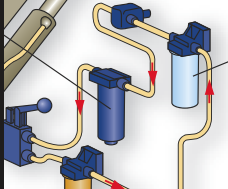


Reed Business Information®

**26** How to keep hydraulics in tune



**30** Peterbilt hybrid ready for urban markets



**35** A look at 18 mid-sized excavators



# CONSTRUCTION EQUIPMENT

February 2009  
ConstructionEquipment.com

Since 1949

Ideas and Insight for the

60<sup>TH</sup>  
ANNIVERSARY

## Compact Trio Hits the Field

Operator-trainers give Wacker Neuson's compact lineup a workout **p. 20**

RBI™

CLICK HERE TO

**RENEW**

your FREE magazine subscription

CLICK HERE TO

**START**

a FREE e-newsletter subscription





Equipment just keeps getting more complicated all the time. But I like what's been happening with onboard diagnostics. Our mechanics appreciate anything you can give us to help troubleshoot issues and decrease downtime. • I'd like a joystick steering option. The next generation of operators are all heading that direction anyway. Heck, who needs a steering wheel. • Fuel costs are killing us. So these loaders have got to be efficient. A lock-up torque converter might help that. • Monitors are great when you can see them. I've found glare to be an issue, so you've got to position the screen right — within my line-of-sight. Make it a decent size with large enough letters and numbers so I can read it. And I've gotta be able to see the gauges. • I've tried joystick steering. Works great for loading trucks, but it's pretty hard to control during load-and-carry. If you can get that right, I'll buy it. • All machines need maintenance. But not all loader manufacturers make it easy. The simpler the better. It's all about uptime, you know. • I've got trucks coming in all day. I flat-out need to produce — get 'em loaded and get 'em out. So I want a loader with fast enough hydraulics to keep up. • From pile to hopper — seems like we're up and down the ramp hundreds of times, all day long. Anything you can do to speed cycles and make us more productive is worth a look. • Whatever you can do to reduce operator fatigue is good. I'd think joystick steering would be ideal for production work. It'd be nice to not have to crank a steering wheel all day. • My boss is a real tickler about fuel usage. He doesn't like seeing machines sitting around idling. Heck, I've even seen him climb up in a cab and shut off the machine. He'd buy a machine with auto-shutdown. • I need to know how much material we load in a day and I have to know that we're not overloading our trucks. Onboard payload systems let me do that. • Seeing the bucket is one thing, but I've also got to see who else is around me. All-around visibility is just as important. • Nothing worse than charging a pile and coming up with nothin' because you can't get traction. I don't always work in ideal conditions, so a diff-lock that kicks in at the first sign of slippage is a must. • I don't want to reach and I don't want to stretch. The controls should be right there, and go with me when I move the seat, because I don't keep it where the last guy had it. • We run several different brands of loaders. With some, you have to crank up the radio to hear it. On others, you can't even hear yourself think. • Unless you run one all day like I do, you don't really appreciate a quiet machine. Makes all the difference in the world. • We have lots of equipment spread over a lot of jobsites. We lock the machines and all that, but everyone knows one key fits all. A keyless starting system with a pass code is something we'd use. • This is more than just a machine to someone like me — it's my office. When you're in a cab for 10 hours at a time a comfortable seat isn't just a luxury. • Would you buy a pickup with an uncomfortable seat that can't be adjusted? I wouldn't, and I don't want to sit all day in a loader like that, either. • Let me tell you something, in my business, out-of-sight can mean out-of-a-job. • You've already got a monitor in the cab. Why do you need two when you add a weighing system? • Rear cameras are nice, but why not give me an audible alert, too? That way I can keep my eyes on the mirrors. • I have a rearview camera on my car — why not my loader? You can cause a lot more damage backing into something with a loader than you can a car. And there are more obstacles on the jobsite. • A cycle counter to help me count loads would be nice. Right now I keep track on a notepad. I'm not excited about seeing dollars go out the exhaust while the machine's sitting idle. **think**



**Look what happens when we put your heads together.**

**Introducing the new K-Series Loaders.** When we set out to create the best production loaders in the business, we turned to the best *minds* in the business — yours. In fact, our K-Series is the result of hundreds of owner and operator suggestions. From efficiency-boosters like our auto idle/shutdown feature and available five-speed powershift transmission with lock-up torque converter, to our exclusive NeverGrease™ pin joints and easy-cleanout Quad Cool™ system for maximizing uptime. To see the result of your big thinking, visit your John Deere dealer today or call 800-503-3373. [www.JohnDeere.com/think](http://www.JohnDeere.com/think)





# Master of the multi-task.



**HONDA**  
GENERATORS

THE POWER OF CHOICE

With a Honda generator you've got power that tackles just about any project and never asks for overtime. Plus they're quiet, reliable and fuel-efficient. Exactly the kind of task-oriented worker you want on your jobsite.

For a free brochure or the nearest dealer, call 800.426.7701 or shop online at [gen.honda.com](http://gen.honda.com).

Please read the owner's manual before operating your Honda Power Equipment. Connection of a generator to house power requires a transfer device to avoid possible injury to power company personnel. Consult a qualified electrician. ©2009 American Honda Motor Co., Inc.

SHOP ONLINE



Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 2



# CONSTRUCTION EQUIPMENT

February 2009 • Vol. 112, Issue 2

## FEATURES

## DEPARTMENTS

**Editorial** 9  
Ready When It Turns Around

**Managers Digest** 15  
No space rate hike for AEM members

**Equipment Executive** 46  
Factors that affect the equipment rate

**Digital Digest** 61  
Watch Wacker's trio of earthmovers on  
[ConstructionEquipment.com/Digest](http://ConstructionEquipment.com/Digest)

## PRODUCTS

**Market Watch** 10  
This month's primary  
machine introductions



**Truck Report** 49  
Komatsu designs its latest  
electric-drive system with Siemens

**Truck Report** 50  
Navistar to use only its own  
diesels in 2010

**Market Watch Lite** 52  
Small solutions to jobsite challenges

Innovations & Ideas 56  
Classifieds 59  
Advertisers Index 60

## COVER STORY

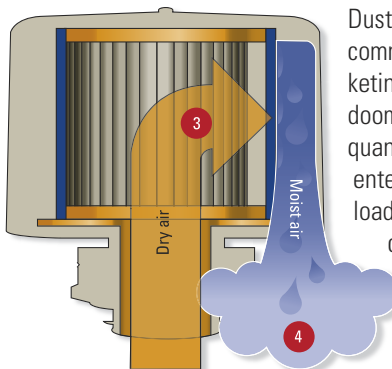
## 20 Move Site Materials Faster and Safer

Wacker Neuson now offers compact earthmovers including a unique line of all-wheel-steer wheel loaders and site dumpers, as well as a line of mini excavators. *Construction Equipment* gave the operators at the International Union of Operating Engineers Local 150 a chance to tell us what they think about the machines after putting them to work. Executive editor Larry Stewart says operators are impressed.



## PREVENTION ILLUSTRATED

## 26 Defend Your Hydraulics from Dangerous Contaminants



Dust, dirt, water, metal: What do they have in common? According to Doug Jahnke, product marketing manager at Eaton Hydraulics, they could all doom a piece of heavy equipment. Even in small quantities, if these seemingly innocuous particles enter the hydraulic fluid of an excavator, backhoe loader, or one of your other valuable machines, components such as pumps and valves could begin behaving erratically and shorten equipment life. Associate editor Andrew Baltazar explains not only the dangers of contaminants, but also the steps you can take to protect your equipment.





### HANDS-ON TRUCKING

## 30 Hybrid Drive Applied To a Dump Truck

The term "pickup & delivery" is associated with parcels, freight and beverages; not dirt, gravel, stone and all the other commodities hauled by a dump truck. But most dumpers operate in urban settings, where stop-and-go is a large part of their days. This is also where hybrid-drives offer the greatest fuel savings achieved by capturing braking energy and using it to relaunch the vehicles. Truck editor Tom Berg reports on Peterbilt's Class 7 Model 335 dump-truck chassis employing Eaton's electric system.

### BUYING FILE

## 35 'Mid-Sized' Excavator Depends on Who's Being Asked

In October, *Construction Equipment* wondered whether an equipment manager in search of a new 16,000-pound excavator is shopping for a "compact" machine. It depends, we concluded, on which brand you're looking at, because different manufacturers define in different ways their machines sized at or just above the official 13,200-pound "mini" threshold. As we look at the market offering in the 20,000- to 40,000-pound size range this month, the question still doesn't go away. Almost identically sized machines at the lower end of that range may be identified with different labels. Senior editor Mike Anderson tells you more.



### ConstructionEquipment.com

**Research Equipment Online:** When it's time to research your next machine acquisition, be sure to access the industry's most up-to-date specifications database. With new machines added monthly, ConstructionEquipment.com's Spec Check database ensures that you have the best and most accurate specs for your comparisons. Our archives of evaluations will provide additional insight.

All that, combined with our manufacturers and dealers database, gives equipment buyers the best online research tool on the 'Net. Visit today.



### SUBSCRIPTIONS

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](http://www.getFREEmag.com/ce)

### Celebrating 28 Consecutive Years of Editorial Excellence

- 12 Jesse H. Neal Awards
- 13 Robert F. Boger Awards
- 1 Godfrey Body of Work Award
- 52 Regional ASBPE Awards
- 19 National ASBPE Awards
- 10 TABBIE Awards

### Reed Business Information

Tad Smith: CEO; Jeff Greisch: President, Chicago Division; Dean Horowitz: Director, Construction Media; Iain Melville: Reed Construction Data CEO

 Reed Business Information.



# Recognize the name...

# Trust the quality



Excavators



Wheel Loaders



Dumpers

Enter 3, 4, 5 when you visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info)

## Introducing a new line of compact construction equipment

Wacker Neuson Corporation once again raises the bar with its new line of compact construction equipment. This new equipment line is sized right to get more work done in cramped jobsites and landscape applications. Very user friendly, each machine is designed to deliver strong and consistent performance while helping you lower your operating costs.

### Wheel Loaders

Four articulated models and two all-wheel steer models with bucket capacities from 0.26 – 1.1 cu. yd.

### Excavators

Seven models from 1.5 – 8 tons (including short and zero tail swing). Offering digging depths from 7'4" – 15'.

### Wheel Dumpers

Three all-wheel drive models with payload capacities of 0.69 - 4.2 cu. yd.

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



[www.wackerneuson.com](http://www.wackerneuson.com)

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 6



# WACKER NEUSON



# DEAD ON IN ONE PASS...

"I like the Trimble GCS900 because it gives me confidence that I'm dead on in one pass."

- Tony Pye, Malphrus Construction

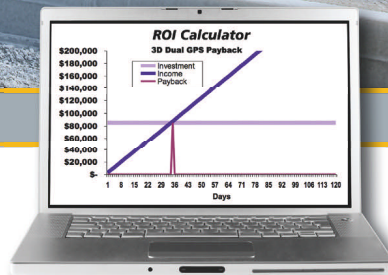
Find out more at [www.trimble-productivity.com](http://www.trimble-productivity.com)

One perfect pass. That's when you know drivers, machines and technology are making you money. How much time and material will you save with a Trimble 3D system? Your dealer can tell you with the Trimble ROI Calculator. Payback can be as short as 30-45 days... or even the first job. To stay competitive, talk to the Authority today.

**Trimble: The Construction Technology Authority**

Talk to your Volvo equipment dealer about Trimble Ready machines today.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 7



**Your Return on Investment**



[www.trimble.com](http://www.trimble.com)



## EDITORIAL STAFF

**Rod Sutton**, Editor in Chief  
630/288-8130; rsutton@reedbusiness.com

**Larry Stewart**, Executive Editor  
314/962-0639; lstewart@reedbusiness.com

**Mike Anderson**, Senior Editor  
519/986-1789; michael.anderson@reedbusiness.com

**Andrew Baltazar**, Associate Editor  
630/288-8087; andrew.baltazar@reedbusiness.com

**Katie Weiler**, Managing Editor  
630/288-8142; kweiler@reedbusiness.com

**Tom Berg**, Truck Editor

**Mike Vorster**, Contributing Editor

## PUBLISHING OFFICES

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

**Rick Blesi**, Publisher

**Dawn Batchelder**, Marketing Coordinator

**Bruce Ksiazek**, Director of Finance

**Karen A. Ruesch**, Production Director

**Joyce Simon**, Production Manager

**Allison Ternes**, Director, Audience Marketing

**Bill Patton**, Creative Director

**Michael N. Smith**, Senior Art Director

**Monina Tan-Pipilas**, Production Artist

## SALES REPRESENTATIVES

**Mary Adee**, Regional Manager  
630/288-8134; Fax: 630/288-8185  
madee@reedbusiness.com

**Emily Clay**, Regional Manager  
503/477-9222; Fax: 303/265-3929  
emily.clay@reedbusiness.com

**Michael Ostrowski**, Regional Manager  
630/288-8139; Fax: 630-288-8185  
michael.ostrowski@reedbusiness.com

**Jan Varnes**, Account Representative  
630/288-8143; Fax: 630/288-8185  
jan.varnes@reedbusiness.com

**Mike Hancock**, International  
Tel: 011 44 208/652 8248

## Spec Check: Spec-Check.com

**Bill Borthwick**, Manager Product Analysis  
**Mac Wilcox**, Manager Database

## REPRINTS

**Reprint Management Services**, Reprints  
**Lyndsay Bahn**, 717/666-3052  
constructionequipment@theygsgroup.com

## Ready When It Turns Around

In past years, the first quarter kept the industry bustling with trade shows. Not this year — for us or for the rest of the country. The first sign was last month during our trip through Chicago's O'Hare International Airport.

Even though a snowstorm canceled or delayed dozens of flights, we found short lines, plenty of places to sit and wait, and few people traveling.

Then, news started trickling in of equipment manufacturers pulling out of equipment exhibitions such as The Rental Show, World of Concrete, and In-termat. Official reasons typically centered on the economy. Some said they would redirect that investment to customer support and service — excellent news to many end-users who rely on OEMs and dealers for product support.

Another reason for pulling out may be that end-users simply are not buying. According to comments on our industry group at LinkedIn.com, Construction Equipment, purchasers are hesitant. For a manufacturer, that caution means fewer show attendees and a more difficult marketing sell as the return on investment in show space diminishes.

ROI in a down market becomes more important. Managers feel the tightened grip on the reins as all spending faces justification. In a market such as this, those reins are being held in a vise-grip.

As managers of fleets that represent a sizable portion of a business's capital investment, you're going to feel that grip tighten even more this year, at least in these upcoming months. The equipment operation's ROI will be scrutinized, but the last response fleet managers should consider is retreat.

Nobody will question a decision to not purchase a new machine. But a fleet must still be managed. Preventive-maintenance schedules must be maintained; fleet age must be balanced; rebuild/replace work must continue.

For more than five years, Mike Vorster has advised readers on the financial aspects of management; now may be a good time for review. And for alumni of our Construction Equipment Institute, we have a LinkedIn.com group for conversation with peers: Construction Equipment Institute.

Equipment fleets must be ready for work when the current crisis abates. And that's the return on investment that fleet managers must provide.



**Rod Sutton, Editor in Chief**

We welcome your comments.  
E-mail: [rsutton@reedbusiness.com](mailto:rsutton@reedbusiness.com)  
Fax: 630/288-8185  
Mail: 2000 Clearwater Drive,  
Oak Brook, IL 60523

Rod





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

## A summary of the month's primary machine introductions and model changes

By KATIE WEILER, Managing Editor



### Vermeer

To enhance plowing performance in muddy, loose or hard-pan soil conditions, Vermeer has introduced a steel-track version of its 120-horsepower quad-track utility trencher tractor. Differential locks allow the operator to provide full power to all four steel tracks of the Vermeer XTS1250. Other ground-drive features such as axle oscillation and front, rear and crab steering are also functional with the "aggressive" steel quad-track system, which already benefits from the quad-track system's relatively no "breakover" point. The XTS1250 is capable of pulling plow blades up to 42 inches and is equipped with a 5,000-pound-capacity reel carrier.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 179

### John Deere

Each equipped with a 93-horsepower Tier-3 engine, the 120D conventional and 135D reduced-tail-swing hydraulic excavators put that power to use with "pinpoint metering" via the Powerwise III engine and hydraulic management system. A power recirculation system delivers efficient flow to the boom and arm, speeding multi-function operation and cycle times. Three modes can be selected to match engine rpm to operating conditions. The new "E" mode for light-duty work reduces fuel consumption without sacrificing productivity, and the high-power "H/P" mode increases engine rpm to boost horsepower for working through tough spots.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 178



### Thomas

An upgrade and replacement for the 175 model, the Thomas 185 high-lift skid steer loader offers bucket height of more than 11 feet, dump height of more than 9 feet, and lift capacity of 1,850 pounds. With operating weight of 7,200 pounds and breakout force of more than 2 tons, it features a self-level valve control, operator hand controls and an engine sound-suppression system kit. Two in-line hydrostatic pumps provide the 185 with lifting, pulling and hoisting ability. The loader is powered by a four-cylinder, 59-horsepower Tier 3 engine and reaches travel speeds up to 8 mph.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 180



## ► Brokk

The radio-controlled Brokk 400, weighing nearly 10,600 pounds, has the greatest capacity and power in the demolition robot line. Carrying the 1,150-pound Atlas Copco SB 552 breaker, the Brokk 400 has a hitting power of more than 770 foot pounds. Brokk says that comparisons between the 400 with the SB 552 breaker and the model 330, which it replaces, with an AC 450 breaker, the larger machine proved 50 percent more productive. An electric motor powers the 400's hydraulic system to a maximum pressure of 3,143 psi and 34.3 gallons of flow per minute. A new quick-attach coupler allows quick exchanges with other tools such as concrete crushers, steel shears, scabblers, drills, and various buckets and grapples. Maximum dig depth is about 10 feet.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 181



## ► Caterpillar

The 345D L crawler excavator offers a 380-horsepower Cat C13 engine that increases the machine's horsepower by 10 percent, yet Cat claims the new machine uses about the same amount of fuel in tough digging and other hard duty as the C model it replaces. The main implement hydraulic pump has been redesigned and delivers 2 percent more flow. An electric regeneration circuit has been added to boost hydraulic efficiency and reliability. The 100,000-pound excavator offers undercarriage options that keep its overall width down to very transportable dimensions, yet it can be configured for heavy-duty production work in quarries as well.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 182

## ► Haulotte

Haulotte designed its HTL 90-45 (photo) and HTL 90-55 telescopic handlers, with capacities up to 9,000 pounds and lifting heights up to 54 feet 10 inches, to handle quick-attach accessories such as forks, toothless buckets, work tools, and side-mounted work tool containers. The four-wheel-drive telehandlers' lateral stability results from automatic locking of the deck oscillation, a progressive deceleration system for limiting reverse travel, and the lateral tilt corrector. Two forward stabilizers reinforce stability.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 183





## Market Watch



### Genie

Based on the lightweight and compact GRC-12 Runabout indoor aerial work platform, the GRC-12 Runabout Contractor offers two-person occupancy with a narrow profile to get more work done in a small amount of space. Designed to withstand the rigors of working on HVAC, electrical and other

applications in undeveloped indoor worksites, the Contractor is engineered with a steel platform and rails. The telescoping mast is encased in steel, giving it additional protection against worksite debris.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 184



### GreyStone

Fully portable self-erecting screen tower is positioned as an alternative to permanent or stackable screen supports. It uses a horizontal, vibrating three-deck wet screen and is recommended for sand, gravel and aggregate producers that move classifying equipment from site to site at least once per year. The tower takes less than two days to tear down and set up, and it can be moved via semi-tractor. It can act as a primary screen for 6-inch-minus material or secondary screen for larger material. It feeds material 3/16-inch minus into a classifying tank and stockpiles up to three sizes.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 185



### Taylor

The TX-4030 rigger truck, with its 132-inch wheelbase and rated capacity of 30,000 pounds at 36-inch load center, is built to lift heavy tooling used in factories. It is powered by a Tier-3-certified, six-cylinder engine at 160 horsepower. Accessing the truck's internal components is simple, thanks to the lightweight rolling engine hood, swing-away side doors, and tilting cab.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 186

### Liebherr

Introduced at Minexpo 2008, the 422-horsepower Liebherr PR 764 Litronic tractor boasts an operating weight of 52.5 metric tons, staking a claim as the world's largest hydrostatically driven crawler dozer. A Liebherr D9508 V8 diesel engine drives the machine by means of four variable-displacement pumps and engines, each in a closed circuit. Providing increased pushing power, tractive force and counter-rotation, the unit's hydrostatic driveline system has a particularly low center of gravity, thus making the machine safe to operate on steep slopes, says the company.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 187







**“In 13 years, we’ve bought 122 Case skid steers. We always buy Case because we can rely on them to perform in all conditions and there’s never an issue with parts. Plus, we can depend on our Case dealer to be there for us whenever we need something.”**

*Kevin Stone, Landscape Concepts Management*



# CASE GIVES YOU MORE.

You’ve always expected reliability out of Case skid steers and compact excavators, but we thought you deserved more. Our new **400 Series 3 line of skid steers** features Tier III-certified engines that deliver more horsepower and torque, while the redesigned cab offers more room, better visibility and ergonomically-designed controls. Our **compact excavators** deliver more power and faster cycle times, thanks to new Tier IV-certified engines. Easy access for daily checks makes maintenance simpler — giving you more uptime. Want more? With Case you get world-class service and 24/7 access to Case customer support. It all adds up. Case gives you more ways to be more profitable.

