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October 2009
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60TH ANNIVERSARY

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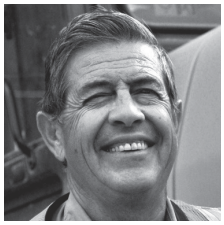

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CONSTRUCTION EQUIPMENT®
October 2009 • Vol. 112, Issue 11

DEPARTMENTS

PRODUCTS

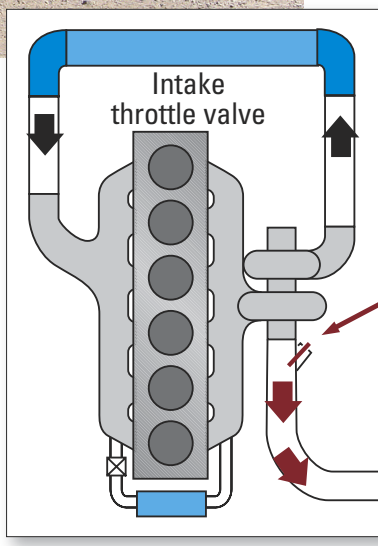
FEATURES

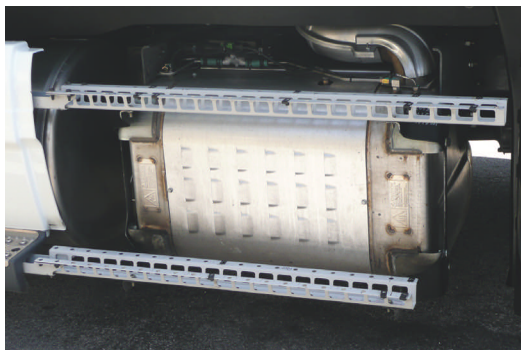
COVER STORY:

20 2010 Diesels Loom; Which Way to Go?

The economy shows signs of improving, and your business should start perking up. Your present trucks will wear out and you'll have to somehow replace them, and chances are that sooner or later you'll buy a truck with a 2010 diesel. Its exhaust gases might be cleaner than the air it breathes in, and you'll be pleased that it will probably use less fuel than what you now run. Right up front you'll pay thousands of dollars more for a 2010 diesel, just as you did for a 2007 model, if you have any of those. And the engine is likely to require more upkeep.

Manufacturers will use two main paths to meet the new emissions limits: 1. Injecting a urea fluid to break down NOx in the exhaust (SCR); 2. Using greater amounts of exhaust-gas recirculation (A-EGR). Truck editor Tom Berg explains the pros and cons of each.





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EDITORIAL STAFF
Rod Sutton, Editor in Chief
rsutton@reedbusiness.com
630/288-8130
Larry Stewart, Executive Editor
lstewart@reedbusiness.com
314/962-0639
Mike Anderson, Senior Editor
michael.anderson@reedbusiness.com
519/986-1789
Andrew Baltazar, Associate Editor
andrew.baltazar@reedbusiness.com
630/288-8087
Katie Weiler, Managing Editor
kweiler@reedbusiness.com
630/288-8142
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, Director - Construction Equipment
rblesi@reedbusiness.com
Dawn Batchelder, Marketing & Client Services Coordinator
dawn.batchelder@reedbusiness.com
Bruce Ksiazek, Director of Finance
Karen A. Ruesch, Production Director
Eletta Harris, Production Manager
Angela Tanner, Audience Marketing Manager
Karthik Krishnan, VP Interactive Media & Sales Management
Bill Patton, Creative Director
Michael N. Smith, Senior Art Director
Monina Tan-Pipilas, Production Artist

SPEC CHECK: Spec-Check.com
Bill Borthwick, Manager Product Analysis
william.borthwick@reedbusiness.com
Mac Wilcox, Manager Database
mac.wilcox@reedbusiness.com

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

REED BUSINESS INFORMATION
John Poulin: CEO/CFO, RBI-US
Jeff DeBalko: President of Business Media/ Chief Internet Officer
Dean Horowitz: General Manager-Construction Media

Holding the Key to Recovery

An equipment executive recently told us that his company checks equipment costs daily. That's right: daily. What some equipment managers review monthly or quarterly, this company is keeping a keen eye upon.

A bad number on equipment costs can destroy the profit in this highly competitive market. Projects listed today are receiving two or three times as many bids, as more companies vie for fewer opportunities to put machines to work.

As a result, bids are coming in way under expected budgets. In fact, the bids on demolition of Texas Stadium in Dallas range anywhere from $7 million to $15 million, according to a document obtained by demolitionnews.com.

Rod Sutton, **Editor in Chief**

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

Granted, some bids are taking advantage of decreasing materials costs, but the pressure on an equipment manager couldn't be greater. If you can't provide reliable owning and operating cost on the pieces of equipment needed to build a project, your company's bid could end up sinking the corporation.

According to a recent Wall Street Journal article, strong companies are taking advantage of current market dynamics to buy market share. It will work if that company has the cash and is in a strong financial position.

The equipment manager holds one of the keys to that kind of strong financial footing. Here are two suggestions if your company isn't one of them:

1) Read "How Estimates Affect Cost Calculations" (March 2004) and use the downloadable spreadsheet to see how you can figure your owning and operating costs. Use it to fine-tune your processes.

2) Consider traveling to Chicago this month for AEMP's Asset Management Symposium. One session in particular will help you work better with your organization's upper-management team: Building Owner Understanding of the Value of the Equipment Department.

It's important that your organization rightly approach the increasingly vital role of the equipment executive in financial situations.

Rod

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CONSTRUCTION EQUIPMENT MARKET WATCH

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

By KATIE WEILER, Managing Editor

Caterpillar

The largest Cat motor grader, the 24M, has a pair of multi-axis joysticks as replacements for the steering wheel and nine control levers used in the predecessor 24H. The intuitive controls, with an electro-hydraulic load-sensing system, are said to reduce hand and arm movement by nearly 80 percent. Powered by an 18.1-liter Cat C18 ACERT engine generating 533 net horsepower and 1,762 foot-pounds of maximum torque, the 24M weighs 137,692 pounds and uses a blade measuring 24 feet in width.

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Komatsu

Komatsu's 6-cubic-yard WA100M-6 wheel loader, part of the newly launched Dash 6 line, sports the "Easy Fork" feature to combine parallel movement and Z kinematics to lift big payloads on pallet forks. The 7.7-ton WA100M-6 comes standard equipped with a quick coupler and third auxiliary hydraulic line. Komtrax satellite monitoring system is also standard.

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Casagrande

Cutter soil mixing rigs combine components from French-based drilling manufacturer TEC with Italian-made Casagrande base carriers. Soil-mixing drums are mounted on a dual-motor frame, connected to the base carrier by a special Kelly bar. The drums, or cutters, are available in diameters of 95 and 110 inches, and in widths ranging from 19.5 to 42 inches. Cutting tools mount on a variety of carriers, delivering soil mixing at depths ranging from 56 to 115 feet.

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Liebherr

With an operating weight of 24,471 to 26,464 pounds, the LR614 crawler loader — equipped with a Tier 3 101-horsepower engine — is ideal for working in cramped operating environments. The larger LR624, running on a 143-horsepower engine and featuring joystick steering, has an operating weight of 37,245 to 40,893 pounds. Bucket capacity for the LR614 is 1.57 to 1.63 cubic yards, and 1.96 to 2.35 cubic yards for the LR624.

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Ditch Witch

Powered by a 268-horsepower engine, the JT100 directional drill delivers 100,000 pounds of pullback and 12,000 foot-pounds of torque. The Ditch Witch drill's design allows rotation, thrust, and drilling fluid flow to operate simultaneously at full power, and the dual-pivot drill frame means steeper entry angles without raising the tracks.

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Komatsu

Weighing in at 8,100 pounds, Komatsu's WA50-6 compact wheel loader is powered by a 38.6-horsepower engine and has a dump height of 8 feet 1 inch. The compact wheel loader is equipped with standard auxiliary hydraulics, which simplifies attachment installation and enhances the capability and versatility of the machine. It also comes with Komtrax technology.

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Vermeer

Featuring a track undercarriage, Vermeer's HG8000TX horizontal grinder allows operators to efficiently move the machine around jobsites. Equipped with 28-inch double- or triple-grouser track pads, the tracks offer increased traction in unstable ground conditions, providing access to remote areas or transport across obstacles. The machine is powered by a 1,050-horsepower Tier-2 CAT diesel engine, and it offers a large infeed opening with a millbox opening of 50x71.5 inches.

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Elliott

Elliott's V60 aerial work platform reaches a working height of 63 feet. Mounted on a 19,000-pound chassis, the V60 has platform capacity of 500 pounds, 38-foot side reach, and a 30x40-foot rotating work platform. Outrigger deployment is narrow, Elliott says, extending to 8 feet in the front and 8 feet 10 inches in the rear.

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NorAm

In addition to the standard 110-horsepower Cummins QSB4.5 engine, the Tier-3-updated NorAm 65E compact motor grader is available with an optional Caterpillar C4.4 engine. The grader features a digital electronic display and diagnostics system to monitor machine operations, enlarged engine side panels for improved service access, and an easy-fill hydraulic tank system located inside the engine compartment.

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Caterpillar

E-Ject Systems, a Caterpillar company, designed the 7460 Ejector Trailer to put 60 tons (46.9 cubic yards) of payload behind a Cat 740 articulated dump truck at lower ground pressure than the 42-ton-capacity truck would assert in its conventional configuration. Cat says the bed can be removed from a 740 ADT and fifth-wheel-style trailer hitch installed with 20 to 24 hours of labor. Scraper-style ejection unloads the trailer on the go.

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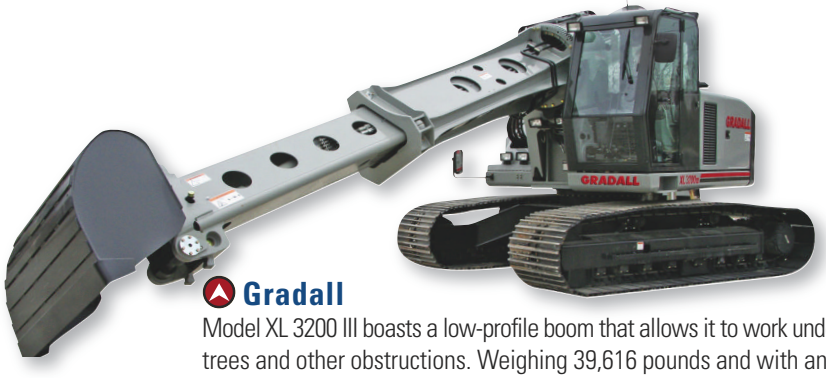

Gradall

Model XL 3200 III boasts a low-profile boom that allows it to work under bridges, trees and other obstructions. Weighing 39,616 pounds and with an engine rated at 172 horsepower, the excavator has a boom force of 22,075 pounds and bucket breakout force of 19,300 pounds. Dig depth is 19 feet 2 inches.

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IMT

IMT says 17 of its 22 articulating cranes are new or improved, with lift capacities ranging from 1,740 to 35,405 pounds. Eight mid-range cranes have been introduced with single- or double-link configurations. A new "over-bending" feature provides more flexibility when working through narrow passages and under power lines, ability to lift maximum loads in all boom positions, and a lower stowed height on the truck body. Rated Capacity Limiter is available on all cranes.

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MLE

Man & Material Lift Engineering expands into compact track-mounted aerials with its "specialized crawler" series, and the A70TD Spider Lift. Mounted on non-marking tracks, the 48-volt battery-powered unit fits through 3-foot doors and unfolds to a working height — with automatically leveling outriggers — of 76 feet. Maximum platform capacity is 550 pounds.

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Liebherr

Stevenson Crane demonstrated setting up a 120-ton Liebherr LTR1100 with only a 10-foot assembly jib in 30 minutes. The telescopic crawler crane transports on three truck loads and requires no set-up crane. Retracted, the telescoping track units offer an overall width less than 11 feet. On-board jacks simplify track removal for a transport width of less than 10 feet. The crane has a 172-foot telescopic boom and can be used with two 23-foot boom extensions.

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MANUFACTURER NEWS

JCB Expands Dealer Network

In the words of the equipment manufacturer, JCB is "going against the grain" with a current North American dealer expansion.

"Not only are we bringing in new dealers, we are focusing on re-engaging existing dealers and helping them to grow their businesses," says Jim Fielding, general manager of dealer development for JCB North America, headquartered in Savannah, Ga. "Experiencing any growth under these difficult financial circumstances is unusual."

As of Labor Day, JCB had added seven new dealers and increased market coverage by five percentage points. By the end of 2009, an increase of 14 percent in dealer coverage is expected. "We search out prospective dealers in non-competitive businesses that are well managed and have the facilities available to successfully add JCB machinery to their lineup," says Fielding.

The company also announced John Patterson, chairman and CEO of JCB in Savannah, has additionally been appointed to the newly created position of deputy chairman of JCB Worldwide. Patterson, a 38-year veteran of the company, was appointed worldwide chief executive officer in 1998, but stepped down from that position in 2008 to focus attention on growing market share in North America. U.K.-based JCB is the world's largest privately owned and third largest overall manufacturer of construction equipment.

John Patterson has been named deputy chairman of JCB Worldwide.

EDUCATION & TRAINING

Construction Equipment Management Program Launches in January

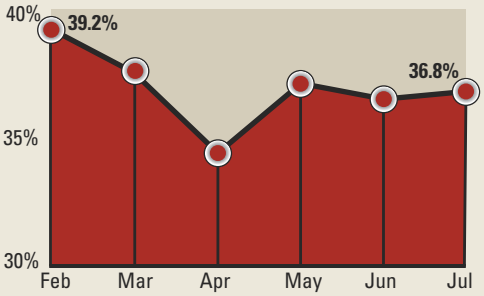
The Construction Equipment Management Program will be held Jan. 5-8, 2010, at Georgia Tech in Atlanta. Primary instructors and managers of the event are Mike Vorster and Andy Agoos.

This high-level asset management seminar will be limited to 35 attendees and will focus on best practices, business organizational forms, internal rate setting, managing owning/operating costs, fleet acquisition/disposal and replacement strategies, and repair/maintenance practices. Equipment managers, owners, senior operations personnel and senior administrative personnel, along with OEMs, dealers, and suppliers, would gain the most from attendance. Although Vorster and Agoos are the primary instructors, the seminar encourages interaction among the attendees. The curriculum is fairly intense and fast paced and offers new looks at long-standing problems. For information, visit www.cempcentral.com.

