



EQUIPMENT AUTOMATION

TOPCON[®]



3D-MC

Automatic, Stakeless Grading



ISO 9001:2000
FM 68448



3D-MC

Topcon's 3D-MC puts the future of machine control to work for you today. Like no other product available, 3D-MC uses revolutionary technology to simplify your work without compromising accuracy, so you stay profitably ahead of the competition.

Performance

- GPS+ (GPS + GLONASS): More satellites keep you working when systems cannot
- Co-op tracking: grade in and around trees where others can't
- Laser communication for LPS is faster and more accurate than radio
- Continue to work when waiting for a 3D model or change orders by instantly switching to sonic, laser or slope control
- Laser communication (mmGPS & LPS) faster and more accurate than radio

Simplicity

- Color "touch screen" control box that can be used by any operator
- Smart Knobs provide full control to the operator right at his fingertips
- Completely automatic to eliminate guesswork

Reliability

- A history of over a quarter century providing equipment automation to contractors
- Slope sensors and connectors are filled with epoxy to keep out dust, moisture and vibration
- Extra heavy duty cables and simple rugged bracket design

Compatibility

- System Five-3D control box will run Laser, Sonic, Slope, 3D-GPS+ and 3D-LPS "Plug n Play"
- Modular "building block" design: Add options as your business grows
 - Digital technology allows for forward and backward compatibility from 1989

MILLIMETER GPS

a new dimension of precision and productivity

Imagine taking your GPS rover and transforming it into a super-precise measuring device that rivals a robotic total station. Or enabling your highly productive 3D-GPS+ stakeless grading systems to speed through your highest precision work. At a fraction of the cost of a robotic total station system, and without the single-user limitation. That's the power of MILLIMETER GPS™.

High-precision, three-dimensional stakeless grading has been available for years. But it required an expensive specialized robotic total station for each piece of automated machinery. With the MILLIMETER GPS system, you can add high-precision control to your Topcon 3D-GPS+ grade control system for a fraction of the cost, and—like GPS—one PZL-1 transmitter can operate multiple PZS-MC equipped machines. For added convenience on large or extremely steep areas, multiple PZL-1 transmitters can be linked, providing continuous, high-speed, high-precision control.

- World's first millimeter accurate GPS system—up to 300% more accurate than standard GPS
- Lazer Zone transmitter provides precise vertical measurement area 600m in diameter, 10m in height
- Works existing Topcon GPS+ systems
- Multiple rover support (machine or pole mounted)



Introducing Lazer Zone™ – where precision and productivity merge

Topcon proudly introduces a new dimension of control technology— Lazer Zone™. The PZL-1 Positioning Zone Lazer projects a Lazer Zone beam that sweeps over a 600 meter area. This unique signal creates a 10 meter high zone of precision elevation control. The Lazer Zone sensors, either on a rover pole or machine mast, computes a precise elevation anywhere within the Lazer Zone. This provides instant millimeter accurate elevation control.

It's another Topcon **WORLD'S FIRST** technology that will put your productivity and job quality in a zone by itself.



HiPer+
Wireless GPS+
receiver



System Five-3D
Windows CE® based
3D control box



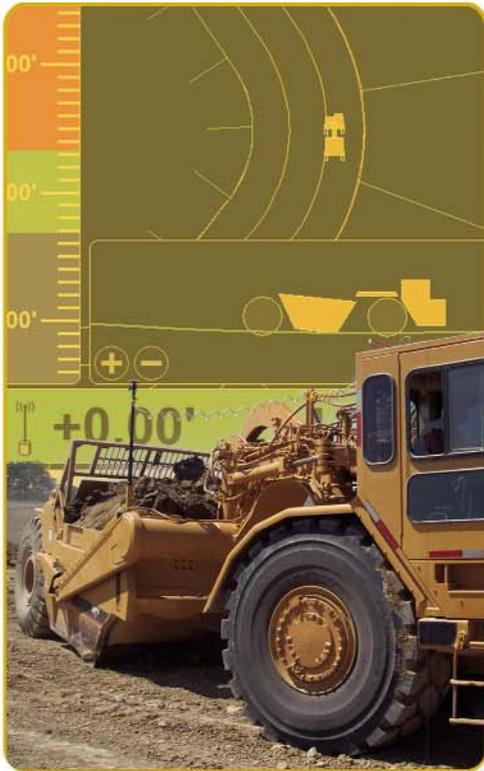
HiPer Lite+
Cable-free integrated
RTK GPS+ receiver