**SUPERIOR | RELIABILITY FUEL EFFICIENCY OPERATOR ENVIRONMENT SERVICEABILITY**

Isn't it time you added Case equipment to your fleet?

Contact your Case dealer for a demo today

[www.casece.com](http://www.casece.com) / 866-54CASE6

**CASE**  
CONSTRUCTION



# THE NEW VOLVO C-SERIES EXCAVATORS.



## BUILT FOR THE WORK YOU DO.

**MORE CARE. BUILT IN.**

The new Volvo C-Series Excavator...built for tough work. You need an excavator that is economical to own, tough, reliable, easy to service and extremely fuel efficient. The new Volvo C-Series excavator meets these – and more. From the moment you enter the ergonomic luxury of the Volvo Care Cab, reach over and start the powerful Volvo Tier III diesel with V-ACT technology, and then experience the instant response of its high-performance hydraulics, you will know that you are in control of a machine built for the work you do. A machine with the performance you demand – higher torque at lower revs for superior fuel efficiency...brute breakout force...faster cycle times. **The new Volvo C-Series Excavator. Setting new standards for performance. Built in.**

Volvo Construction Equipment

[www.volvoce.com/na](http://www.volvoce.com/na)

Financing and insurance solutions that really work. Contact your dealer or Volvo Financial Services at 877-865-8623 or [www.volvo.com/financialservices/na/en-us](http://www.volvo.com/financialservices/na/en-us).

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 9





## INDUSTRY EVENTS

### Welding Experts Encourage Technical Education Reform

Welding students, graduates of welding programs, and industry experts recently gathered with more than 100 Wisconsin high school counselors and educators in a “Career Horizons” symposium designed to inform attendees about the rewards of a career in welding.

A major goal of the symposium, sponsored by Miller Electric, Airgas, Miron Construction, and AZCO, was to encourage high school personnel to create partnerships with surrounding industries and businesses in order to improve technical education programs in their communities.

“I had no idea how many career pathways were available through a welding education until I became involved in this program,” says Larry Haase, principal at Menasha



Appleton West High School counselor Sandra VanBrunt had a blast plasma cutting her name out of a piece of sheet metal as a souvenir of the event.

High School. “We’ve all ascended through our careers by starting at step one, and a welding education can be a launching pad for a variety of careers in dozens of industries.”

## MANUFACTURER NEWS

### U.S. Air Force and Mack Trucks Partner on Hybrids

Mack Trucks delivered the first diesel-electric hybrid refuse truck to the U.S. Air Force Advanced Power Technology office.

The truck, called TerraPro, uses a hybrid electric power train comprising an integrated starter, alternator and motor to regenerate energy during braking and to help the truck’s 325-horsepower Mack MP7 engine provide torque to the wheels. As a result, fuel economy is improved by 20 to 30 percent.

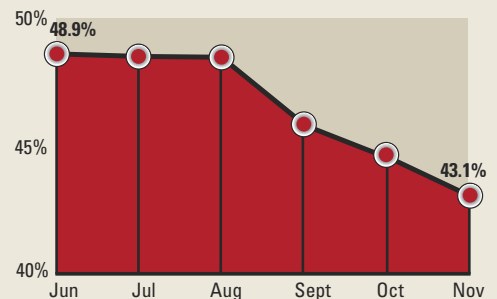
“The vehicles we’re producing under this partnership are a key stepping stone to offering commercially viable hybrid electric vehicles to our customers,” says Dennis Slagle, Mack president and CEO.



## USED EQUIPMENT

### November Values Fall 3.6 Percent

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



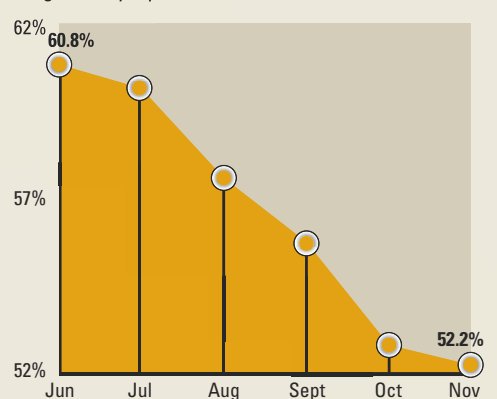
Note: Orderly liquidation value is expressed as a percentage of replacement cost (average cost paid for a new unit by large rental companies and dealers) for the average age of equipment within that category.

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

Declines in auction values continued to drive down orderly liquidation values in November, falling 2.8 percent from October. For the six months ending November, values were down 12.8 percent. Values for articulating-boom AWP's have fallen 18.1 percent in that time frame; skid-steer values are down 13.4 percent.

### Skid-Steer Loaders

(Avg. orderly liquidation value as % of cost)



Skid-steer-loader values have dropped 13.4 percent in the six months ending November, and average selling age is 54 months.



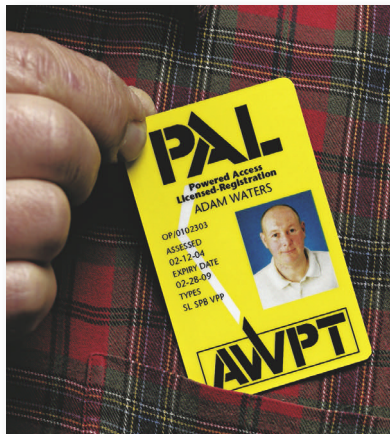
## SAFETY NEWS

### Safety Organization Ups AWP Certifications

The International Powered Access Federation in 2008 issued a record 81,378 Powered Access License Cards to operators who passed the aerial-work-platform training program at one of IPAF's 330-plus approved training centers. In 2004, IPAF processed just 43,007 PAL Cards.

"Training will grow steadily in 2009, as new markets and industrial sectors embrace the benefits of internationally recognized operator training," says Tim Whiteman, IPAF managing director.

According to IPAF, the training course usually lasts no more than



two days and covers both theory and practice of aerial-work-platform operation. Those who pass the course are awarded the PAL Card, which is valid for five years.

## TRAINING

### Electrical Repairs: Activity Is Not Necessarily Progress

*Here's a perspective on how to get the most from investments in electrical training. Shop supervisors need to adjust their expectations to suit the unique nature of electrical diagnostics and give trainees opportunities to build confidence using new skills.*

Electrical-system repair is most challenging because the ways you spend your time on electrical systems and mechanical systems are inverted.

Mechanical diagnoses are very often (not always) pretty fast. The hose blew, the cylinder head cracked, the bearings failed. Even

when it's not easy, you at least have a pretty good idea where to start.

So you start. You dig a little and the broken crank, or the metal shavings, or the water in the oil nails down the cause. The component is already coming apart and, while rebuilding it may be complex, you know what needs to be done and can estimate the time and cost to finish.

On a mechanical failure, diagnosis is generally about 10 percent of the job and repair is about 90 percent.

The reverse is generally true of electrical-system problems. Diagnosing most (not all) problems should

take a couple of hours or more, but when it's done right the repair usually only takes a few minutes. Reading the manual and schematic to figure out how the affected circuit works is critical to the process, and it does take time. Meanwhile, the shop supervisor and nearby mechanics are wondering why the mechanic "isn't working."

This pressure rushes too many mechanics through electrical diagnoses. People start getting torqued off when the parts changing drags on for a day or more, never realizing that if the mechanic had been allowed to concentrate on the re-

search first, odds are good that he could have finished sooner with greater confidence.

A supervisor's primary responsibility is to help those he supervises do their jobs. Sending mechanics to electrical-system training is a good start, but if the foreman reinforces that effort by offering the technician electrical work, supports the use of "slow" methods, and keeps other guys off his back, then there will be successes. Within a year or so, the man will have matured electrically and then, then things really begin to click.

— DAN SULLIVAN

[www.brighterideas.com](http://www.brighterideas.com)

## MANUFACTURER NEWS

### StarTrak Systems Buys Micrologic

StarTrak Systems, a leader in transport refrigeration monitoring and control, entered the market for wireless tracking and monitoring of construction equipment by acquiring MicroLogic. The 25-year-old Lowell, Mass.-based business is most notable for its technical development of the LoJack Stolen Vehicle Recovery System and engineering the LifeLine Personal Emergency Response System. More recently, MicroLogic began offering solutions to wirelessly monitoring equipment such as towable generators, excavators, bulldozers, backhoes, rock drills and cranes. The company currently provides data services to about 25 customers, tracking and monitoring over 1,000 machines, principally in the Eastern United States.





# AGGRESSIVE WHEN YOU WANT IT, GENTLE WHEN YOU NEED IT.

**Versatile Cat® Asphalt Compactors use proven technology that is easy to set up for any mix or application.**

Not every mix and application is the same, so your asphalt compactor should be versatile and easy to set up to match performance to ever-changing conditions. If it isn't easy to use, how can it be productive?

Cat® Asphalt Compactors get the work done on the breakdown pass, when the mat temperatures are higher and conditions are optimal for compaction. They are comfortable and simple to operate: high amplitude for aggressive compaction, low amplitude for gentle massaging. They match high paving speeds with high frequency, and low paving speeds with low frequency. Simple and reliable, with predictable density every time in minimal passes. No complexity and constant tweaking, as there is using "non-aggressive" compaction technologies; no hoping your density numbers will catch up on the intermediate or final pass.

Caterpillar is the market leader because we offer proven technology that makes turning a profit easier. Isn't that what technology is supposed to do? To get the real story on asphalt compaction, visit your Cat Dealer today.

[www.cat.com](http://www.cat.com)

**SAFELY HOME. EVERYONE. EVERYDAY. SAFETY.CAT.COM™**

CAT, CATERPILLAR, their respective logos, "Caterpillar Yellow" and the POWER EDGE trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission. ©2008 Caterpillar All Rights Reserved

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 10

**CATERPILLAR®**  
TODAY'S WORK. TOMORROW'S WORLD.™



## CORRECTION

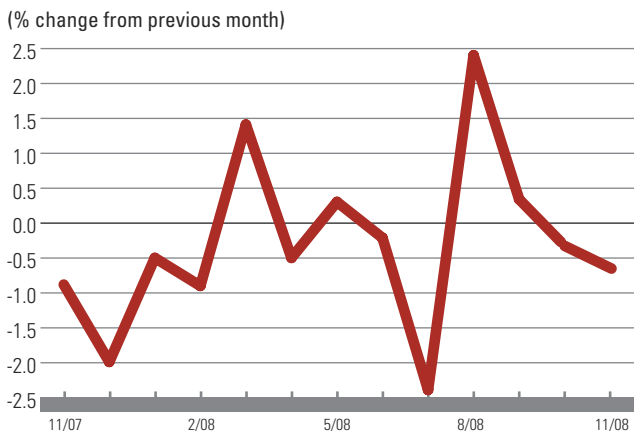
### IMT EDSC10 Service Truck Body

In our December Top 100 Products issue, page 29, we published the wrong photo of IMT's compact EDSC10 mechanics truck. Mounted on a Dodge or Freightliner Sprinter chassis, the EDSC10 is the lightest model in its class, addressing customer concerns about fuel economy and maneuvering in tight places. Pictured here is the correct photo. We regret the error.



## STATUS & FORECAST TOTAL CONSTRUCTION SPENDING

Total construction spending declined 0.6 percent in November from October, but construction volume may have increased because construction materials prices fell 3.2 percent. November's construction spending activity is inconsistent with November's 82,000 construction-worker layoffs, a 3.2 percent drop in materials production, and continued drop in project starts. The relatively strong spending is the last of the building boom momentum in power, highway and manufacturing facility projects. A sustained decline in spending is expected through next summer. For more analysis, visit our Economic Outlook at [ConstructionEquipment.com](http://ConstructionEquipment.com).



Source: U.S. Department of Commerce

## CONEXPO NEWS

### No Space Rate Hike For AEM Members

Member companies already facing the economic downturn won't get hit up for additional exhibit rates for the next Conexpo-Con/Agg trade show.

The Association of Equipment Manufacturers (AEM), in announcing a hold on space rates for members, says the approach will both help member companies manage their budgets more effectively in these times and increase their trade-show return on investment.

"Surveys have shown the value of marketing even in a downturn, and that trade shows are one of the most cost-effective ways to reach buyers ready to make purchasing decisions," says Megan Tanel, AEM vice president of exhibitions. "This rate hold is one way we can keep our members competitive in the marketplace."

"We operate our shows as a member and industry service. Making money is not the main objective."

Held every three years, Conexpo-Con/Agg broke records for attendance, exhibit space and educational opportunities in 2008. The next edition will be held March 22-26, 2011, at the Las Vegas Convention Center.

## WASTE WATCH

### Hazardous Aerosol Cans

Aerosol cans are considered reactive — they could explode — so they are hazardous waste," says Ed Buckner, environmental engineer in EPA's Region 7. "They should be collected in a drum with other hazardous waste, or you could puncture them and drain the contents. You would have to do a determination on the contents of the drum before disposal."



— LARRY STEWART



# EVERY<sup>TM</sup> PART. GENUINE.



Appearances can be deceiving, especially on critical parts for your engine. Close inspection between Genuine Cummins Parts and “will-fit” parts reveals dramatic differences in design, tolerances and materials. Differences that can result in early failure, unscheduled downtime and increased repair costs. Don't take unnecessary risks – make sure that every engine part you get is Genuine Cummins, every time. For parts and service information, see [quickservice.cummins.com](http://quickservice.cummins.com).





## Move Site Materials Faster and Safer

New Wacker Neuson site dumper and all-wheel-steer loader impress Local 150 operator instructors in the field



**Jeff Cromer**



**Dominic Ventura**



**Chris Tomblin**

**W**acker — a German company that has spent 50 years building a U.S. reputation supplying tampers, light towers and other light equipment — merged with Neuson in 2007, and the company renamed Wacker Neuson (pronounced like “noise-on”) now also offers compact earthmovers that have been marketed in Europe under the Neuson Kramer brand. The new offering includes a unique line of all-wheel-steer wheel loaders and site dumpers, as well as a line of mini excavators. *Construction Equipment* gave the professional operators at the International Union of Operating Engineers (IUOE) Local 150 a chance to tell us what they think about the machines.

A pair of other equipment brands has privately-labeled the Neuson Kramer excavators and wheel loaders for market here in North America for some time, but the site dumper — a staple on many European projects — is a relatively new entry to North America.

“In the U.K. and Spain, they’re used on every jobsite,” says Jay Baudhuin, Wacker Neuson’s product manager for compact equipment. “Sites are small and crowded.”

European contractors stack materials (crushed stone, fill, topsoil) in a remote location and shuttle it to the work face with site dumpers. Our friends from Local 150 were most impressed with what they tended to call a “little truck.”

“I’ve been on jobs where this would have come in handy,” says Jeff Cromer, an instruc-

tor with the IUOE Local 150 Apprenticeship and Skill Improvement Program. He described the example of setting in-floor ventilation for a big tilt-up building that would become an auto auction facility. Spoil from the trenching had to be moved outside, and after the duct work was in place, the excavations had to be back filled — one backhoe-loader bucket at a time — with stone from stockpiles in the parking lot.

“Usually when you’re working inside like that you’re digging with a backhoe and just laying the dirt right on the stone that’s already been spread for the pours,” says Chris Tomblin, another of the Local 150 instructors helping evaluate the Wacker Neuson machines. “You have to come back and scoop up the spoil without wasting stone. Why do that when you could dig right into this (the dumper) and haul it right out?”

The 84-horsepower 6001 site dumper that Wacker Neuson brought to Wilmington, Ill. (home of Local 150’s, operator-training facility), is 7 feet 3 inches wide, so it will carry 6 metric tons (13,200 pounds) through loading-dock doors (height is just over 10 feet with the folding ROPS erected — 7 feet 7 inches to the top of the seat when the roll bar is folded).

“It surprised me how well it got around,” says Cromer. “Power was great, even in the high range. At the low end it was really strong. Running in the mud, I was in the high side and it didn’t bog down.”

“I thought you could get anywhere with



## Wacker Neuson Test Set

Three instructors from IUOE Local 150 spent a day trenching, loading and hauling with three Wacker Neuson compact earthmovers to evaluate the units.

### 6001 Dumper

#### Payload Gross Horsepower

13,200 lbs. 84



**PRO:** Capacity, spreading ability, maneuverability

**CON:** Lacks cab

**RATING:** ★★★★★

### 850 Loader

#### Operating Weight Net Horsepower

9,921 lbs. 60



**PRO:** Stability, maneuverability, power, comfort

**CON:** Lacks bucket-level indicator

**RATING:** ★★★★★

### 8003 Excavator

#### Operating Weight Max. Dig Depth

16,810 lbs. 14' 1"



**PRO:** Comfort, solid footing, backfilling ability

**CON:** Parity among many competitors

**RATING:** ★★★★★

Photos: George Ploetner



# Hands-On Earthmoving



Photos: George Ploetner

**The 6001 Site Dumper is maneuverable and powerful enough to climb over dirt piles with more than 4 cubic yards of material on board, and stable enough to dump material from uneven underfoot conditions.**

it that you would want to go,” says Tomblin. “You can drive up over the pile and dump, and not have to worry about being stable enough.”

