

KOMATSU

 **TOPCON**



MACHINE CONTROL

KOMATSU-TOPCON SOLUTIONS

Machine control: the missing link in automation

All Komatsu dozers and excavators offer the ability to integrate Topcon machine control systems. This means all the cables, brackets, hydraulics and settings needed for the machine control systems are installed when the machine is delivered.

Komatsu-Topcon integrated Laser and 3DMC GPS systems enable machine indication or automatic machine control solutions that are accurate to the centimetre or millimetre. This provides stakeless grading and earthmoving solutions for road and railway construction, landfills, site work, etc.

Keeping the user in mind, Komatsu-Topcon machine control systems feature a modular set-up. A basic installation offers all the fundamental machine controls functions. From there, the machine can be upgraded to slope, laser or GPS control. This modular approach guarantees complete compatibility and upgradeability from the start and for years to come.

Reduce surveying costs

Direct control based on the 'digital design' lets the contractor significantly reduce surveying-related costs. Stake-out work and restaking phases can be kept to an absolute minimum.

Increase productivity

The operator knows what the grade is anytime, anywhere! No more downtime waiting for a surveyor. All the data is available in the cab.





Improve material usage

With the design model in the cab, the operator can start grading and excavating correctly from the very beginning. Reworking is dramatically reduced, ensuring you only grade and excavate what really needs to be done.

Improve quality

Machine control offers the 'missing link' in automation: from the survey and design phases to stake-out and daily execution. By reducing human interference, it significantly cuts the chances of mistakes throughout the process.

Lower investment

The modular set up lets you move from a low-budget configuration to a high-level system simply by adding in components. No replacing boxes and no extra downtime for re-installation.



DOZER SOLUTIONS

Dozer machine control systems

Automatic blade movements on a dozer can greatly improve dozing productivity and grading accuracy. They also allow operators to work faster and more safely with a reduced workload.

Komatsu-Topcon machine control systems are the best way to automate blade movements. Depending on the control system used, blade steering can be indicated or fully automated. As a result, even inexperienced operators work much faster and deliver a high-quality final graded area.

All the information from the laser or GPS systems is constantly available on an in-cab display, clearly showing the slope and elevation. In addition, the calculated corrections to a laser reference or design model are sent directly to the blade's hydraulics.

Two different systems for Komatsu dozers are available.

- Two-dimensional (2D): allow creation of flat areas, possibly combined with a slope depending on the configuration. These systems are based on one or two laser signal receivers and/or a slope sensor installed on the dozer blade.
- Three-dimensional (3D): allow any complicated landscape design to be made. This requires GPS receivers, and can be extended with a laser zone system for millimetre accuracy.



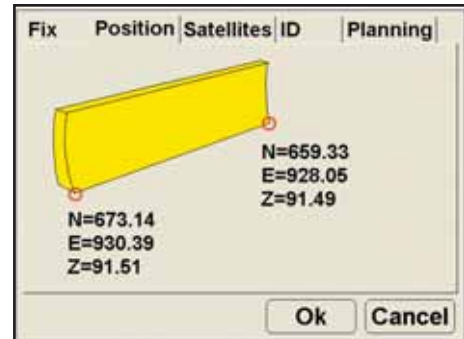
2D dozer machine control systems

We offer a number of different 2D machine control systems. Combined with an installed laser, they deliver a perfect final surface.

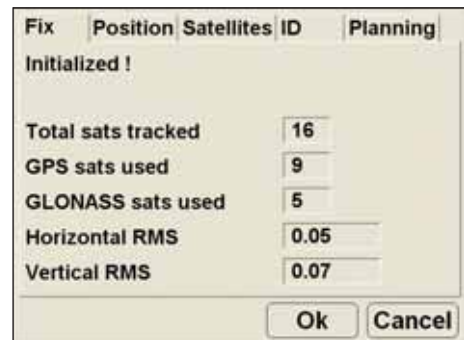
- Specifically designed for dozer applications where the operator only needs elevation control. The blade cross slope is still controlled by the operator. This allows you to start working with the minimal set-up and get to the finished level as fast as possible.
- Using a robust laser transmitter, combined with a single laser receiver on the Komatsu dozer allows you to provide a finished area fast and at the lowest cost.
- Installing a second laser receiver or a slope sensor on the dozer blade can increase the dozers working performance and applications. Topcon's unique slope sensors have an extremely wide working range, making it possible to handle slopes from -100% to +100%.

