State-of-the-arts Construction Sites

-Digital Transformation and Autonomous Machinery-

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Lineup of construction Equipment

Bulldozer
Hydraulic excavator (Crower-type)
Hydraulic excavator (Wheel-type)
Wheel loader

Dump truck
Articulated dump truck
Motor grader

Hydraulic excavator for Mining

PC8000

Machine specification can vary, depending on the country or region.
Construction, Mining and Forest job sites

Smart Construction

Construction Equipment

Autonomous Haulage System

Mining Equipment

Utility Equipment

Forest machines
DANTOTSU Value (ESG solutions through the creation of customer value and improvement of earnings)

Workplaces of the future: Safe, highly productive, smart and clean

**DANTOTSU Value**

- **[Advancement of Construction]**
  - Commitment to safety and productivity
  - SMART CONSTRUCTION
    - Optimization platform and solutions business strategies

- **[Advancement of Machine Operations]**
  - Commitment to "visualization" of machine operations
  - Preventive maintenance by applying IoT and AI
  - Lifecycle support under serial number-based management
  - Next-generation KOMTRAX

- **[Advancement of Machines]**
  - Commitment to high quality and high value
  - Automation, autonomous operation, electrification, remote controlling
  - ICT-intensive model
  - Electric shovel
  - Battery LHD

**DANTOTSU Solution**

- Level enhancement
- Speed acceleration

**DANTOTSU Service**

- Conventional level and speed

**DANTOTSU Product**

- Expansion of the value chain
現場に、未来がやってくる。
Whole construction process is connected with 3D data
(All things such as relative persons, equipment and other things are connected.)
Technology of ICT machines

Equipment is controlled automatically on 3D design data.

3D model

GNSS (Global Navigation Satellite System)

Cylinder with stroke sensor
Stereo camera
GNSS antenna

Correction data
RTK-GNSS (Real Time Kinematic)

GNSS Private company to provide correction data

CORS. Continuously Operating Reference Station

IMU
Controller
GNSS receiver
Internet modem

Control box

Technology
machines

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Roadmap to Construction Workplaces of the Future

Workplaces of the future: Safe, highly productive, smart and clean

Digital Transformation of Construction
- Automatic generation of daily tasks from daily optimized construction plans
- Collaboration and autonomous operation of equipment on the workplace

Processes [Optimization Level of Construction]

ICT Construction
- ICT-intensive construction & machines
- Visualization of progress
- Utilization of topographical data

Introduction of advanced ICT-intensive models

Products [Level of Automation and Autonomous Operation]

Level 1
Limited Operation Support

Level 2
Advanced Operation Support

Level 3
Advanced Solo Automation

Level 4
Advanced Collaborative Autonomous Operation

Level 5
Advanced Decision-making Autonomous Operation

Level 4
Automation of Construction Planning

Level 3
3-Dimensional Construction Planning

Level 2
3-Dimensional Topographical Map

Level 1
3-Dimensional Design Data

Conventional
Automated Future Construction Job Site

Key Words
◆ Recognition ◆ Planning ◆ Safety ◆ Cooperation ◆ Autonomous

AI  IoT  Big data

Autonomous Bulldozer

Autonomous Excavator

Autonomous Truck

Material Recognition

Truck Recognition

Object Detection

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Autonomous Construction Demonstration

Komatsu IoT Center Tokyo Demonstration Area

- Dumping Spot
- Loading Spot
- Autonomous Crawler Truck
- Autonomous Excavator
- ICT Bulldozer
- Automatic Driving Dump Truck
- Material
Autonomous EXCAVATOR

- Processor
- Cameras
- Terrain Sensor
- AI Truck-Bed Detection
- Terrain Mapping and Excavation Planning
- AI Truck Status Detection
- AI Human Detection
DANTOTSU Value
FORWARD Together for Sustainable Growth

Future construction equipment
(Automated, autonomous, electric and remote-controlled)

Optimization platform and solutions business
(Reduction of environmental impact and improved safety and productivity)

Promotion of smart forestry
(Circular environmental protection)

Future Plant
(Connected plants with Zero impact on environment and workers)

ICT-used smart forestry
Entry into planting

Thank you for your attention!