3Di-GPS+

affordable GPS indicate control

Experience the productivity of Topcon GPS+ machine control at a much lower initial investment with the new 3Di-GPS+ Indicate Control System from Topcon. Now your bulk earth moving equipment can take advantage of GPS+ technology to dramatically increase your rough grading productivity. One of the most important aspects of grading is balancing your material. Utilizing 3Di on your scrapers, compactors and large dozers will insure you move the right amount of material the first time.

- Low initial investment / easy upgrade path to fully automatic, GPS+ system!
- Simple user interface
- New easy to use Grade Indicator for cut/fill operations!
- New Benchmark feature makes it easy to check position!
- New Machine Builder specific for Scrapers!
- Real time pictures of the jobsite allows an operator to mark clearing limits without the need for a surveyor, allowing you to start and finish ahead of schedule



3Dxi

GPS+ machine control for excavators

3Dxi is a powerful indicate 3D GPS+ control system for excavators. Contractors can now experience significant productivity gains on their excavators like they have on their dozers, graders and scrapers.

- Same easy to use 3DMC software used in System Five-3D box!
- Multiple views (plan, profile, section) display real time movement of the Bucket, Stick, Boom and entire machine.
- Easy to use color Cut/Fill Indicator for instant grade verification.
- Elevation reference lets you control grade on the left, right, or middle of your bucket.
- New state of the art CAN based Tilt sensors:
 - No linearization required!
 - Small, sealed sensor with no moving parts!
 - Easy to install, mount almost anywhere!
- New graphical Machine builder specific for Excavators.
- Change buckets on the fly. Store up to six different sizes.
- GPS+ (GPS/GLONASS) receiver insures maximum productivity.
- Compatible with all MC receivers: Legacy E, HiPer Lite+.



FC-100
Compact
Windows CE®
field controller



RT-5Sa
Long-range,
5 arc second
laser transmitter



Dual System 5
Dual slope
control box

3D-GPS+

automatic 3D GPS grade control system

Forget about waiting for stakes to begin grading. With Topcon's 3D-GPS+ machine control system, an operator knows where he is on the jobsite and how far away the cutting edge of his machine is from final grade. By triangulating distance measurements to satellites orbiting 12,000 miles in the sky, we can locate any point on the earth. Add a base station to correct for errors and GPS can accurately control the grading on your jobsite to within 1/10' or less. Imagine cutting or placing material within spec over your entire site without stakes. With Topcon's 3D-GPS+ not only do you move the material quicker and with less stakes, but also eliminate the costly process of moving material twice.

A distinct advantage of Topcon 3D machine control is our ability to track more satellites than anyone else. 3D-GPS+ (GPS+GLONASS) insures you will not have equipment downtime due to too few satellites found in GPS only systems. No one can deny when using GPS, "the more satellites the greater the solution quality and integrity."

Another unique feature available only from Topcon is our "Co-op Tracking". This technological advancement allows you to stay locked on satellites while grading in or around trees. The ability to track satellites in these adverse conditions guarantees your grading production will stay on or ahead of schedule.

If you are looking for a way to be more competitive and improve your profits, Topcon's 3D-GPS+ for your equipment is all the control you need.

- Increase production by making fewer passes with fewer machines
- Increase production by eliminating downtime waiting for surveyors and cutting out rework
- Control materials to your advantage and reduce overages
- Significantly decrease surveying cost by reducing staking on base and sub-base



3D-LPS

high precision stakeless grading

Topcon's 3D-LPS (Local Positioning System) is the World's first and only laser based 3D machine control system. Instead of adding more stakes to finish to those tighter tolerances, you can now significantly reduce or eliminate the stakes all together with Topcon's patented 3D-LPS system.

