

# Today's Trucking

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## **PRODUCT WATCH - SCR, EGR: WHY NOT BOTH?** by Rolf Lockwood

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No choice really but to start with the recent revelation that Navistar will offer selective catalytic reduction (SCR) emissions control on its engines after all. Well, sort of. It's available on a few engines made by its subsidiary in Brazil, MWM International, to meet the Euro IV standard that's about to be applied there.

MWM, based in Sao Paulo, builds engines from 2.5 to 9.3 liters for essentially every market in the vehicular, agriculture, industrial and marine segments. It does not build trucks ([www.mwm-international.com.br/](http://www.mwm-international.com.br/)).

My good friend Oliver Dixon first noted this apparent contradiction – Navistar being OK with SCR in South America but very vocally against it in the northern half of our hemisphere – and wrote about it in his entertaining World Trucks Blog (very much worth a look at [www.roadtransport.com/blogs/world-trucks-blog/](http://www.roadtransport.com/blogs/world-trucks-blog/)) a couple of weeks ago. My colleague Marco Beghetto followed up with a call to Navistar headquarters in Warrenville, Illinois this week.

Spokesman Roy Wiley confirmed that MWM would indeed build SCR engines in Brazil. He said they're being made at the request of Volkswagen Truck and Bus, Navistar's largest South American customer, in meeting the Euro IV emissions standards Brazil has adopted. Euro IV is well behind our EPA 2007 standard, by the way.

"Regulations, conditions, and environmental issues are different in Brazil and other parts of the world," he said. "We're a big supplier to Volkswagen and so we work with them."

Wiley, however, couldn't say off-hand whether MWM is working with an independent partner to produce the SCR engines.

The main engine in question is the NDG 9.3 inline six, pictured here, available in one rating of 392 hp, at 9.3 liters the biggest MWM motor. It has a single turbo and the electro-hydraulic 'G2' direct injection system working at a high 2400 bar (34,809 psi). Beyond that, I know little.

Interestingly, said to be "in development" at MWM is the four- or six-cylinder Acteon engine with common-rail injection – that will run with either EGR or SCR emissions treatment! It will come in two 4.8-liter versions and a pair of 7.2-liter ratings. Injection pressure on these ones is listed at just 1800 bar (26,107 psi).

In the seemingly endless war of words between the EGR and SCR camps, Navistar has been vocally critical of SCR as a North American emissions solution. But Wiley says such a characterization is "unfair," adding that the company has only "discussed" the use of "urea" in 2010 SCR engines. "There's a big difference."

Wiley couldn't confirm whether urea -- or more accurately, the urea-based NOx-busting chemical Diesel Exhaust Fluid (AdBlue in Europe) required in most SCR engines -- will be used in the Brazilian NGD engines as well.

In the past, Navistar officials have wrongly called DEF a "toxic" substance.

So there you have it, yet another odd wrinkle in the continuing SCR vs EGR saga, a journalist's dream if ever there was one.

SECOND-GENERATION BIOFUELS ARE SLOW TO DEVELOP in Germany, one of the leaders in this sphere, according to a Reuters report. We'll see them next year at the earliest, it seems.

The first biofuels produced using new-generation biomass raw materials could be available in commercial volumes in 2010, German junior Environment Minister Michael Mueller recently said. But the timing is all a bit vague apparently, and the start of production has been postponed many times already, the first target having been 2007.

Germany is busy building test plants to produce commercial volumes of second-generation biofuels from biomass materials like wood chips, hay, vegetable waste and low-grade crops. So-called first-generation biofuels are made from food crops such as grain, rapeseed oil and palm oil.

Two months ago Germany cut the compulsory level of biofuels to be blended into fossil fuels this year to 5.25% from the 6.25% originally intended. The country's biodiesel industry, Europe's largest, is presently working at about 60% of its capacity and

wants the blending cut to be stopped. It won't be raised until gen-two biofuels are on stream, according to Reuters.

Giovanni Federigo De Santi, director of the energy institute at the European Union Commission's Joint Research Center, said, "We want to develop second generation biofuels which move away from competition from food and animal feed."

But with so much complex technology still to be developed, Santi said he didn't believe new generation biofuels could be fully ready for transportation uses for another 10 years.