USED EQUIPMENT

Values Move Up

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

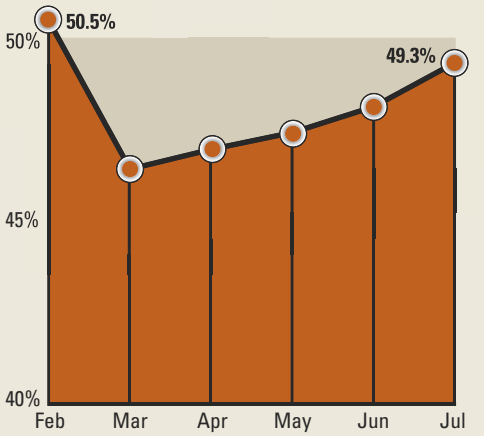


Note: Orderly liquidation value is expressed as a percentage of replacement cost (average cost paid for a new unit by large rental companies and dealers) for the average age of equipment within that category.

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

Orderly liquidation values moved up for the first time in months, up 1.1 percent in July; values are down 9.9 percent over the past six months. Scissor lifts and high-reach forklifts led the one-month rebound.

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



Values of backhoe loaders continued to climb in July, moving up 2.6 percent over June and recording the fifth consecutive month of growth. Values are still off 2.3 percent from six months ago, and average selling age is 59 months.

EQUIPMENT MANAGEMENT

Central Data Repository Idea a Threat: AEMP

The idea of a central repository of fleet operating data is not new, says the founder of a pioneering maintenance-management-solutions company. Charles Arsenault projects governments eventually calling on such data collections to help justify or even formulate regulations, but this is only part of the concern expressed by the Association of Equipment Management Professionals (AEMP).

"The potential ramifications of a central repository are staggering, and go well beyond governmental oversight," says Pat Crail, CEM, vice chair of AEMP's technology committee. "For example, if a particular manufacturer were to be able to view the entire population of a particular class of machine, they might theoretically pinpoint markets with high concentrations of high-hour machines ripe for replacement, creating a potential competitive advantage. Or, imagine if an end-user was able to review the data of a competitor.

"These potential scenarios illustrate the point that it is in the best interest of AEMP to proactively discourage any attempt to create a central data repository for machine operation data," says Crail, of the Cincinnati-based materials producer and construction contractor John R. Jurgensen Cos. "Further, a keystone for AEMP is the equipment triangle, wherein the end-user, OEM and distributor work on a level playing field. A central repository might be considered in direct conflict with that philosophy."

Arsenault, CEO of Arsenault Associates, stresses his comments about government involvement made during a recent speech to the 21st annual gathering of users of his company's Dossier fleet management software are not endorsements of such policies, but rather projections based on trends he sees. As one of a half-dozen "originators" of fleet-maintenance-management solutions, Arsenault says the seeds for a central data repository were planted long ago. "We've often talked about the idea of, 'What if?' " he says, "and that 'What if?' takes in all kinds of ideas. One of them has always been the idea of a central data repository of information, where people could access and bounce their information off the central database."

Having spent time himself in the public sector as a former mayor, Arsenault has received feedback from various levels of government over the years indicating to him the idea of a central data repository has public-sector interest. "What we find is that they are constantly looking for ways to validate," he says, citing safety and environmental issues as examples of government data competence. "When it comes down to operational, however, there's not a whole lot out there, because quite honestly they're not really on top of that piece. I can perceive a day, and these individuals I was talking to could also perceive the day, when some of this information might be required to be shared with the government," he says. "Not on a cost basis, not on a basis of giving away company secrets, but rather to see this information and data.

"The idea of a central repository allows anyone – the government or anybody – to slice and dice information as they deem fit," says Arsenault. "I came up with a saying a while back that, 'Maintenance is like golf.' By that, I mean you don't play against an opponent, but you play against your best last score. Unless you have a computer system in place, you don't know what your best last score was, let alone being able to measure against it. I can see the day when the government will be able to do the same type of thing, and I believe they will start with bits and pieces where it is related to existing rules and regulations, such as safety and environment, and then eventually identifying areas and moving on to other values that are important at that time."

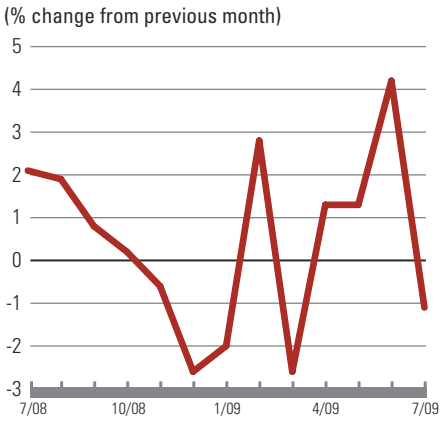
The entire scenario of a central data repository is concerning for members of AEMP, says Crail. The association "promotes privacy in the accumulation and use of equipment data. End-users have a right, and a duty, to treat such information as proprietary in the same way that they would financial or bid information."

— MIKE ANDERSON

STATUS & FORECAST

HIGHWAY CONSTRUCTION SPENDING

Highway construction spending grows through the tail-end of the recession and the initial recovery period when it usually dips. Stimulus funds and periodic price spikes for metals and paving materials are enough to offset the collapse of the highway trust fund financing system and the reduction in general revenue and bond financed projects. Highway and bridge starts soared to a record high $5.4 billion in July and then rose to $7.3 billion in August.



Source: U.S. Department of Commerce

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"Fuel Duel" Confirms 5% Economy

Cummins staged what it calls a "Fuel Duel" test that confirmed its Tier-4-Interim QSB6.7 improves fuel efficiency 5 percent.

Identical 190- to 200-horsepower wheel loaders were powered by 6.7-liter QSB engines – one certified to Tier 3 emissions limits and the other performing to Tier 4 limits. The engines were specified with the same power output, peak torque and rated speed.

Identical wheel loaders in the 190- to 200-horsepower class were used as host machines for the Fuel Duel. The 6.7-liter QSB engines – one certified to Tier 3 emissions limits and the other performing to Tier 4 limits – competed back-to-back in the Fuel Duel. They were specified with the same power output, peak torque and rated speed.

Various duty-cycle tests included short and long cycle times with minimal idle time to represent real-world operation. The machines undertook a sequence of pile breakout and bucket discharge testing, together with repeated sprints and braking. Both the Tier-3 and Tier 4 Interim (T4i)-powered machines were operated by the same driver with the same bucket size and tire pressure.

The higher fuel efficiency of the T4i engine was achieved without compromising machine performance. In fact, the T4i machine completed the Fuel Duel tests with shorter cycle times due to a faster engine response to load demands. The T4i standard will affect this engine class in 2011.

The T4i engine's fuel efficiency advantage included active regeneration of the diesel-burning Cummins Particulate Filter. Fuel used in regeneration was barely measurable, as the filter cleaned itself in passive regeneration mode for much of the operating time.

AWARDS & CONTESTS

2010 Fleet Master Entries Available

Entries are now available for the 2010 Fleet Masters Award. Each year, the Association of Equipment Management Professionals (AEMP) presents the Award to exceptional equipment professionals who excel in meeting the unique challenges inherent in cost-effective, efficient and effective management of fleets that combine on- and off-road equipment.

Fleet professionals are judged on issues such as asset management, operations, and safety and risk management. Two awards are presented: one to a private fleet-management team; one to a public fleet.

For details, contact Sara Sanderman at 970/384-0510 or sara@aemp.org.

LETTER TO THE EDITOR

A Reader's Plan for Tier 0 Machines

In response to our May-issue story "Now is Not Too Soon to Retire Tier 0 Machines," Bob Dorazio, owner of a small (less than 2,500 hp) California fleet, had this to say:

I have studied the heck out of this California CARB thing, and I found your article to be well researched and written. For that I thank you sincerely.

We have a small number of under-100-hp machines. I have concluded the best thing for me is a bit different. I am going to repower a 69-horsepower backhoe loader that has 6,000 hours on it from a Tier 0 to a Tier 2. The initial thinking was to get an early particulate filter with the double-up credits on our biggest-horsepower machine – a Tier 1, 100-hp reach lift – but we decided instead to keep that lift as a low-hour machine (with no filter) and rent a lift for bulk handling projects. (One repower and downgrading the telehandler to a low-hour machine keeps Dorazio's fleet compliant until 2018.)

I am a bit nervous about aftermarket filters and am thinking it is better to spend money on a new (Tier 4) machine that has a factory filter. I am watching and waiting – keeping the old 'hoe and making a one-machine jump (instead of two) to a Tier 4 before 2018 keeps me at a low overhead for the next few years. I am gambling we can keep the reliability there by carefully watching our predictive maintenance.

I have always believed the guy with the shop that runs machines through an engine cycle and a couple of transmissions beats the guy who has new and runs it till it starts to cave and then replaces with new. 'Course there are exceptions for the types of soils and type of work, etc.

So instead of giving away your machine at the auction just because it is Tier 0, throw in a repower.

Just a suggestion, and yes I know that some folks believe new is always better.

— BOB DORAZIO

By TOM BERG, Truck Editor

2010 Diesels Loom; Which Way to Go?

Manufacturers will use two main paths to meet new emissions limits; each has advantages and disadvantages, but both will cost you

The environment and everyone in it are being helped by 2007-spec diesels that are already so clean that there's no soot buildup inside the exhaust pipe. NOx has been cut so much that there's no diesel odor, but 2010s will produce 83 percent less.

The economy shows signs of improving, and your business should start perking up. Your present trucks will wear out and you'll have to somehow replace them, and chances are that sooner or later you'll buy a truck with a 2010 diesel. Its exhaust gases might be cleaner than the air it breathes in, and you'll be pleased that it will probably use less fuel than what you now run.

Right up front you'll pay thousands of dollars more for a 2010 diesel, just as you did for a 2007 model, if you have any of those. And the engine is likely to require more upkeep. If you now have some trucks with '07-legal diesels, you know that they make virtually no smoke, emit no odor and that, unless something went wrong in the engines, the inside of their exhaust pipes are free of the characteristic coating of soot that's a diesel tradition. Shouldn't that be enough for Clean Air authorities?

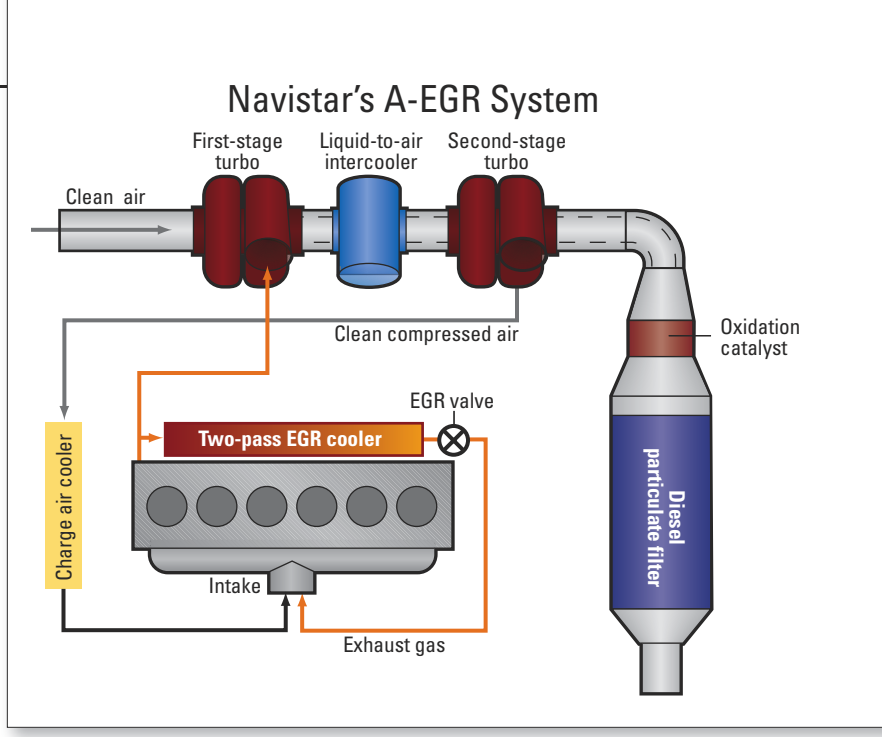
And why should there be only three years between implementation of the tough federal '07 limits and now the even tougher ones for '10? For that matter, the '07 rules came only three years after the '04 rules went into effect for all diesel builders; and most of the domestic manufacturers had to meet the '04 limits even sooner, in October '02, because they supposedly cheated in the designing of previous models.

What's the rush? It's because many experts argue that diesel emissions are fouling the air and injuring millions of people. The sooner exhaust gets cleaned up, the sooner our citizens will enjoy better health. Healthier people need less medical treatment, and in societal terms that will save more money than the cleaner engines will cost, according to health advocates. (If you live in California, you have the Air Resources Board's more draconian rules to contend with; see story on p. 26.)

Diesels in the United States were totally unregulated until 1989, and serious limits didn't come until 1994-95, when electronic controls were introduced. There are thousands of old, smoky diesels still out there, and environmentalists would love to pour some of that Clunker Cars' silicate solution into them.

In the late '90s, electronics were upgraded in an on-going process by engine makers, and oxidation catalysts were added to exhaust systems. October '02-January '04 limits required most builders to add exhaust-gas recirculation, which proved troublesome, along with advanced electronics, combustion design, higher-pressure fuel systems, and advanced turbocharging. Current '07 limits require all previous advances plus diesel particulate filters. Targets have been particulates, commonly called "soot"; nitrous oxides (NOx), which react with hydrocarbons to form atmospheric smog; and carbon monoxide and other ingredients which make diesel exhaust unhealthy.

The principal target for 2010 is NOx, which must come down from 1.2 gram per horsepower per hour to 0.2 gram – an 83 percent decrease. There are two ways of doing this: Using greater amounts of exhaust-gas recirculation, the method Navistar International has chosen; or injecting a urea fluid to break down NOx in the exhaust, which is called selective catalytic reduction and is the path chosen by all other engine builders. They are



Navistar's Advanced EGR system avoids SCR exhaust aftertreatment devices, but adds extra coolers and a second turbocharger. A-EGR also includes higher-pressure fuel injection and enhanced electronic controls plus a bigger radiator already used on '07 models. Navistar says A-EGR will add about 50 pounds to a truck.

Cummins, Detroit Diesel, Paccar, and Volvo-Mack on the domestic side; and Hino, Isuzu, Mitsubishi Fuso, and Nissan UD among the imports. Light-truck diesels from Ford, General Motors and Dodge will also use SCR.

Many builders already use SCR in Europe and Japan, and it reportedly works well for emissions and appreciably increases fuel economy. SCR uses less fuel because the engine needn't be so finely tuned to cut NOx and can instead be set up for performance and economy. Also, fewer active "regenerations" of diesel particulate filters are needed to burn off soot, which in turn uses less fuel. Volvo here has begun advertising "no-regen" engines for 2010 because those in highway service will run hot enough to passively burn off soot. This might be less true of engines in stop-and-go service, as is the case with many construction trucks.