“You’ve got the dump box right in front of you so you can see if it’s level or not before you dump it,” says Cromer, “which is an advantage in terms of stability.”

The 6001 is hydrostatic, with two-speed drive motors and a top speed of 15.5 miles per hour. Power comes from a four-cylinder, water-cooled Duetz TD2011 diesel. The dumper is built in Austria, in the same plant as the Wacker Neuson excavators. The company also builds 1- and 3-metric-ton models that are marketed here in North America. The 6001 site dumper has few direct competitors here except the Terex PS6-AWS and Coyote D70.

Not just any small articulated dump truck can compete with these site dumpers. A key feature allows the dump bed to swivel 180 degrees, 90 degrees left and right of center, so it can dump to either side of the machine. The dump-body lip is 3 feet 6 inches high when the body is raised to full tip.

“You can just turn that bed to the side and

drive to spread stone,” says Dominic Ventura, the third of Local 150’s instructors to lend a hand in our evaluation. “It’s not like a skid steer where you dump a bucket and you have to go get more material — through the door and out to the parking lot. Instead of one skid steer bucket you’ve got, what, 10 on that truck? The plumbers will love it.”

“With the bed swiveling the way it does, you could just load your stone, drive right up next to a trench, turn the bed toward the trench and dump the stone right in,” says Tomblin.

The 6001 is the largest of the Wacker Neuson site dumpers marketed in North America. There’s a 9-metric-ton model with a cab in Europe.

“I can’t think of a negative other than I would put a cab on it, not only for weather conditions but for safety reasons also,” says Tomblin of the 6001. “You’re kind of close to the hopper. For safety reasons, a cab would work out better, so the operator doesn’t have to get off the machine when it’s being loaded.”

At press time, pricing was still being worked out amidst the roiling economy and the shifting value of the dollar relative to the Euro, but the 6001 is expected to list for about \$50,000.

We asked Wacker Neuson to bring its 850 all-wheel-steer wheel loader for local 150 to evaluate because the 9,900-pound machine with a 1.1-cubic-yard, general purpose bucket, is a good match for loading the 6001 site dumper’s 4.2-cubic-yard box. All-wheel steer gives the loader an edge that rivals the dumper’s uniqueness. There are many compact wheel loaders on the market, but only the Kramer-designed Wacker Neuson 280 and 850 — offer coordinated all-wheel steer.

The crucial difference between an all-wheel steer loader and a conventional articulating wheel loader is stability. When a machine articulates, its center of gravity moves left or right of its centerline. That’s why articulated wheel loaders are rated with two tipping loads — one with the frame straight and another, lower rating with the frame articulated.

“The nice thing about this (the 850



loader) is that you can fill up your bucket and go make a turn on that slope,” Baudhuin said, pointing to a berm in the Local 150 arena at one point during our conversations with the instructors.

Before we knew it, Ventura was behind the wheel of the loader, filling the bucket and heading for the berm. With some trepidation, and Baudhuin’s assurance that he would assume responsibility for anything that might happen to the loader, Ventura drove straight up the berm, turned as tight as the stereo steering would allow, and came straight back down.

Later, again at Baudhuin’s urging, Ventura raised a full bucket to the top of the loader’s reach and spun the machine quickly in tight circles. He locked the brakes to finish the final turn with a flourish.

“I can’t believe the stability of that loader,” says Ventura, noting that even in these tip-defying maneuvers, “it doesn’t even get wobbly. Landscapers who are bringing trees up berms or carrying sod pallets — they could really use it.”

“With an articulated loader, when you turn and raise the bucket, it wants to tip over one tire or the other,” says Tomblin. “You don’t get that with this little machine. It’s stable in any direction you turn. And you can turn on a dime.

“It digs really well, too,” says Tomblin. “I thought it had very good power. To be operator friendly, though, it needs to have some kind of a gauge on it to tell you if that bucket’s level or not.”

“Because if you tilt that bucket down she’s gonna dig,” Ventura adds. “I dropped the teeth in the ground and blew right across the arena in the high range — no sweat.”

Only Bobcat’s A300 all-wheel steer loader offers the same kind of all-wheel steering, which mimics all-wheel steer that has become common on telehandlers and other specialty machines. But the A300 is a skid steer with a static tipping load about 1,000 pounds less than that of the Wacker Neuson 850.

“Our original concept with the loaders was to go after skid steers — not to replace all skid steers, but 10 to 15 percent of applica-



tions are better served by wheel loaders,” Baudhuin claims. “One of our key selling features is that, with skid steers, you’re always spinning on the tires, so you’re going to have tire wear. Tires are expensive. Trying to outfit a skid steer with new tires, you’re talking \$3,000 or \$4,000. We have users of our all-wheel steer loaders in Europe who have gone as long as 3,000 hours on a set of tires.”

Baudhuin points out that steering around corners, rather than skidding, not only saves tire rubber but also does less damage to the surface and uses less fuel. Added ground clearance and tire size also makes the wheel loader more maneuverable in extreme underfoot conditions.

Baudhuin also suggests that the wheel loader is inherently safer than a skid steer, not requiring operators to climb over the attachment to reach the seat, and offering clearer sight lines to the ground all around the machine. The steering wheel and foot throttle also make the loader easier for novices — such as renters — to operate.

In a market replete with able competi-

**The 8003 impressed our operators with its large-excavator comfort features. The 8-metric-ton, swing-boom excavator digs more than 14 feet deep, and it is powered by a 69.5-horsepower Yanmar.**



# Hands-On Earthmoving



**The 850 all-wheel steer loader remained stable throughout its tightest turn on the side of a 40-percent slope with a loaded bucket. Our operators could also confidently spin the loader in tight circles with a load raised high overhead.**

tors, Wacker Neuson turns to capability, durability, and operator comfort to distinguish its excavators. The 8003 brought to Wilmington — an 8-metric-ton-class excavator (actually 16,810 pounds) in its third generation — exceeds the Association of Equipment Manufacturers' 6-metric-ton cutoff for mini excavators, but is nevertheless considered a mini excavator by the Local 150 instructors and most industry observers.

Baudhuin points to durability features including an X-shaped carbody, like full-sized excavator frames; steel pins and bushings in the boom, stick and bucket joints; hydraulic lines routed out on top of the boom and protected all the way down to the bucket.

"We call our blade a dozer blade, not just a cut-down blade," says Baudhuin of the excavator's 9-foot-7-inch blade. "And if you look at the welding of it, you can tell the quality."

Our evaluators had little to say about weld quality, but after backfilling a stretch of trench with the excavator, Cromer said, "it's got a pretty good track base under it — it doesn't rock around much, which is good."

Wacker Neuson markets another series of excavators with the letter Z in the model designations representing zero-turn-radius ma-

chines. But the house on even the non-Z models like the 8003 overhangs the track width only minimally.

"Most of that is because of how we've placed the engine transversely beside the cab," says Baudhuin. "By doing that we've also maintained a larger operating station."


"A lot of times you get so cramped in your mini excavators, but this one was actually pretty comfortable," says Cromer, who values some of the large-excavator comfort features in the 8003. "It surprised me a little that you could adjust the armrests and adjust the seat. A lot of them don't come with those options, or maybe don't have armrests at all."

"I could see working in there eight hours," Tomblin adds. "The cab was plenty big."

The 69.5-horsepower 8003 digs just over 14 feet deep with a 6-foot-1-inch stick. A swing boom allows it to trench parallel to the tracks offset from the machine's centerline, alongside foundations, fences or other barriers.

The Wacker Neuson compact line represented by the 6001 site dumper, 850 loader, and 8003 excavator impressed our panel of operating instructors at Local 150. The site dumper and all-wheel-steer loader stole the show because of their unique capabilities.

Although the Wacker Neuson line of compact earthmovers is new to North America, the machines come with a great deal of field experience. Wacker celebrated its 50th anniversary in the United States in September, but the company was founded 150 years ago in Germany. Neuson is new to North America, but has been making equipment on the other side of the Atlantic for more than 40 years.

"None of these are new," says Baudhuin of the compact earthmovers. "They're all proven designs that have been running in Europe for years." 



Watch Video

See video on how the Local 150 instructors tested Wacker Neuson's compact earthmovers, and the results of pressing their stability limits. Watch the video at [www.constructionequipment.com/article/CA6625481.html](http://www.constructionequipment.com/article/CA6625481.html).



You think it.  
We'll help you do it.

## Introducing the Hyundai 9 Series Excavator

We know what you're thinking. You need to do more for less. The new **Hyundai 9 Series** was built to do just that. Think proven, industry-leading fuel efficiency. Think improved hydraulic technologies for an edge over the competition. Think added value for your dollar. That's the new Hyundai 9 Series Excavator.

When you think efficiency – Think again. **Think Hyundai.**  
Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 12



**Think**  
EFFICIENCY



We build a better future

**Think**  
AGAIN

Get the **best** warranty in the industry:  
**Hyundai's 2-year / 2,000-hour warranty**

Totem Equipment  
907-276-2858 | Anchorage, AK  
Pittman Tractor Co. Inc.  
251-621-3555 | Daphne, AL  
Forestry 21 LLC  
334-864-7250 | Lafayette, AL  
Equipment Resource Manag.  
501-223-8604  
North Little Rock, AR  
Rick Albert Machinery  
510-504-5086 | Anioch, CA  
TLR Equipment Co.  
949-558-4711 | Irvine, CA  
Mascon Equipment  
208-468-5135 | Stockton, CA  
Century Equipment Co. Inc.  
970-434-7363 | Clifton, CO  
970-247-0522 | Durango, CO

Rueter's  
303-287-1361 | Henderson, CO  
Kahn Tractor and Equipment  
860-642-7506 | North Franklin, CT  
Wesco, Inc.  
203-847-2496 | Norwalk, CT  
Folcomer Equipment Corp.  
302-349-5760 | Greenwood, DE  
M.D. Moody and Sons, Inc.  
229-334-1080 | Fort Myers, FL  
US Shoring & Equipment  
904-693-3404 | Jacksonville, FL  
407-888-0154 | Orlando, FL  
954-674-1120 | Pompano Bch, FL  
US Shoring & Equipment  
813-662-3723 | Tampa, FL  
Nasser Heavy Equipment  
770-889-5004 | Cumming, GA

Stafford Equipment  
912-384-4400 | Douglas, GA  
Nasser Heavy Equipment  
770-885-6863 | Lawrenceville, GA  
Grove River  
912-756-7054 | Richmond Hill, GA  
Stafford Equipment  
229-382-4400 | Tifton, GA  
229-247-4495 | Valdosta, GA  
Nasser Heavy Equipment  
678-941-1100 | Villa Rica, GA  
Central Equipment  
208-233-2850 | Pocahontas, ID  
Rueter's  
515-298-0939 | Ames, IA  
712-792-9294 | Carroll, IA  
712-366-5221 | Council Bluffs, IA  
515-738-2521 | Grand Junction, IA  
515-727-5221 | Johnston, IA

Dunmire Equipment  
309-527-6300 | El Paso, IL  
Borris Equipment Company  
815-494-6650 | Frankfort, IL  
815-363-4100 | Ingleside, IL  
Diamond Equipment  
618-242-2273 | Mt Vernon, IL  
Borris Equipment Company  
847-336-1205 | Waukegan, IL  
Diamond Equipment  
812-425-4429 | Evansville, IN  
812-289-4747 | Terre Haute, IN  
Newman Equipment Inc.  
317-781-8100 | Indianapolis, IN  
Hardings Inc.  
219-686-8811 | Lowell, IN  
Diamond Equipment  
270-781-1061 | Bowling Green, KY

Victor L. Phillips Co  
620-275-1899 | Garden City, KS  
785-267-4345 | Topeka, KS  
316-938-3346 | Wichita, KS  
State Machinery and Equipment  
504-484-0431 | Kenner, LA  
Four Seasons Equip. of LA  
337-626-8000 | Sulphur, LA  
Baker Tractor Equipment  
508-379-3673 | Swansea, MA  
Folcomer Equipment Corp.  
410-575-8580 | Aberdeen, MD  
410-247-7454 | Baltimore, MD  
800-951-2550 | Fredrick, MD  
301-627-3838 | Upper Marlboro, MD  
Wallford Equipment Co.  
207-782-4886 | Auburn, ME  
T B Equipment & Rental  
207-262-0014 | Bangor, ME

Road Machinery & Supplies  
952-895-9585 | Iron Mountain, MI  
Midland Engine  
989-631-4600 | Midland, MI  
St. Joseph Equipment  
763-287-4474 | Elk River, MN  
218-727-3038 | Hermantown, MN  
507-288-3402 | Oronoco, MN  
852-445-5401 | Shakopee, MN  
Victor L. Phillips Co  
417-887-2729 | Brookline Stn., MO  
Victor L. Phillips Co  
417-781-8222 | Joplin, MO  
816-241-9290 | Kansas City, MO  
Hayden Equipment  
636-456-5252 | Warrenton, MO  
Mid South Machinery  
228-867-1555 | Gulfport, MS  
601-948-6740 | Jackson, MS  
662-680-6553 | Tupelo, MS

Westco Machinery  
406-254-2106 | Billings, MT  
Stafford Equipment  
704-333-0786 | Charlotte, NC  
Rob's Hydraulic Inc.  
252-752-1500 | Grimestand, NC  
Chappell Tractor East  
603-642-5866 | Brentwood, NH  
603-673-2840 | Milford, NH  
GBH Service  
973-383-3370 | Newton, NJ  
Tracey Road Equipment  
315-788-0200 | Adams Center, NY  
518-438-7636 | Union City, PA  
607-775-5810 | Kirkwood, NY  
George & Swede Sales & Ser.  
585-984-3425 | Pavilion, NY  
Pine Plains and Equipment, Inc.  
518-398-7107 | Pine Plains, NY

Tracey Road Equipment  
315-437-1471 | Syracuse, NY  
The Mclean Company  
330-655-5800 | Hudson, OH  
Borris Equipment & Supply Inc.  
810-663-7032 | Tolso, OK  
Oregon Tractor & Equipment  
503-282-7211 | Portland, OR  
Oregon Tractor & Equipment  
541-679-6211 | Roseburg, OR  
Katerlin Sales and Service, Inc.  
814-438-7636 | Union City, PA  
Highway Equipment  
724-452-7800 | Zelienople, PA  
Midlands Machinery  
803-438-9352 | Lugoff, SC  
Chuck Mason Equipment  
423-825-3801 | Johnson City, TN  
865-637-8682 | Knoxville, TN

Diamond Equipment  
615-641-1100 | La Vergne, TN  
Alvin Equipment  
281-331-3177 | Alvin, TX  
Four Seasons Equipment  
214-388-1700 | Dallas, TX  
281-807-4777 | Houston, TX  
Century Equipment Co. Inc.  
435-586-4406 | Cedar City, UT  
801-282-5761 | Salt Lake City, UT  
801-794-1463 | Spanish Fork, UT  
Stafford Equipment  
804-786-4500 | Ashland, VA  
Jay City Equipment  
360-675-4441 | Oak Harbor, WA  
St. Joseph Equipment  
705-847-3606 | New Liskeard, ON  
705-525-4695 | Sudbury, ON  
807-476-1400 | Thunder Bay, ON  
RPM Tech | 450-285-1811 | Sante, PO  
RPM Tech | 450-837-3280 | Laval, PQ

Century Equipment Co. Inc.  
307-382-6570 | Rock Springs, WY

CANADA  
Yellow Tractor Works Inc. | 780-413-1740 | Edmonton, AB  
C.E.M. Equipment Ltd. | 403-223-4683 | Taber, AB  
Woodland Equipment  
258-372-2855 | Kamloops, BC  
250-561-2450 | Prince George, BC  
K4 Equipment | 204-257-4767 | Winnipeg, MB  
ALPA Equipment  
506-826-2717 | Balmoral, NB  
506-452-9810 | Edmundston, NB  
506-826-2717 | Fredericton, NB  
Grant Equipment  
705-847-3606 | New Liskeard, ON  
705-525-4695 | Sudbury, ON  
807-476-1400 | Thunder Bay, ON  
RPM Tech | 450-285-1811 | Sante, PO  
RPM Tech | 450-837-3280 | Laval, PQ



## Defend Your Hydraulics from Dangerous Contaminants

Without effective hydraulic filters, breathers and seals, big machines are no match against small particles

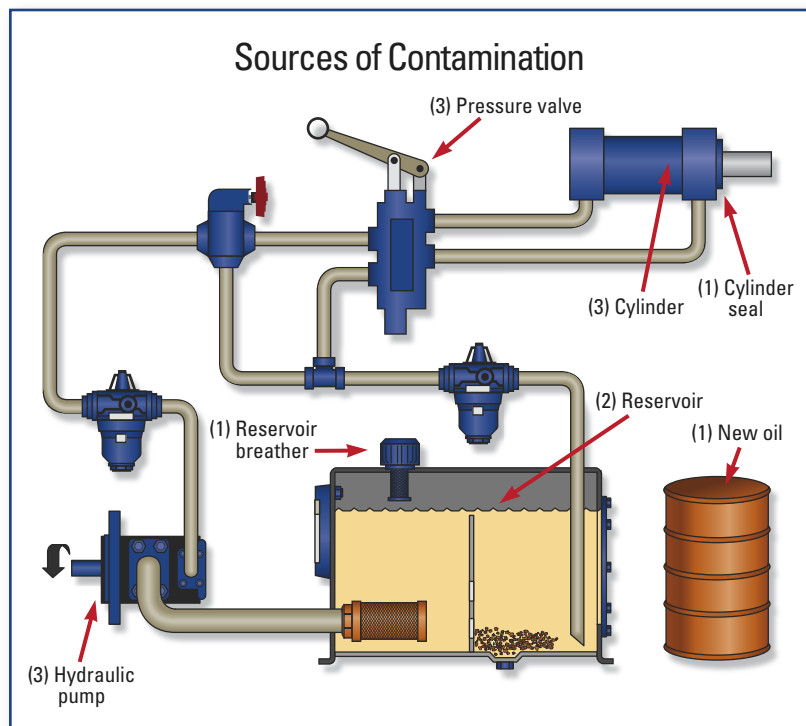


Illustration adapted from Eaton graphic.

**D**ust, dirt, water, metal: What do they have in common? According to Doug Jahnke, product marketing manager at Eaton Hydraulics, they could all doom a piece of heavy equipment. Even in small quantities, if these seemingly innocuous particles enter the hydraulic fluid of an excavator, backhoe loader, or one of your other valuable machines, components such as pumps and valves could begin behaving erratically and shorten equipment life.

There are three types of hydraulic failure. Catastrophic failure occurs when a large particle enters a pump or valve causing a vane to jam. Intermittent failure happens when contaminants sometimes settle on a poppet valve, preventing it from closing. Degradation failure is usually the result of abrasive wear, corrosion or surface fatigue on a component. For instance, when particulates get in between the clearance of the surfaces of a moving pump, they can rub up against the surfaces causing stress and cracks and even breaking parts of the pump into metallic particles.

“Because the metal is hard, it potentially could cause more abrasion and seriously damage a pump,” says Jahnke. “If the pump is operating at high pressures and high speeds, the metal particles could quickly cause it to go bad.”

