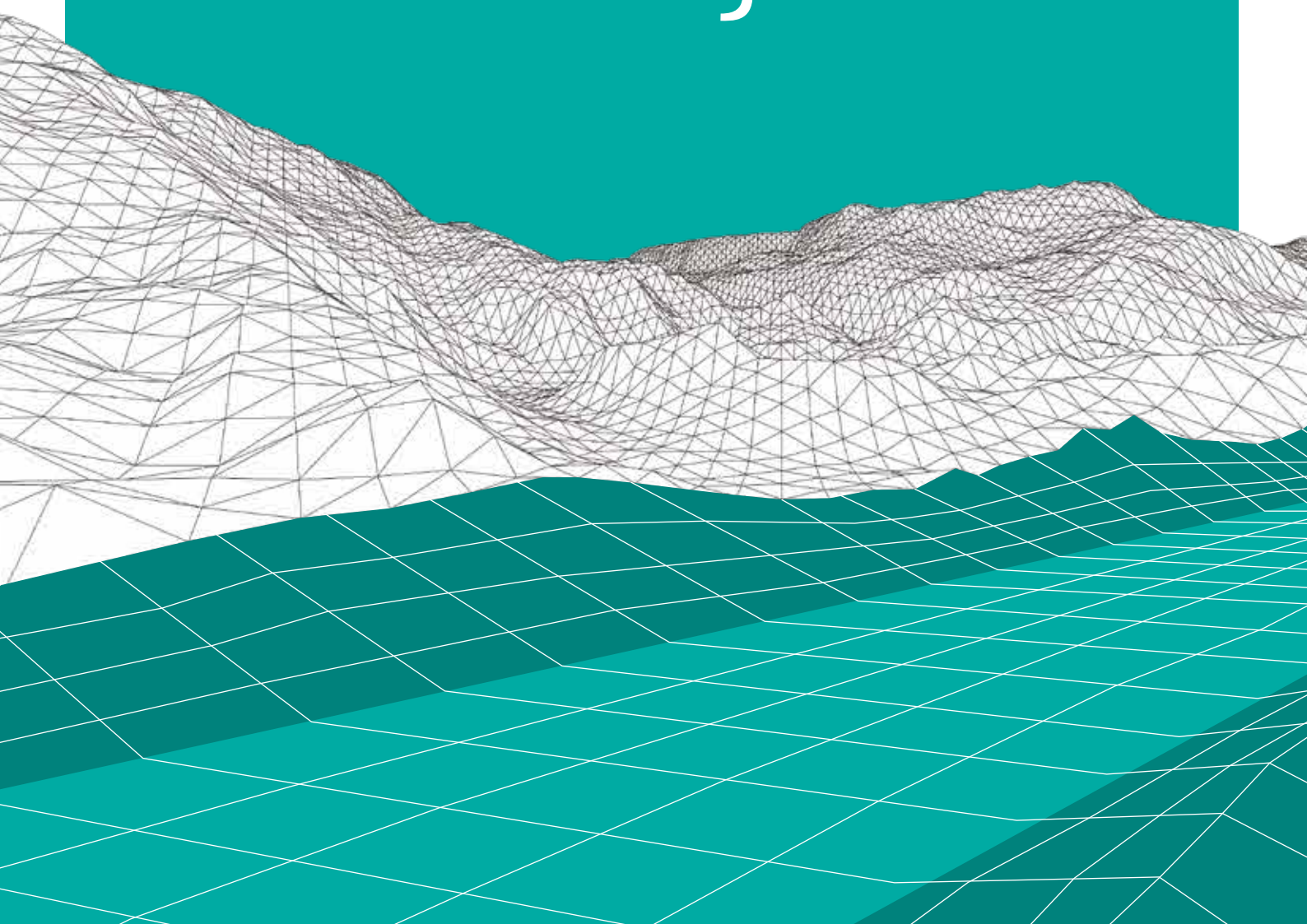


**KOBELCO**

ICT transforms work sites.

Get started with DigNav.

DigNav SK210(N)LC-10E



# Dramatically boost work-site production with DigNav

DigNav is Kobelco's comprehensive ICT solution. The system lets users view information obtained from sensors via a display. It provides guidance for the bucket tip and work progress on an easy-to-view monitor, making jobs more efficient and accurate while reducing the number of staff.

