CATERPILLAR®

Press Release

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Cat® D7E Combines Innovative Electric Drive with Established Technology for Uncommon Performance, Value and Sustainability

"Revolutionary design" is a term to be used carefully and sparingly when applied to earthmoving machines, but the Cat® D7E Track-Type Tractor qualifies for that distinction. The D7E uses an electric drive system that delivers 10 to 30 percent greater fuel economy, greater productivity and lower lifetime service costs, compared with conventionally designed crawler tractors of equal weight and horsepower. The D7E meets the increasing demand for powerful, maneuverable, fuel-efficient dozers that have the versatility to work effectively in both production dozing and fine grading applications.

Equipment owners and operators will have their first opportunity to view D7E technology at work during a series of demonstration events taking place this summer at 14 Cat dealerships across North America.

The overall efficiency of the new D7E results from its ability to better deliver engine power to the ground. This efficiency means the D7E can use a smaller engine than comparable competitive machines, yet it can outperform them. In addition, the engine runs in a narrow speed range (1,500-1,800 rpm) to further reduce fuel consumption and extend engine life.

Electric drive eliminates the torque converter, powershift transmission and related drive shafts used in all-mechanical designs. Eliminating these components significantly lessens cooling requirements, decreases the number of moving parts and reduces the volume of fluids required.

Innovation at work

In an age of increasing environmental awareness and regulation, the diesel-electric technology of the D7E offers unprecedented sustainability benefits. It is designed to burn considerably

less fuel and consume fewer fluids and parts for reduced owning and operating costs. Improved productivity and efficiency means getting more work done, while consuming fewer resources. These accomplishments were recognized in May 2009 with a Clean Air Excellence Award from the U.S. Environmental Protection Agency. The EPA gives the award in recognition for outstanding efforts to help make progress in achieving cleaner air. Major components and structures are also engineered to be rebuilt, extending the working life of the machine and reducing the need for disposal of materials.

The Cat C9.3 ACERT™ diesel engine, rated at 235 net horsepower (175 kW) in the D7E, drives a powerful electrical generator that produces AC (alternating) current. Current flows through special armored cables and military-grade connectors to a solid-state inverter, then to the propulsion module. Within the propulsion module are two heavy-duty electric motors (using AC current) that drive through common gearing into the differential steering system. Power from the steering system is transferred via axels to mechanical, double-reduction final drives to provide smooth, infinitely variable driving force to the tracks. The engine in the D7E is entirely beltless, eliminating the need for belt maintenance and replacement.

The D7E also has a new three-section aluminum radiator using separate circuits for the engine (jacket-water), charge-air system and electrical-power system—including the inverter and generator module. A variable-speed fan controls airflow through the radiator. The design of the radiator cooling systems reduces parasitic load and saves fuel. In addition, the electrical drive motors are cooled simply and effectively by power train oil.

Advanced electronics provide DC (direct) current to power the accessory system. The modular heating and air conditions system, water pump and battery charger are electrically powered for maximum reliability in varied conditions.

Established technology

The D7E combines its innovative electric drive system with proven Cat mechanical components to create an extremely efficient package. The Cat differential steering system upholds its reputation for allowing the operator to power both tracks through turns while

retaining blade loads. The D7E system, however, takes maneuverability to new levels by being the first differential steer tractor ever to be able to make lock-track pivot turns.

A heavy-duty, low-drive undercarriage is engineered for durable service in severe applications, such as logging and pioneering in rocky terrain. Both standard and low-ground-pressure (LGP) configurations are available. Optional for the D7E is the Cat SystemOne™ undercarriage, which uses sealed pin-and-bushing cartridges and balanced-life components throughout—a design that can reduce undercarriage maintenance costs by 35 to 70 percent.

The care Caterpillar used in designing the D7E operator station is apparent in the details. The cab's single center post, for example, aligns perfectly with the exhaust stack, air intake and single blade-lift cylinder to greatly enhance forward visibility, and the angled door and mating side panel allow excellent sightlines to the blade. Interior sound level is a quiet 73 dB(A), and an integrated display screen provides a range of machine status information. The tilting cab allows wide-open access to major components.

Efficiency and versatility also are built into the D7E work tool and control systems. Blade options include universal, semi-universal, straight and angled configurations—all supported by heavy-duty, L-shaped push arms and controlled by a powerful, single lift cylinder. Available rear work tools include a single- or multi-shank ripper, hydraulically driven winch and a drawbar, which allows using towed implements and scrapers.

For added convenience, the D7E ships from the factory complete with grade control system wiring and mounting points, facilitating easy installation of the Cat AccuGrade™system when the customer chooses. The AccuGrade system, with sensors that precisely calculate blade elevation and slope, provides automated blade control for attaining grades in fewer passes and without grade stakes.

For more information about the D7E, customers should contact their local Cat dealer or visit www.cat.com/D7E.

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