

BINDER

TECHNOLOGY

TIPS

GLOBAL POSITIONING

Topcon GPS technology can significantly boost your earthwork and paving productivity

As an earthmoving contractor, if you could do your work faster and at a lower cost, you would probably feel you have the best of both worlds. Komatsu America Corporation has long believed that's possible, especially when its equipment is coupled with Topcon Positioning Systems hardware.

Topcon, a worldwide leader in global positioning technologies, provides automated machine control systems as a purchase option on Komatsu equipment. Topcon systems have been used for more than a decade, but Komatsu enhanced the systems by offering its own hydraulic kit that directly interfaces with the Topcon products. Together they provide precise metering of oil flow to the hydraulics for more exact blade positioning during cut-and-fill and fine-grading operations. Komatsu installs the hydraulics and rough installs the Topcon system. Topcon dealers provide final installation and calibration of their systems, as well as initial customer training.

"Topcon technology allows the user to work more quickly and efficiently than ever before," said Jim Cleary with Cleary Machinery Company, a Topcon distributor who works with Binder Machinery and its customers. "You simply load the job you are working on into the Topcon system and through GPS technology, the machine and system work together to control hydraulic flow and the machine's blade for accurate grading without wasted effort. It helps get to grade faster and without costly overcutting and refilling. The savings can be very significant."

The cost savings and production benefits of the 3D-GPS+ grade-control system result primarily from two sources. First, it significantly reduces survey and staking

costs, and the downtime associated with both. Second, the system enables the user to reach final grade in fewer passes.

Fully automatic grading

The heart of the Topcon 3D-GPS+ system is the System V Control Box which is mounted on the machine dash directly in front of the operator. Users upload the job design into the control box, which then receives machine positioning signals from the radio antenna, GPS receiver, the blade-mounted GPS antenna and the cross-slope sensor, as well as the GPS base station.

The control box continuously compares the actual machine and blade position to

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Jim Cleary,
Cleary Machinery



Les Scott,
Komatsu



With the Topcon 3D-GPS+ system, job information is uploaded into a control box mounted on the dash of a Komatsu dozer or grader, directly in front of the operator. The operator controls direction and speed, while the 3D-GPS+ system automatically positions the blade to create the finish grade.



Topcon system saves time and money

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the job design. Calculated corrections are sent to the machine hydraulics, creating the fully automatic grading of the jobsite. All the operator has to do is control the speed, direction and windrow while the Topcon 3D-GPS+ system creates the finish grade in automatic.

An optional Millimeter GPS Kit (laser zone), which provides precise vertical control, is available as an add-on. The kit works on a horizontal plane of 2,000 feet and vertical plane of 33 feet, which allows for millimeter accuracy. Users can run multiple pieces of equipment off the same system, and can link together up to four kits to provide an even larger horizontal work area.

The Topcon advantage

"One of the best things about the 3D-GPS+ system is that it's easy to learn and easy to use," said Les Scott, manager of Komatsu's Working Gear Group. "Some contractors might be reluctant to try GPS-based control, thinking it's too complicated for them or

their operators. That's not a concern with the Topcon system."

In addition to ease of use, the other big advantage of Topcon is that it uses not only the U.S. group of GPS satellites, but also the Russian GLONASS satellite group, which is why it's called the GPS+ system.

"We have more satellites than our competitors and we continue to add on," said Cleary. "That means even more accurate grades and better performance, even in obstructed areas, as well as less downtime."

How much can you save?

The money the Topcon 3D-GPS+ system can save or make users comes from several sources.

"First, users save on stakeout because the Topcon system only needs five control points, rather than a large number, so the markout and associated surveying costs are greatly reduced right away," said Cleary. "The user can also get a more accurate account of how much material was moved in a day by comparing the starting point with the end point via the auto-topo function. Users can get per-day figures, which show production and indicate whether users need to adjust to meet production numbers or if they're ahead of schedule, which is most likely the case with the Topcon system.

"We've seen users save as much as 50 percent in the amount of time it took them to move the same quantity of material with the Topcon system," he added. "That's not always the case, but even if you saved half of that, you've put a lot more money in your pocket. We're confident the return on investment will prove to be quick and substantial."

Available on several machines

While it's widely used on numerous types of Komatsu machinery, the Topcon GPS+ system is usable on other equipment as well.

"We've worked with Binder Machinery and its customers for most of the last decade to help them use 2D and 3D machine-control systems on pavers, motor graders, milling machines and dozers," said Cleary. "The possibilities continue to grow for savings in a large number of applications." ■

Topcon utilizes more satellites than any competitive positioning system, which means more accurate positioning and less downtime. Multiple pieces of Komatsu equipment can run off the same Topcon 3D-GPS+ system.