Cummins says SCR diesels use 3 to 6 percent less fuel than current engines, and there are reports of even greater savings. Dosing of SCR fluid is at the rate of 2 to 3 percent of fuel use. That fluid will cost some money, but unless it's seriously more than the price of diesel fuel, the truck user will still be money ahead compared to now. Navistar says the fuel economy of its engines will be about the same as now, but will cost less than competitors' engines up front. (Some will, some won't; see below.)

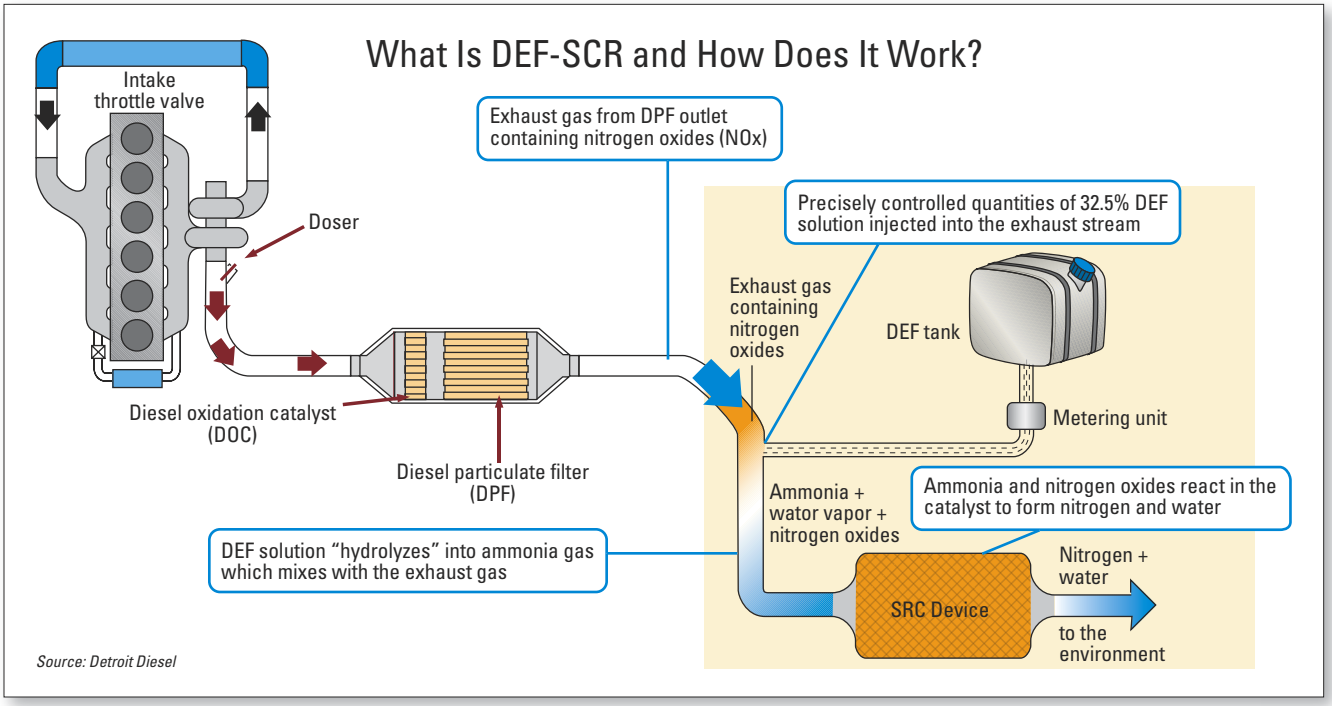
An SCR system requires the driver or maintenance staffer to replenish an on-board urea tank – a new chore. Owners must buy and store the fluid or have drivers find it while on the road. A pump pushes the fluid out of the tank; because fluid is about two-thirds purified water, a heater is used in the tank or line between it and the dosing chamber, where fluid is injected downstream of the particulate filter. This equipment plus the fluid, which weighs about 9 pounds per gallon, add 200 to 400 pounds and occupies sometimes precious space on a truck. This can be a major drawback to any weight-conscious owner and presents packaging problems to multi-axle dump trucks, among others.

Availability of urea fluid – also called diesel exhaust fluid, or DEF – was a worry to the federal EPA, which a few years ago balked at approving SCR for use here. But the industry convinced regulatory authorities that a distribution network would be in place by the time 2010 diesels hit the road. Indeed, fluid is already available in some places, so manufacturers and fleets testing '10-model diesels can obtain it. Eventually it'll be sold from bulk dispensers and in jugs. So the EPA has formally approved SCR as an emissions-reduction method.

Navistar considered SCR, but decided to go with what it calls Advanced EGR. This sends higher amounts of exhaust gases to cylinders, and uses enhanced electronic controls, even-higher-pressure fuel injection, multiple coolers, and double turbocharging. It can be argued that A-EGR is a more elegant approach than SCR because the NOx is handled totally in the cylinders. And it avoids the weight and bulk of SCR equipment, not to mention the chore of replenishing the fluid tanks. Thus A-EGR might be attractive to operators of construction trucks.

But Cummins is urging buyers to "think outside the cylinder." Its engineers and executives had planned to use both enhanced EGR and SCR for its 2010 models. Engines in over-the-road tractors would've used higher levels of EGR so operators wouldn't have to worry about finding urea fluid, while engines in local trucks would use SCR because operators could establish a ready source for the fluid.

Then Cummins executives saw that fluid distribution was going to be wide-spread, even out on the road, and meanwhile looked at results of its fuel economy testing and saw



To a 2007-spec engine with exhaust-gas recirculation and a diesel particulate filter, selective catalytic reduction for 2010 adds a tank for diesel exhaust fluid (DEF) and dosing equipment to chemically break down NOx in the exhaust. SCR promises better fuel economy, but equipment adds weight and bulk to the truck.

that SCR would yield better mileage, which most over-the-road customers demand. So more than a year ago Cummins did a partial about-face and announced that all its 2010 diesels for the United States and Canada would use SCR. This will cost Cummins much of its business with Navistar, which insists it will neither build nor install any SCR diesels in domestic trucks come January. Cummins might still supply non-SCR diesels for export of International trucks to countries whose laws are less stringent than here, but not for domestic use.

Navistar, meanwhile, continues to move toward total self-sufficiency in engines. For many years it has designed and built all of its medium-duty diesels, and it now also offers heavy-duty MaxxForce engines in 10.4- and 12.8-liter sizes. A recently struck deal with Caterpillar, which is leaving the domestic truck-engine business, will let Navistar base an upcoming 15-liter MaxxForce model on iron from Cat's C15.

Navistar dealers have been explaining A-EGR to customers and are emphasizing its advantages. Some might be attacking SCR, which is what Navistar executives have been doing aggressively since last year. They have charged that topping off urea tanks will be a burden to owners, drivers, and mechanics, who'll have to learn about the new SCR equipment and how to maintain it. Execs have said that urea fluid is toxic and dangerous to handle, that it will be hard to find, and that it will be expensive and therefore offset any fuel-economy advantage that SCR might have.

Most of those charges are false, say those in the SCR camp. Some builders have already begun to sell the fluid; they say its price will vary, but will probably mimic that of diesel fuel. As for toxicity, windshield-washer fluid is far more so, as is grease, motor oil, diesel fuel and gasoline, and even the general public safely handles these substances every day. Suppliers say that you can almost drink diesel exhaust fluid without injury, or spray it on your grass as a fertilizer (urea is the carrier for ammonia, DEF's active ingredient). If leached into soil, DEF chemically breaks down harmlessly.

Navistar predicts that fluid-based SCR will become an outmoded technology when better ways are found to reduce NOx. When this happens, trucks with SCR'd engines will become almost worthless. Navistar has tentative plans to generate ammonia right on the truck, so urea fluid and its tank won't be needed. Such systems are now being developed by Eaton and Integrated Fuel Technolo-

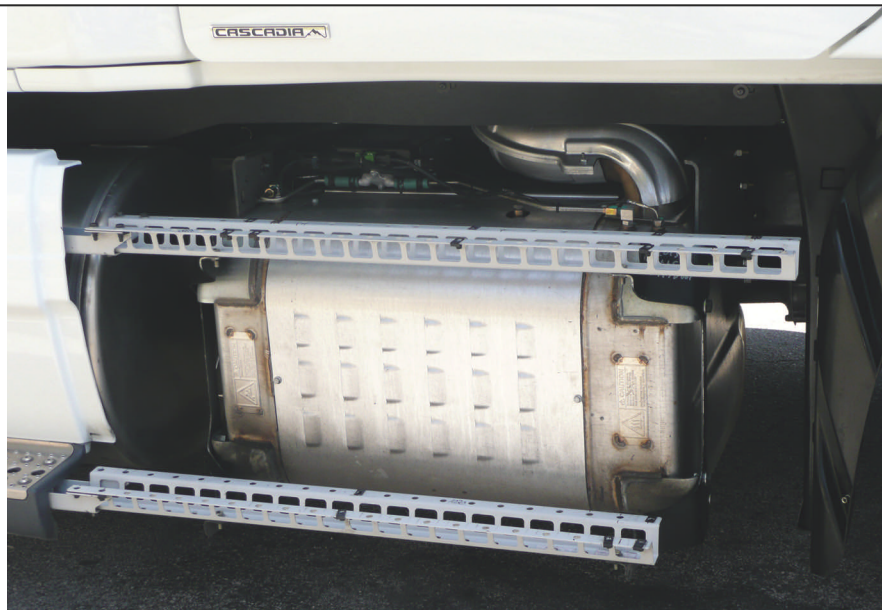
gies to do that, and Navistar hopes one or both will be ready by 2011.

Competitors say there are doubts either system will work in the real world, and even if they do, they'll add some weight and bulk to trucks – something that Navistar is now criticizing. Meanwhile, the SCR fluid distribution network – the so-called infrastructure – will be so convenient that users won't necessarily want to abandon it, and trucks will still be worth decent money.

SCR users have further reacted to Navistar's aggressive campaign by noting that they already employ EGR and know that it has limits. The EGR rate is controlled by electronics and a valve in the EGR piping; it varies from 0 to as much as 25 percent of inlet air under some conditions in '02-04 diesels. In '07 models it's as high as 35 to 40 percent; and in Navistar's A-EGR '10 engines it will top 50 percent at times. Competitors say such "massive" amounts of exhaust gas will subject engines to damaging heat, and the extra cooling needed to deal with more hot gas adds weight and bulk under the hood.

Navistar counters that any extra heat will be captured by additional coolers before the hot gases enter its engines, so they'll not be harmed. Most MaxxForce models will have two-pass EGR coolers, and those with double turbos will have a cooler between each, as some models already do. Bigger radiators were added to '07-model trucks and are sufficient to handle the heat from '10 engines, Navistar execs say. And a typical heavy International will weigh only about 50 pounds more than before. This is merely a greater use of a known technique, and the important thing is that customers won't have to learn about a new technology and cater to it, executives insist.

Navistar is also using legal challenges. It asked EPA to delay the 2010 rules to give truck buyers more time to adapt to the new emissions-reduction technologies, but EPA refused. Navistar also charged in a lawsuit that the EPA approved SCR without the public comment process it has used in previous rules writing. That gives users of SCR an unfair advantage. Competitors filed court briefs explaining their own positions and supporting EPA, much to Navistar's objections.



Detroit Diesel's compact "One Box" design for heavy-duty engines puts all SCR gear in one place under the cab or elsewhere on the truck's frame. Fuel capacity could suffer, but fuel economy will be better by 3 to 6 percent or more, DD and other builders say. SCR equipment for light- and medium-duty diesels are considerably smaller.

A spokesman for Volvo Trucks North America called Navistar's suit "a desperate act by a desperate company," intimating that Navistar knows A-EGR is inferior and is trying everything to thwart use of SCR. Navistar says it's suing for the sake of its customers, its stockholders and its employees. In July, the head of the company's engine program and a renowned German diesel expert, Dr. Helmet Endres, abruptly resigned, and neither he nor Navistar offered an explanation.

One more wrinkle is use of EPA "credits" to meet 2010 and earlier rules. Navistar and Cummins have both earned credits for producing and selling diesels that are cleaner than they had to be. Navistar has been making Green Diesel engines for more than nine years, and the Cummins Turbo Diesel used in Dodge's popular heavy pickups has been 2010-legal since 2007. Earned credits can be applied to other engines in a manufacturer's lineup.

Some current and future engine models technically put out slightly more than the stated limit for NOx, but they are legal according to EPA's rules, which allow as much as 0.5 gram per horsepower per hour of NOx in 2010 when combined with credits. Eventually those credits will run out, and the builders will have to meet the 0.2-gram limit; the builders say they know this, and are planning for it.

Customers should be aware that the emissions rules pertain to diesels, not trucks. At least one builder, Volvo, is now producing '10-model engines for a few customers who want to get acquainted with them early. But most diesels built through the end of December will be EPA-2007 models without A-EGR

2007 International tractor's exhaust includes an oxygen catalyst and diesel particulate filter under the cab; those could be in the stack if the customer wanted. The 2010 system will be the same because no SCR gear will be added — an advantage on crowded frames.

or SCR. Partly because of slow sales, most truck manufacturers will have EPA-'07 diesels on hand for several months into calendar 2010. Thus, many trucks built after Jan. 1 will get '07-model diesels. Chances are you can still order new trucks with '07-model engines, but you'd have to act soon.

All builders have been extensively testing their 2010 diesels, and some have units in the hands of fleet customers. Millions of miles of road testing will complement the lab work done as part of expensive development processes. Builders say the testing's intense pace has kept them from formally presenting the engines to trade-press writers for review. Mack showed an SCR engine in a Granite dump truck to *CE* more than a year ago (see *CE* January 2009), and Detroit Diesel recently offered drives in a highway tractor.

These drives show the engines make good power and torque, and express the builders' confidence in the products. Of course, they don't prove the systems' effectiveness at reducing emissions or show how well they'll hold up in everyday use. That's now being learned by testers and will show up later as customers put the new trucks into service.

Whether the A-EGR path or the SCR method works better in actual service is something that users, perhaps including you, will find out. If you're like many operators, you'll let large fleets with the resources to experiment try the new engines first, then make decisions based on what you hear from them. EPA-2007 diesels are already highly complex and require special care. Fleet managers have reported that the '07s are more reliable and less troublesome than the '02-04 engines. Maybe you're already buying some '07s to beat the 2010 versions and their higher prices, and if so, you're not alone from what we hear.

