

Cat's Deep Commitment to AccuGrade Machine Control is Driven from the Top by Chairman & CEO, James Owens

Caterpillar's program for the deployment of its AccuGrade machine guidance system is moving forward strongly on several fronts. The progress made since its introduction at BAUMA last year is surprising, considering the magnitude of the task.

Readers will recall that Cat is the first manufacturer to offer machine guidance infrastructure built into its machines, termed the AccuGrade-Ready Option (ARO). This makes it a simple 'plug and play' operation to fit a range of laser and GPS technology—the plumbing, valves and wiring are all there, with connection and mounting points for antennae, laser receivers and other hardware.

Machine control built-in, rather than tack-on later, obviously gives greater robustness and reliability. And far from being 'We have it, too', Cat's AccuGrade is a second-generation product range with a full spread of enhanced features. Technologically Cat is leading, not following.

Machine Control is Driven from the Top

Cat's deep commitment to this science was strongly expressed by Chairman and CEO Jim Owens at CONEXPO 2005.

Identifying the five key elements of his 'Count on Cat' philosophy, Jim pointed out that AccuGrade positively addresses four, if not all.

"We know from talking with customers every day that controlling costs, boosting productivity, dealing with a shortage of skilled workers, maintaining safety on the job and addressing regulatory pressures are major challenges," he said. "Cat aims for solutions to these challenges."

Last year at BAUMA, David Pinaire who heads up the AccuGrade program worldwide, had explained Cat's drive into this high-tech field: "In the past, if we designed a new model that offered two or three percent improvement in productivity, we considered we'd done well. This technology offers benefits in the region of twenty percent. We couldn't afford not to be involved."

"Taking surveyors off the immediate work area is a real contributor to site safety. And in answer to the skill shortage, well, machine guidance has proved to raise the productivity of newer operators at a greatly accelerated rate."

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New AccuGrade Products

The initial AccuGrade laser release at BAUMA on D3G, D4G, and D5G dozers offered a choice. A single laser receiver mounted on the blade permitted basic laser guidance. Breaking new ground was the far more sophisticated dual-receiver version. Operating off an inexpensive dual grade laser transmitter, this gives control of the cross slope of the carrier's blade, previously only possible by using a total station.

Just prior to Conexpo, the full-featured GPS version of AccuGrade was released. Instead of external antennae and cab-mounted receivers,



the Cat system employs integrated antenna/receivers mounted on rugged masts at each end of the blade.

The in-cab colour display for GPS is larger and more sophisticated than the unit supplied for basic laser operations. Carrying the job design in the on-board computer, an operator can work from a number of different display views—plan, profile, cross-section and text only.

Cat also showed at Conexpo the twin-antenna AccuGrade system for hydraulic excavators, at that time still in the final stages of development.

Whilst indicate-only systems with vertical and horizontal light bars can be supplied, the Cat gear is of such sophistication that automatic operation is usually the preferred option.

Wide Availability Now, over the Cat Machine Range

Initially released only for D3G/4G/5G, the AccuGrade option can now be supplied on a wide range of track-type tractors, specifically the D5N, D6N, D6R II, D7R II, D8T and D9T.




On motor graders, the AccuGrade-ready option has been released for 120H, 135H, 12H, 140H, 143H, 160H, 163H, 14H and 16H.

The Third Phase of the Operation: Most Importantly, the Backup is There

Behind the scenes, Cat has put in place a world-wide support structure for AccuGrade, a massive undertaking. This involves a culture change, a new era of sophistication, and underlines the commitment to technologically more complex solutions than the steel and exhaust smoke of the previous century. The Cat sales family has been burning the midnight oil, studying technical data to ensure in-depth support is there, as machine automation entrenches itself as the second millennium's fundamental shift to brains as well as brawn.

The take-up by dealers in the U.S. has been phenomenal, with 28 Cat dealers across the country now qualified for AccuGrade—specialist training has been completed, parts backup is on hand, and ARO machines are being delivered.

In Australia, dealer training began in Melbourne in February and will continue across the country, with operator training and demonstrations. Presently motor grader laser products are the focus but AccuGrade GPS training is following fast. 



The Issue of Skill Shortages for Motor Graders is Directly Addressed by AccuGrade

Buyers of motor graders from Caterpillar can now order machines with the built-in ARO (AccuGrade-Ready Option) that permits the plug-and-play addition, at a later date if preferred, of the Cat AccuGrade grade control systems.

In its simplest entry-level version, AccuGrade for motor graders will provide basic cross-slope control by the addition of a cross-slope kit and in-cab display. This combines automated controls with manual adjustments to achieve the desired cross slope of the blade.

Easily scalable for more sophisticated inputs, sonic trackers can be added to use a string line or existing surface as a reference. Constant grade reference can be achieved using a laser receiver on the machine and an external laser transmitter to command one side of the blade

Laser can be the first step up the ladder to automatic machine control, and it can later be upgraded to GPS. But if you do foresee a future need for GPS, Luke O'Neill of Caterpillar tells us that you'll need to mention that when you place an order, to ensure the necessary additional wiring is built-in. This seems like a sensible precaution by buyers, since a motor grader usually has a long service life, and who can predict—with the rapid advance of this technology—when GPS may become part of the work it's called upon to do?

On motor graders, ARO has been released for the 120H, 135H, 12H, 140H, 143H, 160H, 163H, 14H and 16H. The CAN-bus technology allows hardware to be connected to factory-installed wiring and hydraulics that have been run inside the frame of the machine, rather than being tacked on later. Apart from being safer and more reliable, Luke points out that there are issues that can be handled at the factory that simply can't be achieved by a 'tack-on later' approach. Such matters as the integration of hydraulic controls into the machine's hydraulic system to ensure best performance and lifetime dependability.

There's Still Time

Built-in ARO will clearly become a factor in the value of the machine when it's sold or traded. Buyers with orders on the factory who haven't yet considered this option can have it added if they move quickly.

Operators report that when cross slope control is fitted, the habit develops of using it constantly, whether the immediate job at hand calls for it or not. It allows concentration on other tasks inside or outside the cab.

The old truism is often repeated, that this technology 'makes a competent operator out of a novice, and a good operator out of an average one.' In these days of skill shortages—bearing in mind the likely service life of a new grader and the probable deterioration of available skills—the choice of ARO option would appear to be prudent forward planning. 