are not sealed gulp in dusty ambient air through the reservoir breather every time the fluid level drops. Dirt entering the reservoir circulates through the whole system before it can be removed by a return-line filter. To protect seals and tolerances, the breather should be fit with a filter that's every bit as efficient in the same contaminant-size range as the main system filters.

Seal Life vs. Sump Temperature



Gallery of Skid-Steer Loaders



JOHN DEERE

Excels at Loading

Deere introduced its 300 Series skid-steers in 2004 with patented vertical-lift booms achieving maximum reach at full lift height. Thirty-five-degree bucket rollback reduces spillage in the carry position, and the dump angle is a steep 45 degrees. There are skid-steer hydraulic systems that push a bit more flow than Deere's standard 317 and 320, but none bests 3,450 psi pressure except Caterpillar's 248B.

Mid-sized skid-steer models: 2

New models: 317 and 320

Product-line features: The 300 Series skid-steers carry John Deere's 250 Series Power Tech engines. Oil-change intervals are extended to 500 hours with Deere Plus 50 engine oil and filter.

For more information, visit ConstructionEquipment.com/info

GEHL

Improved Operating Capacity

Gehl refined the new E-Series loaders to reduce sound levels and improve performance, yielding what Gehl calls "some of the lowest operator sound levels in the industry." Operating capacity increased 150 pounds, to 1,650 in the 4640T. Gehl says Poclain's refined radial-piston drive motors enhance reliability and loader and attachment performance while reducing sound levels. New muffler design and air intake also reduce sound.

Mid-sized skid-steer models: 4

New models: 4640ET, 4840E, 5640E and 5640ET

Product-line features: The Power View Boom improves operator views left and right over the loader arm.

For more information, visit ConstructionEquipment.com/info



KOMATSU

Works Without Stalling

The SK818-5 and SK820-5 are the first Komatsu skid-steers with vertical-lift arms. Automatic Power Control relying on Komatsu's load-sensing hydraulics allows operators to work at full power with no worries about stalling the engine.

Mid-sized skid-steer models: 4

New models: SK818, SK820 and SK1020

Product-line features: Komatsu's Proportional Pressure Control joysticks require little lever effort, and operators have the choice of three control patterns including traditional hand-and-foot controls to two variations of hand controls. Ride control is an optional feature.

For more information, visit ConstructionEquipment.com/info

THOMAS

Vertical Lift Suited for Loading

The multiple-linkage, vertical-lift design of the Thomas 205 achieves a maximum reach of more than 31.5 inches at full height. Other features of the recently introduced machine, such as low-profile rounded boom arms and lower rear end for unobstructed view all around the machine, help tailor the 205 to loading work.

Mid-sized skid-steer models: 3

Product-line features: All Thomas loaders come with a five-year, 5,000-hour warranty (three years or 3,000 hours full-machine warranty plus two-year, 2,000-hour coverage on the drive train).

For more information, visit ConstructionEquipment.com/info



BELIEVE

NONE OF WHAT YOU HEAR,
HALF OF WHAT YOU READ,
AND ALL OF WHAT YOU DRIVE.

TEST DRIVE A TAKEUCHI AND BELIEVE

Talk is cheap. To know the quality and comfort of Takeuchi, you need to take a test drive. Then you'll know beyond a doubt: these are working machines. How much power do you need? There's one that will work for you. Don't take our word for it, though. Use our dealer locator service at our web site, www.takeuchi-us.com. Then test drive an excavator or track loader. It'll make a believer out of you.



**MAKE
TRACKS
& SAVE**
TEST DRIVE



TAKEUCHI®



1525 Broadmoor Boulevard, Buford, GA 30518 www.takeuchi-us.com 770.831.0661

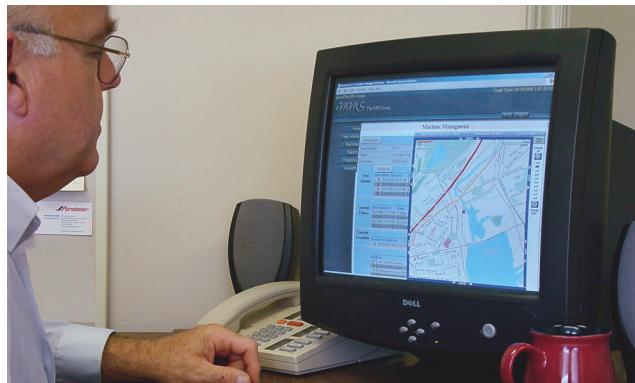
For more information, visit www.ConstructionEquipment.com/RS and enter 27

Asset Tracking/Theft Protection

TITAN

Equipment Monitoring System prevents theft by a nightly curfew, which immobilizes the machine and sets several silent alarms that notify end-users immediately when tripped. GPS delivers real-time locating capabilities from any Internet-connected computer. The system wirelessly reports hour meter and asset location that helps reduce maintenance costs, provides more accurate billing, and increases fleet utilization.

For more information, visit ConstructionEquipment.com/info



QUALCOMM

GlobalTRACS automatically collects, organizes and transmits information that tells fleet managers where construction equipment is located and also sends back critical machine health data. GPS-based location information shows where equipment is located and geo-fence alerts automatically notify fleet managers of any equipment movement outside pre-set boundaries. Designed for use by equipment distributors, rental companies and end-users, the GlobalTRACS system can provide up-to-the-minute engine hours data that shows when the equipment is running or when it isn't.

For more information, visit ConstructionEquipment.com/info

LONGVIEW ADVANTAGE

A series of telematic devices includes the Advantage 1000 and 2000, which have an environmentally rugged housing called the Longview StrongBox and a protected fixed I/O connector for input power protection and transient handling capability. Advantage 2000 incorporates multiple hour-meter connections to measure various machine elements on a single vehicle or piece of heavy equipment. StrongBox is a compact die-cast aluminum housing that surrounds the device components to resist water, salt, grease, oil and highly corrosive elements.

For more information, visit ConstructionEquipment.com/info



RITRON

Quick Talk Reporter is a battery-powered, voice-alerting radio transmitter that automatically monitors and alerts police of power failure and vandalism to equipment left unattended at worksites via wireless two-way radio. Quick Talk Reporter is weather-resistant and can monitor up to two separate contact closure/switch inputs. It automatically transmits custom voice messages over any VHF or UHF radio system. Standard Quick Talk models have a line-of-sight coverage of up to a half mile. The PC programmable six-volt model has a range up to five miles.



For more information, visit ConstructionEquipment.com/info

Spotlight

LOJACK

Ruggedized Vehicle Recovery System is incorporated into this police-tracking computer and is also designed for construction equipment and commercial vehicles. The system helps prevent equipment from theft and is directly integrated with law-enforcement agencies. Based on Lojack radio-frequency technology, the system can be installed covertly in a variety of locations on a piece of equipment. There is no external antenna. The system is powered by the equipment's electrical system with an additional backup battery.

For more information, visit ConstructionEquipment.com/info



ORBCOMM

Orbcomm uses low-earth orbit and satellites to provide tracking, monitoring, and messaging capabilities to and from anywhere in the world. Similar to two-way paging or e-mail, the system is capable of sending and receiving two-way alphanumeric packages of data. The system is designed for such applications as tracking and monitoring vehicles, truck, trailer and cargo locations; tracking operating conditions of vehicles and trailers, including temperature alarms, open doors and full/empty conditions; and tracking, monitoring and reporting engine diagnostics.

For further information visit
ConstructionEquipment.com/info

Pump up the Volume.

Multiquip has all the pumps you'll ever need.



Designed for basic construction dewatering jobs, our centrifugal, trash, submersible, and diaphragm models are easy to use, boast quick priming speeds and withstand the rigors at any job site. What's more, they're simple to maintain, have inexpensive replacement parts and move huge volumes of clear and debris-laden water.

When you need pumps, why go anywhere else?

MQ
MULTIQUIP

800-421-1244

www.multiquip.com

Experience the Progress.

Experience the Progress with Liebherr: With their extremely low fuel consumption, the wheel loaders deliver an impressive performance in all operating conditions, resulting in greater economy and a lower environmental impact. Advanced Technologies are our Business.



Liebherr Construction Equipment Co.
4100 Chestnut Avenue,
Newport News, VA 23607
Phone: (757) 245-5251
Fax: (757) 928-8701
www.liebherr.com

LIEBHERR
The Group

For more information, visit www.ConstructionEquipment.com/RS and enter 28

With the highest lift and capacity in its class,

plus 70 inches of horizontal boom travel,

Pettibone Traverse does what other machines

don't... it gets the job done.



PETTIBONE®

When it's got to get done.

Traverse® Series

For more information, visit www.ConstructionEquipment.com/RS and enter 29

visit **WWW.GOPETTIBONE.COM** to locate your nearest dealer

By MIKE VORSTER, Contributing Editor

The Residual-Value Grid

Auction data provide graphic depictions of machines' residual market values over time

This month, we revisit the age-old questions: "When should I sell my machine, and how much should I get?"

Many people answer those questions for us when they trade machines at auction. Sellers tell us when they believe the machine should be sold, and buyers tell us what they believe the machine is worth. Auction companies have a lot of data that can be accessed and analyzed to provide answers and establish benchmarks for age and residual market value.

No doubt, there is a lot of "noise" in the data. Machines are sold at various times, in various locations, and for various reasons; but, if we decide how we are going to analyze and present the data, we can filter it and analyze that portion of the data set that best suits our situation.

Many people have developed trend lines, charts and equations to show the relationship

between the age of a machine and its residual market value. Many studies, particularly one recently completed here at Virginia Tech, are detailed and thorough. They do, however, miss out on an important piece of information: how many transactions occur at various ages. How, then, can we use auction results to find out when owners sell machines?

The residual value grid shown here lacks a little in quantitative precision, but is a good graphic to show the age at which the machine was sold (X axis), the auction price or residual market value (Y axis), and the number of transactions that occurred at a given combination of age and price (Z axis, depicted by contour lines).