DigNav+Plus also leverages the Trimble Earthworks Grade Control Platform that semi-automatically assists finishing operations. This solution allows operators at just about any skill level to perform highly precise construction with fewer support staff.



## What is a machine control system?

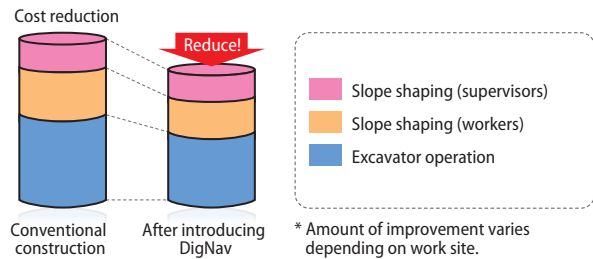
This semiautomatic system assists operators in shaping surfaces, resulting in efficient, high-quality work regardless of operator proficiency. DigNav machine control is easy to master even for lesser-experienced operators.

# 2D MACHINE GUIDANCE WITH SEMI-AUTOMATION

## POINT 1

### Increases productivity and reduces costs

DigNav reduces total costs, from staking to earthwork. The system alerts operators when the bucket tip reaches the target to prevent over-digging while reducing work hours and fuel consumption — real productivity improvements for dramatically reduced costs.

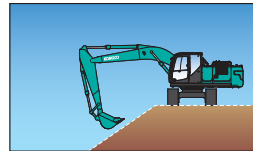


## POINT 2

### Saves trouble to reduce work load

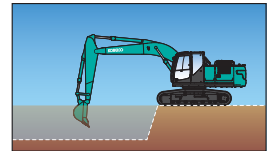
ICT minimize the work of staking. Operators can view the finished shape while sitting in the cab. Upgrading to 3D view eliminates the need for staking to save even more labor.

Slope shaping



One slope setting enables shaping up to the target point.

Ditching



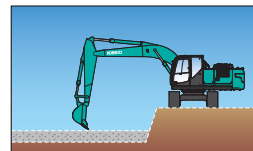
Prevents over-digging to speed.

## POINT 3

### Improves quality and facilitates work on less visible areas

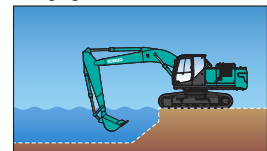
ICT avoids having to work by feel, instead providing operators a precise, electronically generated view of the work in progress. Machine control semi-automatically shapes sites, reducing the risk of disturbing the surface.

Bedding and spreading



Shapes a flatbed according to data.

Dredging



Allows operators to discern the contours of submerged surfaces.  
\* Optional

## POINT 4

### Makes work sites safer

Machine control minimizes the number of workers needed to supervise and inspect a site, reducing work hours while improving safety.



# 2D

# MACHINE CONTROL



2D machine control



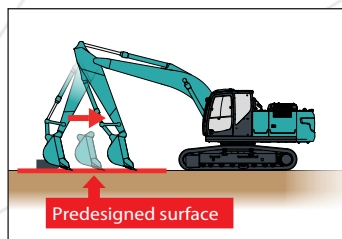
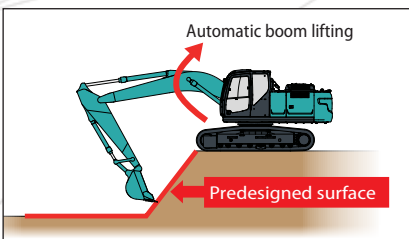
## Shapes according to a predesigned surface plan just by operating the arm lever for results equal to that of highly skilled operators

### Ideal for finishing roughly shaped surfaces

In addition to the guidance system, DigNav has a land-shaping assist function that lets operators shape the land according to a predesigned surface plan using only arm lever operation. It also has an over-dig prevent function, which prevents the predesigned surface from being disturbed. By semi-automating the combined operation of boom, arm and bucket — which normally requires considerable training — machine control reduces the learning curve while ensuring quality, machine-assisted results. This is especially good for preserving shapes and quickly finishing roughly shaped surfaces.

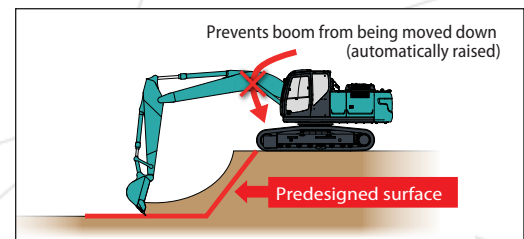
### Land-shaping assist function

In tandem with the lever operation, this function automatically controls the boom height and bucket angle. During leveling, operators can maintain the proper bucket angle, having the bucket push down while pulling horizontally with the tip scraping the ground.