STILL OVERSEAS, VOLVO SAYS FUTURE TRUCKS won't be so heavy. Volvo Group says its engineers have created a method for constructing trucks that weigh less while carrying the same loads. The intended benefit: reduced fuel consumption and thus fewer carbon dioxide emissions.

To date, lightweight technology has mainly been used in Volvo Aero's aircraft engine components, but engineers at AB Volvo's research company, Volvo Technology, say that similar technology can be used to reduce the weight of the cab and chassis in heavy trucks by at least 20% within 10 years.

"We're creating the super-light vehicle in a computer program that simulates how hundreds of thousands of small construction alterations can reduce the vehicle's total weight without affecting other key characteristics in the vehicle, such as crashworthiness or the ability to bear loads," says Carl Fredrik Hartung, project manager at Volvo Technology.

A lighter vehicle can obviously be powered by a smaller, more fuel-efficient engine, but if it's a diesel/electric hybrid or if it runs on a renewable fuel, then fuel consumption and carbon emissions can be reduced even further.

One of the challenges is that a super-light vehicle must be constructed partly with extra durable but more expensive materials, which means that the vehicle must be manufactured in volumes that are sufficiently large for the cost to be kept down.

"We have come a long way but a great deal of work remains before the first super-light vehicles hit the road," says Hartung.

See [www.volvogroup.com](http://www.volvogroup.com)

AND A COUPLE OF QUICK TAKES ON THE HYBRID SCENE include news that Eaton Corp. is part of an informal consortium working to produce plug-in hybrid electric power systems for 378 commercial vehicles, the largest such hybrid deployment in the U.S. to date. The funding, by way of a US\$45.4 million grant, is part of a recently announced US\$2.4 billion in grants from the U.S. Department of Energy.

Eaton will work with California's South Coast Air Quality Management District and others, including the Electrical Power Research Institute, Altec Industries, Ford Motor Company and Southern California Edison, in creating plug-in hybrid electric commercial vehicles to more than 50 utility and municipal fleets nationwide. Eaton will also provide infrastructure for the electrical charging of these vehicles.

The development and deployment of the plug-in hybrid electric vehicles and the charging infrastructure will take place over 18 months. Vehicles will be evaluated over a two-year period.

In the utility truck application, these plug-in hybrids will be based on the Ford F550 chassis with a total range of at least 300 miles. The system will provide a fuel economy improvement of up to 70%, we're told, when compared to a standard utility vehicle, with similar reductions in emissions and noise. The entire system can be recharged by plugging it into a standard 120- or 240-volt electrical outlet. Naturally, the trucks will be able to power auxiliary equipment and tools while stopped at a worksite.

Eaton's significant electrical expertise will be a key in developing plug-in station technology.

See [www.eaton.com](http://www.eaton.com).

AND HERE'S ONE THAT MAKES SENSE, namely a hybrid-electric type A school bus, made by Collins Bus with an Azure Dynamics drivetrain. Bought by California's NAPA Valley Unified School District, it's said to be the continent's first and only such bus. Called the NEXBUS, it seats 23 people (three in wheelchairs) on a Ford Chassis and should get 16-17 mpg instead of 9-10 in straight diesel trim. It cost a whopping US\$140,000, most paid by grants and incentives.

Not incidentally, Azure Dynamics recently got a big order from Canada's own Purolator Courier, for 50 'Balance' hybrid electric trucks to be delivered during the fourth quarter of 2009 for use primarily in Ontario. Azure has already delivered more than 100 vehicles to Purolator.

The trucks are built on a Ford E450 chassis equipped with a hybrid drivetrain that shuts the Ford 5.4-liter gas engine off at idle and at below 20 mph, while electronically supporting ancillary functions like power steering and braking. It should improve fuel economy by up to 40%.

Purolator Courier of Mississauga is Canada's largest courier company and one of Canada's 10 Most Admired Corporate Cultures.

Azure Dynamics was recently chosen a winner at the 24th annual Canadian Advanced Technology Alliance Innovation and Leadership Awards. It was recognized with an "Outstanding Product Achievement" award in the Clean Technology category.

See [www.azuredynamics.com](http://www.azuredynamics.com).

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