Clean air is increasingly expensive, as buyers of diesel-powered vehicles have been finding out for years. A 2007-model heavy diesel costs $7,000 to $10,000 more than a comparable pre-'07 engine, and 2010 models will still be pricier by about that amount. Cost and weight numbers for light- and medium-duty trucks with '10-legal diesels will be proportionally less than for heavies. Manufacturers who've announced price increases for 2010-model diesels are:

- **Volvo Trucks** – a $9,600 upcharge which itself will not be negotiable, the company declares. But of course the rest of the truck's list price will be, especially in a down economy. Mack, which like Volvo gets its engines from Volvo Powertrain, says its premium would be close to that of its sister company.
- **Daimler Trucks** – Freightliner and Western Star vehicles with heavy-duty Detroit Diesel engines will cost $9,000 more; Cummins ISC and ISB midrange engines will cost $7,300 and $6,700 more, respectively. Daimler will later announce pricing for the '10-model heavy Cummins ISX.
- **Navistar** – Heavy Internationals with 10-model MaxxForce diesels will cost an extra $8,000, and mediums will cost $6,000 more than now.
- **General Motors** – A '10-model Duramax diesel for Chevrolet and GMC light trucks might add $3,500 to $4,000 to the current diesel list-price premium of $7,000. An announcement will come later this fall.
- **Dodge** – The Cummins Turbo Diesel in 2500 and 3500 pickups uses an NOx adsorber that is already 2010-legal, so its price should not change much. But the diesel in cab-chassis models will have SCR hardware that will come at a higher price. It will be announced later.

Are there ways around the costlier 2010

diesels? Yes. But they'll cost money, too.

■ **Keep the trucks** you now have and spend money to keep them running.

■ **Check to see** if you can still order new trucks with less costly 2007-spec diesels. If the salesman says yes, get it in writing with the right to cancel if a new truck comes though with the more expensive '10-spec diesel. Or take delivery, paint the exhaust stack eco-green – which you might do with clean-running '07 diesels, too – and brag that you're doing your civic duty to help clean the air.

■ **Buy glider-kitted trucks**, which are brand new except for their engines, transmissions and sometimes axles. Those components can be installed used, rebuilt or remanufactured. Internal Revenue Service rules require that a completed glider kit sell for at least 25 percent less than the list price of a comparable new truck, and if so, it's exempt from the 12 percent federal excise tax. There are reports of local IRS agents overzealously trying to collect FET money on gliders, so be absolutely sure that any glider meets the rules and get documents to prove it.

Glider kits are available from Freightliner, Western Star and a few other truck builders. Assembling a glider requires knowledge and experience that your shop people probably don't have, so find a good supplier. Makers of front-discharge mixers – Indiana Phoenix, Oshkosh and Terex Advance – offer completed gliders done at their factories.

■ **Retrofit the engines** in existing trucks with pollution-reduction equipment if local or state laws require it. This is the case in California, New York City, and certain other places. Those in this business say '98 through '02 engines are good candidates for retrofitting, and older ones with electronic controls might also work. But pre-'95 diesels with mechanical controls cannot be effectively upgraded.

Special government grants are paying much of the retrofit expense, which ranges from $2,000 for an oxidation catalyst to $30,000 for a particulate filter. Federal Economic Stimulus money includes $300 million to boost such retrofits and other ways to embrace Clean Diesel methods, which include using Ultra Low Sulfur diesel fuel and buying '07 and '10 engines. Seek such grants because they can amount to big money.

■ **Consider alternative fuels** and electric power. Natural gas-powered engines are now available from Cummins and a partner, Westport Innovations, and some burn so cleanly that they are 2010-legal without particulate filters. Propane conversions of gasoline engines are available for light trucks, mostly Ford's F and E series. Both fuels are subsidized, so day-to-day operating costs should be less than for diesel fuel. Electric trucks are now for sale and some are entering service, but they are light- and medium-duty models that are meant for streets and not for rugged on/off-road service.

An alternative-fuel engine and fuel system adds about 50 percent and maybe more to the price of a truck or tractor, and fueling stations can be very costly. But federal tax credits and grants from various government entities can offset the upfront costs. More than $300 million in federal Economic Stimulus money is earmarked for alternative-fuel vehicles, and $2 billion for electric-vehicle and battery development. But the Stimulus money is already spoken for.

How about hybrid trucks? In urban service, electric and hydraulic hybrids can save 30 to 50 percent in fuel and cut exhaust emissions even more. With regenerative braking, hybrids can also greatly extend brake life. Some medium-duty hybrids are suitable for specialized construction-oriented tasks, and they are currently eligible for federal tax credits (which expire in December but are likely to be renewed). The hybrid credits are generally half those for alternative fuels, yet a hybrid's cost premium can approach that of an alternative fuel truck.

Hybrid trucks now available do not avoid 2010 or even 2007 diesel rules. That's because the hybrid drives are mated to diesel engines which need to be legal now and in the new year. If a hybrid with a natural-gas or propane engine were available, a buyer might be able to double-dip on grants and tax credits. We can scheme, can't we?

Some possibly good news is that federal emissions rules for 2010 are the last ones scheduled, so engine- and truck-builders and their customers should have a breather.

"Federal emissions rules for 2010 are the last ones scheduled, so engine- and truck-builders and their customers should have a breather."

By LARRY STEWART, Executive Editor

CARB Demands Update of On-Road Diesels

Truck owners will have to start replacing pre-2007 engines or retrofitting them with DPFs by 2011, but the best (known) compliance deals are going on right now

California contractors, mired in the initial compliance with the Air Resources Board's In-Use Off-Road Diesel Emissions Regulation, are paying scant attention to the sister rule regulating in-use on-road diesel emissions. The off-road rule's shifting requirements have demanded some strategy adjustments and the on-road rule, known as the statewide truck and bus rule or, officially, the Diesel Particulate Matter and Oxides of Nitrogen and Greenhouse Gases Control Measure for On-Road Heavy-Duty Diesel-Fueled Vehicles, appears to be no less time consuming.

"I've been up to my ears in the off-road regulation for six years, and frankly, I'm not nearly as up to speed on the on-road reg.," says Michael Shaw with Perry & Shaw, an El Cajon contractor that fields about 60 diesel machines. "I lost any personal interest I had in trying to keep up with the on-road regulation when I spent countless hours and resources following the off-road regulation through its workshops and public comment to completion, only to have it continue to be a moving target. I just have no faith in the process.

"I'm going to try to stay informed as to

Trucks with engines certified to EPA 2007 or later emissions standards could be compliant until 2021, and they are likely to be gradually more expensive in California over the coming years.

what the requirements of the on-road regulation are," he adds. "And when I decide CARB [the California Air Resources Board] thinks they know what they're doing, then I'll get serious about what we have to do to comply."

The in-use diesel truck regulation requires engine upgrades or replacements to trucks of 14,000 pounds gross vehicle weight (GVW) or heavier, so that by 2023 all of California's trucks will have emissions equivalent to 2010-model-year engines or better. The first performance deadline, requiring particulate matter (PM) filters on some engines on Jan. 1, 2011, is followed by engine or truck replacement requirements to reduce emissions of oxides of nitrogen (NOx) starting the first of January 2013. Fleets with three or fewer affected vehicles don't begin to meet performance requirements until 2015.

Potential for the on-road diesel regulation's finer points to shift, combined with the dearth of retrofit technologies available to bring existing trucks into compliance, has many contractors in the wait-and-see mode. Of course, a lack of cash to spend on trucks is discouraging investments as well.

But inaction will likely inflate compliance cost. Scant early-action incentives in the on-road measure expire by 2010. And while the cynical sit on the sidelines, the proactive are likely driving up prices for one key option – trucks with 2007-certified engines.

In general, the regulation requires truck owners to reduce fleet emissions each year for the next 12 years following one of three possible plans. The first is to install best-available control technologies (BACT) in the form of verified diesel emissions control strategies (VDECS) – which to this point are primarily diesel particulate filters (DPFs) – and replace either vehicles or engines or retrofit them to match 2010-model-year engines' emissions on a prescribed schedule. The second option is like the first in that it requires engines to be retrofit with BACTs and/or replaced, but instead of scheduling specific ranges of engine model years to be upgraded each year, it directs that certain percentages of the total fleet be upgraded each year. The third option is to meet CARB's gradually declining fleet-average emissions targets for PM and NOx. The three routes each reach the same place on or about 2023, having reduced California truck and bus fleets' emissions until the average matches the exhaust profile of a 2010-model-year, EPA-certified on-road diesel.

You don't have to declare which compliance option you intend to use, or stick with any one compliance option from year to year. Once the requirement of any one compliance option is met for PM, and any one option is met for NOx, the fleet is in compliance. A fleet calculator spreadsheet is available on the

Scheduling BACT Retrofits

The BACT Schedule compliance option lists the compliance date, engine model years affected, and required actions. Fleets that comply with this schedule do not have any reporting requirements. In any given year, engines about seven years old or newer will always meet the requirements of this schedule. A fleet can meet the replacement requirement by replacing a vehicle with one that has a 2010-model-year engine or with one that has a later compliance date on the schedule. For example, a fleet owner with a 1994 engine could meet the Jan. 1, 2013, compliance requirements by replacing the existing truck with one that has a 2007-model-year engine originally equipped with a PM filter. According to the schedule, no further action would be required for that truck until 2021. By 2021, the truck would need to be replaced with one powered by a 2010-model-year engine or newer. In this way, a fleet could comply by purchasing used vehicles and would not need to purchase 2010-model-year engines until 2021.

BACT Schedule

Compliance Date January 1	Existing Engine Model Years	Required Actions
2011	Pre-1994	Install PM Filter
2012	2003 – 2004	Install PM Filter
2013	2005 – 2006	Install PM Filter
	1994 – 1999	Replace Vehicle
2014*	2000 – 2002	Replace Vehicle
2015	Pre – 1994	Replace Vehicle
2016	2003 – 2004	Replace Vehicle
2017	2005 – 2006	Replace Vehicle
2018, 2019, 2020	All pre-2007	No new requirements
2021	2007 or equivalent	Replace Vehicle
2022	2008	Replace Vehicle
2023	2009	Replace Vehicle

PM Filter – Highest level verified diesel emissions control technology to reduce PM.
* By 2014 all engines must have a PM filter regardless of engine model year.
Source: California Air Resources Board

Cleaire's Longview DPF is the only on-road VDECS currently verified to reduce NOx. But its 25 percent reduction falls far short of bringing engines into parity with 2010-certified emissions.

CARB website at www.arb.ca.gov/msprog/onrdiesel/calculators.htm to help evaluate different choices. The calculator determines when any of the three options are satisfied for either pollutant; and it accounts for vehicles that qualify for credits, delays and other provisions. It does not, however, help much with comparing compliance costs.

"We developed a compliance planning tool in-house that takes all three compliance options [considering the data you input] and compares and contrasts them," says Charlie Cox, with emissions-retrofit dealer, IRONMAN Parts, in Corona, Calif. "So you can see which one is going to make you spend the most money and when it's going to make you spend it. One [option] may look good for the first three years and then slaps you with a big purchase demand on the fourth year.

"The more fleets that I run through this thing, the more obvious it is that the purchase preferences and fleet makeup of each fleet have everything to do with which option makes the most sense," he says. "The BACT Schedule option has its pros and cons. It's simple – harsh, but simple. You don't even have to report under that option, so life is easier. Some people want that.

"But I also have clients who say things like, 'I like my '98s – they get great fuel economy – but my '02s aren't nearly as nice. I'd rather keep my '98s.' Well, he'd better not choose the BACT Schedule option; it's going to tell him exactly when those need to be gone."

Cox is impressed at the significance of factors other than cost driving many strategies.

"If they normally turn over a lot of trucks every year – a high percentage of the fleet – then they're likely a good candidate for the BACT Schedule," Cox says. "Whereas if they turn over a very low percentage of their fleet, then the fleet averaging option is more likely a good choice.

"Other fleet managers look at the BACT percentage option and realize the expenses there tend to be more uniform than the BACT schedule (which costs like a rollercoaster – extremely low expenses to extremely high expenses from one year to the next)," he says. "Fleet average tends to be less of a rollercoaster, but there are still years with high costs and low. The BACT percentage option allows you to blend retrofits and replacements so that you have a nice, stable expenditure each year.

"If you want to keep trucks as long as humanly possible, then fleet averaging is probably more for you," Cox says. "If you want to be somewhere halfway in between, BACT

percentage limits will also let you pick and choose which ones go where and when. All you have to do is meet the percentages."

How far some truck owners might go to simplify compliance has surprised Cox.

"I sat down with a P&D-fleet guy the other day who completely surprised me with his reaction to the numbers we came up with," Cox says. "He said, 'Well why don't I just go buy a boatload of '07s [trucks with engines certified to 2007-model-year emissions standards]?' He was talking about buying 225 2007s in the next year and a half.

"To me, that seemed like a crazy purchase, considering the cost. But he said, 'No I'll get a great deal on them now.'"

A fleet judiciously replaced with 2007-certified trucks could be compliant until 2021 via the BACT Schedule. But already pricey 2007-to-2009 trucks are likely to hold value, if not appreciate, in California as demand for them increases between now and 2014.

Ultimate compliance – 2010 emissions standards – is impossible at the moment, so there is no silver bullet for sale right now that guarantees a truck's indefinite place in a fleet. Trucks with 2010-certified engines will be available on Jan. 1, but buying brand-new replacements will likely be the expensive play. Volvo Trucks will add a $9,600 surcharge to vehicles that meet EPA 2010 emissions standards, and Daimler Trucks will levy emissions-control surcharges from $6,700 to $9,000 per vehicle, depending on engine choice. Navistar's price increases will reach $1,600 per vehicle, which is added to an average $1,000-per-unit price hike early in 2009.

Retrofitting some trucks with VDECS will be less expensive, but these trucks will need to be replaced or fit with additional, as-yet-unverified technologies to bring them to emissions parity with 2010 engines. And today's VDECS applications are limited. Costs range from $10,000 to $30,000, but average between $15,000 and $20,000 per engine.

The best candidates for retrofitting are 1998- to 2002-model diesels because they already have some pollution-control technologies that will limit the need for regeneration and maintenance. The ideal retrofit device is a passive one, that regenerates (burns accumulated soot off the filter element) while the truck is working. The engine must run at a specified minimum temperature for at least 25 percent of its duty cycle for passive filters to be reliable. The alternatives are active VDECS, which regenerate using electric energy or diesel fuel and require that the truck be taken out of production during the process.