Contaminants invade a hydraulic system in a number of ways. During the manufacturing phase of, say, a skid steer, the hydraulic

- (1) **INGRESSED:** When particles enter the hydraulic system from the outside, they are called ingressed contaminants. Contaminants enter via inadequate reservoir breathers, faulty cylinder seals, or already-contaminated new oil.
- (2) **BUILT-IN:** During the assembly process, the hydraulic system sometimes is improperly flushed before the machine is sold. This could mean that contaminants are already inside the reservoir, components, or fluid conductors when you buy the machine.
- (3) **GENERATED:** Corrosion of components and movement of pumps, motors and cylinders can create harmful metallic particles inside the hydraulic system. If left unfiltered, a chain reaction could occur in which generated contaminants interact with components' moving parts and break the surface into more metallic particles.



## How Contaminants Cause Abrasive Wear

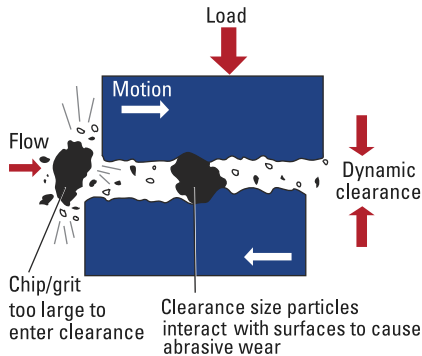


Illustration adapted from Donaldson graphic.

Clearance-size particles can get lodged between moving parts in the hydraulic system causing abrasive wear. First, the abrasive interaction between the particle and the surface of the component creates stress risers on the surface. Then, micro cracks develop near the surface when the component moves. If there are several cracks, they can join to form larger ones. Finally, surface material breaks away in the form of metallic particles that have the potential to do additional damage.

system may have been improperly flushed, resulting in built-in contamination. Ingression, another source of contamination, is when particles enter the system from the outside via the insertion of new oil that is already contaminated; or when dirt, dust or water sneak through seals or reservoirs topped with inadequate breathers.

Perhaps the most dangerous form of contamination is generated contamination, which occurs when hard particles strip off of internal components and damage surfaces composed of weaker materials. If maintenance staff fails to filter out these contaminants, a cascade effect could occur in which freed particles continue to crash into components, thus creating more particles with the potential to do further damage.

One way to make sure contaminants are eliminated from the hydraulic system is to regularly monitor filter elements and replace them when they are clogged. And while manufacturers sell equipment with a reservoir breather, they are not always equipped with a breather filter. Replacing the standard breather with one that has a built-in filter helps enormously to keep out contaminants.

Fluid sampling, says Jahnke, is necessary

## The Importance of Filtration

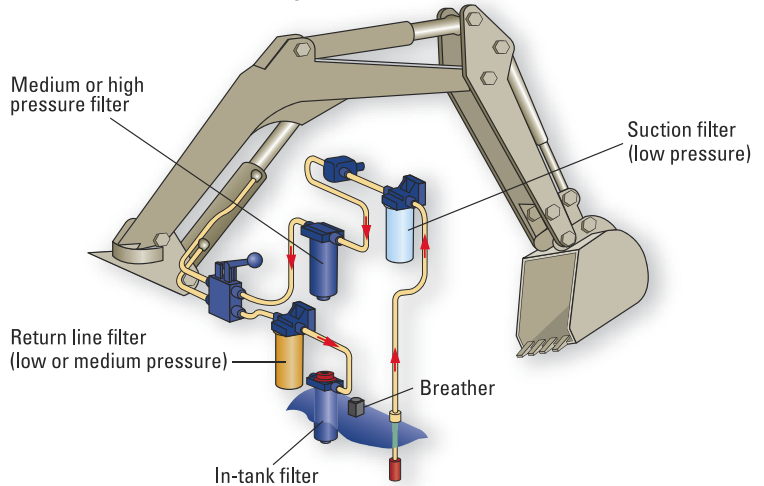
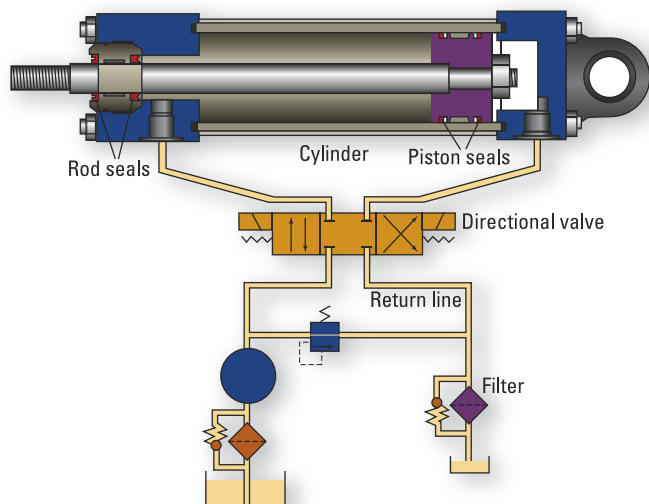


Illustration adapted from Donaldson graphic.

Contaminants will inevitably enter your machine, whether from the outside or generated from within. Most equipment includes a sophisticated filtration system, often comprising a suction filter to catch medium-sized particles between the reservoir and the pump; return-line filter to collect dirt as oil returns to the reservoir; breather filter to prevent atmospheric contaminants from entering the reservoir; and the pressure filter, also known as the "last-chance" filter, which cleans oil directly after the pump to protect other components downstream.

It is up to your maintenance staff to ensure that the filtration system is working optimally by monitoring it on a regular basis. When electronic or mechanical indicators alert you that filter elements are dirty or clogged, replace the elements immediately.

## Seals Are the First Line of Defense




If the cylinder is not fitted with effective rod seals, dirt could get through and damage valves before it is caught by the return-line filter. It is normal for rod seals to wear out. As they shear oil off the rod or cylinder barrel, they become more rounded resulting in a leaky cylinder that could let dust and dirt in. Before leaking begins to occur, the rod seals should be replaced.

## What Not to Do

1. Do not insert new oil without first running it through a filter or transfer cart. "Filter carts should be used always," says Jahnke, adding that this is rarely the case among fleet maintenance crews. "Most oil manufacturers don't give you clean oil in the 55-gallon drum."

2. During down times after maintenance or repairs, do not leave caps off of reservoirs and do not leave motors, valves, pumps or other internal components exposed. "The system should, as much as possible, be kept sealed so that you don't get air depositing dust and humidity into the system," says Jahnke.

to determine what kind of contaminants have invaded the hydraulic system. For instance, if dust, dirt, or silica is found, this usually means ingress had occurred. In this scenario maintenance staff should install a breather filter on the reservoir. If dirt is found inside the components of a new machine, running the fluid through an offline filter or kidney loop should clean it out.

Hydraulic fluid should be sampled and analyzed on a regular basis. Depending on how frequently a piece of equipment is used as well as the pressure of its hydraulics, Eaton advises maintenance staff to take samples anywhere between two and six months. In order to determine whether the hydraulic fluid meets the target cleanliness, take a representative sample from the return line before the filter and send it to a qualified laboratory. 

## Recommended System Sampling Frequency Chart

### System with target cleanliness 17/15/12 or lower

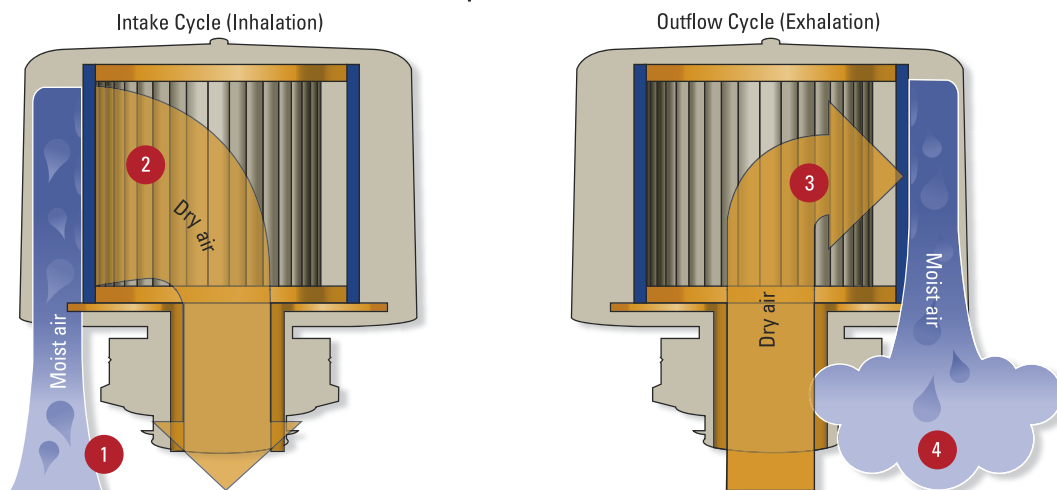
System Pressure	Less than 2,000 psi	2,000-3,000 psi	More than 3,000 psi
8 hours of operation per day	4 months	3 months	3 months
Over 8 hours of operation per day	3 months	2 months	2 months

### System with target cleanliness 18/16/13 or higher

System Pressure	Less than 2,000 psi	2,000-3,000 psi	More than 3,000 psi
8 hours of operation per day	6 months	4 months	4 months
Over 8 hours of operation per day	4 months	3 months	2 months

Source: Eaton

## Install the Proper Breather Filter



Breathers enable sufficient air movement inside the hydraulic reservoir while keeping out atmospheric contaminants such as dust and water particles. The ones that come standard in heavy equipment aren't always fitted with a filter-equipped breather. To maximize elimination of harmful particles, a filter-equipped breather should be installed.

How Donaldson's T.R.A.P. Breather works: 1. The circuit breathes in air containing moisture vapor. 2. The breather strips moisture from the incoming air, allowing only dry air to enter the circuit. 3. During the exhalation cycle, the breather allows unrestricted airflow outward. 4. The outflow of dry air picks up the moisture collected by the breather during intake and blows it back out, fully regenerating the breather's water-holding capacity.

Illustration adapted from Donaldson graphic.



4,500 STAFF, 55 SUBSIDIARIES,  
5 CONTINENTS, 1 GOAL: INNOVATIVE  
CONSTRUCTION TECHNOLOGIES!



Close to  
our customers



ROAD AND MINERAL TECHNOLOGIES

From machinery used for road construction to versatile solutions in the production and processing of mineral aggregates: Satisfied customers around the globe put their trust in our market-leading and future-oriented technologies.

[www.wirtgen-group.com](http://www.wirtgen-group.com)



**WIRTGEN AMERICA**

Wirtgen America  
6030 Dana Way • Antioch TN 37013  
Telephone: 615-501-0600 • Fax: 615-501-0691  
[www.wirtgenamerica.com](http://www.wirtgenamerica.com)

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 13



## Hybrid Drive *Applied to a Dump Truck*

With Eaton's electric system, Peterbilt's latest Model 335 works best in stop-and-go operations

**T**he term "pickup & delivery" is associated with parcels, freight and beverages; not dirt, gravel, stone and all the other commodities hauled by a dump truck. But most dumpers operate in urban settings, where stop-and-go is a large part of their days. This is also where hybrid-drives offer the greatest fuel savings achieved by capturing braking energy and using it to relaunch the vehicles.

People at Peterbilt Motors realize this and they've assembled a Class 7 Model 335 dump-truck chassis employing Eaton's electric system.

The truck was among two dozen Eaton-equipped vehicles at the Hybrid Truck Users Forum's annual ride-and-drive event, held last

October at the Bosch proving grounds near South Bend, Ind. Track time was preceded by two days of informational sessions downtown where attendance of more than 550 set a new record. This, organizers said, showed ever-increasing interest in hybrid-drive trucks and buses by builders and operators.

In development and field use, electric hybrids are a couple of years ahead of hydraulic-drive systems. That's why most of the 35 hybrids available for demonstration driving were electrics, and 23 of those used Eaton's system.



**Viper Green Model 335** dump truck uses Eaton's electric system, which converts braking energy into electricity that propels the rig away from dead stops, making the truck ideal for municipal and other urban service. Its shiny aluminum box is mostly for show, but makes the point that construction is another application for hybrids.



## SPECIFICATIONS

**Truck:** Peterbilt 335 Hybrid w/conventional-cab straight truck, BBC 108 inches, GVW 35,000 pounds

**Engine:** Paccar PX-6 (Cummins ISB), 6.7 liters (409 cu. in.), 300 hp @ 2,600 rpm, 620 lbs.-ft. @ 1,600 rpm

**Hybrid system:** 340-volt Eaton electric-drive, w/60-hp/310-lb.-ft. motor

**Transmission:** Eaton Fuller EH8E306A-CD, 6-speed automated mechanical w/automatic clutch

**Steer axle:** 12,000-lb. Dana Spicer E1202I on taperleafs

**Rear Axle:** 23,000-lb. Dana Spicer S23-170D on 23,000-lb. Reyco 79KB steel-spring suspension

**Wheelbase:** 155 inches

**Brakes:** Bendix S-cam air w/Bendix ABS

**Tires & wheels:** 11R22.5 Bridgestones on Peterbilt-Alcoa DuraBright polished aluminum discs

**Body:** 10-ft. J&J polished aluminum dump w/J&J hydraulic hoist

Eaton's 24th was a Class 8 Peterbilt 320 trash truck using Hydraulic Launch Assist, a simpler and potentially less costly system. Bosch Rexroth, the meeting's official sponsor, showed its own hydraulic system in a pair of heavy trash chassis (one displayed and one for a ride-only demo) plus a Class 3 International military utility truck with a prototype hydraulic setup (for display only).

Eaton's electric system uses a 60-horsepower motor mounted in the driveline ahead of a 6-speed UltraShift automated mechanical transmission with an automatically operated clutch. During drifting and braking, the motor becomes a generator that drags on the driveline to produce electricity, which the system stores in a bank of lithium-ion batteries. During launch, electricity courses back through the motor and helps push the truck into motion. This takes some load off the vehicle's diesel engine, thus saving 30 percent or more in fuel.

Prices for diesel fuel have dropped \$1.50 to \$2 per gallon since last summer — the upside of the current worldwide recession — so a hybrid's monetary savings now aren't as great. But it's almost certain that as the economy comes back, fuel prices will go up again. So there's still a decent business case to be made for a hybrid, assuming the truck runs at

least 20,000 to 30,000 miles a year and a buyer claims available federal, state or local incentives to offset the hybrid system's premium cost.

Driving an Eaton-equipped hybrid truck is pretty much like driving a regular one with an automated transmission: You start the engine, punch D-for-Drive on the selector pad, release the brakes, step on the accelerator and go. The clutch engages smoothly, and if you're easy on the pedal, electric power gets you underway until juice from the batteries is depleted. Then the engine, which has been idling, quickly revs up and takes over.

If you've impatiently mashed the "gas," clutch engagement is still smooth, but the engine will cut in almost immediately and you'll take off quicker.

Of course, you haven't saved as much fuel as you could've, but that's true even with-



The 300-horsepower Paccar PX-6 diesel works with Eaton hybrid system's 60-horsepower electric motor to launch the truck, and it handles most or all propulsion at higher speeds.



In a box behind the driver's steps are the chassis battery (left) and Eaton electronic controls with a horizontally mounted cooling fan. Orange cables carry 340 volts to and from the motor-generator and lithium-ion batteries, in the large black box to the rear.

# Hands-On Trucking



A color screen on the dash, next to UltraShift selector, shows what mode the hybrid system is in and whether it's charging or proceeding on electric or diesel power.



out the hybrid system. If you start out on an upgrade, the engine will also begin working rather soon. The electric motor makes up to 60 horsepower, and its 310 pounds-feet of torque are available at zero rpm, so it can kick off smartly.


This is a “parallel” system, so both the motor and the engine run through the tranny, and they’ll work alone or together. If you’re conscientiously light on the pedal, the motor will go through several gears, whirring as it revs up and down. It’ll go to 3rd gear and, if you nurse it, to 4th and almost 25 mph. It might go faster on a downgrade, but otherwise 24 or 25 is about the limit in electric-only mode, and the engine then cuts in. Speed requires horsepower and the diesel has much more of it — up to 300 in this case — so it does all of the propulsion work on a

freeway or highway.

That’s how any Eaton medium-duty electric hybrid operates, and so did this truck. The system’s operating voltage is 340, and that’s carried by thickly insulated orange cables. This is the industry standard color; most emergency responders have been told about it, and so should anyone who drives or maintains a truck like this. The system has built-in safeguards to keep people from an accidental shock, and there’s a big orange push-button switch at the control box that shuts off the high voltage.

The short dump box was empty, so demands on the power train weren’t serious; with a load, the diesel would’ve cut in sooner in any circumstance. The hybrid system is only for propulsion, but it could conceivably power an electric motor to run the hydraulic pump that could power the hoist, a snow plow, and other hydraulic mechanisms on a truck. If there’s not a lot of regeneration from braking, the diesel spins the motor-generator to produce electricity so the batteries should never run low. For now, this truck’s hydraulic dump hoist is run by a standard diesel-powered PTO and pump.

The engine in this truck always runs and does not shut down during pauses at arterial stops and other light-load driving situations. But it could, and does in another 335 truck shown at the HTUF event. Peterbilt and Eaton engineers programmed electronic controls to turn off the engine if it finds itself idling for more than a few seconds. The fuel-saving engine-off mode could be extended if the truck’s power steering and other accessories were electric powered, and that’s something that’s in the near future for electric hybrid trucks.

Eaton’s electric-drive system is strong enough for Class 8 trucks, and it was used with a 10-speed UltraShift in a Peterbilt 386 road tractor being evaluated by Wal-Mart Transportation. Thus it could conceivably be employed in heavier dump and mixer trucks and help them save fuel, too. So could a hydraulic hybrid system, possibly at lower cost than electric hybrids with their expensive lithium-ion batteries. We’ll see what continued development brings us. 



# THE **Chevron** DIFFERENCE

## GREAT PRODUCTS. **EXPERT** ADVICE.

At Chevron, our Lubrication Specialists take the time to get to know you and your business. They recommend the best combination of products and services to help improve performance, and minimize downtime.

For many customers, this may add up to thousands of dollars in savings per year as well as longer equipment life, and increased productivity. Contact a Chevron Lubrication Specialist today to see the difference we can make for you.