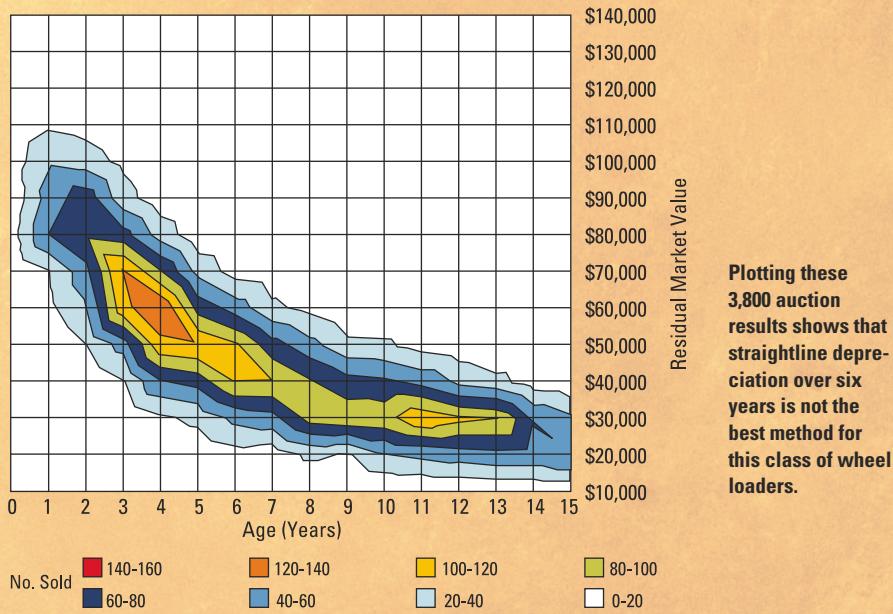
This graphic shows the "ridge" or "mountain range" created by analyzing auction trans-



Mike Vorster

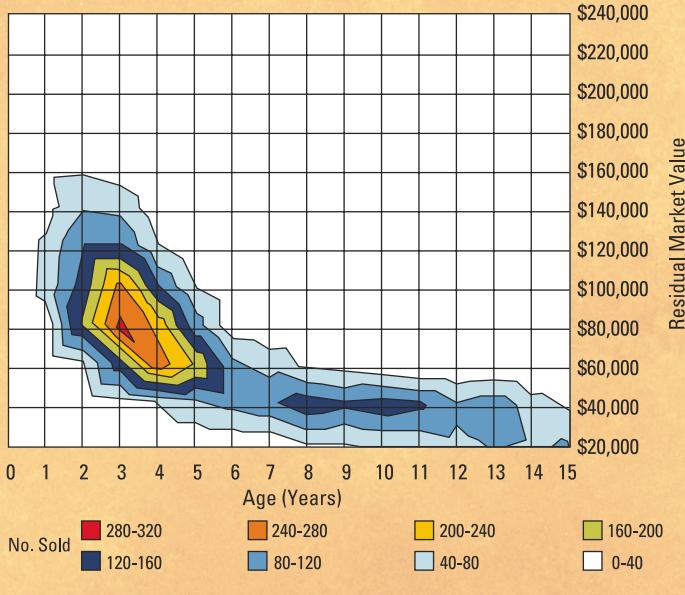
David H. Burrows Professor of Construction Engineering and Management at Virginia Tech.

Residual Values: Wheel Loaders



Equipment Executive

Residual Values: Track Dozers



With these 4,600 dozers, we see a steep loss in value in the first five years, but it evens out after year seven.

actions for 3,800 wheel loaders in the two- to four-cubic-yard range. Age, price and number of transactions vary, but there is a clear ridge that runs from about two years and \$80,000 to about 13 years and \$30,000 and contains most of the transactions.

The ridge line has the shape we would expect: It slopes downward and outward with an ever-decreasing gradient. Most of the transactions occur at the “summit” of the ridge, which is centered at four years and \$60,000.

Here are some conclusions we can draw from this graphic. First, we see that loss in value is fairly steep in the first five years, when it goes down at a rate of about \$10,000 per year. Then it slows dramatically to a rate of about \$4,000 per year for the next five years and becomes close to zero thereafter.

Second, and more important, we see how wrong it is to write off the machine on a straightline basis over a period of, say, six years. Three thousand eight hundred auction results tell us this is simply not correct.

Filtering the data and producing grids for different locations, machine brands or times in the economic cycle produces some interesting results. What you lose in confidence based on the volume of data

available you gain in relevance from the fact that the data is focused. Residual value grids developed for specific brands clearly show that you cannot make sweeping statements about the average price paid at auction for brand X over brand Y without analyzing the average age at which brand X and brand Y were sold.

Grids for other types of machines also provide insights. Our second graphic shows auction results for 4,600 track dozers in the 100- to 200-hp class.

The “summit” is much more defined with the vast majority of sales occurring before five years. Loss in value from years 2 to 4 is steep (\$120,000 to \$60,000), but after that it slows down with prices staying at about \$40,000 from year 7 on. Depreciating dozers of this type to zero over six years will overcost them by about \$3.70 per hour. This is based on the fact that we will assume about \$40,000 in extra or unnecessarily conservative depreciation and spread this over six years at 1,800 hours per year.

Managers find it difficult to identify and calculate metrics that define the overall effectiveness of an equipment-management operation. Many believe they are doing well if they are able to sell their equipment for a reasonable price. There is logic to this as the object is to manage your fleet in a way that maximizes its value in the eyes of potential buyers or users.

Auction companies have a lot of data that can be accessed and analyzed to provide answers and establish benchmarks for age and residual market value.

I often hear that things are going well because the company is making a gain on sale and that it is seldom “upside down” relative to book value when it comes to selling used equipment. This is pretty easy if book value is conservative and expectations regarding residual market value are low.

Developing and using a residual value grid that reflects competitive used-equipment transactions for your make, model and location can not only help in setting appropriate depreciation rates, but it can also assist in setting good standards for your whole operation. How would you feel if you sold a five-year-old, 100- to 200-hp dozer for \$40,000?

One of the great things about my job is that I get to work with the brightest minds and best students in the world here at Virginia Tech. I acknowledge the contributions made by Gunnar Lucko and John Hildreth in developing these and other residual value grids. 



TIGHT
spaces

TOUGH
angles

NARROW
aisles

Got access problems? Narrow your thinking.

When you need to access hard-to-reach areas, nothing compares to the new family of mast-style boom lifts from JLG. With their compact design, 360-degree rotating mast and a versatile articulating jib, they are built to take you up, over and around obstacles. Three models are available with platform heights up to 18, 26 and 33 feet. Plus, with a 500-pound capacity and long lasting electric power, these unique machines will help you meet more of your access challenges and boost your productivity plant-wide. For more information visit www.jlg.com/mastboom1 or call 877-JLG-LIFT.




The Power To Do More

INTRODUCING *The Best Warranty in the Industry!*



Our New Warranty Includes:

- Two years of bumper-to-bumper protection*
- Three year powertrain coverage*
- Unsurpassed parts availability*

For years, the name Hyundai has meant performance and durability in heavy equipment. Sure, other brands claim to be tough, but at Hyundai, we put it in writing! Starting now, Hyundai is offering the best overall warranty in the business.

This warranty is available on our complete line of 2005 Wheel Loaders and Excavators. Visit your local Hyundai dealer or call **800-423-8721** for more details.

*ask your dealer for limitations and restrictions



HYUNDAI
CONSTRUCTION EQUIPMENT

955 Estes Avenue
Elk Grove Village, IL 60007
800.423.8721 • www.hceusa.com

For more information, visit www.ConstructionEquipment.com/RS and enter 31

Built for the Long Haul.

WA600-6 Steps Up to 502 Horsepower

Komatsu challenges quarry-loader leaders by adding power, weight, bucket size and dump clearance with its transition to Tier 3

In bringing in the WA600-6 wheel loader into Tier 3 compliance, Komatsu pumped the quarry/mining loader up to 502 horsepower (12 percent greater than the WA600-3 it replaced) and similar boosts in weight, loading height and tipping load.

The WA600-6 shares the top of the 375- to 575-hp wheel-loader size class with Volvo's L330E. Both machines are rated at 502 horsepower, and they develop virtually identical breakout forces. The Komatsu outweighs the Volvo by about 7,000 pounds, and exceeds the Volvo's straight tipping load by 2,500 pounds. But its articulation angle of 43 degrees makes the WA600-6's static tipping load when articulated into a full turn about 1,800 pounds less than the Volvo's (which articulates to a maximum of 35 degrees).

The key component change is Komatsu's Tier-3 engine, the six-cylinder, 23-liter SAA6D170E-5 with cooled exhaust-gas



Raising engine horsepower 12 percent tied Komatsu's WA600-6 at the top of the 375- to 575-hp size class with Volvo's L330E. The new Komatsu is the heaviest loader in its class and has the highest dump clearance and greatest tipping load.

Quarry Loader Competitors

| | Komatsu | | Caterpillar | Kawasaki | Volvo | Dresser |
|------------------------|-------------|-------------|----------------|-------------|-------------|-------------|
| | WA600-3 | WA600-6 | 988H | 115ZV | L330E | 560C |
| Engine | Komatsu | Komatsu | Cat | Cummins | Volvo | Cummins |
| Model | SAA6D170E-3 | SAA6D170E-5 | C18 MEUI ACERT | QSK19 | D16B LAE2 | QSK19 |
| Net power | 450 hp | 502 hp | 475 hp | 480 hp | 502 hp | 415 hp |
| Max. speed (mph) | | | | | | |
| Forward / Reverse | 18.8 / 20.3 | 23.4 / 23.0 | 24 / 15.6 | 21.8 / 14.1 | 19.8 / 19.8 | 20.2 / 20.2 |
| Static tip load (lb.) | | | | | | |
| Straight | 74,414 | 80,645 | 76,776 | 65,280 | 78,130 | 63,310 |
| Full turn | 64,838 | 67,210 | 64,745 | 55,910 | 69,090 | 56,350 |
| Bucket cap. (cu. yd.) | 8 | 8.4 | 8.33 | 8.3 | 8.6 | 7.5 |
| Dump clearance* | 11' 0" | 13' 1" | 11' 4" | 10' 10.7" | 10' 9" | 11' 11" |
| Dump reach* | 78" | 71" | 80" | 78.3" | 88" | 58" |
| Dump cycle time (sec.) | 14.6 | 15.7 | 15.6 | 15.2 | 14.6 | 18.2 |
| Breakout force (lb.) | 83,010 | 87,230 | 85,068 | 84,900 | 87,200 | 66,230 |
| Wheelbase | 13' 5" | 14' 9" | 14' 11.2" | 13' 3.4" | 13' 4" | 12' 11" |
| Turn angle (deg.) | 40 | 43 | 43 | 40 | 35 | 35 |
| Operating weight (lb.) | 101,854 | 118,385 | 109,230 | 100,180 | 111,070 | 92,533 |

* Full height with bucket dumped

Source: Spec Check – see www.Spec-Check.com

Earthmoving Report

recirculation and air-to-air charge air-cooling. Adding EGR allows an engine manufacturer to advance fuel-injection timing compared to Tier-2 engines, im-

proving low-end torque and fuel efficiency, and reducing noise. Using the WA600-6's electronic fuel-injection controller, the engine comes standard

with dual-mode engine power: an Economy mode for fuel efficiency, and a Power mode for maximum productivity.

