

Machine Automation for Dozers



The right system for every application – from Leica Geosystems

Dozers are used in many stages of construction for a wide variety of applications. Very high requirements are placed on the reliability and functionality of Dozer control systems. Dozer systems from Leica Geosystems increase the productivity of your machine and reduce costs several times over. Down time is eliminated, and your margin increased.

Laser control

- Extremely robust
- Straightforward to operate
- High operating speed

3D GPS display system

- Can be used on virtually all types of Dozer
- 24 hour, 7-day per week availability
- Maximises material savings, improves quality of your work

3D GPS control system

- Blade regulation in real-time
- Minimum number of passes to get final grade
- Optimised volume check



Laser Control – Pro Control™

Proportional Machine Control

- Proportional hydraulics provides smooth and precise blade control
- Breakthrough versatility: various applications, machine types and job site conditions
- Fully automatic or manual
- Rugged design
- Perfect for all dozers and other earthmoving machines
- Upgradable to 3D GPS Control



PRO Control Panel Versatile

- Single and dual grade laser, sonic or cross slope control provides a single solution for fine grading using the latest technology in controlling for proportional valve control.
- Upgradeable to 3D.
- Maximum flexibility – configures to various hydraulic systems and machine brands.

Easy to Operate

- Hydraulic speeds are controlled from the cab and adjust to the specific job site conditions.
- Choose from conventional indicate machine control to fully automated slope and elevation control.
- Push button control for easy-entry of target slope into the panel and visual indicators.

Rugged

- Water resistant



CAB (Constant Accuracy Band) Sensor Accurate

- Used with Laser Alignment's control panels, the CAB Sensor automatically controls the hydraulics to keep the sensor centered on the laser beam and the blade "on grade."
- CAB technology maintains on-grade accuracy regardless of operating distance, spot size, or rotating laser type.
- 360° reception allows operator to grade in any direction and features a wide 8 inches (20 cm) of pick up range.

3-step Process of Productivity:

1. Set Laser
2. Benchmark blade and adjust sensor
3. Begin grading with smooth proportional control



Operator Friendly

- Bright LED's indicate the position of the machine's blade relative to the laser plane of light.

Rugged

- Cast aluminum housings interconnected with two solid aluminum posts. Its impact resistant lens is mounted on foam rubber, and all of the internal electronics are shock-resistant.
- Hermetically sealed and waterproof to ensure continuous operation in all weather conditions.



GPS Indicate System – GradeStar® Dozer Indicate

Increase your performance and quality!

Using the Leica 3D GPS Indicate System for Dozers you can save considerable amounts of time and work significantly more effectively than with conventional methods. GradeStar Dozer Indicate from Leica Geosystems is a GPS-based system that was specially developed for usage in earthworks and strip mining.

Using **GradeStar Dozer Indicate** the machine driver always has the design profile in view. He manually controls the blade to suit the information of the 3D digital terrain model. The machine position relative to the site plan is displayed on the colour display on the robust machine computer, along with the actual and design blade tilt, and the cut or fill level. The height corrections are indicated to the driver using a light bar (optional).

„Leica Geosystems' GradeStar Dozer system is an ideal application for large earthworks projects. By removing the need for the traditional setting out procedures of profile boards and batter rails our re-contouring process has become a lot more efficient.

Along with removing the time consuming element of profiling and subsequent re-profiling the dozer operator is continually aware of cut and fill levels at any given point within the designed project. This increases our efficiency and accuracy as areas can be graded to the correct level first time as opposed to being graded, checked and regraded.

GradeStar Dozer is straightforward to use and we have found that machine operators with little or no experience of computers have soon mastered the system.“

James Brackenbury BEng,
Project Engineer
GKL Northern Ltd,
Peterborough, United Kingdom



Versatile applications

The 3D GPS display system from Leica Geosystems is versatile in use and can be adapted to all earthmoving machines without modification to the hydraulics, e.g. for:

- **Landfill** – terrain profiling, application of sealing layers
- **Work areas** – topsoil excavation, levelling
- **Landscaping** – terrain profiling, slopes, golf courses
- **Road building** – earth movement, drainage, foundations

Your advantages at a glance

Lower operating costs

- Due to direct control in the driver's cab fewer passes, objective achieved faster
- Time-saving and thus more cost-effective machine utilisation

Lower filling costs

- Due to higher accuracy, optimised usage of material, saving in surveying costs

Higher flexibility

- You are independent of surveying work
- Usage in any conditions, day and night, 24h
- Compatible with virtually any machine



Straightforward operation and clear display of information

- Function selection by touching the screen
- Graphical and numeric cut/fill information
- Fast change of the display using zoom functions

GradeStar Dozer Indicate uses a two-axis tilt sensor for the calculation of the correction for the blade and machine. In this way the highest accuracy is also ensured when constructing slopes. The **light bar** indicates to the driver how the blade must be corrected.