Call **1-800-533-6571**, or log on to:  
[www.Chevron-Lubricants.com](http://www.Chevron-Lubricants.com)



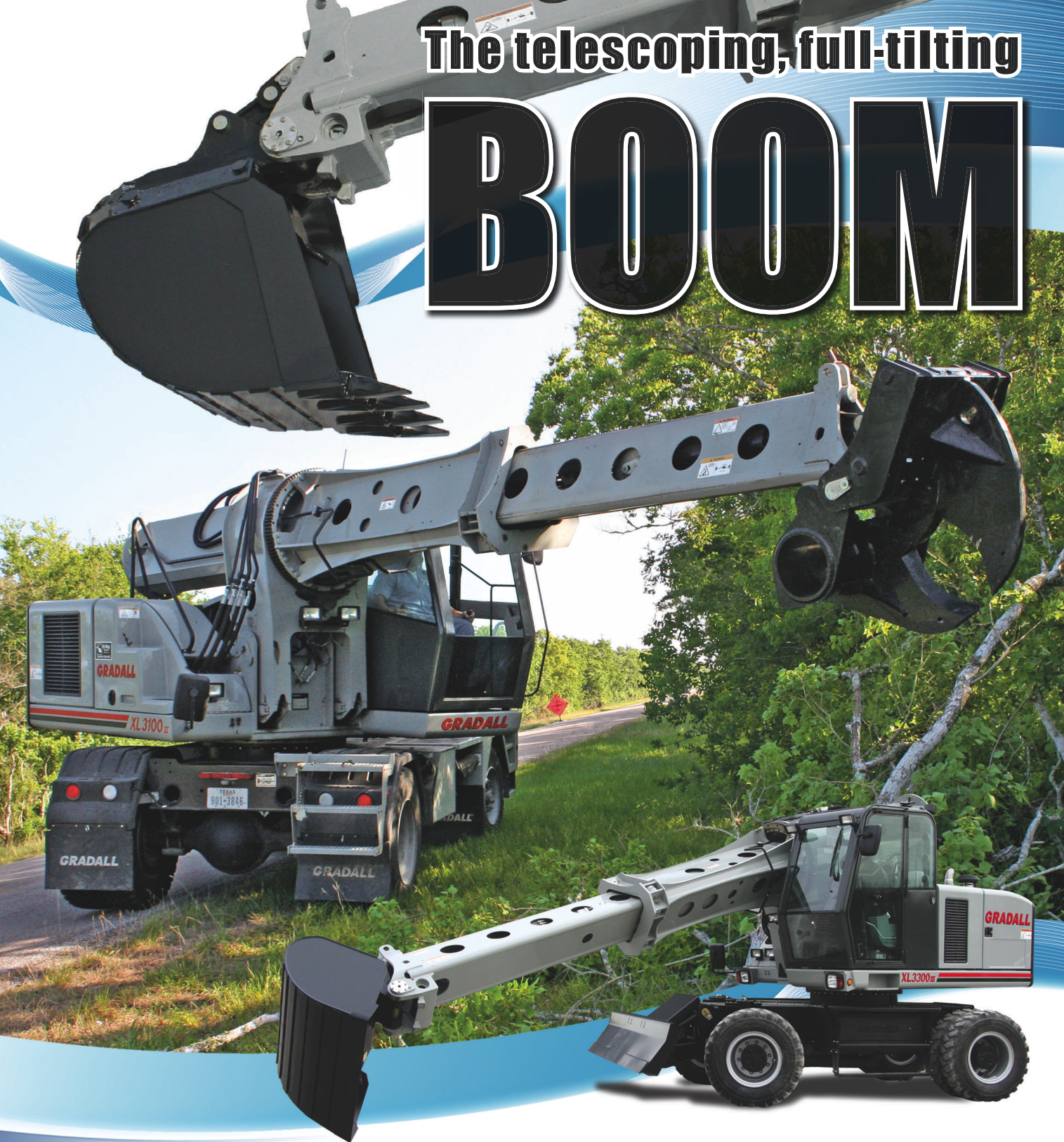
A **Chevron** company product

© 2008-2009 Chevron Products Company, San Ramon, CA. All rights reserved. All trademarks are the property of Chevron Intellectual Property LLC.  
**Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 14**



The telescoping, full-tilting

# BOOM



## An exclusive excavator concept, born in America.

It's an American versatility advantage that nobody's ever been able to effectively duplicate. The full-tilting Gradall® boom that doesn't lose power while it puts the right attachment into the right position. And a low-profile Gradall telescoping action that keeps the boom fully visible through the entire dig cycle, even under bridges and trees where knuckle booms can't work. Best of all, the new Gradall Series 3 models pack more power and faster cycle times for even more versatility on both big and small jobs. Get the only excavator with true American ingenuity, manufactured only in America.

[www.gradall.com](http://www.gradall.com)

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 15

**3** **GRADALL®**  
Rebuilding America  
with American ingenuity.



## 'Mid-Sized' Excavator Depends on Who's Being Asked

Putting a clear name on machines weighing 20,000 to 40,000 pounds depends on how various brands are marketed

In October, *Construction Equipment* wondered whether an equipment manager in search of a new 16,000-pound excavator is shopping for a "compact" machine. It depends, we concluded, on which brand you're looking at, because different manufacturers define in different ways their machines sized at or just above the official 13,200-pound "mini" threshold. A 16,000-pound machine could be a compact excavator, or it could be a full-sized excavator, or it could be a "midi." Caterpillar, for example, places the 17,306-pound 308D into its mini family.

As we look at the market offering in the 20,000- to 40,000-pound size range this month, the question still doesn't go away. Almost identically sized machines at the lower end of that range may be identified with different labels.

"We currently classify the 311D LRR as a small excavator," says Tim Lubeck, Caterpillar marketing consultant, general construction. "Caterpillar has four excavator categories that we use for our product line: mini (301.5-308D), small (311D LRR-319D), medium (320D-328D) and large (336D-385D)." Although, Lubeck concedes, some vendors would place the 27,448-pound 311D LRR into the full-size category.

"The easiest way to classify excavators is by operating weight and transportability," he says. "Minis are small enough to be easily moved on a small trailer behind a pickup or 1- to 2-ton truck. Small excavators require at least a tandem dump truck with a 20-ton

tag-a-long trailer or a small 35-ton lowboy trailer, but do not require permits to move. Medium excavators require at least a 50-ton lowboy and a permit, but can still be moved in one piece. Large excavators may require disassembly, and multiple loads and permits to be transported in most states."

### Survey says

As with Caterpillar and the 311D LRR, we surveyed various leading equipment manufacturers to confirm how they would classify specifically the smallest machine they offer in the 20,000- to 40,000-pound range. In some cases, it's purely based on weight; other times, configuration comes into play.

LBX considers machines up to 12 metric tons as mini or compact, those from 12 to 18 metric tons as small, 20 to 35 metric tons as medium, and 40 tons and up as large. The roughly-28,000-pound 130 X2 "would be considered a small, full-size excavator," says

### The Cost of Ownership

Size	List Price	Hourly Rate*
8.1 - 11.0 metric tons	\$99,259	\$41.66
11.1 - 12.0 metric tons	\$124,942	\$50.01
12.1 - 14.0 metric tons	\$144,206	\$57.45
14.1 - 16.0 metric tons	\$145,201	\$61.12
16.1 - 19.0 metric tons	\$161,438	\$67.89

\* Hourly rate represents the monthly ownership costs divided by 176, plus operating cost. Adjusted operating unit prices used in the calculation are diesel fuel at \$2.62 per gallon, mechanic's wage at \$45.39 per hour, and money costs at 5.125 percent.

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

# Buying File: Crawler Excavators

## Crawler Excavator Specifications (20,000 to 40,000 pounds)

Model	Operating Weight (lb.)	Arm Length	Max. Dig Depth	Reach at Ground	Dump Height	Net Power (hp)
Yanmar SV 100	20,950	n/a	15'3"	23'9"	16'3"	74
Hyundai R110-7A	24,690	7'5"	16'8"	25'0"	18'9"	89
Gehl 1202	25,397	7'10.5"	15'9"	24'8"	19'4"	90
Mustang ME12002	25,397	n/a	15'9"	n/a	19'6"	90
Hyundai R110D-7A	26,230	7'5"	16'8"	25'0"	18'9"	89
Hitachi Zaxis 120-3	26,962	8'3"	18'3"	26'11"	20'3"	93
Caterpillar 311D LRR	27,448	8'6"	17'8"	25'11"	18'6"	80
Komatsu PC130-8	27,700	8'2.5"	18'1"	26'10"	20'4"	92
Case CX130B	27,800	8'2.4"	18'2"	26'10"	21'0"	95
LBX Link Belt 130 X2	27,880	8'2.4"	18'2"	26'10"	21'0"	95
John Deere 120D	28,123	8'3"	18'3"	26'11"	20'3"	93
Terex TC125	28,219	7'9"	15'4"	27'2"	17'11"	102
Caterpillar 312D	28,340	8'2.4"	18'2"	26'10"	20'0"	90
Case CX130B LC	28,400	8'2.4"	18'2"	26'10"	21'0"	95
LBX Link-Belt 130 X2 LC	28,440	8'2.4"	18'2"	26'10"	21'0"	95
Volvo EC140C L	28,530	8'2.4"	18'2"	26'10"	19'7"	92
Caterpillar 312D L	29,600	9'2"	19'2"	27'8"	20'4"	90
Case CX135	29,631	7'10"	17'11"	26'6"	22'8"	95
LBX Link-Belt 135 Spin Ace Tier III	29,762	7'10"	17'11"	26'6"	22'8"	95
Hitachi Zaxis 135US-3	30,582	8'3"	18'2"	27'1"	22'3"	93
John Deere 135D	30,582	8'3"	18'2"	27'1"	22'3"	93
Caterpillar 314C LCR	30,700	8'2"	17'11"	26'10"	22'6"	90
Hyundai R140LC-7A	30,820	8'2.4"	18'4"	26'11"	19'11"	105
Doosan DX140LC	30,864	8'2.4"	18'6"	26'9"	20'8"	95
Terex TXC 140LC-2	30,864	8'2"	18'6"	26'9"	20'8"	95
Komatsu PC138USLC-8	31,504	8'2"	18'0"	26'10"	22'5"	92
Takeuchi TB1140	31,878	n/a	18'0"	28'1"	20'5"	83
Kobelco 140SR Acera	32,040	9'4"	19'7"	28'4"	23'4"	94
New Holland E135B	32,040	9'4"	19'7"	28'4"	23'4"	94
JCB JS 145	32,140	8'2"	18'3"	26'11"	22'0"	94
JCB JZ 140	32,291	8'2.4"	18'3"	26'11"	22'0"	98
Hyundai R140LCD-7A	32,630	8'2.4"	18'4"	26'11"	19'11"	105
Kobelco ED150 Acera Blade Runner	35,900	9'4"	19'1"	28'3"	23'10"	94
Komatsu PC160LC-7 Tier 3	36,640	9'6"	20'6"	29'9"	21'5"	115
JCB JS 160 NLC Tier III	37,445	8'10.3"	19'6"	28'7"	22'1"	123
Case CX160B	37,700	8'7"	19'11"	29'1"	21'8"	120
LBX Link-Belt 160 X2	37,700	8'7"	19'11"	29'1"	21'8"	120
Kobelco SK170LC Acera Mark 8	37,800	10'2"	21'5"	30'6"	22'11"	121
New Holland E175B	37,800	10'2"	21'5"	30'6"	22'11"	121
Volvo EC160C L	37,830	8'6"	19'10"	28'11"	20'10"	117
Hitachi Zaxis 160LC-3	37,908	10'2"	21'4"	30'1"	21'0"	121
Caterpillar 315D L	38,036	9'6"	20'11"	29'5"	20'8"	115
JCB JS 160 LC Tier III	38,175	10'0"	20'7"	29'8"	22'2"	123
Hyundai R160LC-7A	38,360	8'6"	19'11"	29'1"	20'6"	116
Doosan DX180LC	38,801	8'6"	20'1"	29'6"	21'4"	118
Terex TXC 180LC-2	38,933	8'6"	20'1"	29'6"	21'4"	118
Gradall XL 3200 III	39,240	n/a	19'2"	27'5"	14'9"	152
Hitachi Zaxis 160LC-3	39,980	10'2"	21'4"	30'1"	21'0"	121
John Deere 160D LC	39,980	10'2"	21'4"	30'1"	21'0"	121

Source: Spec-Check Xpanded Specs (as of December / 08)



Rob Brittain, product manager, Link-Belt excavators, “as opposed to our 135 which is similar in weight, but is a Minimum Swing Radius excavator.”


At New Holland and Kobelco, brand marketing manager Paul Golevicz was asked about the New Holland E135B and the sister Kobelco 140SR Acera that, while in excess of 30,000 pounds, are the lightest units offered by the brands in the 20,000- to 40,000-pound range. “We actually classify both units as Large Short Radius excavators,” says Golevicz. “The mid-size range is normally referred to as approximately 6 to 12 tons. This allows us to differentiate these units from their smaller Short Radius cousins.”

With John Deere, which also markets the Hitachi brand in North America, Mark Wall refers directly to the established standard when considering the roughly-28,000-pound Deere 120D and the sister Hitachi Zaxis 120-3 models. “They are classified as mid-sized machines,” says Wall, product marketing manager, excavators. “Compacts are usually thought of as anything less than 6 metric tons; mid-size from 6 to 50 metric tons. This has

been the industry standard for years.”

Likewise, the nearly-28,000-pound Terex TC125 is considered mid-sized, based on the industry’s classifications, says Bill Parker, Terex Construction product manager.

The similar-sized Case CX130B or the recently introduced, slightly heavier, long-carriage CX130B LC model “by industry standards, would be considered a standard-sized excavator,” says Mitch Blake, a member of the Case brand marketing team with responsibility for excavators. The Association of Equipment Manufacturers, Blake notes, classifies excavators from 6 to 11 metric tons as midis and those 11 metric tons and up as standard, but he adds that some manufacturers “distinguish sizes” within the standard classification.

If there’s confusion as to which descriptions apply to the 20,000- to 40,000-pound excavators available in the market, remember that size and configuration remain the key differentiating factors, regardless of what the label is. To help, the gallery that follows outlines the offering of 18 different brands in the market. 



The sister New Holland and Kobelco brands offer two comparable excavator models each in the 20,000- to 40,000-pound range, but Kobelco offers something additional. Described as “two machines in one,” the Kobelco ED150 Acera Blade Runner matches a dozer-quality blade to a “Large Short Radius” excavator.

# Gallery of Excavators



## CATERPILLAR

### Models Move to D-Series

Each of the four Caterpillar excavators in the 20,000- to 40,000-pound range have been updated and upgraded, taking them from C- to D-Series designation. Generally, the product-line changes focus on new cabs providing greater comfort and intuitive feedback for the operators, greater lift capacity due to heavier counterweights, more engine power for greater productivity, and extended maintenance intervals. Versatility is extended with the Cat Tool Control System, which stores hydraulic flow and pressure for as many as 10 different work tools. Conventional-configuration 312D L and 315 D L models are joined by reduced-radius 311D LRR and compact-radius 314D LCR units.

**Number of models:** 4

**New models:** 311D LRR, 312D L, 314D LCR, 315D L

**Product-line features:** Available as an option on most models, the AccuGrade grade-control system helps operators at any skill level work faster and more accurately.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 158



## JOHN DEERE

### Pinpoint Metering Capabilities

John Deere D-Series excavator introductions, including the 120D, 135D and 160D in the 20,000- to 40,000-pound range, incorporate the Powerwise III engine and hydraulic management system providing pinpoint metering and multi-function operation. A hydraulic recirculation system delivers more efficient flow to the boom and arm to also speed up cycle times. Standard on the Deere 160D LC model and optional on the likewise-conventional-configuration 120D is a hydraulically driven, cool-on-demand fan that runs only as needed. The 135D is a reduced-tail-swing excavator similar in engine output and arm breakout force to the lighter 120D, but with a short counterweight for digging close to obstructions.

**Number of models:** 3

**New models:** 120D, 135D, 160D LC

**Product-line features:** Redesigned cabs feature a new multi-function monitor with large, easy-to-read gauges, warning lights and icons that provide operating information at a glance.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 159

## CASE CONSTRUCTION EQUIPMENT

### Longer-Carriage Unit Arrives

At World of Concrete in 2008, Case not only announced Tier-3 engine upgrades covering the CX130B conventional excavator and the CX 135 minimum-swing-radius machine, but also added a new model to the product offering in the 20,000- to 40,000-pound weight range. The longer-carriage CX130B LC offers an increase of 15 percent in lift capacity over the CX130B, thanks to nearly one foot of additional track length, stretching to 12 feet 4 inches. With an operating weight of 28,400 pounds, the longer-carriage unit offers a boom length of 15 feet 2 inches and a choice of arms maxing at 9 feet 11 inches, for a maximum dig depth of 19 feet 10 inches. Bucket digging force is 21,357 pounds. The CX160B model was among the larger upgraded Case excavators introduced at World of Concrete in 2007.

**Number of models:** 4

**New models:** CX130B LC



**Product-line features:** The CX130B LC features a "green plug" — an oil-pan plug with a built-in check valve that allows used engine oil to run through a tube and be easily reclaimed by a technician.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 160





## LBX

### Load-Sensing Boost for X2 Models

One year ago, LBX followed up the introduction a few months earlier of the updated 28,000-pound Link-Belt 130 X2 excavator model with a similar Tier-3-certified Isuzu engine upgrade to the Spin Ace minimum-swing-radius excavators, including the 135 model at 29,762 pounds. A blade option and rubber tracks are also new for the 135 Spin Ace. The conventional-configured X2 machines feature a load-sensing automatic power boost feature to muscle through tough digging conditions or pull off heavy lifting jobs. Speed Priority, Heavy, Applied Power and Attachment modes on the X2 machines are selected by simply dialing the engine throttle.

**Number of models:** 3

**New models:** 130 X2, 135 Spin Ace Tier III

**Product-line features:** An expanded right-hand, one-piece window provides X2 machine operators with better visibility to the jobsite. Ground-level access to remote-mounted filters and an engine-oil-drain "green plug" with a spring-loaded release and drain hose make for easier machine maintenance.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 161



## NEW HOLLAND

### Strength Teams with Smoothness

With proportional/progressive hydraulics, the improved Intelligent Total Control System featured on both the New Holland E135B and E175B excavators provides full operational control where and when needed. The system complements heavy digging force with progressive control for the smooth, even movement required for fine grading and leveling. While maintaining and even improving bucket, swing and drawbar forces, the control system features auto accel/decel, auto warm-up for both the engine and hydraulics, and four work modes as compared to three for the predecessor system. The E135B is available with a blade, marking the first time New Holland has offered this option on a large excavator.

**Number of models:** 2

**New models:** E135B, E175B

**Product-line features:** The patented Integrated Noise and Dust Reduction system, introduced on the E135B, reduces noise emissions by up to 7 percent or 5 decibels. Enhanced air filtration helps the excavator run cleaner with up to a 10 percent gain in fuel efficiency.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 162



## KOBELCO

### Blade Runner Offers More

In addition to two models comparable to the sister New Holland offering in the 20,000- to 40,000-pound excavator size class, Kobelco further offers the ED150 Acera Blade Runner, described as two machines in one. Sharing the short-radius platform of the 32,040-pound Kobelco 140SR Acera model, the 35,720-pound Blade Runner has a standard, heavy-duty, six-way dozer blade with foldable, lockable blade wings that extend the clearing path beyond the width of the tracks. The 140SR and ED150 Blade Runner models feature the patented Integrated Noise and Dust Reduction System.

**Number of models:** 3

**New models:** 140SR Acera, ED150 Acera Blade Runner, SK170LC Acera Mark 8

**Product-line features:** The improved Intelligent Total Control System features proportional/progressive hydraulics, auto accel/decel, and auto warm-up for both the engine and hydraulics. Four work modes represent an increase by one over the predecessor system.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 163

# Gallery of Excavators

## JCB

### Diagnostics on Full Display

With engine upgrades to meet Tier 3 emissions compliance, JCB welcomed additional product gains to its 20,000- to 40,000-pound excavator offering, including enhanced cold-climate starting and a



claimed 10-percent reduction in fuel consumption. With each of the conventional-configuration JS 145 and JS 160 models and the short-tail-swing JZ 140, engine self-diagnostics can be operated from inside the cab. As well, an engine oil indicator has been incorporated

into the Advanced Management System, a JCB feature which enables rapid fault identification.