With a new lock-up torque converter and a full-powershift, planetary transmission, travel speeds have increased compared to the WA600-3. Maximum forward speed is 23.4 miles per hour (a 23 percent increase) and reverse top-speed of 23.0 miles per hour (up 13 percent).

The upgraded drive train supports a more capable machine. The WA600-3 was an 8-cubic-yard loader with 11-foot dump clearance, and the WA600-6 is an 8.4-cubic-yard loader with 13-foot dump clearance — about two feet more clearance than the nearest competitors in this size class. It's tall enough to load 70-ton trucks, but ideally suited to 50- to 60-ton trucks. Yet the sharp articulation angle gives it a turning radius within about a foot of the shortest-turning machine in the class.

Komatsu brought its joystick steering — the same AJSS (Advanced Joystick Steering System) as is used on the WA800 — to the WA600-6.

The manufacturer "conservatively estimates" that the WA600-6 can deliver a 28-percent improvement in productivity over the Dash 3.

The WA600-6 includes Komatsu's EMMS (Equipment Management Monitoring System), which displays 28 different machine functions including time to fluid and filter changes and troubleshooting memory such as historical engine oil levels and coolant temperatures. Also on board is Komatsu's VHMS (Vehicle Health Monitoring System) to provide detailed monitoring of the machine via satellite communication or through a laptop computer.

For more information, visit
ConstructionEquipment.com/info

Check it out

IT'S WHAT'S NEW IN USED EQUIPMENT

John Deere Certified Used Equipment offers outstanding value and performance.

- Guaranteed 90-day warranty coverage on all Certified machines
- Additional Certified powertrain warranty options available*
- Thorough machine evaluation performed by a Deere-Certified technician
- Machine performance and cycle times tested
- Comprehensive oil scan analysis performed on key fluids
- Improved equipment values for financing*
- Backed up by your John Deere dealer's parts and service department

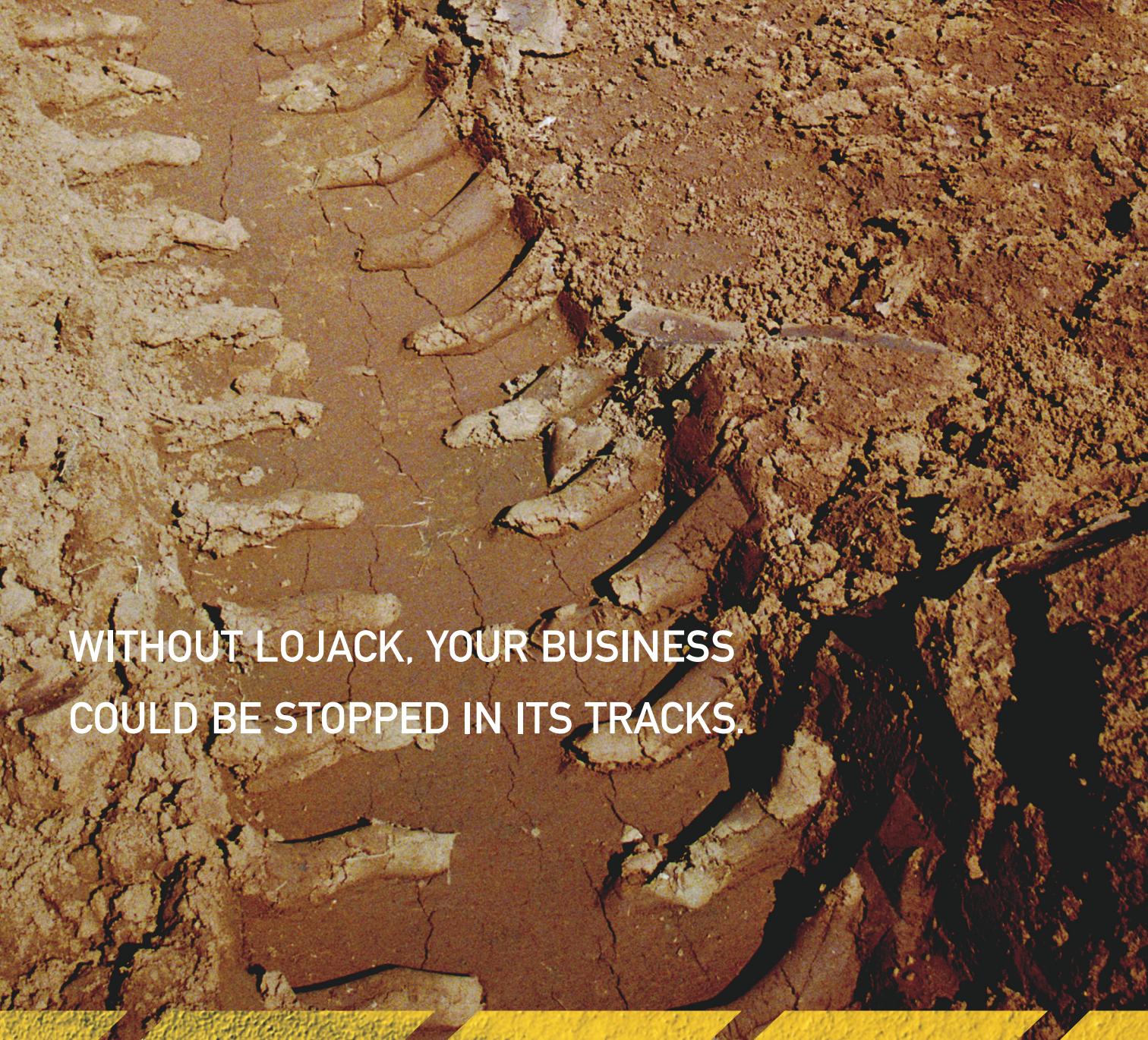
*See your local participating John Deere dealer for more information.



JOHN DEERE

For more information,
visit www.ConstructionEquipment.com/RS
and enter 32





WITHOUT LOJACK, YOUR BUSINESS COULD BE STOPPED IN ITS TRACKS.

Thieves aren't the competition. But they steal your business, one piece of equipment at a time.

The good news is, LoJack gives you the best chance of getting your equipment back. Usually within hours, and without damage. LoJack helps police track and recover stolen equipment with a national recovery rate of 90%. There's only a one-time purchase price, and the peace of mind is forever. So don't let your business grind to a halt — visit lojack.com/equipment. Call 1-800-838-1177 Ext. 3832 now to get the only recovery system that works with the police.

**LoJack is available for cars, trucks, motorcycles,
construction equipment and laptops.**

For more information, visit www.ConstructionEquipment.com/RS and enter 33

LO/JACK®

FOR CONSTRUCTION EQUIPMENT

SIMPLY THE BEST...



Ranco Lightweight Doubles

OUR
ONE
RANCO

- **FREE ... 1-YEAR SCHEDULED MAINTENANCE**
- **3 YEAR ... STRUCTURAL WARRANTY**
- **TRAILERS... FOR EVERY APPLICATION**



Ranco Lightweight 21-40

For more information and a Dealer Near You Call:

(800) 631-5708

For more information, visit www.ConstructionEquipment.com/RS and enter 35

P.O. Box 856 • Lamar, CO 81052 • FAX (719) 336-5952 • www.rancotrailers.com

New Design for Bomag Pneumatics

Two new rubber-tired rollers have lots of horsepower, refined hydrostatic drive, innovative steering and adjustable operating weights

With operating weights that can be adjusted from approximately 10 to 30 tons, the new BW24RH and BW27RH pneumatic (rubber-tired) rollers are suited to a wide range of compaction chores, says Bomag, including base preparation, soil and asphalt finishing, soil stabilization and chip/seal resurfacing. Bomag has designed these machines to meet two specific operating-weight classes, 25 and 30 tons, but the new models have the flexibility, depending on ballast loading, to operate from around 9.5 to 26.5 tons (BW24RH) and from 14.5 to 30 tons (BW27RH).

To achieve the correct operating weight for the application, the rollers can be ballasted with water, sand, steel shot or scrap steel. Both have a 124-cubic-foot ballast compartment, which has a large opening on either side of the machine to facilitate ballast removal. The units also can be "pre-ballasted" by attaching individual weights under the frame. With maximum ballast, the BW24RH tops out at 52,911 pounds, and the BW27RH at 59,525 pounds. These weights provide a maximum middle-wheel load of 6,614 and 7,441 pounds, respectively.

The new rollers are fitted with eight, 11.00-20 18PR tires that provide total-width coverage of 83.4 inches, allowing for a 2-inch tire-track overlap. An automatic inflation system controls tire pressure, which the operator can easily regulate from the cab, even when the machine is working. According to Bomag, the tires provide a kneading action that results in highly uniform compaction and a dense finish at the surface.

Both new machines feature a hydrostatic drive system that



The operator's station for the BW24RH and BW27RH, available with an optional enclosed cabin, features two steering positions and a sliding/swiveling seat to accommodate operator preferences.

uses two hydraulic motors to power the four rear wheels. The machines' hydrostatic pump powers the motors, which, in turn, work through gearing to power the wheels. Two working ranges allow top speeds of 4 and 12 mph, respectively. The rollers are powered by Deutz BF-4M 2012 diesel engines, rated at 99 and 131 horsepower, respectively.

