In a Significant Move

Cat Introduces Machine Control

Theodore Roosevelt's maxim, "walk quietly, but carry a big stick" was brought to mind by the lack of fanfare attending the release at BAUMA of AccuGrade, a new machine guidance/control system released by Caterpillar.

AccuGrade's arrival was of considerable significance, as future events will show. Merely as a historical event, it is the first time a manufacturer has released a new range of machines with built-in infrastructure for a guidance system.

Cat is Committed to Machine Guidance

The fact that Cat's the pioneer should spur operators and dealers to pay more attention than they appear to have done: The world's leading manufacturer has served notice of its deep commitment to this technology.

Caterpillar's Asia Pacific machine guidance and control specialist, Rohan Mills (based in Melbourne), explained why: "When we've launched new models in the past, we've considered it an achievement to build in productivity improvements of five or ten percent. This new guidance technology is delivering gains of twenty and thirty percent, so we considered it vital to take a leading role."

Optioning AccuGrade on the D3G/D4G/D5G range, says Cat, is just the first step of a long march that will see it rolled out across many products. As the man said; 'you ain't seen nothing yet'.

AccuGrade is Better Technology

Of equal significance, when it comes to laser and GPS, this is not simply an "us, too" announcement. AccuGrade is truly a second-generation guidance system, the first fruit of years of research by the Cat/Trimble joint venture. When heavyweights like Cat and Trimble get together, you'd expect a powerful outcome, and AccuGrade is certainly that.

The AccuGrade product released at BAUMA has to be seen in two lights. The first is the capability that the initial release offers—technically, it's new millennium stuff. And the system is built into the machine, using—for the first time—Controller Area Network (CAN) technology, making it truly 'plug and play'.

'Built In', not 'Tack On'

Attachment points are provided for antennae and other hardware, and hydraulic plumbing is already there, awaiting activation. Electric masts allow the operator to adjust the height of the laser receivers from the machine's cab, simplifying and reducing the time taken for set-up.

AccuGrade is not a 'tack on later' solution, as all other guidance systems have been to date, and in operation it will therefore prove to be more trouble-free and robust. This is an issue of importance—last week we visited a D6 operator who had suffered downtime on five occasions due to a poorly-routed antenna cable being continually crushed by his blade tilt mechanism, and it had yet to be resolved.

Dave Pinaire heads up the machine control division of Cat — seen at BAUMA introducing AccuGrade on a D5. Note laser receivers on telescopic masts.

Cat also makes the case that operator and bystander safety has been rigorously addressed in the development of AccuGrade. It's a good point—no-one wants the guidance system to suddenly display a mind of its own because of inadequate installation standards. The Trimble guys told us that they considered their safety procedures pretty exhaustive, but were impressed by the safety standards that Caterpillar brought to the table.

A New Platform for the Future

Of vastly greater significance is the promise it holds for the future. From both the Cat and Trimble sides of the JV, we're told that this is the new platform that will take them forward for many years to come.

AccuGrade is far more productive than other systems operating off an inexpensive dual grade laser transmitter, because of its unique capacity to control the cross slope of the carrier's blade.

This cross slope or tilt control is of course common in systems operating under the guidance of a robotic total station, but such a laser transmitter

Continued on Page 22

Cat's new machine control product, AccuGrade

Continued from Page 8

costs a great deal more than a single or dual grade laser and requires the preparation of a data model of the job. Besides, a robotic total station can control only one machine, whereas a grade laser can guide many.

How it Works

An in-cab display (see picture, page 8) provides a simple view of all system information. It has an easy-to-read LED grade indicator and a backlit graphical LCD numeric elevation display that shows the blade's position relative to grade, and indicates cut or fill requirements at that point.

The first AccuGrade version is squarely focussed on straightforward tasks involving (per set-up) a flat, if sloping, plane - or two planes. Such earthworks as pads for houses or large buildings, carparks, tennis courts and similar sporting facilities that need a surface accurate to a few millimetres. It could grade a cambered road, providing it was of a consistent gradient. Accuracy is +/- 6mm.

Users of other systems will be familiar with the limitation that when a grade is to be created, the machine must make a series of passes in the same direction, with the blade's cross-slope unchanged. Or in the reverse direction with the blade slope reversed. Because of AccuGrade's dual antenna set-up, the position of each end of the blade is separately monitored. In practical terms this means that the machine can go round and round in circles, if desired, and the cross slope will keep adjusting such as to execute the required single or dual grade.

When you grasp that principle, you understand that it translates into far greater efficiency in getting a surface brought to grade - the machine is still locked to the laser transmitter but within that limitation is directionally free; meaning that the surface can usually be completed with a significant reduction of to and fro passes.

AccuGrade features automatic blade control as standard, whereby the operator needs only control speed and direction of the machine. It would often be used in that mode. However, for quicker roughing in, the blade lift can be handled manually to avoid digging in, while leaving 'tilt' under automatic control. With this technique, an area can be completed more speedily, since on each pass a cut is being taken that's the same profile as the final design surface. Alternatively, both lift and tilt can be manually controlled.

GPS will Follow

Before long this new system will be optionally upgradeable to GPS, but don't let that hold you back, because being 'upwardly mobile' is one of the fundamentals of the AccuGrade product. It has been carefully designed to be the foundation for many products to come, and for portability between a number of different earthmoving machines.

MovingDirt feels that there is probably a further point to be made—the likely stimulus to the popularity of small Cat dozers. The more thoughtful contractors who we speak to are re-evaluating the cost-effectiveness of these nimble but powerful machines, extremely well suited to high speed accurate grade finishing. More on that, later. PK

Powertilt sees off three excavators —

(continued from Page 9)

It's not as if this attachment has led a protected life—Jeff works it very hard. "I remember a long day ripping rock, soon after I got the Powertilt. The work simply had to be finished, and I thought, 'If anything is going to break it, this will be the job'. That was seven years ago, and nothing's broken yet".

Part of the secret is undoubtedly the fact that Jeff Rayner is a very fussy chap who takes great care of his gear. His digger looks as if it just came out of the paint shop—reminds us of a backhoe we saw in Bendigo a couple of weeks ago, whose owner washed it every Sunday. Jeff goes over his Komatsu every day with a grease gun, and has hydraulic oil tests religiously every 500 hours. "The oil tests would tell me if anything was going on in the Powertilt," he observes, "And it isn't."

When the Powertilt went back to JB Sales for a service five years ago, Rayner learned one of the secrets that's helped him keep it trouble-free. There are a dozen bolts holding a cover plate at the end of the cylinder, beneath which is adjustment for end play in the pin. "It's easy to see the beginning of any movement, and I just take it up straight away," he says. "One push of the grease gun every week is the only other attention it needs."

Having learned that, it hasn't been back for service, since that day.

Preventative Maintenance is the Key, says Balemi

Simon Balemi heartily approves, as he's seen the results when other owners simply ignore basic preventative maintenance.

"Jeff's experience shows that these units are basically very robust indeed when they're treated properly," says Simon, "But like any other attachment under a lot of stress, their needs have to be respected."

The extra productivity that Jeff Rayner offers is a factor in keeping him in constant work, he feels. There are the small things, like being able to save wastage of material by accurately tipping screenings out of the corner of the bucket into narrow trenches. He also has the digger fitted with a guidance system that allows him to set up multiple batters on the cross section of a drain, for instance (up to five at a time).

"I've always believed that investments like the Powertilt pay for themselves by keeping me on site after others have been paid off," he says. "The basic test is that each attachment should contribute to doing the job better and faster." PK