**Number of models:** 3

**Product-line features:** The JCB Plexus filter cleans hydraulic oil down to 1.5 microns, dramatically reducing dirt and condensation in the system. The hydraulic oil can run 5,000 hours between changes.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 164

## HITACHI

### New Models Packing More Punch

Regardless of their configurations, the new Hitachi ZX120-3, ZX135US-3 and ZX160LC-3 excavators incorporate features that were introduced with their larger predecessor Dash-3 models, including redesigned



cabs, beefier undercarriages, faster hydraulics, and Tier-3-compliant engines with more power. The four-valve-per-cylinder, four-cylinder Isuzu engine achieves improved fuel efficiency and greater output primarily through a common-rail fuel-injection system

and the cooled Exhaust Gas Recirculation system.

**Number of models:** 3

**New models:** ZX120-3, ZX135US-3, ZX160LC-3

**Product-line features:** As part of the redesigned cabs, short-throw levers combined with armrests mounted independently from the seat provide fingertip control with less effort. One work mode adds to the simple operation of the new Hitachi excavators.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 166

## VOLVO

### Short on Swing, Not Features

As part of Volvo's initial move into short-swing models for the full-sized excavator market, the 14-metric-ton ECR145C L model swings only about 9 inches outside its own track width, facilitating work close to fixed objects and reducing collision risks with other machines working nearby. The rounded shape of the cab is also designed to stay within the rear swing radius. Inside the cab, a new color LCD monitor features both a built-in service display and selectable hydraulic control options.

**Number of models:** 3

**New model:** ECR145C L

**Product-line features:** With approximately 80-percent commonality of components to conventional excavators such as the EC140C L and EC160C L, the Volvo short-swing excavator needs neither to cost more nor to wait longer for parts.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 165



## KOMATSU AMERICA

### Options for Machine Configuration

A short-tail-swing excavator and a larger conventional-configuration model are offered by Komatsu in the 20,000- to 40,000-pound range. The 31,504-pound PC138USLC-8 was introduced in 2007 with lift capacity comparable to the since-departed PC120LC-6 conventional machine, but with tail-swing radius reduced by 27 percent for work in tight spaces. Also debuted in early 2007, the 36,640-pound PC160LC-7 is equipped with Komtrax, which uses wireless technology to send such machine operating information as hours, location, cautions and maintenance alerts to a secure website for efficient fleet management.

**Number of models:** 2

**Product-line features:**

Model PC138USLC-8 is available with an optional blade for additional jobsite duties. Weighing less than 20 tons, the PC160LC-7 likewise requires only a two-axle trailer for transport.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 171





## GEHL

### Taking 'Compact' to Bigger Jobs



A manufacturer of compact construction equipment, Gehl Company does stretch into the 20,000-pound-plus excavator size range with its 1202 model. With an overall operating weight of 25,397 pounds, the Gehl 1202 incorporates a reduced-tail-swing design that, with 18 inches of overhang, puts the excavator to work in tight spots. Up front, an independent

boom swing allows the operator to move the boom 80 degrees to the left and 50 degrees to the right without having to rotate the upper structure or move the tracks. Load- and pressure-sensing valves match hydraulic flow to application.

**Number of models:** 1

**Product-line features:** A wide dozer blade aids in the balance of the Gehl 1202 when the 98-horsepower excavator is digging, in addition to providing the machine with grading and dozing functions when required.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 168

## DOOSAN INFRACORE

### DX Machines Have 'Correct' Cabs

As part of the updated DX Series of excavators ranging right up to the 110,000-pound-plus DX520LC, Doosan displayed new 30,000-pound DX140LC and 39,000-pound DX180LC models at Conexpo-Con/Agg 2008. New DX Series machines boast an "ergonomically correct" cab design with automatic heating and air conditioning, a telescopic control stand, and a six-way-adjustable seat with lumbar support. A glass surface and transparent roof section enhance visibility for the operator, and a dual-walled exhaust silencer cuts noise levels. An electronics package allows communication between the engine and hydraulics for optimum machine performance and fuel economy.

**Number of models:** 2

**New models:** DX140LC, DX180LC

**Product-line features:** For easier maintenance, new DX Series excavators feature centralized grease points on the boom and arm; and convenient hose routing, wiring harness layout and filter placement.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 170



## TEREX

### Pattern-Change Control Available

Redesigned LC-2 excavator models from Terex are equipped with a new pattern-change control, which allows operators to select and work with the operating pattern that best suits them. This extends the rental-yard appeal of compact excavators to the larger 30,864-pound TXC 140LC-2 and 38,933-pound TXC 180LC-2 models. A new Tier-3-compliant engine uses a common-rail fuel-injection system, combined with the e-EPOS electronic management system to boost productivity by 4 percent and fuel efficiency by 6 percent. A roomier, quieter cab features automatic climate control boasting 20 percent additional cooling capacity and 8 percent more airflow.

**Number of models:** 3

**New models:** TXC 140LC-2, TXC 180LC-2

**Product-line features:** With the new Terex excavators, oil-change intervals have doubled in length to 4,000 hours, air filter replacements are now every 2,000 hours as compared to 500 previously, and front pin lubrication intervals have gone from 50 to 250 hours.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 167



## TAKEUCHI

### Cooling Upgrade for Largest Model

Another example of an equipment manufacturer renowned for compact excavators, but whose product offering creeps above the 20,000-pound level is Takeuchi. When updated with a Tier-3 turbocharged Isuzu engine monitored by an electronic system, the 31,878-pound TB1140 excavator received a new heavy-duty, side-by-side cooling module for the hydraulic oil, engine coolant and intercooler. Working from a sliding station equipped with a 10-way adjustable suspension seat, the TB1140's operator uses a three-button throttle control with three preset operating modes. The excavator also has an automatic fuel bleed system.

**Number of models:** 1

**Product-line features:** With the arm plumbed for primary and secondary, two-way, auxiliary hydraulics, the TB1140 is capable of simultaneous operation of cab swing and two digging functions with no reduction in working speed.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 169



# Gallery of Excavators

## MUSTANG

### An Easier Way to Trench

The Gehl-owned compact Mustang product line extends into the 20,000-pound-plus size class with a model "offering compact-excavator features with crawler-excavator performance," says Brian Rabe, Mustang product specialist. The 25,397-pound ME12002



comes with a standard dozer blade and boom swivel for quick work of trenching needs on crowded jobsites. Swiveling the boom to the left and rotating the upper structure to the right allows the operator to dig a vertical trench right along

the edge of a building or retaining wall.

**Number of models:** 1

**Product-line features:** The addition of rubber tracks, available as an option, adds to the versatility of the ME12002 to maneuver around on different surfaces.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 172

## GRADALL

### Matching Production with a Twist

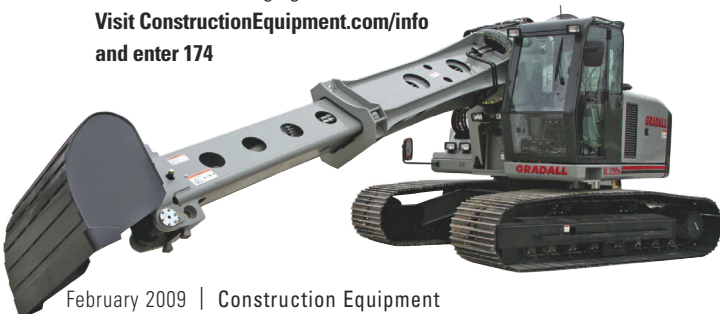
With a basic machine weight of 39,616 pounds, the new shorter-tailed Gradall XL 3200 III crawler boasts boom forces and cycle times comparable to conventional excavators, but with the famous Gradall telescoping and tilting boom. Powered by a new 172-horsepower Detroit Diesel engine, the unit has a rated boom force of 22,075 pounds and bucket breakout force of 19,300 pounds. Joysticks are built into the large seating module, where the operator controls the 220-degree boom tilt and the telescoping action of up to 27 feet 5 inches at ground line or 19 feet 2 inches of dig depth. Using a new in-cab switch, operators can quickly select the Gradall, Deere or SAE joystick pattern.

**Number of models:** 1

**New models:** XL 3200 III

**Product-line features:** Common to all Gradall Series 3 models, available attachments include trenching, excavating, ditching, pavement removal, dredging buckets and more.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 174



## YANMAR

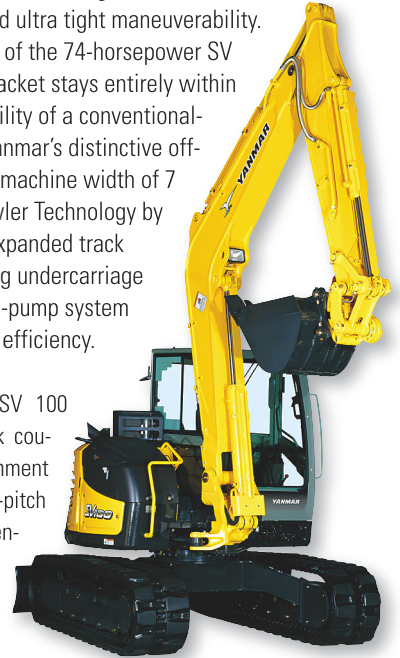
### Offset Tracks Boost Maneuverability

At just beyond 20,000 pounds, Yanmar's largest excavator extends a blend of performance and ultra tight maneuverability. The front and rear turning radius of the 74-horsepower SV 100 is so small that the boom bracket stays entirely within the width of the tracks. The stability of a conventional-style excavator is achieved by Yanmar's distinctive offset tracks, which provide a total machine width of 7 feet 7 inches. Yanmar's ViO Crawler Technology by Advanced Stability delivers an expanded track gauge for stability without adding undercarriage width. The ViO progressive three-pump system enhances power, speed and fuel efficiency.

**Number of models:** 1

**Product-line features:** The SV 100 has a tailor-made hydraulic quick coupler as standard, making attachment changes a one-person job. Short-pitch rubber track tread blocks offer enhanced operator comfort when in travel mode.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 173



## HYUNDAI

### Series Transitioning Ongoing

With 9 Series model introductions continuing late in 2008 and throughout 2009, Hyundai is among the more active of excavator manufacturers in all size classes at this time. Within the 20,000- to 40,000-pound range, the company will offer the R110LC-9 and R160LC-9 models, sandwiching the R140LC-7A. Transitioning to 7A from the previous 7 Series was based primarily on Tier-3 engine compliance. Effective December 2008, all new 7A Series and 9 Series excavators come with the new standard Total Coverage Warranty offering full machine warranty for two years or 2,000 hours, plus five years or 10,000 hours of structural warranty. Additionally, the first routine service is free.

**Number of models:** 3

**Product-line features:** Espousing performance and reliability at a value, Hyundai excavators feature large cabs with amenities such as heated suspension seats and CD players built into the base machine cost, along with such machine features as additional boom flood lights, swivel guard plates, air pre-cleaners and locking fuel caps.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 175





# Your Asphalt Resource



R. Wayne Evans  
VP Business Development Pavement Technology  
Wirtgen America Inc.

*"World of Asphalt is the gathering place for asphalt professionals. A trip to this show is priceless in terms of the number of networking opportunities, excellent education, and to see new equipment and technology."*



March 9 -12, 2009 • Orlando, Florida USA

**Register to attend [www.worldofasphalt.com](http://www.worldofasphalt.com)**

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 16



Co-located with World of Asphalt.



In conjunction with World of Asphalt.

# Buying File: Attachments

## Atlas Copco

Attaching to 10- to 18-metric-ton excavators, the 1,650-pound Atlas Copco MB 700 hydraulic breaker is designed with only two moving parts, for reliability and limited maintenance. The MB 700 delivers up to 800 blows per minute, and requires hydraulic flow of up to 32 gallons per minute at 2,466 pounds per square inch. Along with the VibroSilenced damping system and ContiLube II automatic lubrication, the MB 700 features AutoStart, which allows it to operate as soon as it contacts target material.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 202



## Geith

Among the six models of Geith precision steel shears is one small enough to be operated by a 15-metric-ton excavator. Geith SST shears combine jaw force with a hydraulic speed valve for a faster work cycle. An interchangeable nose blade ensures optimal piercing. Geith shears are designed for continuous 360-degree rotation, with an internal break to allow the operator to execute a precise cut at the right place and the right angle.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 204



## Allu

Available in 48 different models for use on excavators and wheel loaders of various sizes, the SM processing attachment from Allu scoops, screens and pulverizes in a single-step operation. A patented design of rotating drums with changeable hammers is able to screen and crush various materials simultaneously. The SM attachment mixes and aerates compost, crushes asphalt, and breaks down construction and demolition debris.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 206



## Kenco

The Kenco barrier lift, available in various sizes for various carrier types, is used to safely place concrete median barriers, sound walls, curbing and piling. Elastomer pads ensure lifting performance even in wet weather. All Kenco barrier lift models are available with optional self-aligning guides that extend down from one set of the pads to allow the lifter to align itself with the barrier wall whenever the lifter is lowered into position.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 203

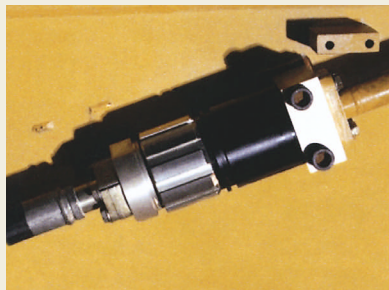


## Snap-tite

Designed to adapt to any new or existing excavator attachment, Snap-tite's trademarked QuikXchange hydraulic coupling system quickly connects lines to hammers/breakers, shears or crushers. With one per-

son changing work-tool hydraulic lines in five minutes or less, the dry-break system is both connected easily under pressure and disconnects cleanly. Requiring 6,000 pounds per square inch of working pressure, the 1.25-inch, high-flow unit is available in three connection sizes.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 205



## Bradco

For use by various carrier types including excavators, Magnum Mulcher brush-cutter heads from Paladin's Bradco brand are available in five sizes ranging from 165 to 500 horsepower. The

fixed-tooth cutter/mulcher head uses a patented hammer design. The attachments are configured to mount close to base machines with a low profile to both improve the operator's visibility to the work and balance the carrier for less damage to the site.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 207



For more attachments, visit [ConstructionEquipment.com](http://ConstructionEquipment.com).



# RANCO ANVIL SIDEDUMP



**Free...1 Year Scheduled Maintenance  
3 Year...Structural Warranty**



**For A Dealer Nearest You Call USA Toll Free (800) 631-5708**  
700 E. Crystal • P.O. Box 856 • Lamar, Co 81052 • [www.rancotrailers.com](http://www.rancotrailers.com)

## Factors That Affect the Equipment Rate

Equipment managers who understand how the equipment rate functions within an organization can set it wisely and then track its accuracy



**Mike Vorster**

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

**T**he equipment rate means many things to many people. People within the organization use it to estimate costs and measure performance, but they forget that the rate is nothing more than an interim estimate for the actual full lifecycle equipment cost the organization expects to experience if everything proceeds as planned.

The need to establish an hourly, weekly or monthly rate for a machine stems from the fact that most equipment costs occur in relatively large, discrete amounts spread at random times throughout the life of the machine. The rate averages out these large, infrequent expenditures and spreads them evenly over the life of the machine so that costs can be estimated and performance can be measured over shorter periods of time. The rate is, in fact, much like an insurance premium: You pay relatively small, regular amounts to cover the cost of the large transactions that you expect will, but hope will not, occur in the future. As with an insurance premium, the higher and more frequent the claims, the higher the payments.

Good, accurate and reasonable equipment rates play a critical part in three important aspects of construction management. First, they are used in estimating where they strongly influence the company's ability to competitively price work. Second, they are used in job costing to measure performance and profitability at an operational level. Third, they are used in equipment management to create benchmarks, standards and norms used for budgeting, cost control and a variety of other decisions. Setting the right rate for an item, category or class of equipment requires substantial thought, careful analysis, and good judgment.

The diagram shows how many areas can be used to focus on, calculate and calibrate the rate. The process starts at the bottom left of the diagram with a good theoretical calculation using a standard format such as that

given in "How Estimates Affect Cost Calculations" (March 2004) or as described in many manufacturers' publications.

Theoretical calculations are usually based on a brand new machine, a competitive or commercial rate for the cost of money, the full lifecycle costs for repair parts and labor, and an assumed residual value. The resulting value provides a theoretical baseline for owning-and-operating costs under the assumed conditions and helps to show how internal policies for inputs to the calculation (such as depreciation, utilization and cost of capital) affect the rate.

The insights provided by a theoretical calculation are greatly enhanced if the calculation is repeated using a range of values for age and utilization so that both the magnitude and the timing of the minimum owning and operating cost point can be determined. This gives benchmark values for minimum cost as well as economic life and provides the information needed to set up a structured and quantitative approach to fleet-replacement planning. Theoretical calculations are also good for splitting the rate into its principal components such as depreciation, fuel, wear items and repair parts and labor.

Managers should test or calibrate the theoretical calculations using published standards and norms as shown in the bottom right of the diagram. Many agencies publish what they think the rate for a given class of machine should be under the conditions they assume. Every organization is different and individual experience can vary tremendously with time, location and economic factors. Great care should therefore be taken when using industry-wide published standards, and they must be constantly adjusted for changes in input costs such as labor and fuel. They do, however, provide a good starting point. You must be able to explain why your calculated rate for a 4-cubic-yard, 200-horsepower



## Factors in Setting the Rate

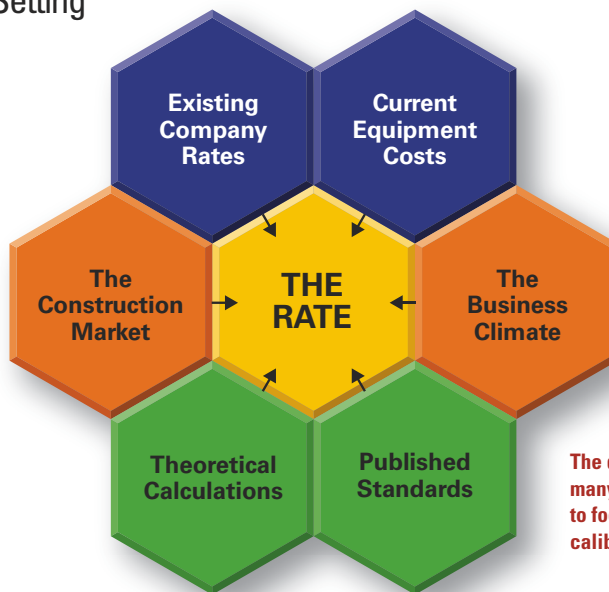
wheel loader comes to \$95 per hour while the method proposed by the Army Corps of Engineers produces a result of \$52 per hour for your local area.

The top row of the diagram shows a different process for setting equipment rates. It relies on the fact that the company has been in business for a while, that it keeps good cost records, and that it is able to use gains and losses relative to existing rates to set rates that reflect the current costs actually experienced.