New for these machines is a two-point-oscillation steering system, which allows the inside and outside front-tire pairs to turn at different rates. Much like a split drum on a tandem roller, says Bomag, the steering system provides smooth transitions and reduces the potential for damaging the mat surface. And to minimize the potential for material pickup on the tires, a corrosion-resistant, 106-gallon water tank supplies a pressurized spray system.

For more information, visit ConstructionEquipment.com/info

Operating Dimensions

| | |
|---------------------------|-------|
| Wheelbase (in.) | 145.7 |
| Width across tires (in.) | 80.4 |
| Total rolling width (in.) | 83.4 |
| Overall height (in.) | 121.7 |

Earthmoving Report

By ROD SUTTON, Editor in Chief

Graders Reengineered from the Ground Up

Champion, Volvo engineers produce integrated power train with 11-speed transmission



Goderich, Ontario, was the home of Champion Motor Graders for many years, and it has remained the site of Volvo Construction Equipment's motor grader operations since the company's purchase in 1997. Last month, Volvo invited us to Goderich to show off its new G900 series of graders. According to company officials, this is the first line that can truly be called Volvo, as it was engineered starting from a clean slate.

Volvo G900 Series Motor Graders

| Grader Model | Engine Model | Net Engine Power, First Gear (HP) | Moldboard Length (ft.) | Operating Weight (lb.) |
|--------------|--------------|-----------------------------------|------------------------|------------------------|
| G930 | D7 | 155 | 12 | 34,300 |
| G940 | D7 | 175 | 12 | 35,200 |
| G946 | D7 | 175 | 12 | 36,700 |
| G960 | D7 | 195 | 12 | 36,800 |
| G970 | D9 | 210 | 12 | 39,000 |
| G976 | D9 | 210 | 12 | 40,500 |
| G990 | D9 | 225 | 14 | 46,300 |

That's not to say Champion has been forgotten. In fact, says Brian Lowe, product and communications manager for the motor grader line, Volvo has integrated Champion technology into the Volvo G900 Series. The key example of that, Lowe says, is the configuration of the drive train within the grader frame.

The engine and final drive are behind the articulation joint; the transmission sits ahead of it. With the transmission forward, more weight is added to the blade. Weight and horsepower combine to provide production power, Lowe says.

Horsepower for the line comes from Volvo's own V-ACT diesels; the D9A powers the G970, G976 and G990 and the D7D powers the G900, G930, G940, G946 and G960. Both are Tier3/Stage IIIA compliant.

The power train, says Pat Olney, president of Volvo Motor Graders, is the best example of why these new graders are true Volvo machines. Volvo took the V-ACT diesels and paired them with the company's transmissions. Grader engineers, who had come from the Champion side, worked closely with Volvo engineers in other product groups to develop the G900 series power train.

The result is impressive. The optional HTE1160 transmission is the industry's first 11-speed grader transmission. The additional gears allow Volvo to increase travel speeds and pro-

Volvo paired its V-ACT diesels with its own transmissions in the new G900 motor graders.

vide additional fine-grading speeds. Numbers for the G940 show travel speed of 31 mph at rated rpm and a low-end speed of 1.2 mph at peak torque rpm.

The HTE1160 has standard Autoshift, and the machines we operated proved to be smooth-shifting. In creep mode, used for fine grading, we were able to maintain about 0.2 mph without jerking. Forward to reverse was effortless, and the shuttle shifting was high on the list of features Volvo's customer research revealed as important. The transmission automatically downshifts when stopping.

Standard transmission is the eight-speed HTE840, with eight forward and four reverse gears. The HTE1160 has 11 forward and six reverse. Volvo told us that about three-quarters of the machines are being ordered with the 11-speed transmission.

Volvo is targeting the line at contractors and municipal government groups, end-users that recognize the value in the engineering and are willing to invest in the additional productivity features, Volvo says.



The graders are designed with the transmission ahead of the articulation joint, an engineering feature that adds weight to the moldboard and enhances productivity, according to Volvo.

We can't show you any videos in the magazine, but go to ConstructionEquipment.com/Volvo for some additional product information supplied by Volvo.

For more information, visit ConstructionEquipment.com/info

CONCRETE SOLUTIONS... ROCK SOLID PERFORMANCE.

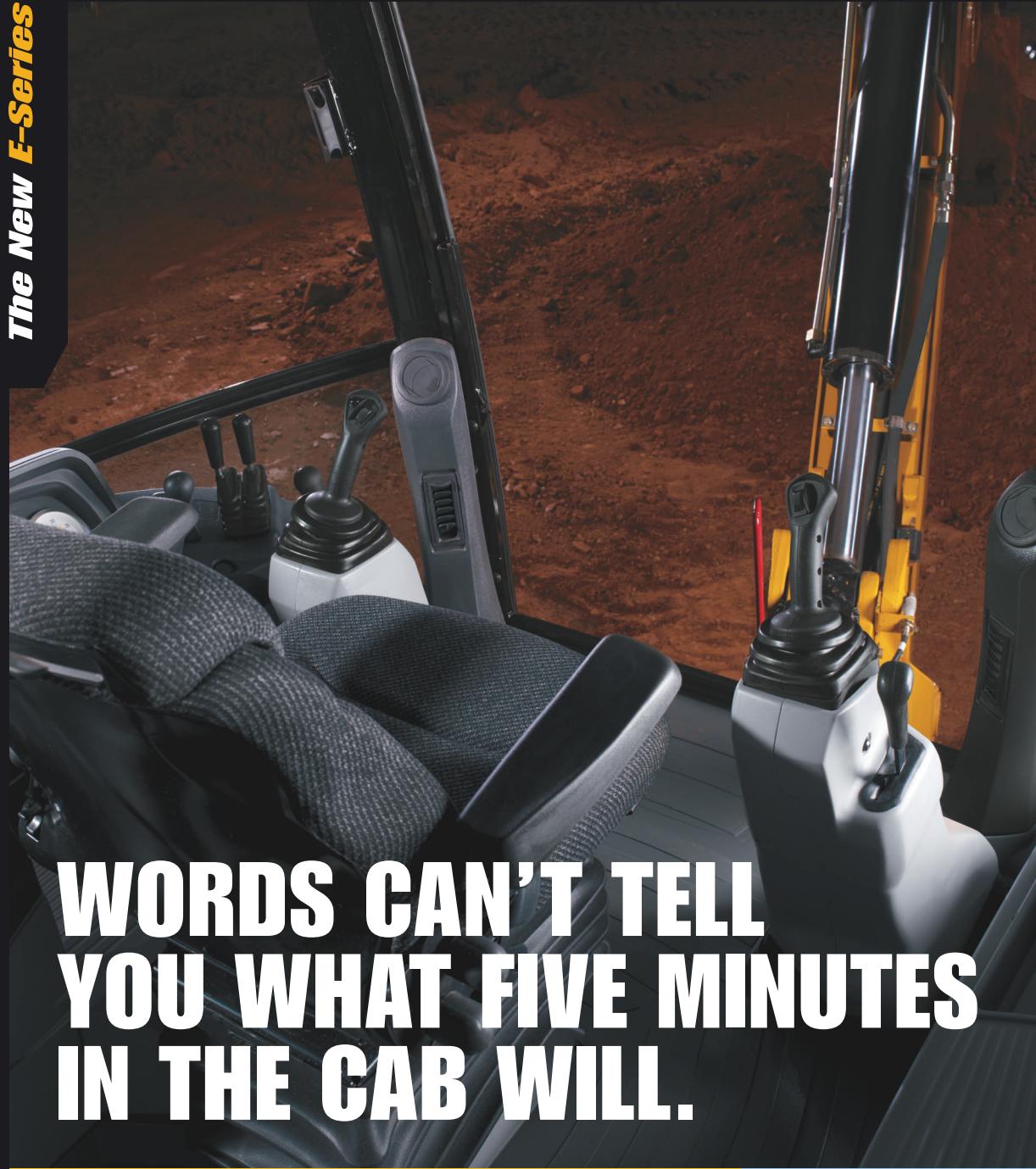
You face a new construction challenge everyday. And no matter what the job, **Kent Demolition Tools** offers a one-stop shop for attachments that meet your specific needs. With more than 30 different attachments, Kent helps you get any job done right.

For more information on Kent products, contact us today at **1-800-527-2282** (East coast), **1-800-624-1616** (West coast) or **330-673-5826**. Or, visit us on-line at www.kentdemolition.com.

- **Hydraulic Hammers**
- **Compaction Attachments**
- **Excavator Grapples**
- **Pneumatic Hammers**
- **Handheld Tools**
- **Auto-Couplers**
- **Pedestal Units**
- **Mechanical Thumbs**



© 2005 Kent Demolition Tools



WORDS CAN'T TELL YOU WHAT FIVE MINUTES IN THE CAB WILL.

©2006 Caterpillar Inc. CAT, CATERPILLAR, their respective logos and "Caterpillar Yellow" as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.

That's how fast you'll realize the new, totally redesigned Cat® E-Series Backhoe Loader is something special. Step into the spacious cab and you notice there's room for your size 13's. From the incredibly comfortable seat, you have a floor-to-ceiling panoramic view. Take hold of the pilot controls and the thumb roller switches and you feel the perfect blend of advanced Cat hydraulic power and precision. Experience the new E-Series at your Cat Dealer today, and see how it can help you **WORK AT THE NEXT LEVEL.**

| *Get more info at WWW.CAT.COM*



CATERPILLAR®

Market Watch Lite

By HEATHER BURLINGAME, Senior Production Editor

We're making it quicker for you to obtain more information on products by going to ConstructionEquipment.com/info. Once there, you'll be in our Buyer's Guide, where you can find manufacturer information and distributor listings. Sign up for our monthly MarketWatch eNewsletter at ConstructionEquipment.com.



