



AGCO Corp. introduced three new tractor series encompassing 12 models — the Challenger MT600C, Massey Ferguson 8600 and AGCO DT Series. The new tractors feature AGCO's e3 emissions reduction technology, an SCR exhaust aftertreatment system. These are the first off-highway vehicles released in North America to utilize SCR technology.

## AGCO TAKES THE LEAP

SCR comes to North America's off-highway market with new tractors; EGR engines available for an additional price

BY AMANDA M. BOTHE

**W**hile selective catalytic reduction (SCR) emissions technology, driven by the next level of EPA diesel emissions regulations, is set to become the standard in North America's on-highway markets, AGCO has become the first to take the leap off-highway with the introduction of SCR technology on three all-new high-horsepower row crop tractor series, encompassing 12 tractor models in all.

AGCO said by employing e3, the company's name for the SCR technology, it will meet Tier 3 requirements and is well on its way to Tier 4.

Though SCR for off-highway use is new to North America, AGCO introduced SCR in its Massey Ferguson tractors in 2007 at the Agritechnica

show in Germany and followed that up last October in its Valtra tractors built in Finland. SCR and the resulting need for the urea-based catalyst, known (in North America) as diesel emissions fluid (DEF), is not as common domestically — at least not yet.

To fulfill the need for DEF, AGCO has teamed up with Brenntag, a chemical company that already produces urea commonly used in fertilizers. AGCO will distribute Brenntag's TerraCair-branded DEF through its dealerships and parts distribution network. The company plans to have boxes of two 2.5 gal. jugs readily available, and 55 gal. and 275 gal. bulk containers will be available for order.

Because North American customers may not be accustomed to purchasing

this additional fluid for their tractors, AGCO customers who purchase a new machine will receive a credit for 180 gal. of DEF in 2.5 gal. containers — approximately a year's supply, according to Jason Hoult, AGCO's product marketing manager, high-horsepower wheeled tractors. The new SCR tractors will have an 8.0 gal. DEF tank that AGCO said will need to be filled about every two times the fuel tank is refilled, or about 3 gal. of DEF for every 100 gallons of fuel.

While AGCO's move may seem bold in an economy shrouded by gloomy reports, AGCO President and CEO Martin Richenhagen said that ag remains a stable market and that 2008 was a record year for AGCO. When asked why SCR now, he



AGCO has partnered with Brenntag to supply TerraCair diesel emissions fluid (DEF). The DEF is stored in a tank marked with a blue cap next to the fuel tank. Operators can expect to use about 3 gal. of DEF for every 100 gal. of fuel.

replied, “because this is when the technology is ready.”

Bob Crain, senior vice president and general manager for AGCO North America, added that AGCO “wants to be the leader in technology,” and that now is the time to be bullish in the industry.

All of the new tractors are still available with EGR engines, but AGCO will charge a \$1250 premium for those without SCR, said Hoult. He said that since the SCR option appeared in the AGCO catalog beginning in the fall, approximately 80% of dealers’ orders were for the SCR-equipped tractors.

The SCR system’s controllers, injectors and catalyst are all supplied by Bosch. A DEF gauge is positioned next to the fuel gauge on the dashboard. Much like a low-fuel light, a warning will be given when the DEF begins to run low. If sensors indicate the DEF tank is empty, the tractor’s power will be cut 50% down to a maximum rpm of 1800, allowing the machine to drive normally, but no longer perform any work.

Hoult said the SCR system utilizes engine coolant to keep the DEF — which is more than 65% water — at an operable temperature while the engine is running. Should the fluid freeze when the vehicle is not in use,

the tractor will still start and the coolant coils will thaw the DEF well within the EPA’s 45-minute allowance, Hoult indicated. In addition, the sealed system is designed to prevent evaporation at higher temperatures.

AGCO said by using SCR, the engine can be tuned to its optimum efficiency for power and can run hotter for a more complete fuel burn. This results in less particulate matter (PM) formation. The resulting NO<sub>x</sub> is then reduced with the SCR.

On all 12 tractors in the three

series, AGCO’s e3 SCR technology is coupled with the AGCO Sisu Power 8.4 L six-cylinder, turbocharged diesel engine equipped with Denso Marston radiators and coolers and Donaldson engine air filters. In all three lines — the Challenger MT600C, Massey Ferguson 8600 and AGCO DT Series — the engine is rated between 270 and 350 hp at 1200 to 1500 rpm, depending on the model.

The engines were also designed with a 54% torque bulge to aid the tractors through tougher spots in the



The cabs were designed with 28% more space and 67 sq.ft. of glass for more room and visibility. In addition, AGCO positioned the controls in comfortable and ergonomic locations.

field. Despite the torque rise, AGCO claims fuel consumption can decrease as much as 15%.

The 8.4 L engine features wet cylinder liners and charge-air cooling, both of which result in improved cylinder cooling, AGCO said. In addition, the cylinder head bolts are arranged in a circular pattern on top of each cylinder for greater strength. Piston connecting rods are individually balanced for smoother operation, AGCO said, and the viscous fan drive with internal clutch responds to the engine temperature for more precise cooling.

The engines are equipped with an electronic management system that works in conjunction with the Bosch common rail fuel injection system to deliver quick and precise response to throttle movement, in addition to working with the continuously variable transmission (CVT) to maintain a consistent ground speed.

All three tractor series employ the CVT from AGCO's Fendt tractor division. AGCO said more than 70,000 of these CVTs are in service globally. The transmission is driven off the engine through the driveshaft to a Dana front axle and Fendt rear transaxle. The configuration provides travel speeds up to 32 mph, the company said. All units are electronically controlled with the ability for mechanical control in the event of a power failure.

The tractors are equipped with a 46 gpm closed-center, pressure- and flow-compensated Sauer-Danfoss hydraulic system positioned between the engine and transmission, allowing the hydraulics to be directly driven off the engine. A variable displacement pump supplies power to the rear implements and steering, along with the charge pumps for the CVT. The hydraulics are maintained with side-mounted return and aspiration filters from Hydac Filtertechnik.

The tractors' cabs received a makeover with 28% more interior space and 67 sq.ft. of glass for more room and visibility, the company said. The controls were all designed for placement in comfortable and ergonomic locations. In addition, the cabs are sound rated at 71 dB(A).

The tractors are also fitted with a solar panel on the roof to trickle charge the batteries, and feature AutoGuide2, a satellite-guided hydraulic steering system. The cab is wired for ISObus communications, which coordinates all data from the tractor and compliant implements to a central computer and helps to standardize machinery hookups, AGCO said.

Though the tractors are very similar regarding their powertrains, each series is targeted for specific applications and customers, and is designed with its own feel. The Challenger MT600C series is designed for the professional farmer, the AGCO DT Series for the family farmer, and the Massey Ferguson is designed to be a workhorse on many types of farms. **dp**