There are just three VDECS allowed on pre-1993 on-road diesels, and none are passive. Of the 14 VDECS capable of working with 1993 or later diesels, half are passive models. Two of those passive VDECS are not verified to work with original-equipment oxidation catalysts, which disqualifies them from

BACT Percentage Choices

Complying via BACT Percentage Limits offers truck-fleet owners flexibility to select which vehicles to upgrade first, but requires users to report fleet information annually. The table's middle column lists minimum percentages of fleet engines that need Level 3-verified particulate-matter (PM) filters. The right column holds the percentage of fleet engines matching 2010-model-year emissions standards needed to satisfy NOx BACT requirements. A fleet of four trucks, for example, could meet the 25-percent PM filter requirement in 2011 by installing a PM filter on any truck. If by then the fleet already has a 2007-model-year or newer engine originally equipped with a PM filter, that truck would meet the PM-filter requirement. In 2012, two trucks would need PM filters. By 2013, the fleet would need to replace a vehicle (25 percent of the fleet) with one having a 2010 engine, or add a retrofit to bring one truck up to 2010 standards (Note: There currently are no retrofit technologies that match 2010-model-year NOx reductions). A 2010 or later model truck would have a DPF, satisfying the 75-percent PM-filter requirement. By 2014, the fourth vehicle would need to be replaced with one having a 2010 or later engine. The fleet would be set until 2017, when one of the trucks with only an aftermarket PM filter would need to be replaced. By 2020, the fourth vehicle would need replacing.

BACT Percentage Limits

Compliance Date January 1	Percent Meeting BACT PM Filter	2010 Engine*
2011	25%	N/A
2012	50%	N/A
2013	75%	25%
2014	100%	50%
2015	100%	50%
2016	100%	60%
2017, 2018, 2019	100%	80%
2020, 2021, 2022	100%	90%
2023	100%	100%

Source: California Air Resources Board

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Electric vehicles like this 16,500-pound GVW Smith Newton bucket truck for PG&E can dramatically lower fleet emissions averages. Smith will produce vehicles up to 16,500 pounds GVW in the United States in 2010.

use with many engines built in the late 1990s through 2007. Ten of the 14 on-road VDECS are not verified for use with engines that use exhaust-gas recirculation (EGR), which precludes them from being applied to most domestic diesels built since October 2002 (only one passive VDECS will work with EGR).

Lots of owners of pre-1994 trucks should be considering 2007-or-later models as replacements between now and 2011. It's also possible to repower older trucks or build glider kits with engines certified to 2007 emissions standards.

Replacing with 2007-certified engines can only be part of a much broader strategy if cost is to be contained, though.

"It takes a real keen understanding of the rules to try to model what's going to be the cheapest legal path to compliance," says Sean Edgar, of the consultancy Clean Fleets Coalition in Sacramento, "Because in the short term people want to minimize their outlay of capital, but in the long term CARB has a plan that by 2023 everybody's going to be using near-zero-emissions engines."

Edgar advises diesel-equipment owners in California on environmental regulatory compliance. His client list includes hundreds of dump-truck and solid-waste companies. He says the first step to lowest-cost compliance for most truck owners is to carefully inventory their engines.

"CARB's rules are all about the engine, not necessarily the year of the truck," he says. "And the year of the engine is not necessarily the same as the year of the truck. You have to

The Fleet-Average Option

Fleet averaging allows a truck owner to gradually retrofit and replace engines to meet fleet-average emissions targets for PM and NOx. Targets decline so that by 2014 all engines should have PM filters, and by 2023 all trucks should have emissions equivalent to 2010-model-year engines. The NOx and PM emissions factors and targets for each engine are based on the engine model year and vehicle weight class. Applying a VDECS reduces the emissions factor by the percent reduction for which the retrofit device is verified. Fleets may comply with some engines emitting above the target if they also have enough engines below the targets that the fleet average meets the goal. Owners complying via fleet average must report fleet information annually. Hybrid vehicles earn a credit up until 2017 that double counts their very low emissions levels when calculating the PM and NOx indices and target rates. Alternate-fuel or heavy-duty pilot ignition engines are allowed to apply the NOx emission factor for the engine model year to which the engines are certified in calculating the NOx index and zero for the PM index.

Engine Emissions Factors (grams/mile)

Model Year*	Greater Than 33,000 lbs PM	Greater Than 33,000 lbs NOx	Less Than 33,001 lbs PM	Less Than 33,001 lbs NOx
1900	3.36	22.0	1.65	14.2
1991	1.25	22.0	0.84	14.2
1994	0.81	22.0	0.43	14.2
2004	0.81	12.0	0.43	6.7
2007	0.11	7.0	0.06	4.0
2010	0.11	1.6	0.06	0.8

* Engine model year emissions standard met

Source: California Air Resources Board

Fleet Emissions Targets (grams/mile)

Model Year*	Greater Than 33,000 lbs PM	Greater Than 33,000 lbs NOx	Less Than 33,001 lbs PM	Less Than 33,001 lbs NOx
2011	0.710	--	0.38	--
2012	0.530	--	0.29	--
2013	0.320	14.4	0.17	8.5
2014	0.110	9.8	0.06	5.8
2015	0.110	9.8	0.06	5.8
2016	0.110	7.8	0.06	4.6
2017	0.110	6.0	0.06	4.0
2018	0.110	6.0	0.06	4.0
2019	0.110	6.0	0.06	4.0
2020	0.110	4.4	0.06	3.2
2021	0.110	4.4	0.06	3.2
2022	0.110	3.0	0.06	1.6
2023	0.110	1.6	0.06	0.8

Source: California Air Resources Board

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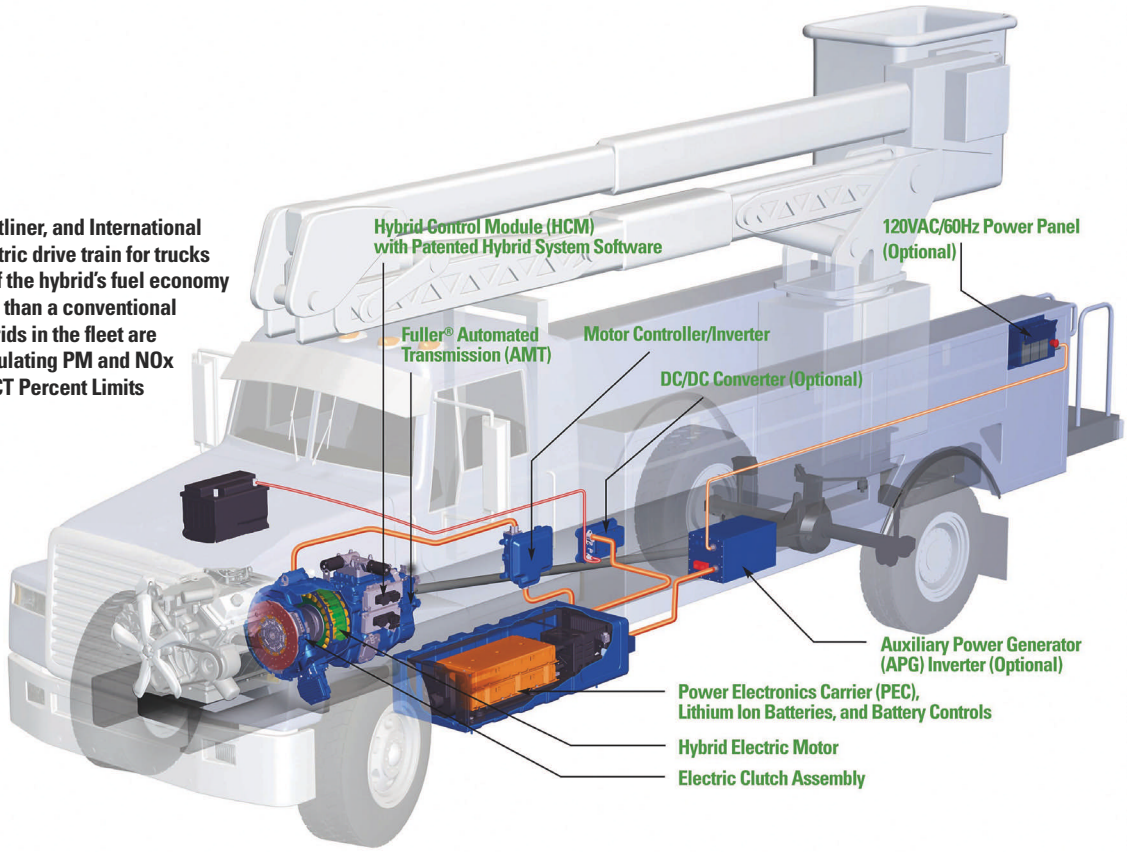
Peterbilt, Kenworth, Freightliner, and International offer the Eaton Hybrid-Electric drive train for trucks up to 40,000 pounds GVW. If the hybrid's fuel economy is at least 20 percent better than a conventional vehicle, the number of hybrids in the fleet are double counted when calculating PM and NOx indices and targets for BACT Percent Limits and Fleet Averaging.



absolutely have clear information about what engine model year is in your existing trucks.

"And the in-use on-road diesel rule is about diesel engines in vehicles that are greater than 14,000 pounds GVW," he adds. "That includes a lot of the smaller Class 4 and 5 equipment that is very common in construction use.

"You also have to understand the current use of the vehicle because there are some mileage-weighted thresholds," Edgar says. "Lower-use vehicles may not have to comply as quickly."

Edgar's greatest challenge to California truck owners, though, may be to thoroughly understand their owning-and-operating costs.

"People understandably do not like the idea of taking on truck or equipment payments right now, economic conditions being what they are," he says. "But I understand from working with a lot of equipment owners that they're spending significant money keeping older trucks on the road."

Neglecting to recoup all of the costs arising from owning and operating equipment – depreciation or cost of capital, for example – because of accounting practices or ownership biases gives a decision maker a false sense of a truck's economy. Failing to accurately measure fuel use or mileage can also make trucks appear much less expensive to operate than a newer replacement.

Underestimating truck costs makes it more difficult to decide which emissions-cleanup option – retrofit, repower, replacement – will be most cost effective in the long term. Worse yet, inaccurate or incomplete accounting can lead managers to retain trucks that might be effectively replaced by subcontractors, dramatically reducing the owner's exposure to regulatory liability.

Properly accounting for all equipment costs is an exercise in which all construction-equipment owners in air-quality non-attainment areas should seriously engage. Because even if your state does not adopt the CARB diesel-emissions regulations to clean up their air, chances are very good that municipal and other local agencies responsible for air quality will soon impose regulations that will force diesel owners to invest in cleaner diesels.

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By MIKE ANDERSON, Senior Editor

A Big Future Indeed For Crawler Loaders

Manufacturers remaining in the full-sized crawler loader market continue to update their products

With the total number of models at less than 40 percent from a decade ago, and with just three manufacturers still in the game, it would be easy to look at the full-sized crawler loader market and conclude its rich place in history.

Not so fast.

The three manufacturers offering full-sized crawler loaders – Caterpillar, Liebherr and John Deere – continue to not only update their models, but also to promote the crawler-loader's useful role on jobsites and in the equipment fleets of smart managers. Each product line offers three model sizes.

"The folks I talk to when I travel, they swear by track loaders, and it's all about keeping the rest of their fleet utilized," says Dave Cusac, track-type tractor product application specialist with Caterpillar's excavation and earthmoving divisions. "If they're moving bedding material and they just had a day of rain or two, 6 psi is a lot better than 30 psi, when you're looking at track ground pressure versus wheels, and still keeping up and keeping some of those machines moving. It was very clear that those folks are very passionate about their usage of the track loaders."

While at a recent product launch for the D7E electric-drive dozer in San Antonio, Texas, Cusac met a customer who operates only Caterpillar 963 and 973 "track-type" loaders. "He said, 'I can do everything with my track loader that they can do with that tractor, and more.'" Texas is one of the regions in the continent where crawler loader usage prevails and even flourishes, and the area contractor already sold on the machine type is certain to be pleased by news coming out of Caterpillar now. Following the 2007 introduction of D-Series versions of the 953 and 963 track loaders, with increases of more than 15 and 25 percent in horsepower to 148 and 189, respectively, Caterpillar is now ramping up to produce the D-Series version of the market's largest machine, the 973.

"A lot of the same features and benefits that we built into the smaller D-Series were also incorporated into the 973 size," says Cusac's Caterpillar colleague Ken Nebergall, adding that the 973D will blow away "those customers who value what the 973C has done for them."

The other market players are busy, too.

This past summer, Lieb-

One of two Liebherr crawler loaders with Tier 3 engines introduced this year to join the previously-released LR 634, the 143-horsepower LR 624 is a successor to the LR 622 that incorporates the visually-appealing and functional design of the LR 634.

herr introduced the 101-horsepower LR 614 and 143-horsepower LR 624 to join the previously released 184-horsepower LR 634, "to provide a full range of Liebherr-designed and -manufactured crawler loaders with bucket capacities from 1.57 to 3.14 cubic yards," says Duane Wilder, president, Liebherr Construction Equipment. "In the fall of 2008, we announced that we would discontinue our dual-branding relationship with John Deere for crawler loaders beginning in 2010. The introduction of the LR 614 and LR 624 are the first new models with Tier 3 engines available in North America exclusively under the Liebherr brand."

With the compact LR 614, Liebherr became the first manufacturer to supply a Tier 3 machine in this class, the company says. The LR 624 replaces the LR 622 with a continuation of the modern styling and design of the LR 634, but while maintaining the established hydrostatic drive system.

At John Deere, the 181-horsepower D-Series version of the 755 offers upgraded styling and controllability, and uses a Deere PowerTech engine versus the previous Liebherr power plant. At the smaller end, the 99-horsepower 605C incorporates the rear-engine design of the 655C-II and 755D. "We wanted to get the benefits of a larger machine. With the engine in the rear, you get a lot better visibility and a little bit better balanced machine, and we wanted to carry that forward into that smaller size class," says Scott Bayless, crawler product consultant with John Deere Construction & Forestry, and another believer in the benefits of the crawler loader. "It can do excavation work like an excavator, but you can actually haul the material away and stockpile it, versus just casting it off to the side."

For digging basements, the ever-popular crawler excavator has its limitations, to which the crawler loader offers alternatives, says Caterpillar's Cusac. "Those become more and more clearly defined by the carry distance. If you're working outside of the reach of the excavator, then you would go to something such as the track loader to do similar tasks."

The versatility of the track loader, says Nebergall, shines through as a complementary tool in landfill applications, and can even offer a consolidation of machines on sewer and water-main jobs. "Especially nowadays," adds Cusac, "when customers are wanting to do so many different tasks on a jobsite with just one machine or one operator."