Atlas Copco

HC 409 and HC 920 hydraulic-compactor attachments feature hoses that are centrally routed to prevent contact with working surfaces. The hoses are positioned to mimic the company's breaker configuration so that a compactor and breaker can be used on the same carrier without having to cross hoses when changing attachments. At 900 pounds, the HC 409 delivers an 8,000-pound impulse force and produces 2,100 cycles per minute. It fits carriers in the 4- to 9-metric-ton weight class and has a 24- by 36-inch plate. At 1,600 pounds, the HC 920 has an impulse force of 16,000 pounds and delivers 2,200 cycles per minute. It fits carriers in the 9- to 20-metric-ton weight class and has a 28- by 40-inch plate. Prices: HC 409 is \$5,541; HC 920 is \$9,671.

For more information, visit ConstructionEquipment.com/info

John Deere

The Worksite Pro Land Plane is designed for use with a skid-steer loader to complete the final grade on either flat or sloping surfaces. The Land Plane is a device that can grade, level, sift or rip, and it is available in widths of 72, 78 and 84 inches.

For more information, visit ConstructionEquipment.com/info



Chevron

Reformulated Extended Life Coolant (ELC) will protect cooling systems of on-road vehicles for 8 years or 750,000 miles and off-road vehicles for 15,000 hours without requiring additives or extenders. If a Chevron chemical extender is added at 500,000 miles/10,000 hours/4 years, the cooling system will be protected for 1,000,000 miles/20,000 hours/8 years. ELC meets ASTM's new heavy-duty coolant spec D6210 and exceeds most engine specifications, including Caterpillar's EC-1. Chevron estimates the cost to fill and maintain a 12-gallon truck radiator with ELC for 8 years at \$398, comparing that to an estimated \$941 per truck for properly maintained conventional coolant.

For more information, visit ConstructionEquipment.com/info



Dana

The tire pressure control system has a new integrated driver display module that simplifies the selection of tire pressures for vehicles used in a variety of on- and off-highway applications. The interface supports two load modes (loaded and unloaded) and three terrains (highway, off-highway and emergency). The module can display tire pressure by axle group, as well as over-speed and low-tire operation.

For more information, visit ConstructionEquipment.com/info



Hilti

The Theft Protection System (TPS) is available for many of the company's tools. It consists of a Company Card, Activation Key and electronic module inside the tool. A customer-specific code is set and then transferred via the Company Card to the tool. The Activation Key allows the tool to be started and used. Tools will lock after 20 minutes and cannot be restarted with the key.

For more information, visit ConstructionEquipment.com/info

When We Say “Forever”... We Mean Forever!!

Protected By Lifetime Warranty*

Profits get hammered two ways. First, when your breaker falls apart, you're not working. Second, some parts are so expensive that it's better to cut into your bottom line and buy a new hammer to get a fresh warranty. That's the way it is with most hammers and their warranties.

But, Huskie is really different. If you own a Huskie Hydraulic Hammer, you are covered front cap to back cap by Huskie's industry-leading LIFETIME Limited Warranty*.

- **LIFETIME Coverage for Front Cap, Back Cap and Main Body**
- **THREE YEAR Protection for All Components except**
- **TWO YEAR Warranty for All Seals**
- **UNLIMITED HOURS of Use**

Forever is a long time. But, if you own a Huskie Hammer, that's how long you can expect to run it 24/7 and still be covered by the revolutionary Huskie Lifetime Warranty.

Want a 30 day free demo?** Call

1-800-HUSKIE1

(1-800-487-5431)

Fax 630-790-3751



*Limited warranty. Normal wear items are not covered. See warranty statement for details and exceptions. Effective on all Huskie Hydraulic Hammers purchased after July 1, 2005.

**Call IPC/Huskie Hydraulic Hammer for details.

The Huskie logo and Huskie Hydraulic Hammer are registered trademarks of IPC Industries, Inc.

© 2005 IPC-Huskie Hydraulic Hammer



For more information,
visit www.ConstructionEquipment.com/RS and enter 38

Lite



BLS

The Poly Bolt-On track pad, a two-piece polyurethane track pad that bolts directly to a steel triple grouser, is offered for use with milling machines, asphalt or concrete pavers, or other track vehicles. Replacement of the polyurethane track pad can save up to 50 percent in replacement labor costs. The steel grouser is a one-time purchase.

For more information, visit ConstructionEquipment.com/info



Ground Heaters

Arctic Bear Cub indirect-fired heaters from Ground Heaters come in three sizes. The smallest model — Cub 200 — weighs 168 pounds and offers a heat output up to 200,000 BTU/hour at an airflow rate of 1,475 cfm. Cub 400 has a heat output of 400,000 BTU/hour at 5,000 cfm with 1.77 inches water column static pressure. Cub 700 produces up to 700 BTU/hour at an airflow rate of 8,240 cfm with 2.09 inches water column static pressure.

For more information, visit ConstructionEquipment.com/info

Miller Electric

The Spectrum 1251 air plasma cutting system has a 100-amp output and can sever 1.75-inch steel with a rated cutting capacity of 1.25 inches, the company says. Rated cutting capacity is the speed at which an operator achieves a smooth, steady cut at 10 inches per minute (ipm). The 1251 cuts $\frac{3}{4}$ -inch steel at 25 ipm, $\frac{5}{8}$ -inch steel at 40 ipm, and $\frac{1}{4}$ -inch steel at 140 ipm. Replacing the Spectrum 1250, the 1251 weighs 97 pounds, compared to the predecessor's 416, using the company's Auto-Line power-management technology. It carries a three-year factory warranty.

For more information, visit ConstructionEquipment.com/info





Godwin Pumps

A new series of portable light towers is said to illuminate from 5 to 7 acres. Manually deployed, the 30-foot-tall, 360-degree rotating steel mast projects 4,000W of adjustable light. Its four-point outrigger stance withstands winds up to 65 mph. An automatic shutdown is triggered by low oil/high temperature. The unit features a 12.2-hp Mitsubishi four-stroke diesel engine.

For more information, visit
ConstructionEquipment.com/info

Thermal Dynamics

The Ultra-Cut 150 plasma-cutting system delivers heavy-duty conventional plasma cutting of mild steel and non-ferrous alloys from 0.5mm to 25mm. It produces cuts with minimal bevel and a weld-ready cut surface. For ease of use, it incorporates the XT consumable parts cartridge system. The company also introduced the Auto-Cut 100 plasma-cutting system built for high performance and low operating cost.

For more information, visit
ConstructionEquipment.com/info



Genesis

The range of XP Mobile Shears has been refined with a fully interchangeable blade system and a new dual-blade guide system. The blade system features four identical cutting blades that can be rotated top-to-bottom and front-to-back

(just like rotating tires on your car) to extend blade life. The four blades also can be rotated in place to use all cutting edges. The dual-blade guide system allows easily shimming the piercing tip to suit the material being processed.

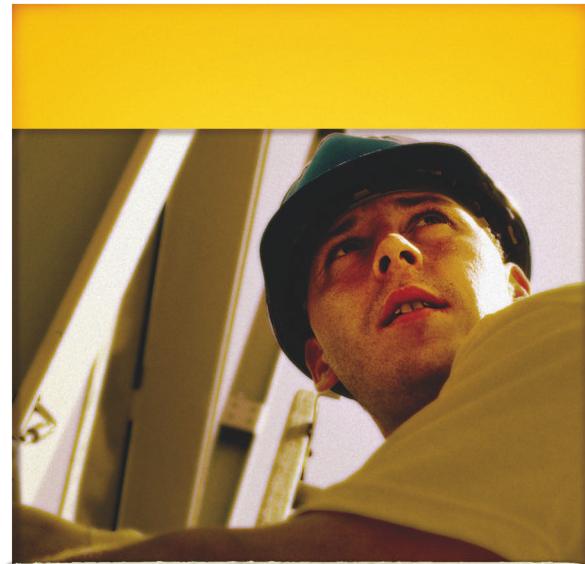
For more information, visit ConstructionEquipment.com/info



Trimble

Trimble introduced several antenna and receivers that track GPS L2C and L5 GPS signals, as well as GNSS satellites. MS990 Smart Antenna, for use on Trimble's GCS900, replaces the traditional GPS receiver and antenna. It eliminates specialized cables, which improves signal strength. A new series of modular GPS receivers, Extreme SPS850 and SPS880, is also available.

For more information, visit
ConstructionEquipment.com/info



**TIME AND MONEY.
JUST TWO OF THE THINGS
RENTING CAN SAVE YOU.**



No commitment. No storage. No maintenance. No hassles. Renting eliminates the negatives of owning or leasing your equipment and frees up capital. It's a smart solution that gives you more options and more savings.

Find the ARA member rental store in the U.S. nearest you by visiting

RENTALHQ.COM



RENTING: THE SMART WAY TO GET THINGS DONE.®

For more information, visit www.ConstructionEquipment.com/RS and enter 39

Market Watch Lite



Multiquip

MVC-80 Series vibratory plate compactors reduce vibration by 50 percent when compared to predecessors, says Multiquip, thanks to a new anti-vibration handle system. Centrifugal force is 2,925 pounds, and the unit can compact up to 72 feet per minute in granular soil or asphalt. Engine options are 5.7-hp Honda or 5.5-hp Robin gasoline engines. The four models in the series range in weight from 177 to 180 pounds, list at \$1,995, and come with a one-year warranty.

For more information, visit ConstructionEquipment.com/info



Leading Edge Attachments

The DigNRip excavator bucket functions like a trencher for severe rock and frost removal. Ripper-tooth tips are located at positions associated with the rolling movement of the bucket cylinder and the sweep action of the stick. Tooth angle is strategically designed so the bucket provides maximum ripping. The bucket comes with Cat-, Hensley- or Escobrand teeth.

For more information, visit ConstructionEquipment.com/info



Atlas Copco

A new line of hydraulic breakers includes four models, the heaviest of which is the 71-pound LH 39. It delivers 110 ft.-lb. of blow energy at an average impact rate of 1,275 bpm. Standard breakers include the LH 27, which produces 81 ft.-lb. of energy at 1,500 bpm; the LH 22, at 62.7 ft.-lb. of energy at 1,740 bpm; and the LH 18, which delivers 48 ft.-lb. of energy at 1,600 bpm. All models feature a slim design for optimal operator view and is equipped with basic vibration dampening.