3D dozer machine control systems

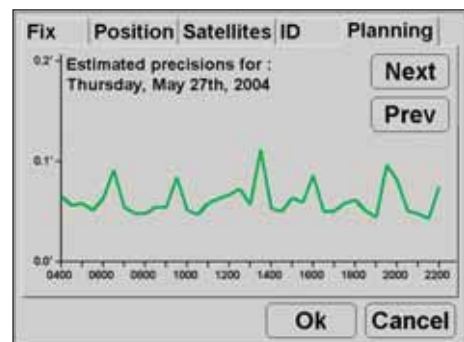
- 3D machine control starts with the 'digital job design data' which is directly uploaded to the Komatsu-Topcon 3D controller installed in the dozer's cab. You can upload data using a standard Compact Flash card or via the USB port.
- A GPS receiver on the machine calculates the position and slope of the dozer's blade many times per second. By comparing the actual blade position and slope with the digital design, the system constantly computes corrections and sends them to the machine's hydraulics to position the blade's elevation and cross slope automatically.
- At the same time, the operator sees an overview of the design surfaces, grades, alignments, GPS status and all other relevant information via the in-cab monitor. This information shows the operator where to drive and how much material still needs to be moved.
- A simple push button on the blade control lever switches between manual and automatic mode, allowing the operator to swap quickly between jobs for maximum productivity.



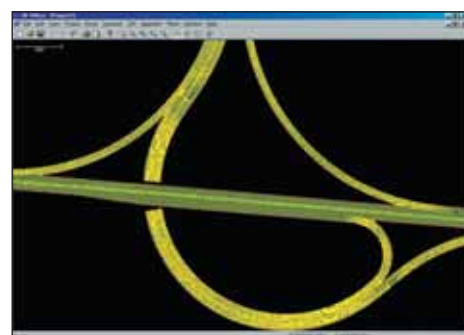
See the coordinates of both sides of the blade's cutting edge



GPS status plus horizontal and vertical accuracy



Plan the best time of day for fine grading



Manage design data for your complete jobsite

EXCAVATOR SOLUTIONS

Excavator machine indication systems

As the word 'indication' suggests, these solutions indicate elevation and slope information to the operator. They are specifically designed for machines working in conditions where a correct slope or elevation is very important. The operator then transfers this information manually to the bucket or excavator blade. Even it is only an indication system, it will allow the operator to work at an accuracy of centimetre level.

The angles of the excavator's boom, stick and bucket are measured and monitored via robust, high-quality and highly accurate gravity sensors. Up to 8 sensors can be connected in series using proven CAN bus technology. The CAN bus makes it easy to adjust each sensor separately for smoothness, faster response times and higher sensitivity, ensuring comfortable operation.

Although their usage is totally different, excavators and dozers work on the same jobsite, moving the same material. So we keep the same jobsite philosophy in mind. For instance the digital design of a road is the same for all machines. In addition, the references and software used in excavator applications are the same as for dozer applications.



2D excavator indication system

- The monitor shows the bucket in relation to the reference lines on the screen of the graphical control panel. It gives the operator a clear overview of the required grade of the bucket even when the bucket is not visible for the operator.
- An accurate indication of the bucket is calculated by the control panel which offers a clear and intuitive user interface to the operator.
- A laser sensor can be connected which allows the operator to move the machine at the jobsite without losing the required height reference.
- The gravity sensors with CAN interface are used in the 2D and the 3D system which guarantees an easy upgrade from a 2D to a full 3D indicate solution.
- A light bar with bright LED's can be attached seamlessly to the control panel so the operator can keep his eyes on the work but still notice the directions from the system.



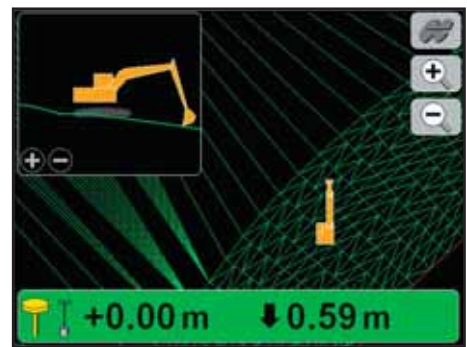
3Dxi display

3D excavator indication system

- The monitor shows the operator the exact position and angle of the bucket in relation to the 'digital job design'. This allows the operator to work quickly and efficiently, even in the most difficult situations.
- This information is delivered by a Komatsu-Topcon-designed combination of gravity sensors and dual, high-accuracy GPS receivers.
- The Komatsu-Topcon machine indication system shows all operations: turning, digging, excavating.
- During operation, the operator has a complete overview of the entire jobsite. The actual bucket position is continuously compared to the digital design and displayed on screen. As well as a graphical display, the operator can also see comparison values and grade indicator lights.



See the coordinates of both sides of the bucket's cutting edge



Choose between different operator views: plan, section or profile



Touch screen with pull down menus

KOMATSU-TOPCON MACHINE CONTROL

KOMATSU-TOPCON EQUIPMENTS

Dozers:

Standard possibilities:

- +/-100% cross slope
 - Single laser
 - Single laser +/-100% cross slope sensor
 - Dual laser
 - Single GPS +/-100% cross slope sensor
 - Dual GPS +/-100% cross slope sensor
 - Dual mast GPS
- (Note that all systems can be upgraded at anytime, due to the modular system)

Options:

- GPS upgrade to GLONASS 20 Hz
- For other options please contact your Komatsu dealer

Excavators:

Standard possibilities:

- 2D excavator indication system
- 3D excavator indication system

Options:

- Laser sensor
- Light bar
- GPS upgrade to GLONASS 20 Hz
- Up to 8 sensors in total
- For other options please contact your Komatsu dealer

Call the experts

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