

Mixer-truck design enters

By TRISHA RICHARDS

Designers of trucks for ready-mix concrete applications have to perform a delicate balancing act. The lighter a mixer truck is built, the more concrete it can carry. However, the more material that is stripped from the truck, the more susceptible it is to damage, causing safety issues for drivers.

When manufacturers design mixer trucks for this very demanding application, their most critical concern is bulk. "It's imperative that ready-mix trucks are lightweight," notes Paul Kudla, director of fleet sales, Volvo Truck Group.

Emissions

That's one of the reasons why the Environmental Protection Agency (EPA) 07 regulations, which closely mirror the Canadian Off-Road Compression-Ignition Engine Emission regulations, are weighing heavily on the minds of manufacturers these days. Heavier components, such as diesel particulate filters (DPFs) installed to help meet the regulations, promise to contribute about 150 extra pounds to a truck, says Mike Cantwell, marketing product manager, Volvo Truck Group.

has already announced a \$7,500 EPA surcharge on its 2007 engines, says Kudla. Meanwhile, Terex mixer trucks will probably go up anywhere from \$5,000 to \$8,000 per truck, says Steve Howard, director of sales, Terex Road Building.

Purchasers aren't looking forward to the price hike, but some think it's an acceptable trade-off. "I think we need to be more aware of the environment and we need to be more aware of how our equipment is affecting the environment," says Robert McGinn, president, Atlantic Provinces Ready Mix Concrete Association. The ready-mix industry has to take responsibility for the environment and has a duty to rectify environmental problems it causes, he adds.

Truck dealers are not immune to the complications of the EPA regulations either. The dealer network is forecasting a 30-per cent reduction in sales for 2007, according to Mike Billette, truck sales manager, 401 Truck Source.

Bendix's RSA technology averts rollovers.



out," says Billette.

Another concern is space. Because the unoccupied room on a ready-mix truck is quite limited, installing components to meet EPA regulations may also be an issue. Almost all of the space available on the side of the chassis currently has components installed.

"We are working to fit our aftermarket treatment into the ready-mix truck so as to not negatively affect wheel base... That's a challenge, because we don't want the truck to grow in length," says Steve Ginter, vocational product manager, Mack Trucks.

Designers are already at work on positioning these components. "In most cases, Kenworth will be able to locate the diesel particulate filter vertically behind the cab for mixer applications in the same place we currently mount the muffler," says Brian Lindgren, vocational sales manager, Kenworth Truck Co.

Losing weight

Manufacturers are looking for ways to trim weight from their mixer trucks. "When you take weight out, you take the integrity of the vehicle out too – and that could cost you in the end," says Kudla. As a solution, Volvo has opted to use a single frame rail on its trucks.

New truck designs must accommodate emission-control devices.



Besides this weight gain, EPA 07 regulations will force manufacturers to install expensive, sophisticated electronics technology to meet the emissions standards. This will have a direct impact on vehicle prices. Volvo

Hot market

Dealers are currently struggling to fill their customers' truck orders because of the number of purchasers buying extra vehicles to avoid higher costs in 2007.

Because of maxed-out order capacity, some dealers are already close to being booked for the entire calendar year.

"We still have capacity for selected models – but for our most popular models, the capacity is already sold

new era



Another common way to lighten the load is by using lighter-weight materials, such as aluminum and plastic, instead of steel. "Judicious use of aluminum to replace steel can help reduce overall chassis weight," says Lindgren. Aluminum cabs, fuel tanks, wheels, bumper, crossmembers and gussets are among weight-saving choices, he suggests. However, "you don't want so light a truck that it can't hold up under the punishment of delivering concrete."

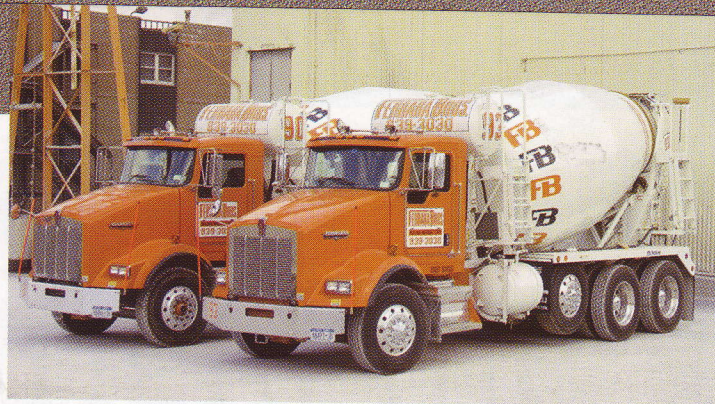
Mack uses finite-element analysis software in its design process to recognize where weight and material is need-

ed, says Ginter. This helps to pinpoint the areas where heavy material is not required, "so we remove the excess material where it's not doing anything to benefit the customer," he says. Mack also uses ductile cast iron in many applications, which is lighter in weight than cast steel, says Ginter.