For more information, visit ConstructionEquipment.com/info

Topcon

The CTS-3000 series total station has software that simplifies staking, the company says. Extended keyboard lets users easily operate and input data. The station can measure, reflectorless, up to 820 feet and up to 9,842 with a single, standard-size prism.

For more information, visit ConstructionEquipment.com/info



Toro

Toro introduces high-speed and high-torque trencher attachments. The high-speed unit delivers an auger speed of 187 rpm at 11 gpm and 442 ft.-lb. of torque at 3,000 psi. The high-torque trencher has a heavy-duty drive system with an auger speed of 120 rpm at 11 gpm and 675 ft.-lb. of torque at 3,000 psi. The attachments fit most compact utility loaders, including the Dingo TX 420 and TX 425 Wide Track.

For more information, visit ConstructionEquipment.com/info

Wacker

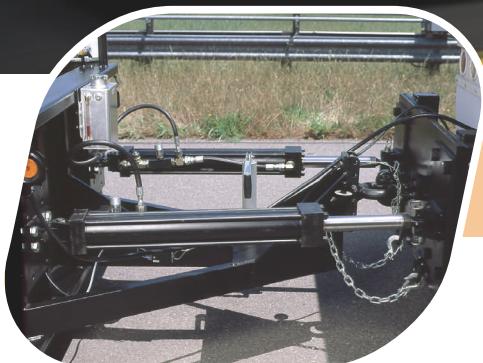
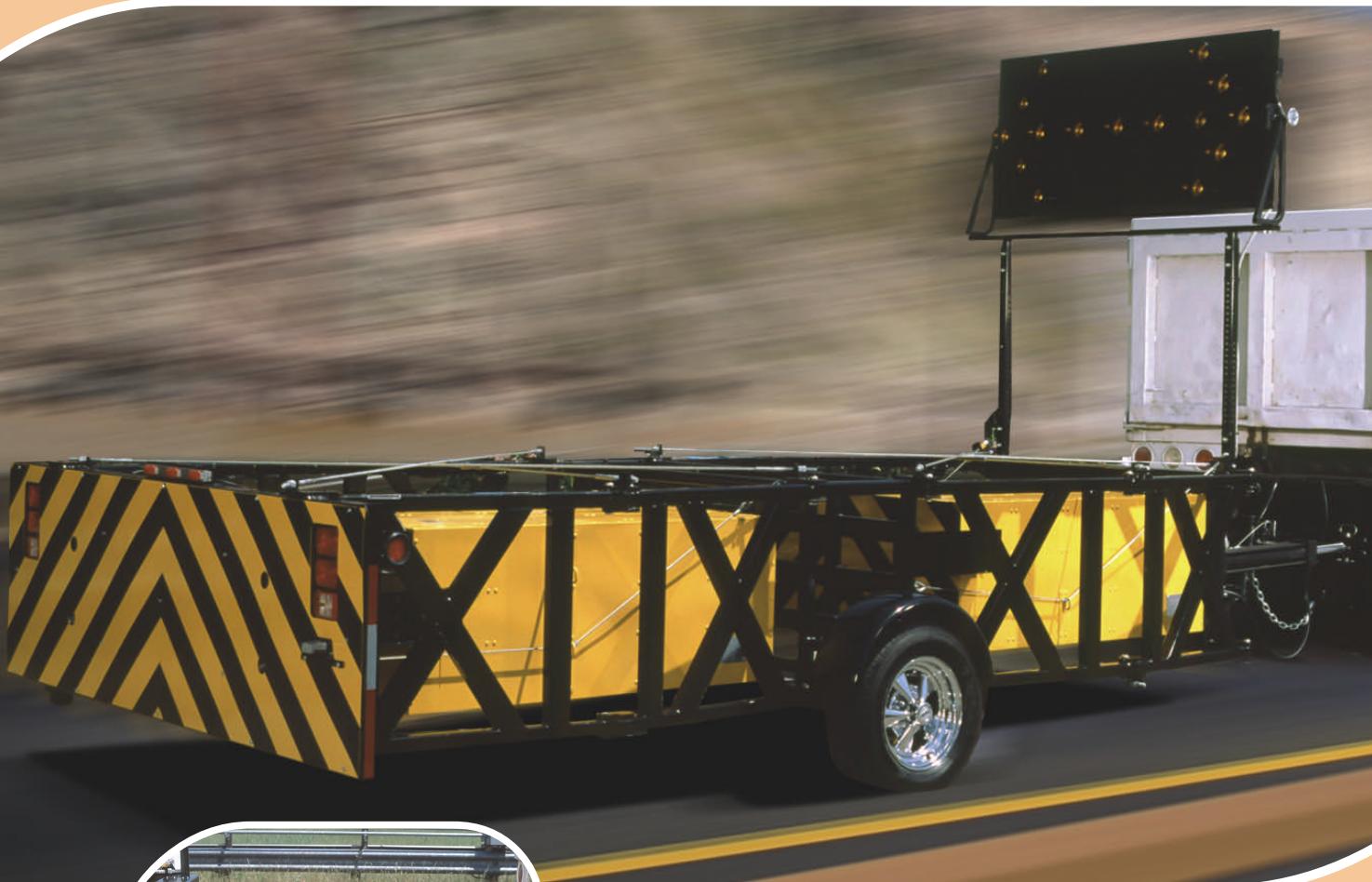
The variable transmission system in the CT 36-8A-V, CT 36-9-V and CT 48-13A-V walk-behind trowels provides an operating speed range from 20 to 200 rpm. A patented gyroscopic safety sensor, gearbox brake and engine limiter protect operators from runaway handles. The engine-rev limiter prevents the handle from getting away from the operator during restarts.

For more information, visit ConstructionEquipment.com/info



Construction Equipment (ISSN 0192-3978, GST #123397457, C.P.C. Intl. Pub. Mail #0360139) is published monthly by Reed Business Information, 8878 S Barrows Blvd., Highlands Ranch, CO 80129-2345. Reed Business Information is a division of Reed Elsevier and is located at 360 Park Avenue South, New York, NY 10010. Tad Smith, Chief Executive Officer; Jeff Greisch, President, Chicago Division. **Construction Equipment** copyright 2006 by Reed Elsevier Inc. All rights reserved. **Construction Equipment** is a registered trademark of Reed Elsevier Properties Inc. and Reed Business is a registered trademark of Reed Elsevier Inc. Periodicals postage paid at Littleton, CO 80126 and additional mailing offices. Circulation records are maintained at Reed Business Information, 8878 S Barrows Blvd., Highlands Ranch, CO 80129-2345. Tel:303/470-4445. **Postmaster: send address changes to Construction Equipment, P.O. Box 7500, Highlands Ranch, CO 80163-7500.** Rates for non-qualified subscriptions, including all issues: USA, \$99.90 1-year, \$177.90 2-year; Canada, \$151.90 1-year, \$257.90 2-year; (includes 7% GST, GST #123397457); Mexico, \$141.90 1-year, \$240.90 2-year; foreign surface, \$194.90 1-year, \$332.90 2-year; foreign air expedited surcharge add \$4.00 per issue. Except for special issues where price changes are indicated, single copies are available for \$10.00 USA and \$15.00 foreign. Please address all subscription mail to **Construction Equipment**, 8878 S Barrows Blvd., Highlands Ranch, CO 80129-2345. Printed in the USA. Publications Mail Agreement No. 40685520. **Return undeliverable Canadian addresses to: Deutsche Post, 4960-2 Walker Road, Windsor ON N9A 6J3 Email: submail@reedbusiness.com.** Reed Business Information does not assume and hereby disclaims any liability to any person for any loss or damage caused by errors or omissions in the material contained herein, regardless of whether such errors result from negligence, accident or any other cause whatsoever.

THE SST TMA



- **Complete NCHRP TL-3 Protection**
- **Speedy Attachment and Removal**

The Safe-Stop® Trailer (SST) TMA is an innovative new concept that is changing how TMAs are used around the world. The proven industry-leading Safe-Stop TMA is designed as an easy-to-attach and maneuver trailer, giving you the ability to rapidly deploy the TMA and maximize your truck fleet utilization. The SST has the widest range of host vehicle weights. It offers nuisance impact protection and has over 50% reusability after design impacts. The SST meets all standard and optional NCHRP 350 TL-3 test requirements and provides optimum TMA protection.

For more information, visit www.ConstructionEquipment.com/BS and enter 136.



ENERGY ABSORPTION SYSTEMS, INC.

WWW.ENERGYABSORPTION.COM

CONSTRUCTION EQUIPMENT

ELSPOT UR
ATTACHMENTS

1 877 433 5733

BIG BOULDER

IDEAL FOR:
- POLE BUILDING
- LIGHT POLES
- POLES

TIME SAVER

SAFE FOR:
- POURING LIQUIDS
- DUMPING WASTE

1 UNIQUE ROTATING BASE FOR ALL THESE TOOLS!

www.ezspotur.comFor more information, visit www.ConstructionEquipment.com/RS and enter 137

Minimize Your Operating Costs

The **Loegering Versatile Track System™ (VTS™)** can give you the best performance, most versatility and the lowest possible operating costs with the ability to change from tires to suspended rubber tracks as needed.

- Minimize machine depreciation
- Get the lowest track maintenance
- Maximize your current machine investment

The best way to see VTS on your skid steer is to demo one soon. Call now, or visit www.loegering.com for a dealer near you.

LOEGERING

800-373-5441

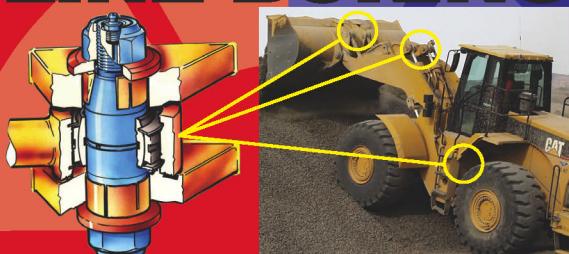
For more information, visit www.ConstructionEquipment.com/RS and enter 139

E-Z DOES IT...FOR YOU!

**MODEL 210B-2**

Service and support...more than a slogan—it's the way we do business. And we do it with a dealer network that can support you with rental units, parts, and other E-Z DRILL needs. E-Z DRILL and our dealers—a winning combination that makes it E-Z for you.