'Think big'

It's not just traditional basement diggers who can benefit from the crawler loader, but any contractor who accepts "how productive they can be with this big skid-

The Cost of Ownership

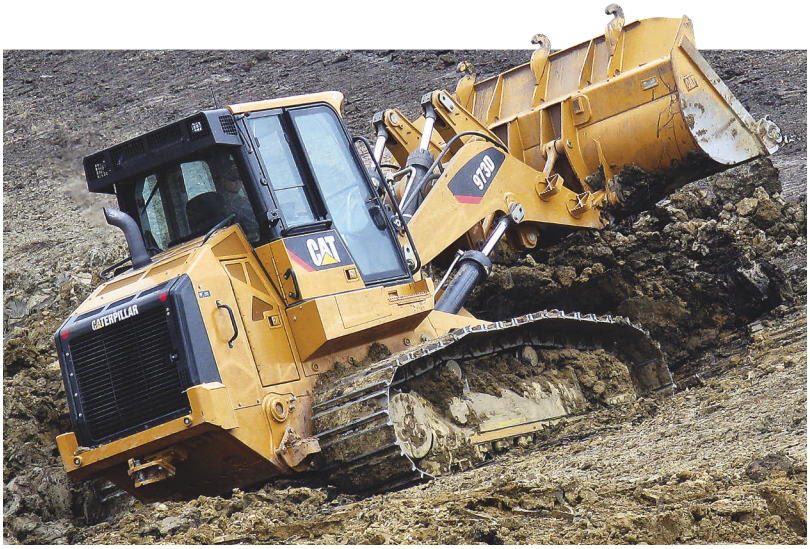
Size	List Price	*Hourly Rate
75 - 104 hp	$131,534	$54.07
105 - 129 hp	$158,255	$64.59
130 - 189 hp	$252,209	$101.92
190 hp and up	$383,267	$142.66

* Hourly rate is the monthly ownership costs divided by 176, plus operating costs.

Unit prices used in this calculation are diesel fuel at $2.50 per gallon, mechanic's wage at $46.29 per hour, and money costs at 4.875 percent.

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

With John Deere's Total Machine Control (TMC) system, the 755D crawler loader's operating characteristics can be tailored to the operator's preferences. The largest of John Deere's three crawler loaders, the 755 is the first D-Series model in the family.



Although not officially introduced as of press time, an updated D-Series version of the largest track loader model, the Caterpillar 973, is on its way this year. Among upgrades to the Caterpillar full-sized track loader product line is a joystick steering system, similar in operation to the system on its compact track loaders.

steer loader," says Nebergall, who uses the compact-loader reference deliberately. "I think most of our customers all over the U.S. and the world understand the value of those products," he explains. "Well, when you look at the current track loaders – our 953D, 963D, and the 973D – you can very easily visualize that it's just a larger and more productive version of those smaller machines."

And recent product developments will help in the understanding, says Nebergall, tractor-type tractor and track loader product sales engineer with Caterpillar's earthmoving division. "The joystick steering system is a new option that allows the newer, younger operator to get on a machine and learn this machine very quickly," he says, "or if he's already been running one of these compact track loaders or skid steers, he already knows those controls."

The regional markets where crawler loaders prevail include the U.S. Northeast and Midwest. "Typically, the crawler-loader market is somewhat finicky," says Deere's Bayless, "because you've got pockets around the country where you have contractors who have used them and have always used them. You've got other pockets around the country where guys used to use them, but have switched to excavators or even wheel loaders. Typically, the guy who is going to be using a crawler loader is doing excavation work in an area that has soft underfoot conditions, that a wheel loader can't do because it's too soft, or an excavator could do but there's not room enough to get a truck in to haul the material away."

Cusac says it often boils down to soil type. "If you use just the state of Ohio as an example: Northern Ohio, you have rock; southern Ohio, you have clay," he says. "A lot more prevalent track-loader customers are pocketed in that southern region versus up in the north." Adds Nebergall: "We've got customers who are very intelligent; they are very careful about how they spend their money, and these are the guys who are still buying track loaders. So, obviously, there's something of economic value by using these machines."

Don't write the last chapter just yet.

Crawler-Loader Specifications (by horsepower)

Model	Operating Weight (lb.)	Bucket Capacity (cu. yds.)	Breakout Force (lb.)	Static Tip Load (lb.)	Dump Clearance	Engine Make	Engine Model	Net Engine Output (hp)
John Deere 605C	23,600	1.7	22,480	14,750	8′ 9″	John Deere	4045TF278	99
Liebherr LR 614	24,480	1.7	20,226	15,269	8′ 7″	Liebherr	D504TI	101
John Deere 655C-II	33,950	2.35	27,675	23,086	9′ 3″	Liebherr	D924T-EA1	130
Liebherr LR 624	37,492	2.35	28,541	25,937	9′ 4″	Liebherr	D934S A6	143
Caterpillar 953D	34,209	2.42	35,491	26,035	8′ 9.8″	Cat	C6.6 ACERT	148
John Deere 755D	46,255	3.14	36,869	31,597	9′ 9″	John Deere	6068H	181
Liebherr LR 634	46,107	3.27	36,856	31,191	10′ 0″	Liebherr	D934 L A6	184
Caterpillar 963D	45,398	3.2	45,831	31,883	9′ 6.7″	Cat	C6.6 ACERT	189
Caterpillar 973C Tier 3*	58,941	4.19	43,762	43,542	10′ 4″	Cat	C9 ACERT	239

* Caterpillar has announced a 973D model is forthcoming

Source: Spec-Check.com Xpanded Specs (as of August / 09)

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Gallery of Crawler Loaders

JOHN DEERE

Largest Model Boasts Total Machine Control

Not only the largest in the three-model product family, but also the first D-Series crawler loader introduced by John Deere, the 181-horsepower 755D (shown here) incorporates a double final drive seal arrangement that alerts the operator in the event of a failure. Also, with Deere's PowerTech Plus engine and Total Machine Control (TMC) system, the 755D's operating characteristics can be tailored to match the operator's preferences. Uniquely at the other end of the model offering, the 99-horsepower 605C carries over the rear engine design of its larger counterparts, providing enhanced visibility and machine balance for performance and operating characteristics similar to the 130-horsepower 655C-II and the 755D. Like all Deere crawler loaders, the 605C has a rearward tilting cab for service access. V-pattern transmission control is standard; joystick control is optional.

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CATERPILLAR

Most Powerful Track Loader On the Market

Having introduced the 953D and 963D track-type loaders two years ago, Caterpillar is now following suit with the D-Series introduction of the largest crawler loader in the market, the 973. At 148 and 189 net horsepower, respectively, up by more than 15 and 25 percent, respectively, over predecessor models, the Caterpillar 953D and 963D (shown here) are powered by the Cat C6.6 ACERT engine. An electronically controlled hydrostatic drive system provides independent power and control of each track, offering fast acceleration, infinitely variable speeds, and automatic, on-the-go, direction changes. A new sealed and pressurized cab tilts for service access.

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LIEBHERR

Two Exclusive Models Update Line

Introduced this summer, the LR 614 and LR 624 are the first new crawler-loader models with Tier 3 engines available in North America exclusively under the Liebherr brand. They join the previously introduced LR 634 to provide a full range of Liebherr-designed and -manufactured crawler loaders with bucket capacities ranging 1.57 to 3.14 cubic yards. The 101-horsepower LR 614 (shown here), while compact in size at a base operating weight of less than 25,000 pounds, boasts a tipping load of 16,751 pounds. The 143-horsepower LR 624 is a successor to the LR 622, representing a continuation of a design introduced with the 184-horsepower LR 634 while maintaining the hydrostatic drive system. The new, larger cab features single joystick control and a single-piece curved windshield. Both new models have available 4-in-1 buckets and rear-mounted rippers as options.

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Suited for digging out roots, handling demolition debris and piling limbs, Kenco's loader rakes have a tine configuration that reduces the volume of dirt and unwanted debris being picked up, allowing easier chipping, grinding and burning. Kenco rakes are available to fit various makes and models of carriers, with either pin or quick-hitch configurations. Also available for use on crawler loaders, Kenco loader buckets are constructed with high-alloy, abrasive-resistant steel.

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PSM

Reflecting the use of crawler loaders in many specialized applications, PSM offers not only a complete line of standard loading tools such as general and multi-purpose buckets, but also is expanding its offerings with a full line of fork attachments. These include rotating forks, fork positioners, quarry forks and side shifters. A division of Cascade Corp., PSM also continues to provide specialty attachments for landfill and demolition jobs — each available with a choice of teeth, adapters and cutting edges.

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General

A patented twin-screw clamping mechanism allows General Equipment's 190C Cut-R-Tach rotary asphalt cutting tool to be fit directly to the crawler loader bucket without special tools, modifications or adapters, and to remain tight during both forward and reverse cutting applications. A 19-inch-diameter cutting blade is machined from a service-duty alloy steel and yields a maximum cutting depth of 5.5 inches. The unit is designed to handle up to 50,000 pounds of downward force.

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Caterpillar

With the Caterpillar K Series bucket-tooth system available for crawler loaders, a lower tooth profile provides better penetration and maintains sharpness longer. Twist-on not only makes installation quicker, but also reduces tip movement and allows the tip to grab the adapter tighter the harder it digs into tough materials. Tips are secured with a one-piece retainer that installs vertically in the tooth, rather than being hammered through holes in the sides. Tooth life is increased by up to 15 percent, says Caterpillar.

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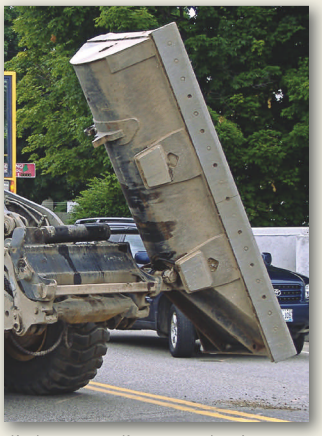
M.C. Faulkner & Sons



Available for use on crawler or wheel loaders, side dump buckets from M.C. Faulkner & Sons are designed with a lock valve to prevent the bucket from free falling while dumping. Used as either conventional or side dump buckets, the attachments are custom-made to match the carrier's specifications and applications, including with bolt-on edges. Also available are pipe grapples with either a quick coupler or pin-on configuration. Along with hydraulic hoses, a diverter valve is normally included on the frame.

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ACS

Available with either a coupler or equipped for pin-on connections, pipe grapple forks from ACS Industries allow full-sized crawler or wheel loaders to handle long and bulky pipe. The grapple forks are designed to clamp to large- or small-diameter pipe, and are available with optional poly-lining on the clamp arms to serves to protect the pipe from damage.

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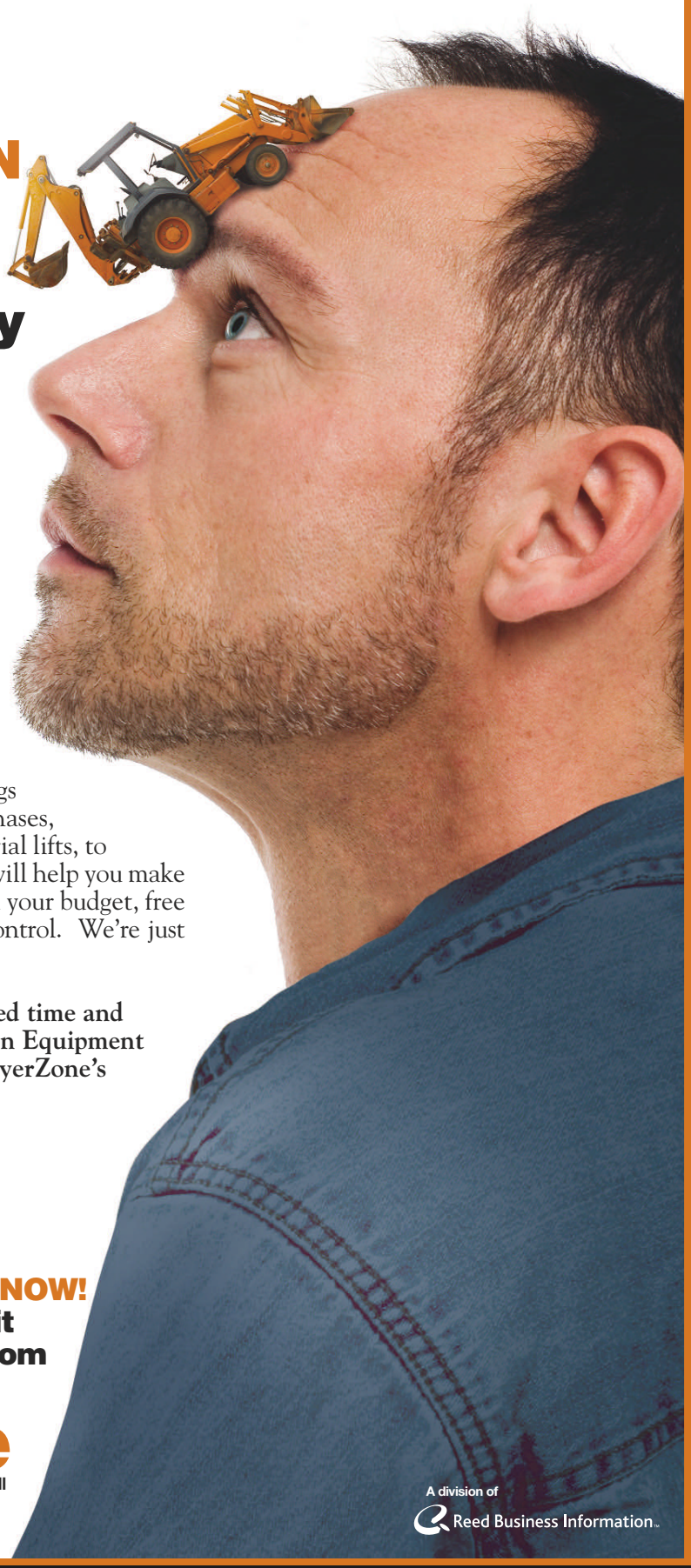

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By ANDREW BALTAZAR, Associate Editor

Equipment Trailers

EAGER BEAVER

The newest addition to Eager Beaver's Lowboy line, the Paver PT series has several features that make it easier to transport heavy equipment. For instance, the low front approach, tapered ramps and gradual slope allow for quick and safe loading of rollers, pavers and milling machines. Other features of this model include run-up wheel covers with wood center, air ride suspension, all wheel anti-lock brakes, 100 percent sealed wiring harness, roto-rings, lock in/lock out outriggers, and high-clearance self lifting gooseneck.

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TRAIL KING

Capable of carrying low-profile, tough-to-load equipment, Trail King's Hydraulic Detachable Gooseneck (HDG) trailers feature a detachable gooseneck system with self-lifting hydraulic cylinders, non-ground-bearing design, and V-shaped alignment. Available in 35-, 40- and 55-ton capacities, HDG trailers have a four-beam deck design for hauling a wide range of loads, whether the weight is concentrated on the outside edges or the middle of the trailer. Full-depth outriggers span the entire side of the beam, and loading ramps are double-hinged and reinforced with a support ledge, allowing heavy track-type equipment to be loaded without risk of "peeling off" the loading ramp.