Comfort

Despite the challenges ready-mix manufacturers are facing, the product they deliver is top-notch, says Dan Brown, fleet manager, Dufferin Concrete. In terms of safety and stability, he says, "I think they've come a long way."

However, there are some issues that could be further addressed to meet the needs of drivers, says Brown. Cab access and cab space could be improved for



Weight reduction must be balanced against vehicle durability.

comfort. Visibility is also a major concern, especially the extent of the driver's view when backing up. He also adds "If it was possible to carry the same weight but lower the height of the mixer," that would also enhance driver safety.

Mixer-truck manufacturers take such customer concerns very seriously. Mack, for example, has enhanced the steering by improving the turning radius on its Granite trucks to help drivers get in and out of tough job sites, says Ginter. Because the mixer truck is either working very early in the morning or going where there's very

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limited light, Mack has also put work lights on the trucks to illuminate the sides of the truck for visibility.

For driver comfort, Mack redesigned the interior of the Granite with a new dash, new seat, new pedal positions and new adjustable steering to be ergonomically correct. "There have also been trends towards automatic transmission," says Ginter, who adds that automatic trucks have surpassed 10 per cent in sales of all its mixer chassis.

Stability

Mack has also made available the Road Stability Advantage by Bendix, the first electronic stability system specifically manufactured for concrete customers. It is designed to reduce the potential for accidents by offering a higher level of protection against the possibility of rollovers and more control for drivers in sliding or skidding situations on slipperier surfaces affected by water, snow, ice or sand.

For its part, Volvo is installing its Roll Stability ABS braking system on its trucks and has a mixer truck currently being tested and approved for an anti-rollover system, says Cantwell.

A low centre of gravity is a key to stability, and "Terex has actually lowered its mixer, as well, to get the lowest centre of gravity possible," says Howard.

Driver skills

But much of the responsibility for safety lies with drivers and can be enhanced with driver training, notes Ron Schimpf, president, Canadian Ready Mix Concrete Association (CRMCA). For trucks to play a smaller role in construction-site mishaps, drivers need to learn to be more aware of their surroundings, he says.

CRMCA introduced a program last year called the Concrete Delivery Professional, which was purchased from the National Ready Mix Association in the U.S. It is being offered across the country as a national certification for mixer truck drivers, and one of the main focuses is safety. Taking this



Like any piece of equipment, truck productivity depends on driver skills.

course, says Schimpf, "is the best thing drivers can do for their safety."

Ready-mix associations across the country have decided to concentrate on drivers' education to reduce job-site hazards, says John Connely, marketing director, CRMCA. "They're our frontline folks and they need a little bit of direction and assistance to give them more confidence in the types of jobs they do," he says.

With the government strongly

enforcing regulations to improve air quality, manufacturers striving to create better equipment, and drivers training to perfect their performances and enhance safety, change is accelerating.

It's time to prepare for a new era in the ready-mix industry, says Billette. "Everything we know this year will soon be no more." ♦

Trisha Richards is a Toronto-based freelance writer.

Five-way safety

The Ready Mix Concrete Association of Ontario, with information from the Ministry of Labour, has developed JOBSAFE, five key safety points to help keep drivers out of harm's way while they're working on-site with a ready-mix truck.

1. No contractor-added chutes. "Basically, the manufacturers tell us not to add any more chutes than the ones that come with the truck. If you do, you could end up bending a chute, and it's a safety hazard. You could end up knocking somebody off a wall," says Dale Dennis, chairman, Ready Mix Concrete Association of Ontario.
2. Drivers must have a signalman to back the trucks up.
3. No "towing-in" of trucks. "What used to happen was the truck would pull up to the side of the road, and if the site was really muddy, they'd tie it to a big machine and drag it through the mud," says Dennis. The result was damaged brakes and worsened visibility because the truck would be covered in mud. There was also the risk of destroying components underneath the truck, like air lines.
4. Ramps must be in good condition to back up. In other words, they can't be too muddy, greasy or steep.
5. Stay one meter away from the excavation. "If you back up too far and the bank gives way, you can end up losing the truck into the hole," advises Dennis.