- World's only non-radio based Local Positioning System
- World's first self-tracking Total Station with laser communication
- World's first three-way communicating laser receiver
- Laser communication vs radio provides more information which results in higher finish speeds
- Laser communicating w/LS-2000 Receiver means fewer passes to get to final grade

System Five-3D

easy to use operator interface

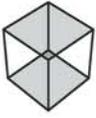
The System Five-3D Box is the simplest control system your operator will ever use. Instantaneously the operator knows how far the cutting edge is from the design grade, offset dialed in for rough grading or material sections and the desired cross slope. The extremely bright, color coded touch screen displays roads, parking lots, building pads and other helpful information so the operator knows where they are on the project at all times.

Need more detail when cutting curb grade or top and toe of slopes, the operator can simultaneously look at section or profiles views while grading the site. Select any linework on the screen and System Five-3D will provide steering information to make sure you grade right where you want.

Don't worry about making your existing machine control systems obsolete. System Five-3D is fully compatible with Topcon 2D systems installed over the last 15 years!



LS-B2
Machine mounted
laser receiver



Pocket-3D

construction GPS grade checking & staking system



Topcon's Pocket-3D GPS field controller software was designed to be easy to learn and use without sacrificing power and performance. Pocket-3D is the human interface to unlock the power of real time GPS (RTK) positioning on your project site. With accuracies within a couple hundredths of a foot, Pocket-3D combined with Topcon's advanced GPS+ technology provides the perfect job site staking and grade control tool with almost limitless potential.

Most Common Features:

Check Grades – verify cut/fill information

Topcon GPS+ with Pocket-3D provides real time position information anywhere on your job site. Inside the Pocket-3D controller, the GPS position is compared to the design grade to provide instantaneous cuts and fills. Now one grade checker can easily provide grade information to several machines on the same site. Put one in your grade foreman's pickup to give him ultimate control of the jobsite.

Stakeout Points

Need to set some points? How about replace stakes that have been disturbed or knocked out? Pocket-3D gives you the ability to stake out points without having to wait for the surveyor. Layout pads, lot corners, road stakes or daylight lines. With Pocket-3D, it's fast and easy.

Tie-outs

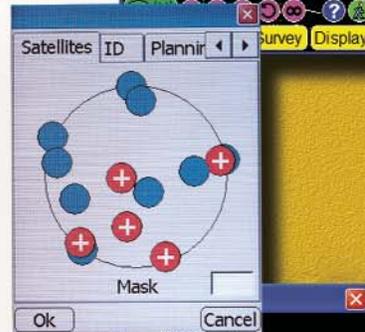
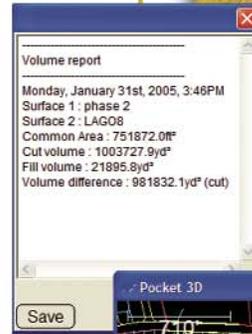
The days of manual tie-outs are over, and with it goes all the hassle of relocating manholes or water valves. With Pocket-3D, you simply locate the points before the asphalt goes down, then come back and Pocket-3D will put you within a few hundredths of a foot! To top it off you get an accurate cut measurement to the top of the manhole eliminating any guess work.

Measure and Compare Surfaces & Quantities

With the high precision 3D measurement of Pocket-3D, toping surfaces and comparing quantities is a snap. Pocket-3D is the perfect tool to check a site to verify bid quantities, measure stock pile volumes or check your progress on the job. Simply mount a Topcon GPS+ Pocket-3D system on a four wheeler or pickup and drive the site automatically capturing the surface information. Pocket-3D can compare the measured surface to the design file or previously topped surface. Instant volume information right there in the field!

As-Builts

Topcon's GPS+ System with Pocket-3D can measure a variety of points without the hassle of line-of-sight total stations, all with the high accuracy you demand, to maximize the control of your job site.



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