### Over-dig prevention function

This prevents over-digging if an attempt is made to move the bucket down after the tip reaches the predesigned surface. It works by semi-automatically controlling the downward movement of the boom and arm pull.



### Perform work as fast as skilled operators

Machine control helps lesser-skilled backhoe operators finish surfacing as fast as skilled operators. It also reduces work-related stress, keeping operators fully focused for longer periods.



Perform work as fast as skilled operators (Kobelco machines)

Skilled operator	Lesser-skilled operator	3D machine control
10 seconds	20 seconds	10 seconds

(Accuracy: Finish  $\pm 50$  mm)

\* Test results vary depending on site conditions.



### Equipped with Trimble Earthworks Grade Control Platform

- Adopts Kobelco's solenoid valve unit (machine control valve) optimized for SK210 (N) LC-10E.
- Equipped with a large monitor for ease of viewing.
- An simple 2D design can be made on the monitor without a 3D drawing. Also, the total on-site efficiency can be improved at a low cost by upgrading equipped machines to 3D machine guidance or 3D machine control.




3D


MACHINE  
CONTROL


## Supports 3DMC upgrades

- SK210 (N) LC-10E 2DMC systems can be upgraded to 3DMC by adding a GNSS antenna, wireless device, receiver or other devices.
- A screw hole in the counter weight makes it easy to affix an antenna.
- 3DMC eliminates the need for staking, as 3D design data is completed in advance.

This makes it the lead machine for 2D machine guidance and 2D machine control at a site with multiple 2D machines to improve on-site efficiency.







# SK210(N)LC-10E for Trimble

## 2DMC/3DMC system configuration

- (1), (2), (3) Angle sensors  
( 2D/3D machine guidance )  
( 3D machine control )

Sensors attached to the boom, arm and bucket continually measure angles.

- (5) Control panel and large monitor  
( 2D/3D machine guidance )  
( 3D machine control )

2D machine guidance displays the position and angle of the bucket as well as the distance to the target once information has been entered. 3D machine guidance and 3D machine control input 3D design data to constantly display the positions of the machine and bucket tip.

- (8) Wireless device  
( 3D machine guidance )  
( 3D machine control )

Calibration data received from base  
\* Position of attachment varies depending on vendor.

- (9) Extended controller  
(3D machine control)\*

3D machine control device  
\* 2D machine control device has already been mounted.

- (10) Electromagnetic valve unit  
(3D machine control)

Hydraulic valve unit for automatic control.

- (4) Inertial measurement unit  
( 2D/3D machine guidance )  
( 3D machine control )

Sensor attached to the machine body to measure its angle.  
\* Attachment location varies depending on manufacturer.

- (6) Communication module (includes VRS)  
( 3D machine guidance )  
( 3D machine control )

Receives satellite information and correction data from electronic reference points (for VRS).

- (7) GNSS antenna  
( 3D machine guidance )  
( 3D machine control )

Antenna for receiving satellite information.  
\* Includes GNSS receiver



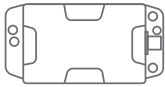
For 3DMC upgrade

## 2DMC/3DMC system components

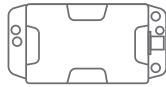
### 2D MACHINE CONTROL

#### 2D machine control

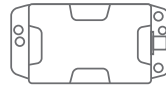
Mounted at the  
Kobelco factory



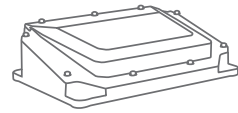
(1) Boom angle sensor



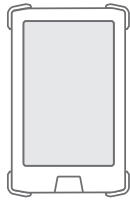
(2) Arm angle sensor  
(includes laser receiver)



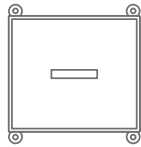
(3) Bucket angle sensor



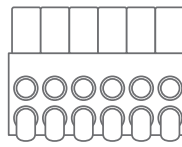
(4) Inertial measurement unit



(5) Large monitor



(9) Extended controller  
\* License for 2D



(10) Electromagnetic  
valve unit

### 3D MACHINE CONTROL

#### 3D machine control

Upgraded by  
SITECH



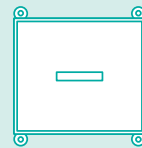
(6) Communication module  
(includes VRS)



(7) GNSS antenna x2  
\*Mast x2



(8) Wireless device



(9) Extended controller  
\* License for 3D

This brochure explains devices for the SK210 (N) LC-10E 2D machine control mounted at the factory in Japan and 3D machine control mounted and upgraded at the local site.