Contact us today.

E-Z DRILL*Setting the Standard for Concrete Drilling & Doweling*800-272-0121 Int'l 405-372-0121 www.ezdrill.comFor more information, visit www.ConstructionEquipment.com/RS and enter 138**NO MORE LINE BORING®**

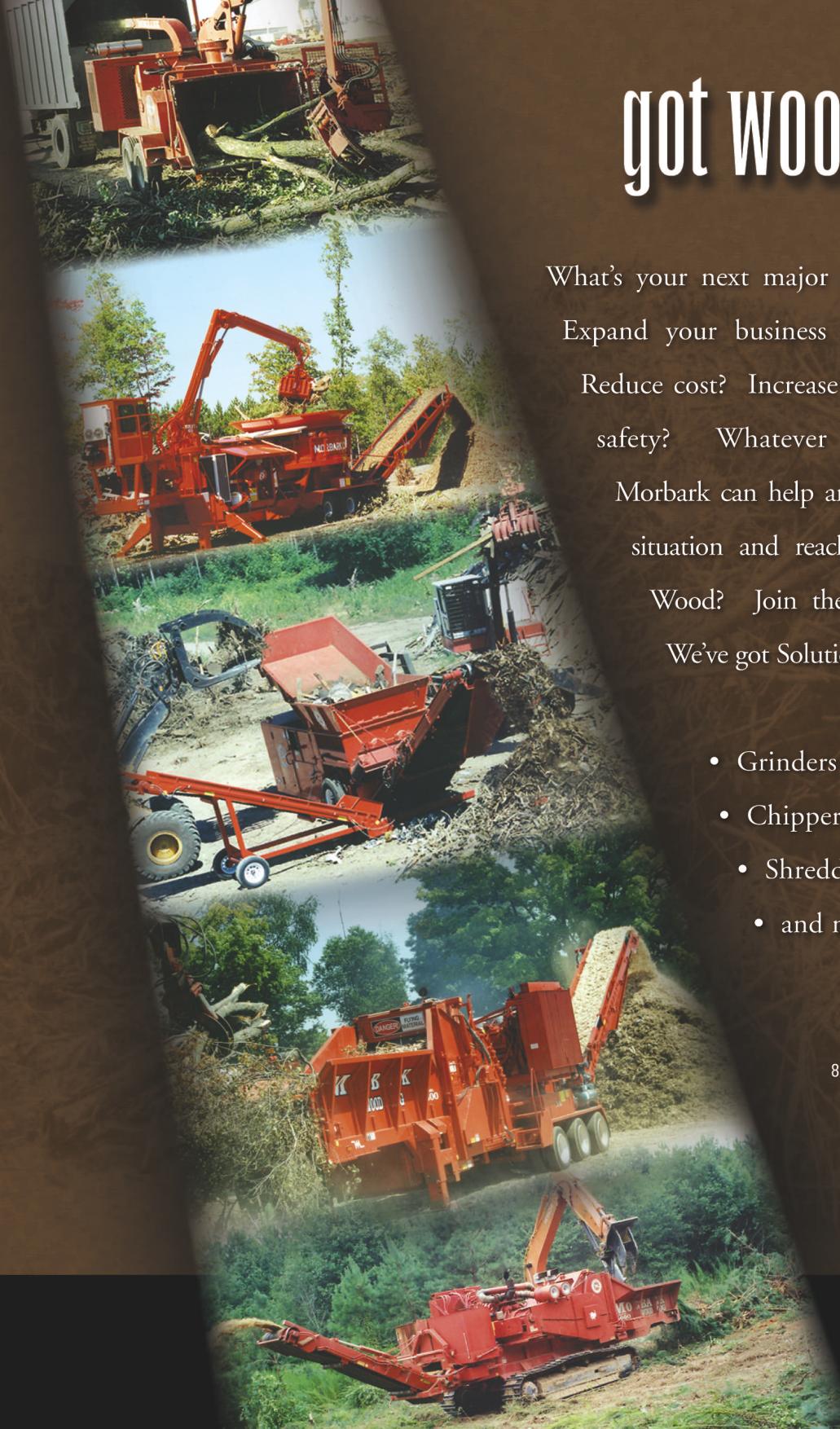
- No Future Repairs
- On Site Installation
- Down Time Minimized
- Stability Better Than New



Expander 888-935-3884
info@ExpanderSystem.com Fax: 888-935-3643
www.ExpanderSystem.com

For more information, visit www.ConstructionEquipment.com/RS and enter 140

got Wood?

What's your next major business decision?

Expand your business or market share?

Reduce cost? Increase profits? Enhance safety? Whatever your challenges,

Morbark can help analyze your current situation and reach your goals. Got

Wood? Join the Morbark Family.

We've got Solutions. Call us today!

- Grinders
- Chippers
- Shredders
- and more

800-831-0042 • 989-866-2381
www.morbark.com
inquire@morbark.com



For more information, visit www.ConstructionEquipment.com/RS and enter 141



ERSKINETM

ATTACHMENTS, INC.

A Legacy of Excellence Since 1948

UNIVERSAL SKID STEER/COMPACT TRACTOR ATTACHMENTS

Stop! Being controlled.

We promise freedom, independence and integrity.



Skid Steer Snow Blower

- **Industry Leader**
- **Experienced**
- **Quality**
- **Reliability**
- **Innovative**
- **Affordable**



Industrial Grapple Rake



6-Way Dozer Blade/
Grader/Leveler



Pick Up Broom



Power Angle Broom



Rotary Brush Mower



Tiller/Leveler/Soil Conditioner



Landscape Rake



Hydraulic Breaker

ERSKINE ATTACHMENTS, INC.

121 Bradley Blvd • Box 100

Erskine, MN 56535

sales@erskineattachments.com

www.erskineattachments.com



Call for Dealer Opportunities

1-800-437-6912

For more information, visit www.ConstructionEquipment.com/RS and enter 142

COMPUTER SOFTWARE

Earthwork & Utility Take-Off & Layout Software**GPS
Machine Control
Modeling**

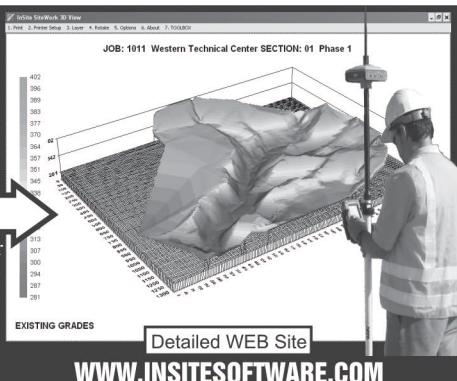
1(877)746-7483

InSite SiteWork™ combines ease-of-use with the most powerful estimating features available; Cut & Fill calculations from paper plans, CAD files, or a combination of both, detailed sanitary & storm take-offs. Verify and revise with the Dynamic Site Balancer. Negotiate your jobs with the most complete reports and highest quality graphics.

from CAD file (DWG) to finished take-off in 10 Minutes!

Use Field General® to generate construction staking data, or control your GPS/ robotic total station, and export surface data to GPS machine control.

InSite SiteWork™
A Start to Finish Earthwork Solution.™

**WWW.INSITESOFTWARE.COM**

**Ideas & Insight
for the
Equipment Pro**

**CONSTRUCTION
EQUIPMENT**

Coming in June:

Telehandlers Buying File

Welders Spotlight

Fleet Masters

Have you checked out ConstructionEquipment.com lately?

RECRUITMENT**Equipment/Fleet Mgrs.
Dealer/Manufacturer Mgrs.**

Send Resumes
Recruiters • Consultants • Trainers
Kelly Walker Associates 214-320-3006
Equip. Mgmt. Training Pubs. Avail.

Advertise Often!**USED REPAIR PARTS****USED REPAIR PARTS**

Wheel Loaders, Crawlers, Track Excavators,
Loader Backhoes, Skidders, Skid-Steer
Loaders, Engines & Transmissions

**Schaefer
Enterprises***"Rely on Our Experience - Est. 1967"*

800-626-6046 • 618-833-5498

www.sewlparts.com • parts@sewlparts.comP.O. Box 136
Wolf Lake, IL 62998**In a hurry?**

**E-mail your ad copy to: Mary Ade at
madee@reedbusiness.com**

MARKET YOUR PRODUCT OR SERVICE

- Computer Software
- Equipment/Used Equipment

- Parts & Services
- Recruitment

For more information contact:**Mary Ade**

630-288-8134

E-Mail:

madee@reedbusiness.com**2000 Clearwater Drive • Oak Brook, IL 60523 • Fax: 630-288-8185**

Ad Index

We're making it quicker for you to obtain more information on products. Visit www.ConstructionEquipment.com/RS and enter the Reader Service No.

| Company | Page No. | Reader Service No. | Company | Page No. | Reader Service No. |
|---|-----------|--------------------|---------------------------------|----------|--------------------|
| American Rental Association | 85 | 39 | Kent Demolition Tool | 81 | 36 |
| Astec Industries | 43 | 17 | Kenworth Truck | 49 | 19 |
| ASV | 36-37 | 15 | Leica Geosystems | 59 | 24 |
| Bell Equipment North America | 80A-80B | — | Liebherr | 69 | 28 |
| Bobcat Company | 6 | 3 | Lincoln Electric | C4 | 46 |
| Bomag | 33 | 13 | Loegering Manufacturing | 88 | 139 |
| Case | 20 | 9 | *Lojack | 77 | 33 |
| Caterpillar E-Series Backhoe Loader | 82 | 37 | Mack Trucks | 35 | 14 |
| *Caterpillar Delta Group | 41 | 21 | Morbark Industries | 89 | 141 |
| *Caterpillar Southeast Group | 95 | 43 | Multiquip | 68 | — |
| Ditch Witch | 26-27 | 12 | Mustang Manufacturing | 61 | 25 |
| Doosan Infracore Daewoo | 25 | 11 | NationsRent | 18-19 | 8 |
| Energy Absorption/ Quixote Transportation Safety | 87 | 136 | *NES Rentals | 30A-30B | — |
| Erskine Attachments | 90 | 142 | New Holland Construction | 17 | 7 |
| Expander Americas | 88 | 140 | *Paladin Light Construction | 41 | 22 |
| E-Z Drill | 88 | 137 | Pettibone | 70 | 29 |
| EZ Spot Ur | 88 | 138 | Power Pavers | 23 | 10 |
| Gradall | 45 | 18 | Ranco Trailers | 78 | 35 |
| Hertz Equipment Rental | 63-64 | 150-151 | SkyTel | 55 | 23 |
| Hitachi Construction Machinery | 96-C3 | 45 | Takeuchi Manufacturing (US) | 66 | 27 |
| Huskie Hydraulic Hammer | 84 | 38 | Terex | 9 | 4 |
| Hyundai Construction Equipment USA | 74 | 31 | Topcon Positioning Systems | 4-5 | 2 |
| International | C2-3 | 1 | Trimble Geomatics & Engineering | 10 | 5 |
| JLG Industries | 73 | 30 | *Verizon Wireless | 14A-4D | — |
| John Deere Construction Equipment | 12-13, 76 | 6, 32 | Volvo Construction Equipment | 53 | 16 |
| | | | Yanmar America | 93 | 42 |

* Regional/Demographic ad Publisher assumes no liability for errors or omissions.