Two different mindsets are found in practice. The first sees the rate as a “rental rate” and uses the product of the rate and the hours worked to generate a “revenue” that is offset against the actual costs to give a “profit or a loss” for each category of equipment. The other sees the rate as a “cost-recovery rate,” and users of this method believe that the product of the rate and the hours worked is a “cost recovery” that should equal the actual costs experienced as closely as possible. The former approach is in more common usage; the latter approach is more correct and helps drive home the fact that the rate is determined by the actual costs experienced.

The gold standard is using accurate equipment costs and a knowledge of gains and losses relative to current rates to set rates that enable each category of equipment to support itself and recover its actual costs. It is not easy to do, and it is not foolproof. The future does not necessarily reflect the past, and historical data cannot be used without care and judgment. This is particularly true when categories are relatively small and when the age of individual units in a category is not well distributed.

It also requires that cost data be collected and grouped by both cost type and equipment category. This makes it possible to establish an hourly cost recovery rate for undercarriages (the cost type) on crawler dozers less than 150 horsepower (the equipment cate-



The diagram shows how many areas can be used to focus on, calculate and calibrate the rate.

gory). Collecting costs into cost or category buckets that are too coarse can easily lead to a situation where “if you have enough things then, on the average, the average will be average” and produce meaningless results. As an absolute minimum, cost types should be segregated into ownership, operating, fuel and overhead; and equipment categories should be defined clearly by equipment type and size or power.

The two cells on the side of the diagram provide the ultimate way to calibrate either theoretical or cost-based rates. “What will the market bear?” and “How can the company be profitable at this rate?” These are real facts of life in a competitive world, and all aspects of company operations must be examined if calculations and available data produce rates that differ from like-for-like comparisons in the competitive arena.

Remember that the rate is the end result of all that has gone before. High rates are the symptom not the disease. They arise because there has been overapplication, under-utilization or bad preventive maintenance. Nothing is achieved by treating the symptoms and leaving the disease. Looking at all the factors shown in the diagram will give confidence in your rate structure and lead to appropriate action.

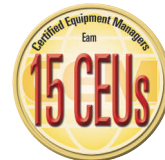
**AEMP's 2009**

# **Management Conference & Annual Meeting**

**March 15-17 ■ Orlando, Fla.**

**J**oin the equipment industry's top fleet managers and industry experts and educators March 15-17 for the Association of Equipment Management Professionals' 2009 Management Conference & Annual Meeting. This unique event is the industry's only conference specifically designed for fleet management professionals.

- Discover **solutions** for the most critical fleet management issues.
- Examine **strategies** for more effective asset management.
- Develop **skills** for working more efficiently in today's fast-paced environment.
- Attend the Construction Equipment Managers Institute.
- Earn 15 CEUs toward CEM **certification**.
- **Network** with the country's top fleet managers.
- Participate in AEMP's 2009 **Trade Show** & Exhibition.



**PLUS**...the 2009 Technician of the Year Award  
and 2009 Fleet Masters Awards

Three session tracks—**Executive, Professional and Essential**—allow you to customize the event to your particular interests and needs, and get the maximum benefit from the conference.

**Who should attend?** Owners, CEOs, COOs, executive-level asset managers, fleet managers, equipment managers, and distributor and manufacturer representatives.



**Register today at [www.aemp.org](http://www.aemp.org)!**

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 14

**Presented in partnership with:**



Association of Equipment Management Professionals  
PO Box 1368, Glenwood Springs, CO 81602  
970-384-0510, [www.aemp.org](http://www.aemp.org)





# Komatsu Designs Its Latest Electric-Drive System with Siemens

Previously all of Komatsu's electric-drive mining trucks were developed using GE drive systems; the 860E takes a new approach

In the 1980s, Komatsu introduced its first trolley-assist mining trucks, the 685E and later the 730E-DC. While the 685E is no longer available, Komatsu has complemented the 730E with the new 860E-1K. This new rigid-frame, electric-drive truck was introduced at Minexpo in September 2008. A new size for the company at 280 short tons, it fits nicely between the 830E (at 240 tons) and 930E (at 320 tons). With a GVW of 1,001,700 pounds, the truck is powered by a 2,700-horsepower Cummins QSK60 Tier 2 engine and meets the latest U.S. EPA emissions regulations.

When equipped with the factory-installed trolley system, the new trucks run on either 1,600- or 1,800-volt overhead power lines. After connecting with those lines, the engine rpm lowers nearly to idle and the truck is propelled by the trolley system. Benefits include significant fuel savings, lower emissions, and longer component life.

"Although the trolley infrastructure can cost up to \$2 million per mile," says Don Lindell, product manager for mining trucks, "some mines are in locations where power is inexpensive, so the benefits of trolley operation significantly outweigh the setup costs."

Komatsu mining trucks (200 tons and up) have always been electric drive. But the 860E-1K marks the first model with a Komatsu-designed drive system and Siemens power-management system. In both trolley and non-trolley applications, the drive system produces a top travel speed of 40 mph, with a 35.52:1 final gear ratio. The liquid-cooled IGBT AC-drive system from Siemens provides many advanced features and a smooth application of torque and traction, according to the company. In addition, the 860E is said to offer outstanding braking power. The "ultra-quiet" dynamic retarding system, capable of 4,650 horsepower, is assisted by



**Komatsu's new 860E-1K mining truck features a 2,700-horsepower, 16-cylinder, two-stage turbocharged diesel that meets Tier 2 emissions requirements.**

four-wheel, wet-disc brakes.

The truck also features a spacious, isolation-mounted ROPS/FOPS cab with improved access systems. It has a five-position, adjustable air seat as well as full-size passenger seat. An integrated electronic dash display provides standard instrument gauges and payload data. The Vehicle Health Monitoring System (VHMS) allows easy access to performance data and is capable of giving technicians more information such as critical faults and pressure checks. It features a secure, easy-to-use Internet interface that doesn't require additional IT infrastructure investment by the mine.

The 860E is scheduled for limited release in 2009 with full-scale production beginning in 2010.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 177

## Navistar to Use Only Its Own Diesels in 2010

Cummins ISX will be replaced by MaxxForce-branded C15 in domestic Internationals

**N**avistar International will use only its own MaxxForce brand of diesels for its domestic heavy trucks starting next January, because Cummins won't supply engines without an aftertreatment method that Navistar is pointedly avoiding. Caterpillar, which is leaving the domestic truck-engine market in 2010 but has formed a worldwide alliance with Navistar, will supply a MaxxForce-branded 15-liter engine to replace Cummins' ISX and its own C15.

The new MaxxForce 15 will be based on Cat's C15, and will join "big-bore" 11- and 13-liter engines already in production at Navistar's new plant in the South. The MF 15 will use enhanced exhaust-gas recirculation (EGR), advanced combustion technology and double turbocharging, but not selective catalytic reduction (SCR) that all competitors will employ. It's not clear if it will use Cat's Clean Air Induction version of EGR.

Navistar executives showed a picture of the MaxxForce 15 during a January 5th webcast for investor analysts. No power ratings or other details were released, but a spokesperson said the company will announce those in March at the Mid-America Trucking Show in Louisville. The MF 15 is likely to power a Cat-branded on/off-highway construction truck that Navistar will supply to Caterpillar starting next year.

In its own announcement on January 12th, Cummins said it still believes that SCR aftertreatment is the better way to meet the federal 2010 emissions limits, so it will not build non-SCR domestic diesels for Navistar or anyone else. However, it will supply such engines to Navistar for export to countries whose regulations aren't as strict as here.

That the MaxxForce 15 will not use SCR fits with Navistar's 2010 strategy, which executives have been aggressively defending and promoting as the wiser method of meeting the 2010 federal regulations. They say that their non-SCR approach will reduce complexity and weight of their trucks, and negate the need for customers to find, buy and use diesel-exhaust fluid that SCR requires.

All other diesel builders will use SCR to meet the American and Canadian governments' January '10 limits, which demand fur-

ther reductions in oxides of nitrogen (NOx). SCR equipment injects a urea-based fluid in the exhaust to start a chemical reaction that breaks NOx into nitrogen and water vapor. It also cuts fuel consumption, the other builders say. Everyone will all continue to use diesel particulate filters, as they have since January 2007.

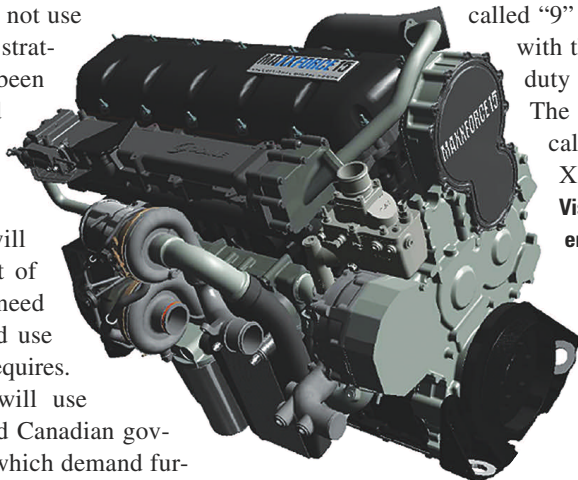
Though American and Canadian truck buyers won't get Cummins ISX diesels from Navistar in 2010, that engine family will be available from Kenworth, Peterbilt and Volvo, and probably from Freightliner and Western Star. All those truck makers also produce their own diesels or will by 2010.

Cummins will remain the exclusive supplier of private-branded medium-duty diesels to Paccar Inc., owner of Kenworth and Peterbilt here and DAF in Europe. And since Cat has stopped offering the C7 truck engine, the Cummins ISB is the only diesel now used in Ford midrange trucks. Chrysler continues to offer the Cummins Turbo Diesel version of the ISB in many of its Dodge Ram pickups and cab-chassis models.

Cummins meanwhile announced revised designations for its upcoming 2010 diesels so they include displacements in liters as well as model names. The '10 models include the heavy-duty ISX15 and ISX11.9, both of which will use a new XPI fuel system, next generation cooled EGR system, a variable-geometry turbocharger, and the SCR aftertreatment system — all controlled by advanced electronics. The ISX11.9 will replace the 10.8-liter ISM, and targeted applications include construction and other vocational trucks.

There'll also be a heavy-duty ISL9 which, like the current ISL, will displace 8.9 liters and is a bigger and stouter version of the 8.3-liter ISC. The 2010 version is called "9" instead of "8.9" to avoid confusion with the ISC8.3, one of the two medium-duty engines, a spokesperson explained. The other midrange engine for '10 is called the ISB6.7; both will have an XPI fuel system and other advances.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 176



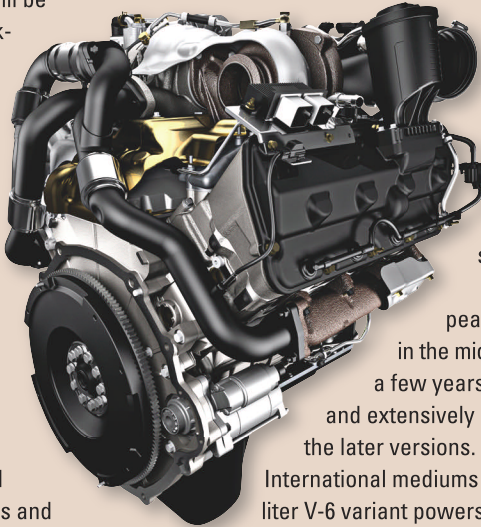
**MaxxForce 15, based on Caterpillar's 15.2-liter C15, will use enhanced EGR, double turbocharging, and other advances to meet federal EPA's 2010 exhaust limits. Like other Navistar engines, it won't have SCR aftertreatment.**



## Navistar V-8 Gone from Ford Vans, Pickups by January

The Navistar-built Power Stroke V-8 diesel will be gone as an option from Ford SuperDuty pickups and E-series vans by the end of this year, as part of the settlement of a two-year-old legal dispute between the two builders. They announced that they are dropping their suits against each other, and that the long-running supply agreement will be terminated.

Ford sued Navistar when problems with 2003- and later-model 6-liter Power Strokes caused high warranty claims; and Navistar countersued when it learned that Ford was developing its own diesels, allegedly in violation of their agreement. Ford still uses a revised 6-liter diesel in its vans, while a 6.4-liter replacement appeared in 2008 and is the current diesel option in F-250 through F-450 SuperDuty pickups and F-450/550 cab-chassis trucks.



Though Ford is mum on what will replace the Navistar-built diesel, online reports say it'll be a 6.7-liter V-8 that Ford designed and will build itself.

Ford is also said to be readying a 4.4-liter V-8 diesel, based on a Land Rover design, for its F-150 pickups.

Navistar's 6.9-liter V-8 first appeared in Fords and Internationals in the mid-1980s. It was enlarged to a 7.3 a few years later, and was turbocharged and extensively modernized as it evolved into the later versions. Navistar now uses the 6.4 in International mediums as the MaxxForce 7, and a 4.5-liter V-6 variant powers a low-cab-forward truck sold by Ford and International dealers.

# BUY TODAY



## And Make No Monthly Payments For 3 Months After You Take Delivery!

**TKX**  
**EXPRESS**  
Financing

Low Monthly  
Payments,  
Fast Approval

Monthly Payments for an *Advantage*™ Series TK110HDG As Low As

\* Price for TK110HDG with 25'9" x 102" deck, 13' hydraulic gooseneck, 20" loaded deck height, 1 3/4" apitong decking, double-wide outriggers at front with dual outriggers in center, frame reinforced for single-axle booster with brackets/air/electric, air ride suspension, 255/70R x 22.5 16PR tires, three (3) 22,500-lb. axles, 55" axle spacing.

**\$1,472<sup>54\*</sup>**  
Per Month

Loan payment based on approved credit. First payment due 90 days after receiving shipment of trailer, 60 month term. 8.70% APR. \$200 document fee. Net selling price \$70,406, including F.E.T. Excludes freight, state and/or local taxes, and license fees. **Additional surcharges may apply.**

**Trail King – Your Complete Trailer Team**



A CARULIS Company

(\*Limited time offer only)

Trail King Industries ■ 800-843-3324 ■ [www.trailking.com](http://www.trailking.com)

# Market Watch Lite

By KATIE WEILER, Managing Editor

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

## ▶ JRB

Incorporating a "new concept" in quick couplers for excavators, the JRB VersaLoc handles multi-pin spreads and various pin diameters, allowing the operator to change out a variety of attachments in seconds without leaving the excavator's cab. The Versa-Loc's reduced weight allows for more force being available to the attachment. Accommodating various hook widths, pin spreads and pin diameters, VersaLoc is available for Class 25 to 100 applications.

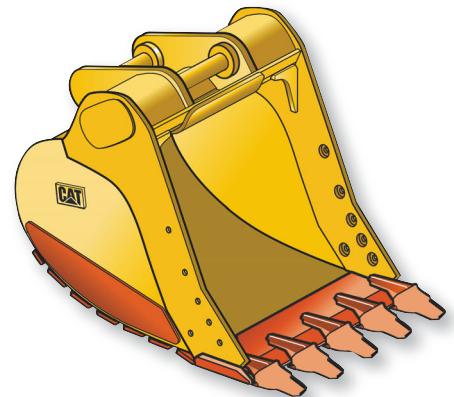
Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 188



## ▶ Caterpillar

Cat Pin Grabber Performance Bucket is designed to improve bucket-curl forces when using a Pin Grabber Coupler on excavators. Recessed pin reduces tip radius and delivers up to 10 percent more breakout force compared to a conventional pin-on bucket and coupler. General-purpose, heavy-duty and heavy-duty-rock configurations are available. Sizes range from 0.43 to 3.34 cubic yards for Caterpillar hydraulic excavators ranging from Model 315 to the 345.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 189



## ◀ Atlas Copco

SB 302 hydraulic breaker is the first mid-range addition to the Atlas Copco SB line. Maximum impact rate is 1,380 bpm, 48 percent higher than its predecessor. Weighing 670 pounds, the breaker is designed for carriers in the 4.5- to 9-metric-ton class. It requires oil flow of 13.2 to 21.0 gpm at a pressure range of 1,450 to 2,175 psi. It has a limited three-year warranty.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 190



## ▶ Bomag

The newest and largest addition to the Bomag line of walk-behind reversible plate compactors, the BPR100/80D comes standard with Bomag's Economizer system, which helps the operator achieve optimum compaction by avoiding over-compaction and identifying and eliminating soft spots. By detecting soil stiffness, the Economizer provides an overview of soil compaction status and, says the company, allows jobs to be completed with up to 25 percent fewer passes. The compactor generates a maximum working speed of 88.6 feet per minute and gradeability of 35 percent. Maximum frequency is 3,360 vpm and centrifugal force is 22,500 pounds.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 191





### ▶ Cummins Filtration

Fleetguard Direct Flow air cleaner is designed to minimize air-flow direction changes, which the company says will provide up to 50 percent greater performance and longer air-filter life in a smaller product profile. It was developed to meet requirements of Tier 4 Cummins and other engine platforms with an integrated air-intake system. Optional pre-cleaner module removes up to 95 percent of dust and dirt before it reaches the primary filter. The pleated primary filter is said to be over 99.9 percent efficient.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 192



### ◀ Allen Engineering

The MSP 415 mechanical-drive riding concrete trowel features two 46-inch-diameter, five-blade, non-overlapping rotors capable of speeds up to 145 rpm. The trowel is driven by a 35-horsepower Vanguard air-cooled gas engine, and features a centrifugal clutch system, an electric-powered spray system, and manual steering and pitch controls. A flip-up seat and removable screens allow quick access to the engine, clutch and driveline.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 193



### ▼ Quixote

Designed to be repositioned as work zones change, the Moveable Vulcan Barrier enables the opening and closing of lanes in minutes. The portable, crash-worthy steel barrier can be moved around by using the Vulcan Transfer Attachment that works with equipment such as a skid steer or wheel loader. A mile of Moveable Vulcan Barrier can be shifted in less than 20 minutes to open/close lanes, Quixote says. The barrier's installed length is 13.5 feet; system height is 32 inches; and width is 21.5 inches. It weighs 871 pounds per section.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 194



## 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 or 330-673-5826. Or, visit us on-line at [www.kentdemolition.com](http://www.kentdemolition.com).