The illustrations may not represent actual shapes. Some usage may be different depending on the sales area. As of April 1, 2020.

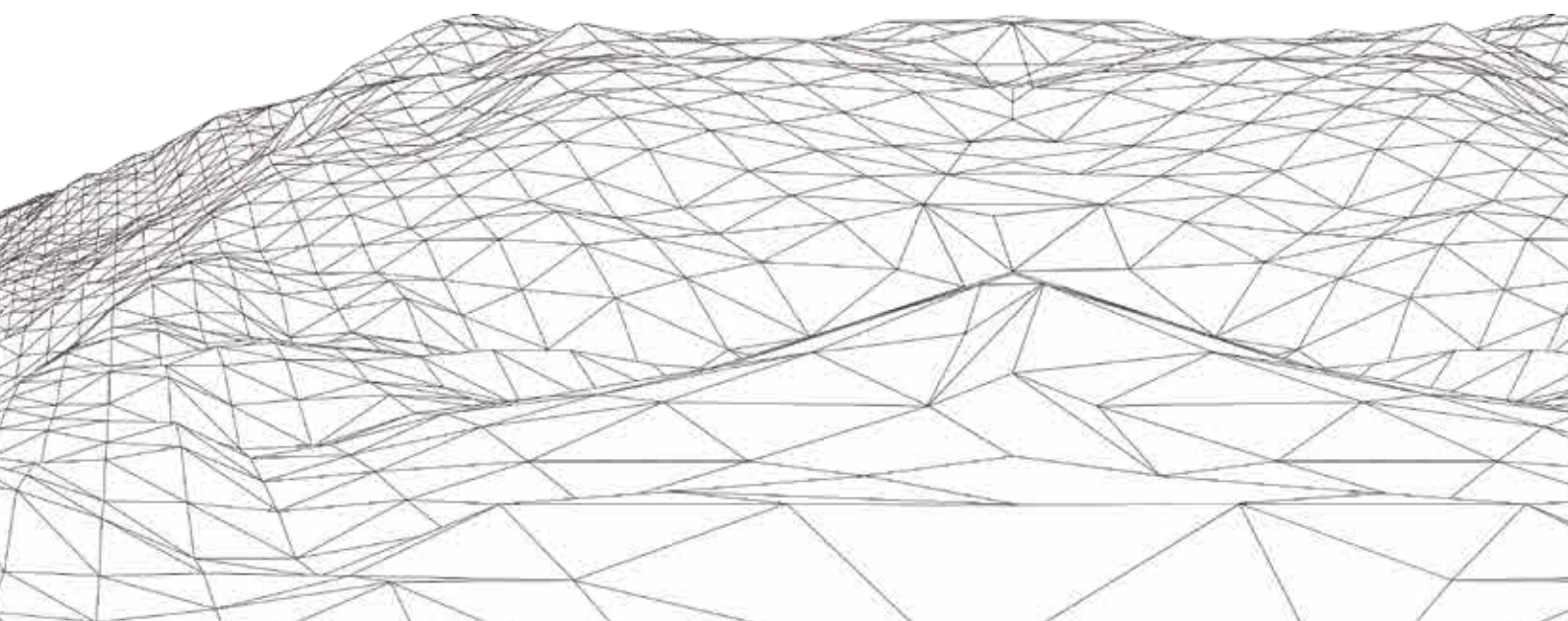
## Kobelco is an ICT partner of SITECH with Trimble.



Contact SITECH for surveying and grade control technology support.

# KOBELCO

Contact Kobelco dealers for excavator machine support.



Note: This catalogue may contain attachments and optional equipment that are not available in your area. And it may contain photographs of machines with specifications that differ from those of machines sold in your areas. Please consult your nearest Kobelco distributor for those items you require. Due to our policy of continuous product improvements all designs and specifications are subject to change without advance notice. Copyright by **KOBELCO CONSTRUCTION MACHINERY CO., LTD.** No part of this catalogue may be reproduced in any manner without notice.

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