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TEREX

The HFT 70RS Rental Equipment Trailer from Terex was designed for large operations with substantial fleet-transportation needs. With its low break-over angle, the HFT 70RS allows operators to drive equipment onto the trailer rather than having to winch it. The trailer's main deck measures 29 feet 5 inches long by 102 inches wide, with an additional 9 feet on the gooseneck deck. Lift-and-carry operations can handle up to 30,000 pounds of equipment, and the trailer has an overall net capacity to carry up to 70,000 pounds.

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TRAIL-EZE

Combining the tilt bed from its line of slide-axle trailers and the rear-loading functionality of its hydraulic-tail line, Trail-Eze's TE-TXT trailers are quite versatile, according to the manufacturer. Ranging from 35- to 50-ton models, the trailers can safely and swiftly rear load most types of equipment thanks to the quick-drop tail. Each trailer comes standard with a winch and air-ride suspension.

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By MIKE ANDERSON, Senior Editor

Putting Control 'Back' into Hands of Operators

JCB offers Easycontrol seat-mounted servo control system as option on 3CX and 4CX backhoe-loader models

An industry shift to servo controls for backhoes was one equipment-manufacturer JCB bought into. The softer pushing and reduced arm throws required on servo controls led to a reduction in operator fatigue, and even more so when the controls were seat-mounted, says Jim Blower, senior product manager at JCB's North American headquarters. "That's our big belief at JCB," says Blower. "If you can keep an operator as comfortable as you possibly can, he's going to be more productive over the day." The downside from the shift from manual controls, though, was a reduction in hydraulic function speed and operator feel to the tool.

With the newest upgrade to its backhoe-loader product line, JCB focused on combining "the best of both worlds." An option on each of the 14FT, 15FT and 17FT models of the 3CX and 4CX backhoe loaders, the Easycontrol seat-mounted servo control system features the full-flow valve block and open hydraulic circuit associated with manual systems.

Available as an option on JCB 3CX and 4CX backhoe-loader models, the Easycontrol seat-mounted servo control system improves backhoe speed by changing from a flow-sharing valve block to a full-flow hydraulic system.

"In a typical servo system, and our Precision Controls System included, you have flow-sharing valve blocks, so there's only half the amount of oil that can ever go to one of the services," says Blower. "So, if you take that valve block out and put a full-flow valve block back in, which is what the manual machine has, you then increase the speed of the machine.

"When everyone went to servos, you lost speed and you lost operator feel, but you had the big benefit of more operator comfort," he says, "so you had the trade-off of one or the other. Now with Easycontrol, it's giving everything back. It's giving you all the performance back in the back end, plus the operator comfort."

Manual controls remain standard on the 3CX and the four-wheel-steer, four-equal-sized-tire 4CX backhoe loaders, but the Easycontrol option (not available on the entry-level 3C models) offers a lucrative alternative to contractors, says Blower. This is particularly so in North America, where JCB studies indicate 75 to 80 percent of backhoe-loader use comes with the machine stationed and the operator swung around in his seat working the back end.

"If the operator can feel where the bucket is, then he's not going to break through that water pipe or gas line or whatever it may be that he is digging around. So it is quite important for the operator to have that feel back in the controls," he says. "Working in cities around services, people would opt for the manual machine because they had a little bit more control over it and they could feel where things were, but they wouldn't have the comfort of servos. Now with these controls, you have the best of both worlds."

The increase in single service speed alone, be that working the stick, bucket or another attachment, translates into an overall 9 percent gain in full cycle time, says Blower.

"The analogy I use on that is it's like an automatic and a manual car: An automatic, it does it all for you; the manual, you have to do a little bit more, but if you do a little bit more, you'll get more performance out of it."

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JCB Backhoe Loaders

Model*	Net Engine Output (hp)	Drive Configuration	Steering Configuration	Operating Weight (lb.)
3CX 14FT	84.6	2WD / 4WD	2WS	15,053
4CX 14FT	97.6	4WD	4WS	16,986
3CX 15FT	88.8	4WD	2WS	17,037
4CX 15FT	97.6	4WD	4WS	18,765
3CX 17FT	88.8	4WD	2WS	17,515
4CX 17FT	97.6	4WD	4WS	18,968

* Models available with Easycontrol system

Source: Spec-Check.com Xpanded Specs (as of July / 09)

By LARRY STEWART, Executive Editor

Komatsu Sets Its Sights on Cat's D10T

D375A-6 dozer comes strong with a 16 percent power boost, 12 percent heavier, and 11 percent more blade capacity

Komatsu's thorough product-development survey said the D375A-5 crawler dozer's replacement would have to demonstrate production equal to or better than Caterpillar's D10T to take market share from the cross-Peoria rival.

So the Dash-6 version of the D375A was launched with its Komatsu SAA6D170E-5 engine boosted 85 horses to 610 net horsepower – 30 more than the D10T. In fact, Komatsu claims that even with parasitic load at maximum (the SAE standard for measuring net horsepower prescribes an intermediate load level), the D375A-6 still delivers 580 horsepower, which equals the D10T's SAE net power output.

Komatsu says the SAA6D170E-5 diesel is not over-taxed, developing 610 horsepower at 1,800 rpm. The maker pushes that same engine platform to 672 horsepower in the PC1250LC-8 excavator and 715 horsepower in the HD465-7 rock truck.

Komatsu replaced the Dash-5's twin gear pumps with a single variable piston pump and closed-center, load-sensing hydraulic system. The hydraulic design is derived from the successful D475A-5EO hydraulic system. Not only did the update reduce pump drag on the engine, but it also improved blade-response time. That's one of the three top characteristics professional operator Guy Eldringhoff, from Barrick's Goldstrike Mine in Elko, Nev. – a Cat D10 user – appreciates.

"The three most important things you look for in a dozer are visibility, power and operation of the blade and other equipment," he said, appraising the machine after some stick time during an August D375A-6 introduction at Komatsu's Cartersville, Ga., training facility. "This one's controls are really responsive, the visibility from the seat is good, and it's got lots of power."

"Faster hydraulics are definitely an advantage, especially when cutting benches for drills and doing reclamation work," adds Pat Carr, equipment manager with Virginia coal miner, Alpha Natural Resources. "And because the pump destrokes, you've got more power to push after you get the blade loaded up."

The D375A-6 transmits torque to final drives through an automatic powershift transmission with locking torque converter. Integrated engine and transmission controllers allowed Komatsu to create an economy mode in addition to its full-power mode. The maker claims a 3 percent fuel-efficiency advantage in Production mode over the D10T, and a 7 percent efficiency advantage in Economy mode.

The Dash-6 weighs 157,900 pounds, about 12 percent more (16,750 pounds) than the D375A-5, and 27,000 pounds more than the Cat D10T.

With more power and weight came blades designed to carry more material. A semi-U blade at 24.2 cubic yards and a full-U at 28.8 cubic yards were created to boost production without increasing blade width or reducing digging force. The curve of the upper half of the blades was relaxed, deepening the blade cross section. Shoulder slopes are also relaxed, resulting in more forward-facing blade surface. The shape is similar to Komatsu's next size larger, the D475A-5EO dozer. Capacity is increased without compromising visibility or balance.

D375-6 Specs vs. Competitors

	Engine	Net Power	Track on Ground	Semi-U Blade Cap. (cu.yd.)	Op. Weight* (lb.)
Komatsu D375A-6	Komatsu SAA6D170E-5	610 hp	13' 1"	24.2	157,940
Caterpillar D10T	Cat C27 ACERT	580 hp	12' 8"	24.2	130,810
Dressta TD-40E Extra	Cummins QSK19	515 hp	11' 10"	24.3	136,509

** Operating weight with blade, no ripper*

An equipment manager tests the new D375A-6 dozer's climbing limits at Komatsu's introduction event. With a counterweight, he feels the more-powerful dozer will climb steeps instead of going around, boosting production and saving undercarriage steel.

Carr took the D375A-6 directly to the steepest terrain he could find in Komatsu's Cartersville sandbox and worked the dozer up and down the pitch. The D375A-5 dozers Alpha currently runs in mine reclamation often have to circle wide after working down particularly steep slopes to get back to the top for another run.

"It's a little blade heavy," Carr said of the Dash-6 bearing Serial No. 1 in the new series. "But with a counterweight, I think it'll climb the steepest stuff we've got." That should be good for production and undercarriage life.

A new 7-inch LCD (liquid crystal display) multi-color monitor gives operators information to help them work efficiently and accurately. Screen visibility is good from various angles and in many lighting conditions thanks to thin-film-transistor (TFT) technology. Komatsu designed an exclusive set of function keys to simplify operators' interaction with the multi-lingual interface.

Various meters, gauges and warning functions are arranged for simple start-up, inspection and warning about operating abnormalities. An easy-to-read "eco gauge" is displayed on the right side of the multi-monitor screen. Operators can save fuel by simply operating the machine so that the eco gauge's needle indicates the green range.

View from the seat is pretty open, even with an 11 percent increase in blade capacity. Computer screen front and center offers good visibility.

There are 16 new, standard mining features on the D375A-6, including high-mounted headlights to shine over the blade when it is raised, battery and starter isolator box with remote jump-start receptacle, centralized grease points, fast fuel fill, engine prelube, rear-view camera, and two manual engine-stop switches.

Komatsu plans to market the new Dash-6 dozer at a 10 to 15 percent higher price than the D375A-5EO.

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By MIKE ANDERSON, Senior Editor

Possibilities SUPER for Compact Machine

A mulching machine, yes, but SUPERTRAK's SK140 Series also offers high-performance tool carrier capabilities that defy its compact-loader stature

By design, SUPERTRAK machines offer more than what might appear at a glance. What looks like a compact track loader, and is built from a base-model Caterpillar compact loader model, is actually a dedicated land-clearing machine boasting 140 horsepower.

"The way SUPERTRAK is building these machines is from the ground up for the mulching application, which means heavier skid plates from the stock machines. The main contributor to this is the auxiliary system, with 40 gallons per minute at 5,500 psi. These machines are intended for those customers who want to move up to the next level," says Dave Evans, market development manager and dealer representative for SUPERTRAK. Caterpillar's 90-horsepower 297C multi terrain loader and 299C compact track loader, when equipped with 72-inch HM315 mulching heads, are "perfect packages" for mulching in residential-type landscaping applications, says Evans. But the souped-up machine, equipped with a two-speed FAE mulching head, takes the CTL-sized machine and suddenly places it in direct competition with smaller, dedicated mulching machines by such manufacturers as Fecon and Gyro-Trac. In terms of Caterpillar mulching solutions, says Evans, there's a gap between the Cat 297C/299C compact machines and the 300-horspower forestry feller bunchers equipped with mower heads. With its "CTL on steroids, SUPERTRAK steps in to fill that gap."

But why, as is being pondered at least in one territory, stop pushing the boundaries there?

With Evans on hand with two models from the Cat C4.4 ACERT engine-powered SK140 Series lineup – a CTL version with steel-wrapped tracks and a rubber-tired RTL model based on a Cat 908 wheel loader – Cat Compact Equipment dealer Battlefield Equipment Rentals brought its vision for the SUPERTRAK to its customers in recent demo days throughout Ontario, Canada.

"They initially were mulching machines, but we're trying to show them in some other applications," says Joel Schaubel, who heads up Battlefield's Cat Compact Product sales team. When he looks at the SK140 Series, Schaubel sees an established, comfortable, quiet, operator-friendly yet compact carrier that can handle such tools as 40-inch cold planers, 2- to 3-foot wheel saws, and even 14-foot brooms used in airport snow removal.

"This thing's a monster. It's certainly in a class of its own," says Schaubel. "The way that we're handling it is that there's nothing else out there like it, so customers aren't going to be banging on our door asking us for it. We have to actually go and show them that, 'Hey, did you know you can actually do this? You don't need a self-powered cold planer like the Zippers, or a self-powered snow blower, or to just settle with a 24-inch or 16-inch planer on the front of your skid steer.'"

That "Battlefield has taken the approach that this is a high-performance tool carrier," is exciting, says Evans. Battlefield equipped the rubber-tired SK140RTL it had on display with a SW45 wheel saw. Remember, this is a Cat 908-sized carrier. "You got more engine horsepower and more hydraulic flow and performance out of that machine than a much larger loader could ever produce," says Evans. "So, now you ask a customer again, 'What would you do with it?' "

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Despite its Cat C4.4 ACERT engine packing 140 horsepower into a compact loader structure, the SK140CTL-C from SUPERTRAK offers a quieter operating experience — about 15 percent less noise — thanks to a blanket-wrapped exhaust.

SUPERTRAK SK140 Series

Model	Engine Output (hp)	High-Flow Hydraulics (gpm)	*Operating Weight (lb.)
SK140TR-C	140	40 @ 5,500 psi	12,280
SK140CTL-C	140	40 @ 5,500 psi	12,620
SK140STR-C	140	40 @ 5,500 psi	13,590
SK140RTL	140	40 @ 5,500 psi	16,100

*Operating weight without working tool

By KATIE WEILER, Managing Editor

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

Ditch Witch

Two new walk-behind trenchers, the RT10 and RT12, offer fully hydrostatic steering and a choice of high-flotation tires or heavy-duty oscillating tracks. Both units also feature a trail wheel that increases stability. The 11-horsepower (net) RT10 and 16-horsepower (gross) RT12 have easy-to-use, color-coded controls. Options include pin-on backfill blade and Roto Witch attachment.

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Topcon

New Z63 and G63 machine-control kits for crawler dozers and motor graders use the GX-60 control box and MC-R3 machine control receiver. The receiver can be used with a single or dual antenna; indicate or automatic; radio or network, according to the company. The control box has a color touch screen display and fits in all sizes of cabs. It supports all current and planned satellite system signals, according to Topcon.

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Bobcat

Bobcat receivers for laser-guided grading have been improved through a partnership with Trimble. Receivers can be used with box blade or grader attachments. Changes in grade can be made from inside the cab, up to 2 inches in either direction. A proportional system provides three speed ranges that allow operators to raise and lower the blade quickly or slowly. The receiver's photo cell has been lengthened, which allows the attachment to travel farther up or down without losing signal.

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Toro

A backfill blade option is now available for Toro TRX dedicated trenchers. According to the company, contractors using the TRX 15 and TRX 19 models can install the new blade in less than one minute. With no special tools, it mounts directly to the trencher, locking in place with a pin mechanism. The blade weighs 55 pounds and measures 40.5 inches wide, 45.6 inches long, and stands 18.6 inches high.

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McLaughlin

McLaughlin's V500 low-profile vacuum excavator provides easier access to confined spaces. The unit features a relatively short wheelbase and a height of only 84 inches, allowing contractors to access areas normally not acceptable to larger units. With a 575-cfm blower, 3,000 psi of water flow and a 3-inch-diameter suction hose, the V500 low profile provides efficient spoil removal. The unit also includes a three-stage filtration system.