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



© 2008 Kent Demolition Tools



Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 21





## Market Watch Lite

### Weldcraft

Modular Flex Complete (MFC) kits from Weldcraft allow welding operators to change over torches while using the existing cable. AK-150MFC kit converts a standard WP-17 series air-cooled TIG torch into 28 different torch styles. AK-225MFC kit converts a single WP-225 water-cooled TIG torch package into five additional torch styles. Both kits include collets, collet bodies, nozzles, torch heads and other accessories.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 195

**ANY CARRIER. ANY JOB.  
YOUR ATTACHMENT CONNECTION.**



[geith.com](http://geith.com)  
800-762-4090



**TRAMAC**

[tramacUS.com](http://tramacUS.com)  
866-472-4373



[geithprecision.com](http://geithprecision.com)  
866-472-4373

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 22



### Lincoln Electric

The portable Power Wave C300, with its multi-process power source and Power Connect Technology for automatically switching between 200 to 600 volts and 50 to 60 hertz, is ideal for a variety of weld jobs, including construction, automotive repair, and general fabrication. It uses the Tribrid Power Module, which delivers an efficiency rating of 88 percent at 250 amps with a 0.97 power factor. And the C300's digital controls are more than 90 times faster than the previous generation thanks to iArc,

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 196

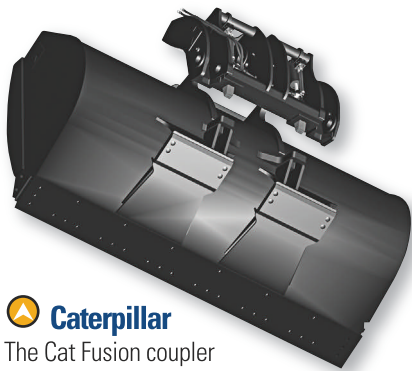
### Eaton

Eaton offers a new line of flexible rubber hose designed to use with B2 to B100 biodiesel products. GH100 hose features a hydrogenated nitrile rubber tube, wrapped with aramid/poly braid reinforcement protected by a polyester abrasion-resistant cover. The hose is qualified for under-hood use with B2 to B20 biodiesel products up to 150 degrees Celsius and with B100 products up to 125 C. It is also suited for transmission oil cooler applications using synthetic lubricants at peak temperatures up to 175 degrees C.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 197







### **Caterpillar**

The Cat Fusion coupler moves the load's center of gravity closer to the machine so that the loader performs much like it is using a pin-on bucket, with no change in tipping load. Wedge locking ensures a snug, rattle-free fit and allows many machines to share work tools with the Fusion interface. Open-frame design gives the operator clear sight lines to the work tool, load and target location. Fusion is available for Cat wheel loaders ranging from the 924 to the 972, including the IT38 and IT62.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 198

### **E-Z Drill**

Using E-Z Drill's new Model 20 UTL drill, utility companies can drill through road surfaces at intervals to check for gas, narrow leak areas to a stretch between holes, and reduce the amount of pavement that must be removed to make a repair. Although designed for the gas industry, the 207-pound, pneumatic Model 20 UTL can handle many vertical drilling needs. The standard 18-inch drill depth can be customized to reach several feet deep. Drill-bit diameter ranges from 5/8 to 2½ inches. The motor requires at least 100 cubic feet per minute of compressed air.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 199



### **JLG**

JLG family of attachments uses a common quick-attach coupler across all three of its telehandler brands: JLG, SkyTrak and Lull. This allows the attachments to be used on all three brands. The collection includes grapple bucket, 8-foot tower, fork-mounted work platform, and a variety of material buckets, truss booms and carriages.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 201

### **Wacker Neuson**

The LTN 6 light tower sports a narrow body, a 6 kilowatt generator, and a 32-gallon fuel tank for up to 68 hours of run time. At just 67 to 68 decibels at 23 feet, the sound level of the LTN 6 is low compared with the industry average, according to Wacker Neuson. Buyers can choose either the 13.4-horsepower Lombardini diesel or the 15.3-horsepower Caterpillar diesel engine. And the 10-gauge steel tub increases strength and adds protection from ground debris.

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 200





**6120 Backhoe  
by Bradco**



**Augers & Drives  
by McMillen**



**Trenchers  
by Bradco**



**Angle Brooms by Sweepster**



**Scrap and Brush Grapple by FFC**

## Paladin Brands – The One Solution For Every Job!

Turn to Paladin Light Construction Group for a wide selection of economical and efficient work-saving products. Our equipment is built by manufacturers with over 40 years experience.



# PALADIN™

LIGHT CONSTRUCTION GROUP

**1-800-456-7100**

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 23

## Unique, Light & Profitable



- ◆ Light weight



- ◆ Unique 180° MultiTip



- ◆ Low fuel consumption

- ◆ Low ground pressure



1200 Northmeadow Parkway, ste 180  
Roswell, GA 30076  
Phone: 404 614 1747  
Fax: 800 254 9481



# HYDREMA

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 136



## Lifelong Learning for the Equipment Management Industry

To learn more about the AEMP Foundation and to find out how you can participate in AEMP Foundation fund raising events, acquire technician scholarship information, or learn about the Certified Equipment

Management program, please visit the AEMP website at [www.aemp.org](http://www.aemp.org).

*Thanks to you the AEMP Foundation helps to build the leaders of the equipment management profession.*



P.O. Box 1368  
Glenwood Springs, CO 81602  
970-384-0510  
[www.aemp.org](http://www.aemp.org)

*The AEMP Foundation is a 501c-3 non-profit organization.*

Turn your  
service truck  
into the  
**ultimate utility vehicle.**



**Jump Starting**



**Welding**



**Air Power**



**AC Power**



**Goodall®**

**Visit us at the NTEA Show Booth #663**

**To learn more about Goodall visit us online: [www.goodallmfg.com](http://www.goodallmfg.com) or call 800.328.7730**

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 137



# Multi-ply Your Money!

use the excavator rock ripping **Multi-Ripper**



## or the **Multi-Ripper Bucket**

**The Best Alternative to Hammers  
Blasting or Rock Trenchers**

4 Times Faster Than a Hammer  
at a fraction of the cost

8 Times the Force  
of a 5 Tooth Excavator Bucket

Rips the sides and bottom of the trench  
flat, with no depth limitation

Owners Claim:  
"this is the best attachment  
that I ever bought!"



Maximize force  
one tooth at a time,  
with our patented  
"Shanks on an Arc" technology.



"Leader in Excavator Rock Ripping Attachments"

visit: [www.digrock.com](http://www.digrock.com)

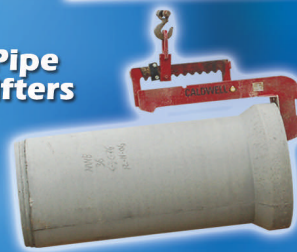
e-mail: [sales@leattach.com](mailto:sales@leattach.com)

call to order: 866-928-5800 or 508-829-4855

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 138

# CONSTRUCTION LIFTERS

**Pipe  
Lifters**



**Beam  
Grabs**



**Remote  
Releasing  
Hooks**



[www.ConstructionLifters.com](http://www.ConstructionLifters.com)

Just click to view or  
purchase any of our lifters



**Construction  
Lifters & Attachments**

**Toll Free 800-719-6190**

A Division of The Caldwell Group

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 139

**Snap-tite**  
COMPONENTS, INC.  
Quick Disconnect & Valve Division

# QUICKXCHANGE

**Work Tool Changes in  
Less than 5 Minutes!**



**Watch the Online Video!**

[www.snap-titequickdisconnects.com](http://www.snap-titequickdisconnects.com)

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 140



## Rigid, Mechanical and Hydraulic Thumbs for most Backhoes

For Use With or  
Without Quick  
Couplers

Full-Motion  
Mechanical

Custom  
Hydraulic

POWERCLAMP

Universal  
Rigid

Universal  
Hydraulic

B.R.U.T.

PowerBrute

AMULET  
MANUFACTURING COMPANY

800-526-8538

amulet.com



Proudly Made in the USA

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 141

## INCREDIBLE ATTACHMENTS

BRIDGE DECK  
AND  
CONCRETE SLAB  
REMOVAL

"We've more than  
doubled our production."  
Rogers Bridge Company, Atlanta, GA



Call Toll-Free 1-800-653-6069

See our entire line of attachments at [www.kenco.com](http://www.kenco.com)

KENCO

"America's Largest Attachment Provider"

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 142

## Running your equipment Green is about to get easier

- ☐ Coming in December - the **Running Green** channel on [ConstructionEquipment.com](http://ConstructionEquipment.com). Check our special section for reference lists, blog, links to other resources, and emissions-related news and features.
- ☐ Coming in 2009, the **Resource Guide to Running Green**, designed to provide the resources you need to meet the new emissions-management challenges. Included in this stand-alone supplement will be key information from our popular series, including reference URLs, graphics and explanations of technologies and tactics. Watch for it in January
- ☐ Sign up for our quarterly **Running Green** newsletter, where we'll keep you up to date with information on this ongoing issue.
- ☐ Watch for our web-based seminar, or webinar, coming in February on emissions control strategies.



Sponsored by:



JOHN DEERE



# COMPUTER SOFTWARE

## InSite SiteWork

**Earthwork & Utility Take-Off Software** combines ease-of-use with the most powerful estimating features available; Cut & Fill calculations from digitized paper plans, Image (PDF, TIF, JPG, etc.), CAD files (no tracing), or any combination, 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.

## Field General

**Construction Layout Software** generates construction staking data, and 3D surface models for layout and GPS machine control.

**WORLD OF CONCRETE**  
booth S20911

**No Digitizer! CAD and PDF Dirt Take-Off**



**GPS**  
machine control  
Modeling

Detailed WEB Site

[WWW.INSITESOFTWARE.COM](http://WWW.INSITESOFTWARE.COM) 1(877)746-7483

## USED REPAIR PARTS

## USED REPAIR PARTS

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



"Rely on our Experience - Est. 1967"

**Schaefer Enterprises**

[www.sewparts.com](http://www.sewparts.com) - [parts@sewparts.com](mailto:parts@sewparts.com)  
800-626-6046 - 618-833-5498

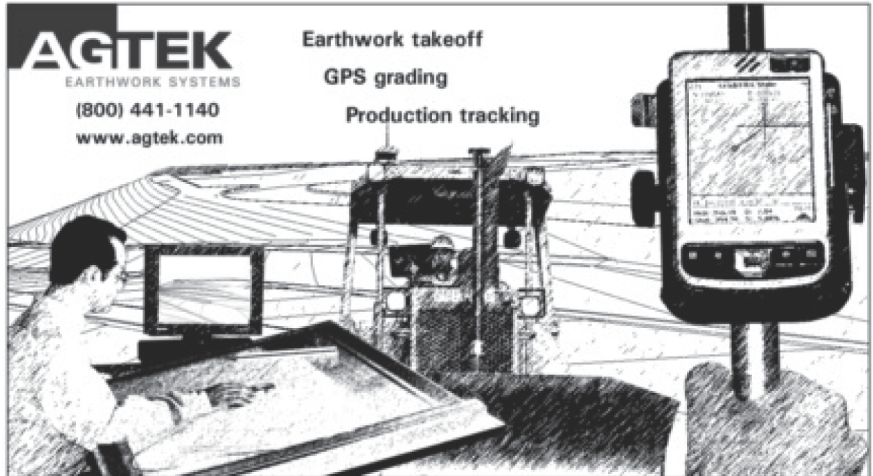


Hwy 3, PO Box 136  
Wolf Lake, IL 62998



**AGTEK**  
EARTHWORK SYSTEMS  
(800) 441-1140  
[www.agtek.com](http://www.agtek.com)

Earthwork takeoff  
GPS grading  
Production tracking



# Getting Comparative Specs is as easy as...

**1** Visit [www.spec-check.com](http://www.spec-check.com) and find detailed specifications for almost 10,000 individual equipment models in more than 60 separate categories.

**2** Specs include both NEW machines (those in current production) and older NON-CURRENT machines.

**3** On top of that, we update our database month. NO OTHER WEBSITE OFFERS THIS MUCH INFORMATION... PERIOD!

Basic specifications are free of charge, and detailed specifications are available for reasonable fees. Short-term and Long-term access plans are available.

**SPEC CHECK**

Come visit [www.spec-check.com](http://www.spec-check.com) to see for yourself, or call (630) 288-8108 for more information.

Specification (Unit of Measure: English)	Allmand Brothers TLB-535 ESL	Bobcat 9100 B	Case 580M Series 2	Caterpillar 430L
ENGINE	Isuzu	Kubota	Case	Case
Engine make	3LD1	D1105-T	445M2	9054C DIT
Engine model	0.0	31.5	75.0	97.5
Net engine power - hp				
DRIVE	Hydrostatic	Hydrostatic	Synchromesh/Pwr Shift	Synchromesh/Pwr Shift
Transmission type	1 / 1	1 / 1	4 / 4	4 / 4
No. of speeds (fwd/rev)	5.5	4.7	24.5	26.8
Max. travel speed - mph	2WD	2WD	2WD/4WD	2WD/4WD
No. of drive wheels	2WS	2WS	2WS	2WS
Steering configuration				
HYDRAULICS				
Hydraulic pump flow - gpm	2400	--	3050	3611
Relief valve pressure - psi				
BACKHOE				
Backhoe bucket width range - in	12" - 36"	--	12" - 36"	12" - 36"
Max. dig depth, optional extended stick - ft/in	--	--	18' 3"	18' 6"
Loading height, standard stick - ft/in	7' 8"	--	11' 2"	13'

# Ad Index

We're making it quicker for you to obtain more information on products.  
Visit [ConstructionEquipment.com/RS](http://ConstructionEquipment.com/RS) and enter the Reader Service No.

Company	Page No.	Reader Service No.	Company	Page No.	Reader Service No.
AEMP Association	19	48	John Deere Construction & Forestry	C2-3	1
American Honda Power Equipment	4	2	Kenco Corporation	58	142
Amulet Manufacturing Co. Inc.	58	141	Kent Demolition Tool	53	21
Case	13	8	Leading Edge Attachments Inc.	57	138
Caterpillar Paving Products	17	10	*Modern Group/Ranco Trailers	45	18
*Caterpillar Delta Group	45	17	Paladin	55	23
Chevron Texaco Global Lubricants	33	14	Sany America	62-C3	24
Construction Lifters	57	139	Snap-Tite Inc.	57	140
Cummins Engine	19	11	Trail King Industries	51	20
DII Attachments	54	22	Trimble Geomatics & Engineering	8	7
GEHL	C4	25	Volvo Construction Equipment	14	9
Goodall Mfg.	56	137	Wacker Neuson	7	3-6
Gradall	34	15	Wirtgen America	29	13
Hydrema	56	136	World of Asphalt 2009	43	16
Hyundai Construction Equipment USA	25	12	* 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

Michael Ostrowski, Regional Manager  
630/288-8139; [michael.ostrowski@reedbusiness.com](mailto:michael.ostrowski@reedbusiness.com)

### IA, IL, MN, ND, SD

Mary Adeo, Regional Manager  
630/288-8134; [madeo@reedbusiness.com](mailto:madeo@reedbusiness.com)

### East, Southeast, Eastern Canada

Dawn Batchelder (Interim)  
630/288-8141; [dawn.batchelder@reedbusiness.com](mailto:dawn.batchelder@reedbusiness.com)

### Southwest, West, Western Canada

Emily Clay, Regional Manager  
503/477-9222; Fax: 303/265-3929  
[emily.clay@reedbusiness.com](mailto:emily.clay@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

### Special Advertising Products

Jan Varnes, Account Representative  
630/288-8143; Fax: 630/288-8185  
[jan.varnes@reedbusiness.com](mailto:jan.varnes@reedbusiness.com)

E-mail your **new product** information to  
[CE.Products@reedbusiness.com](mailto:CE.Products@reedbusiness.com)

**Subscribe** to *Construction Equipment* magazine  
online at [www.getfreemag.com/ce](http://www.getfreemag.com/ce)

**Construction Equipment** (ISSN 0192-3978, GST #123397457, C.P.C. Intl. Pub. Mail #0360139) is published monthly — semimonthly in September — by Reed Business Information, 8878 S Barrons 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 2009 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 Barrons 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, \$120.99 1-year; Canada, \$169.99 1-year; (includes 7% GST, GST #123397457); Mexico, \$169.99 1-year; foreign surface, \$279.99 1-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 Barrons 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: [subsmail@reedbusiness.com](mailto:subsmail@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.





## A First Look at Wacker Neuson Machines

Instructors at the Local 150 equipment training facility near Chicago recently got a chance to take Wacker Neuson's new compact machines for a spin. Jeff Cromer, Chris Tomblin and Dominic Ventura tested out Wacker Neuson's 6001 site dumper, 850 all-wheel-steer loader, and 8003 mini excavator.

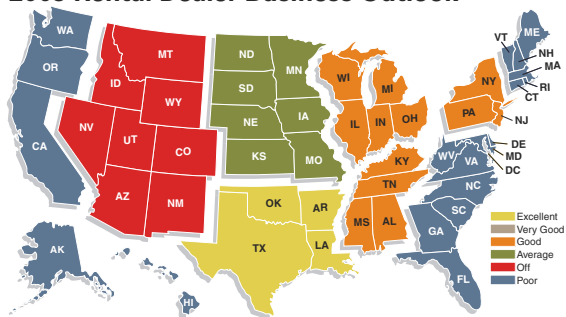
*CE* editors were on site to film the machines at work and to get reactions from the instructors, who agreed that the 6001 site dumper was a big hit and were impressed by the turning radius of the 850 all-wheel-steer loader. Head to [ConstructionEquipment.com/Digest](http://ConstructionEquipment.com/Digest) to view Wacker Neuson's new machines up close.

## 2009 Annual Report and Forecast

*Construction Equipment* has published its Annual Report & Forecast for more than 25 years, surveying the nation's fleets for a look on the year just ended and forecasting prospects for 2009.

The 2009 edition includes interactive charts, maps and graphics that illustrate how contractors, rental, government and other construction sectors performed in 2008, and whether they will improve in the year ahead.

### 2009 Rental Dealer Business Outlook



Source: Construction Equipment/Case Construction Equipment Annual Report & Forecast Survey

## Experts Talk Emissions in CE Webcast

No single issue has troubled, challenged or confused today's fleet managers and equipment users more than emissions regulations.

Lorne Fleming, director of equipment division at Grace Pacific Corp., and air regulatory expert Mike Buckantz, owner of the Associates Environmental consulting business, clear the air in the latest *CE* Webcast, as they provide their thoughts on and answer questions about emissions rules and diesel retrofits.

## CE Reports at World of Concrete

With cameras and video recorders in tow, editors at *CE* headed to Las Vegas for the 2009 World of Concrete show in early February. The online report includes video and photos of products launched at the show as well as interviews with the manufacturers.

## More Digital *Digest*

Watch Vermeer's Four-module Tractor in Action 

Great Managers: GPS Guides Grace Pacific 

Cat Introduces Compact Track Loaders 

Crane Experts Give Safety Tips in a CE Webcast 





Quality Changes the World



Come see us at the Rental Show,  
Atlanta, March 2-5, 2009

Future North American  
Headquarters & Assembly Plant  
in Peachtree City, GA



- All SANY Excavators are Fully Hydraulic and Built with Industry-Proven Components for Exceptional Performance.
- SANY AMERICA's 100 million dollar North American Headquarters and Assembly Plant is projected to open 1st quarter 2010.
- Parts, Service, and Technical Support are currently available throughout the United States.
- Dealer Opportunities and Equipment now available.



Concrete Pump  
Trucks



Crawler Cranes



Rotary Drilling  
Rigs



Motor Graders

### **SANY AMERICA INC.**

100 World Drive, Suite 218, Peachtree City, GA 30269  
Phone: 678-251-2851 Fax: 770-631-7731  
Email: [sales@sanyamerica.com](mailto:sales@sanyamerica.com)  
[www.sanyamerica.com](http://www.sanyamerica.com)

Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 24



in it for the long

**HAUL**



**We've endured a civil war, two world wars, and a great depression . . .** Throughout history we haven't backed down from anything, and we're not about to start!

**GEHL**  
gehl.com

Gehl skid loaders, manufactured in Madison, South Dakota, don't back down from tough jobsite challenges. With almost a half century of skid loader expertise, Gehl offers a new breed of loader that will make a powerful dent in your workload.



Visit [ConstructionEquipment.com/info](http://ConstructionEquipment.com/info) and enter 25