Sales Representatives

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

IL, MI, WI, OH

Patricia E. Maroder, Regional Manager
630/288-8139; pmaroder@reedbusiness.com

IA, IL, MN, ND, SD

Mary Adee, Regional Manager
630/288-8134; madee@reedbusiness.com

East, Southeast, Eastern Canada

Michelle Lorusso, CBC, Regional Manager
630/288-8138; mlorusso@reedbusiness.com

Southwest, West, Western Canada

Terry McGinnis, Regional Manager
801/273-8790; Fax: 801/273-8799
tmcginnis@reedbusiness.com

UK/Europe/Middle East

Mike Hancock
Quadrant House, The Quadrant
Sutton, Surrey SM2 5AS, UK
Tel: 011 44 208/652 8248
Fax: 011 44 208/652 8249

Subscribe to **Construction Equipment** magazine online at www.getfreemag.com/ce

When Yanmar Offers More... Why Settle for Less?



The Compact Backhoe Loader Built For Professionals

The New Yanmar CBL40 offers:

• A durable and strong Single-Frame Chassis like that of a larger Backhoe Loader

- HMT Transmission
- Excavator Adapted Hydraulics
- Backhoe Dig Depth 10'0"
- Digging Force 5,800 lbs. at the Bucket
- Two Control Patterns
- Automatic Bucket Leveling
- Quick Coupler is Compatible with Loader
- Swivel Seat from Loader to Backhoe
- Removable Backhoe
- Optional Cat 1-3 Point Hitch

CONTACT US TODAY

For more information, visit www.ConstructionEquipment.com/RS and enter 42



Loader (2 Models)



Excavator (11 models)



Carrier (3 models)



Built For Professionals
YANMAR[®]

Yanmar Construction Equipment
101 International Parkway
Adairsville, GA 30103-2028
Ph 770-877-7570 Fx 770-877-7572
www.yanmar.com

Cline Off-Road Truck

A specialized coal hauler became the standard in Appalachian coal fields



In 1952, Max Cline started Cline Truck Manufacturing Co. in Kansas City, Kansas. Before that, he had been top salesman at Dart Truck Co. in the same city and felt the need for well-built, heavy-duty, no-frills vehicles for off-road earthmoving and other special applications.

With other personnel from Dart, the small new company quickly established a market for its vehicles, and in its first year of operation received an order for nine crane carriers. By the end of 1954, Cline had built more than 32 trucks for various applications. More designs followed, and in 1956 the St. Joseph Lead Co. ordered two 10-ton underground trucks, the first of many such orders.

Max Cline died in 1957, but truck production continued and sales expanded into different markets. Cline built single and tandem-axle vehicles and trailers to serve the logging industry, special slag haulers for steel mills, and sold vehicles to railroad companies featuring road/rail conversions.

In the 1960s, drill-rig carriers and coal haulers were the most popular company products. The 35-ton 6x4 coal hauler powered by a 380-hp Cummins NT-380 engine became almost a standard item in the Appalachian coal fields. Cline claimed its long chassis, three-axle design with 10 rubber tires on the ground lowered tire costs, increased stability on tight corners and enhanced safety at the dump. It also resulted in a lower loading height allowing wheel loaders to center the load properly. By the mid-1970s Cline coal haulers included rear

Cline's 50-ton coal hauler was offered with Detroit or Cummins power in the 420-hp range; it came with 6-speed power shift transmission and torque converter.

dump sizes from 12- to 65-ton capacity and tandem-drive tractors capable of pulling up to 90-ton wagons.

In the early 1970s, Cline enjoyed substantial sales of its rugged 50-ton tandem-drive coal hauler. Offered with Detroit or Cummins power in the 420-hp range, it came with 6-speed power shift transmission and torque converter. This truck was renamed the Isco IC-250C when Cline became a division of Isco Manufacturing Co. in 1972. During the Isco era, the range included rigid-frame dump trucks from 13- to 50-ton capacity, a 23-ton articulated dump truck, a tandem-drive tractor unit capable of pulling 90-ton wagons, and vehicles equipped with the patented "Ryd-a-Rail" conversion for road and rail use.

In 1979, the Cline name re-emerged under new owner T & J Industries, which kept the company until 1985. Since then, Cline Truck Manufacturing has operated as a division of C.B.T. Corp. C.B.T. discontinued building the trucks in 1993 but still rebuild and service older Cline trucks.

You can read more about the evolution of construction equipment in Keith Haddock's book "Giant Earthmovers an Illustrated History" available in most bookstores. Also, consider a membership in the Historical Construction Equipment Association, www.hcea.net. Be sure to visit ConstructionEquipment.com for past Iron Works features.



"WHEN OUR MACHINES AREN'T WORKING,
neither are we. Our Cat® Dealer shows us ways to improve maintenance practices and optimize hydraulic system performance. This helps us reduce total service costs, reduce downtime and maximize hydraulic system performance on the jobsite."

"Our Cat® Dealer helps us cut costs and downtime." SERVICE



SERVICE. We'll be there with the solutions you need throughout the life of your Cat machines. Call or stop by soon to find out all the ways we can help you get the most from your equipment.

Blanchard Machinery
www.blanchardmachinery.com
Serving South Carolina
Columbia, SC
800-922-2790

Carolina CAT
www.carolinacat.com
Serving Western North Carolina
Charlotte, NC
800-277-1212



Carter Machinery
www.CarterMachinery.com
Serving Virginia and
Southern West Virginia
800-768-4200

Gregory Poole
www.gregorypoole.com
Serving Eastern North Carolina
Raleigh, NC
800-451-7278

Thompson Tractor Co.
thompsontractor.cat.com
Serving Alabama
and Northwest Florida
Birmingham, AL
205-841-8601

Kelly Tractor
www.kellytractor.com
Serving Southern Florida
Miami, FL
305-592-5360

Ring Power
www.ringpower.com
Serving Central and
Northeast Florida
St. Augustine, FL
904-737-7730

Whayne Supply
www.whayne.com
Serving Kentucky
and Southern Indiana
Louisville, KY
800-494-2963

Stowers Machinery
www.stowerscat.com
Serving Eastern Tennessee
Knoxville, TN
865-546-1414

Thompson Machinery
www.thompsonmachinery.com
Serving Middle and Western
Tennessee and Northern Mississippi
Memphis, TN
901-332-3051

Yancey Bros. Co.
www.YanceyBros.com
Serving Georgia
Atlanta, GA
800-282-1562

CAT, CATERPILLAR, their respective logos and "Caterpillar Yellow," as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.

For more information, visit www.ConstructionEquipment.com/RS and enter 43

All Good Things Come in 3's

D A S H 3

Meet the New Zaxis Dash-3 from Hitachi.

IMPROVEMENT: ENGINE

Isuzu's Tier-III engines not only comply with all emissions standards, they now feature four-valve OHC and a new common-rail fuel-injection system. The results are up to 11-percent increased engine output, 6-percent increased torque, and 8-percent reduced fuel consumption. A strengthened cylinder block and ladder frame increase engine life.



IMPROVEMENT: HYDRAULICS

Hitachi's Dash-3 hydraulics are smarter and more responsive to bucket resistance. Multiple sensors instantly feed automatic micro-adjustments for increased hydraulic power to maintain steady, sure movements. Boom, stick, and bucket cylinders feature regenerative flow for faster down movements, extremely fine control, and multitasking.



IMPROVEMENT: CAB

A bigger, quieter, more accessible cab with improved legroom, more visibility, and an improved digital monitor system makes the Dash-3 excavator even more pleasurable to operate. The monitor provides quick access to the machine's performance history and diagnostics.



Faster, greater productivity, and more comfortable — three amazing ways Hitachi has raised the bar yet again in excavator performance.

Contact your local Hitachi dealer representative for information today!
Check us out online www.hitachiconstruction.com

HITACHI

ALWAYS | INNOVATIVE

For more information, visit www.ConstructionEquipment.com/RS and enter 43

New. Powerful. Durable.

0
0
4
e
Vantage

- Compact design with quiet 1800 rpm engine is an ideal choice for pipe rig owners, construction teams and rental fleets.
- Lincoln Chopper Technology® delivers 400 amps of great multi-process welding—Stick, TIG, MIG or Cored wire.
- Plenty of AC generator power for the most demanding job sites—19 kW of peak 3-phase and 12 kW of peak 1-phase power.
- Stainless steel corrosion-resistant roof and side panels provide maintenance-free protection and durability.

• Innovative Service Access includes large sliding engine access door, front panel-mounted battery drawer and latched, locking radiator access.

- VRD™ Voltage Reduction Device—reduced Open Circuit Voltage (OCV) in the CC-stick weld mode for added safety.
- Low Noise—99.1 dBA Lwa sound power (74.8 dB at 23 ft./7 m).

Ask your Lincoln distributor for a demonstration today.



AR06-1

Why buy anything else?

For more information, visit www.ConstructionEquipment.com/RS and enter 46

LINCOLN®
ELECTRIC
THE WELDING EXPERTS™

www.lincolnelectric.com