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Rotobec

With multiple jaw-configuration options including rake/rake, rake/bucket and bucket/bucket, Power Attachment grapples offer versatility in material-handling applications. When feeding grinders, the grapple's continuous-positioned rotation minimizes movement of the excavator, reducing fuel consumption and machine maintenance, says Rotobec.

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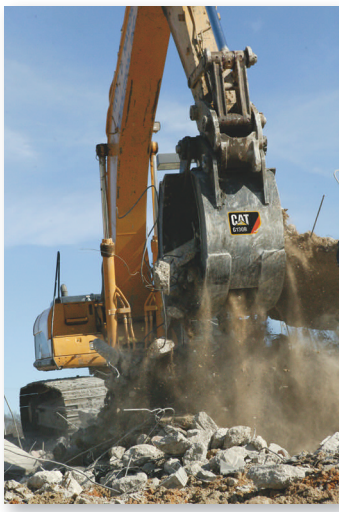
Caterpillar



Designed for demolition work with Cat's medium range of C- and D-Series excavators, the G130B Contractor's Grapple uses a two-over-three tine configuration. As the three long tines on the slightly curved lower jaw sink into scrap piles, the two long tines on the interlocking upper jaw exert the hydraulic power to retain material on the working surfaces. The grapple has a jaw opening of 127 inches and capacity of 5.5 cubic yards.

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Chicago Pneumatic

As a gas-powered tool, the hand-held Red Hawk breaker doesn't require an external power source with hoses or cables attached. With new vibration-dampening handles, a slim body design and a service weight of only 50 pounds, the hand-held breaker provides ergonomic protection with easy handling, the company says. An efficient choke control and carburetor system leads to easy engine starts.

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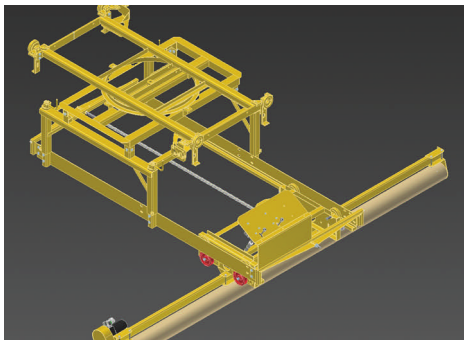
Terex Roadbuilding

By designing the Bid-Well automated sidewalk roller to attach to the carriage roller frame of either a Bid-Well 3600 or 4800 bridge paver, it not only allows contractors to simultaneously pave a bridge deck and walkway, but also eliminates the need for a separate engine. While the paver operator controls oil flow to the sidewalk roller from the platform, two levers at the assembly control rotation and forward/reverse movement of the 6-inch-diameter roller.



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Miller Electric

EnPak Mechanic Series is a diesel engine-driven air compressor, generator and hydraulic pump that can be integrated onto a field service truck. Field technicians can operate tools with the truck engine turned off. AirPak 40 air compressor provides 40 cfm at 100 psi with a 175 max. Eaton pump powers a rated 3,000 psi of hydraulic pressure at 8.5 gpm. Generator provides 6,000 watts at 100-percent duty cycle.

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John Deere

With a 60-inch maximum cutting width and a 74-inch overall width, John Deere's Worksite Pro MH60 mulching head best suits high-flow versions of Deere's 328 and 332 skid steers and CT332 compact track loader. A hydraulic oil cooler reduces the temperature in the carrier hydraulic system up to 10 degrees Fahrenheit. Recommended flow for the MH60 is 27 to 45 gpm. The MH60 weighs 2,497 pounds.

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Kubota

Kubota's four-passenger RTV1140CPX four-wheel-drive utility vehicle transforms easily to two-person seating with what Kubota calls best-in-class cargo space. Retractable seatbelts and a hydraulic dump bed, functional in both seating modes, come standard on all models. A three-cylinder, 24.8-horsepower Kubota diesel powers the vehicle. Maximum cargo load is 1,102 pounds, with a towing capacity of 1,300 pounds.

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AGL

A real-time depth-control system for excavators and backhoes, AGL's EZ Dig Pro allows the carrier's operator to continue digging while obtaining accurate readings, and without the need for ground personnel. Sensors mounted on the machine are calibrated to the carrier, taking into account the movement and angle of the bucket, boom and stick for continuous depth control readings on the in-cab display.

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Nye Mfg.

With no cutting, welding or extra hydraulics required, Nye's high-strength-steel, 8-foot parallel-link stick extension simply pins to the end of an excavator's OEM stick for additional reach on such jobs as deep excavating, demolition and dredging. Nye produces parallel-link stick extensions for excavators ranging 15 to 100 tons.

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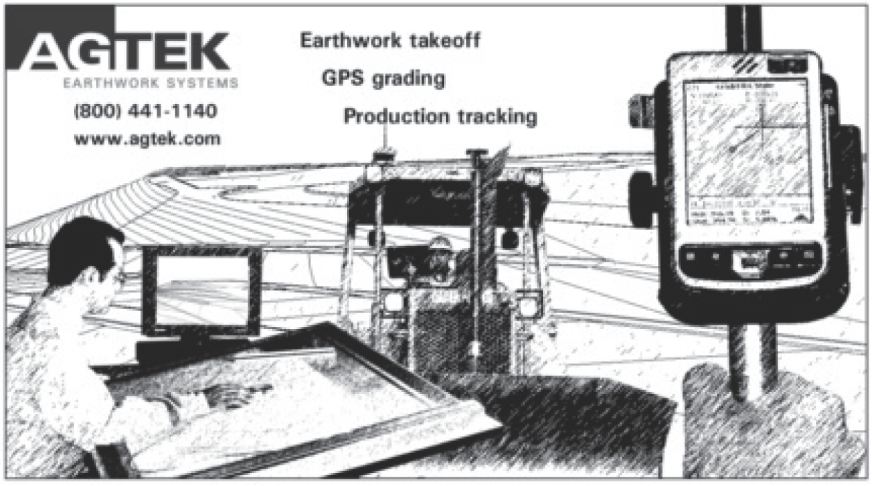

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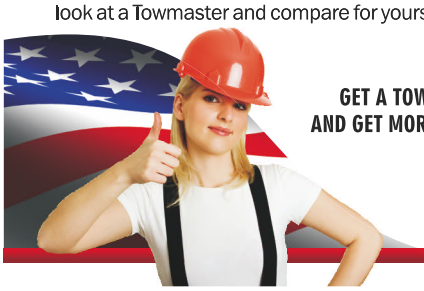

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Reed Business Information, 2000 Clearwater Dr., Oak Brook, IL 60523; Fax: 630/288-8185

General Manager – Construction Media
Dean Horowitz, 630/288-8180
dhorowitz@reedbusiness.com

Group Director – Sales/ Business Development
Tony Mancini, 610/688-5553
armancini@reedbusiness.com

Director – E-media Solutions
Shannon Wasiolek, 630/288-7963
shannon.wasiolek@reed business.com

Midwest Region

Director – Midwest Region
Rick Blesi, 630/288-8140
rblesi@reedbusiness.com

Key Accounts – Integrated Sales
Mary Adee, 630/288-8134
madee@reedbusiness.com
States: AR, IA, IN, KS, LA, MO, ND, NE, OK, SD, WI

Key Accounts – Integrated Sales
Tim Gillerlain, 630/288-8168
tim.gillerlain@reedbusiness.com
States: IL, KY, MN, OH, TN, WV

Eastern Region

Director – Eastern Region
Dan Colunio, 781/734-8360
dcolunio@reedbusiness.com

Key Accounts – Integrated Sales
Adam Grubb, 317/913-1608
adam.grubb@reedbusiness.com
States: CT, MA, ME, NH, NJ, NY, PA, RI, VT, Eastern Canada

Key Accounts – Integrated Sales
John Huff, 630/288-8189
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States: AL, DC, DE, FL, GA, MD, MS, NC, SC, VA

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jelliott@reedbusiness.com

Key Accounts – Integrated Sales
Mike Ostrowski, 630/288-8139
michael.ostrowski@reedbusiness.com
States: AK, CA, HI, OR, WA, Western Canada

Key Accounts – Integrated Sales
Brian Grohe, 630/288-8159
brian.grohe@reedbusiness.com
States: AZ, CO, ID, MT, NM, NV, TX, UT, WY

Product Specialists – Integrated Sales

Rob Bertrand, 630/288-8615
rob.bertrand@reedbusiness.com

Brian Grohe, 630/288-8159
brian.grohe@reedbusiness.com

Jan Varnes, 630/288-8143
jan.varnes@reedbusiness.com

E-mail your **new product** information to CE.Products@reedbusiness.com

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Komatsu Sets Its Sights On Caterpillar's D10T

Taking aim at Caterpillar's D10T dozer, Komatsu increased the net engine output in its D375A-6 crawler dozer by 85 horsepower to 610 horsepower at 1,800 rpm. A variable-displacement piston pump replaces twin gear pumps in the hydraulic system for more efficient use of engine horsepower.

Featuring an updated full-U blade shape, Komatsu's dozer carries more material – 28.8 cubic yards – for improved production without increasing blade width or reducing digging force. It also includes a new LCD color multi-monitor, which offers self-diagnostic functions.

How does the D375A-6 dozer perform? See it for yourself at ConstructionEquipment.com/Digest.

CE Covers ICUEE

Construction Equipment editors headed down to Louisville, Ky., for ICUEE 2009. We brought back footage of the newest machines in action. Our coverage includes product walk-arounds, photos from the show floor, and interviews with equipment manufacturers.

Cat Shows Its Remote-Control Dozer System

At its mining event in early October, Caterpillar previewed a remote-control-driven D10T track-type tractor. The remote-control system, which will be available in a few months, is integrated into the machine and will be offered as an option on the D10T, D11T and D11T Carry Dozer. See it in action on Digital Digest.

Which Retrofits Comply With Emissions Rules

Construction Equipment has compiled a table of CARB-verified diesel emissions control strategies that details the retrofits you need to satisfy emissions regulations. You can sort the table by make or model of engine, as well as retrofits suitable for on-road machines and more.

Latest Big Iron Blog Posts

- Mike Anderson goes over some highlights of CE's Top 100 Products from previous years.
- Rod Sutton explains why heavy-equipment sales provides insight into the health of the economy.
- Andrew Baltazar posts a link to extraordinary photos taken by a crane operator atop one of the tallest U.S. buildings.

More Digital Digest

Jump Start Operators with Virtual Training

Trimble Creates a Community for Contractors

JCB Product Manager Discusses EasyControl Servo Control System

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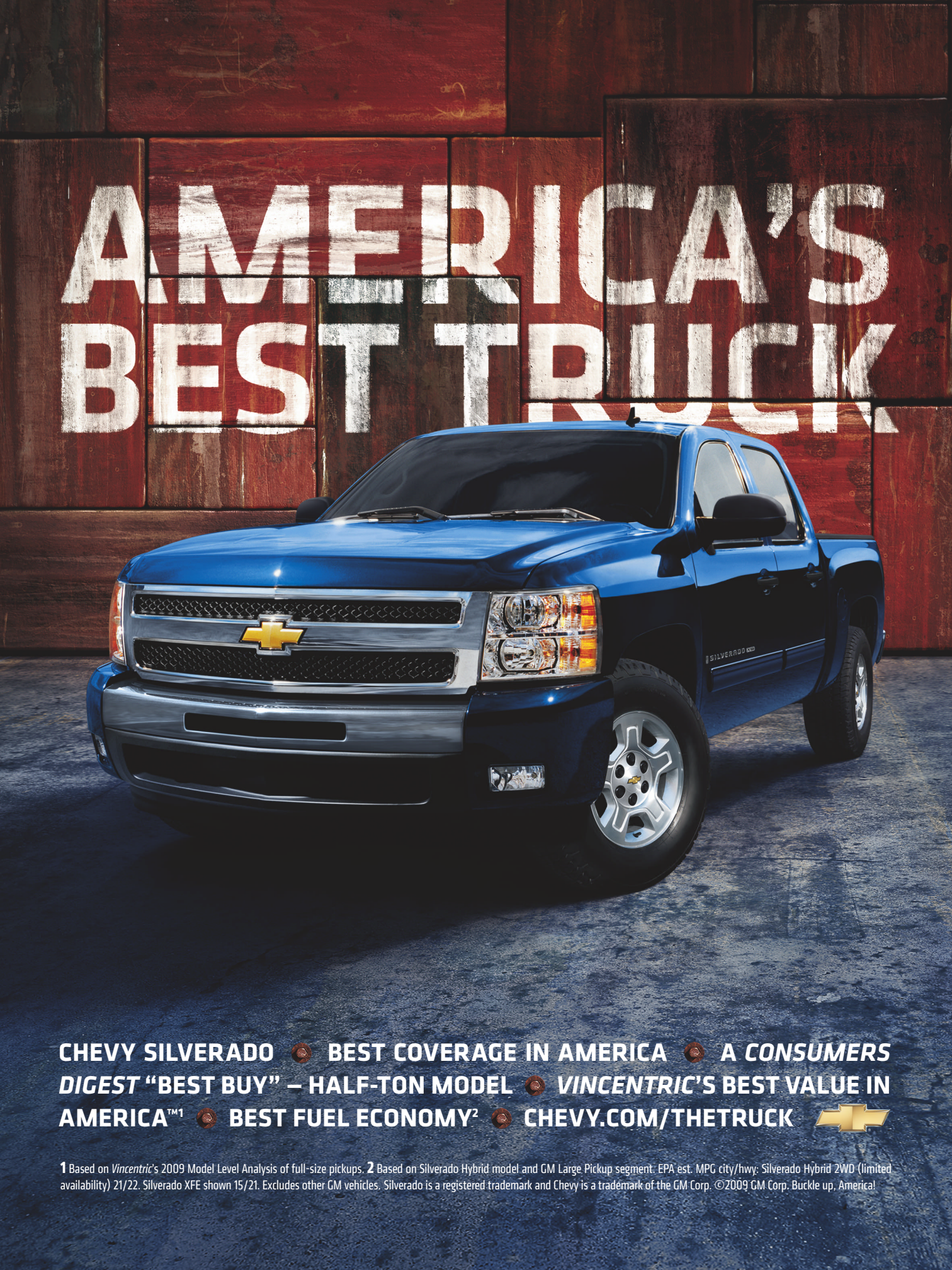

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1 Based on *Vincentric*'s 2009 Model Level Analysis of full-size pickups. **2** Based on Silverado Hybrid model and GM Large Pickup segment. EPA est. MPG city/hwy: Silverado Hybrid 2WD (limited availability) 21/22. Silverado XFE shown 15/21. Excludes other GM vehicles. Silverado is a registered trademark and Chevy is a trademark of the GM Corp. ©2009 GM Corp. Buckle up, America!