GPS Control System – GradeStar® Dozer Auto

Take advantage of the moment

The time is right to adopt **GradeStar Dozer Auto** from Leica Geosystems:

- Your time savings are enormous
- Your cut and fill accuracy in earthworks is increased immensely
- Your design requirements are implemented precisely
- Your work becomes significantly more efficient
- Your construction projects can be completed earlier
- Your bonus is assured

The fully automatic control of the blade ensures the correct height and profile of the cut and fill at every point on the project. The machine driver can concentrate entirely on working the material. Construction requirements are met and your project requirements are met exactly.

Use proven systems

GradeStar Dozer Auto is very simply installed by connecting it to the proven ProControl™ system operated reliably on many machines around the world. The rapid upgrade to 3D and the straightforward change between measuring sensors (laser, GPS) increase the flexibility of your machine.

Your investment will pay for itself many times over during long-term use on future projects, as the system costs are typically amortised during the first project.

With **GradeStar Dozer Auto**, your operator's working methods remain unchanged, meaning minimal training and support requirements.

The unique „**Hold Cross-Slope**“ function allows your operator to 'project' a desired crossfall past design crowns, verges and breaklines, meaning you get to finished grade faster and with less rework.



Perfect for large earth movement and mass excavation

GPS control

The System 500 GPS technology from Leica Geosystems provides the highest accuracy and best tracking performance available on the market. The **GradeStar Dozer Auto** solution provides accuracy of ± 0.10 feet (± 3 cm) in height for rough grading.

Special benefits of the GPS solution:

- Work from one base station.
- Can control multiple machines simultaneously.
- Long range control – up to ten miles from base station.
- Not constrained by line of sight.

How it works

The Leica Geosystems GPS base station receives time and position information from the GPS satellites in the sky. The base station communicates via radio modem to all machines. The precise position is computed on the machine relative to the base station and is then combined with slope and other sensors to determine the exact position and heading of the dozer's blade.

By comparing these values to the project data stored in the computer, corrections for height and cross slope are transmitted to the Pro Control blade controller, freeing the driver to concentrate on steering. This increases site safety.

Only 1 to 2 passes are required to get to final grade, providing significant increase in productivity and making rework a thing of the past.

Continuously tracking the machine's blade with the proven GPS system of Leica Geosystems makes it possible to work without interruption, as line of sight is not needed between the base and the rover.



Your benefit

Leica's GPS solutions are completely modular and interchangeable – base stations can be quickly reconfigured as one-man GPS 'Rover' systems and vice-versa, maximising your utilisation and return-on-investment.

Easy Site Management

Simple or complex street designs are quickly and precisely built onto the landscape according to the exact project design. Digital Terrain Models (DTMs) can be directly loaded via PCMCIA card onto the machine's computer.



We are always at your service

- We offer support with project planning and system installation.
- We offer total solutions.
- We offer solutions to your specifications.
- We offer worldwide service.

Beside Machine Control Systems for Dozers, Leica Geosystems offers solutions for other automatic construction machines such as Graders, Slipform Pavers, Trimmers, Pavers and Curb & Gutter Slipformers.



CAUTION
LASER RADIATION – DO NOT
STARE INTO BEAM
620-690nm/0.95mW max.
CLASS II LASER PRODUCT

Javelin
Laser class 2 in accordance with
IEC 60825-1 and EN 60825-1
Laser class II in accordance with
FDA 21 CFR Ch. I § 1040

The Leica Geosystems Construction Segment Family of Products



Construction laser – our lasers are always built to meet the demands of construction sites, no matter what they are used for: the construction of high-rise buildings, for digging trenches, for machine guidance or interior construction.



Automatic levels – professional optical levels are built for the construction site. They are quickly set-up, very precise and top every comparison of price to performance ratios.



Leading in GPS and TPS technology – used worldwide in projects that demand the highest standards, designed for various applications and to be easy-to-use. We developed the first reflectorless total stations in 1998 and our experience with GPS dates back to 1967. We hold several patents and were first at introducing many new technologies to the industry.



Software and accessories – integrated software solutions and a complete series of tripods, staffs, our patented 360° prisms, batteries, chargers, everything you need to extract the best performance from your instrument.



Hand-held Laser Distance Meter – Simple and handy tool to determine distances, areas and volumes quickly and accurately, indoors and outdoors.



DIGI System – The location system provides a fast and safe solution for tracing buried utility services.

Your dealer:

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**Total Quality Management -
Our commitment to total
customer satisfaction**

Ask your local Leica
Geosystems agent for
more information about
our TQM program.

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