KOMTRAX

KOMTRAX stands for the Komatsu Tracking System, which uses state-of-the-art mobile communications technology and Internet-based technology to track from one's office such data for construction equipment as the current location, operating time, amount of fuel remaining, vehicle cautionary information, and replacement schedule for consumable parts. This is now a standard feature on domestically-produced small- and medium-sized construction equipment.

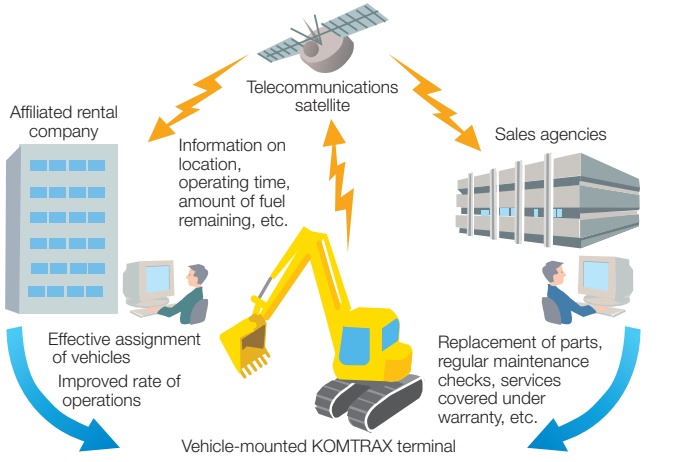
Features of Vehicle-mounted KOMTRAX Terminals

Vehicle-mounted KOMTRAX terminals collect as data (1) information on location using an internal global positioning system (GPS) receiver and (2) information from various on-board sensors and controllers. This is relayed to the Komatsu web server through satellite-based relaying or other means. The server stores the information received from each vehicle in a database and these data can then be accessed by customers, sales agencies, or affiliated rental companies.

Enabling Customers to Use Vehicles in their Optimum Condition

KOMTRAX enables customers to keep track of a vehicle's location, operating status, and condition. Using KOMTRAX makes it possible to receive advice regarding proper usage as related to maintenance timeframes, preventative maintenance, and more. Besides bringing peace of mind and reliability to its customers, Komatsu also (1) enhances the efficiency of construction operations by increasing rates of operation and (2) enables the effective use of resources through proper maintenance, allowing customers to use vehicles in their optimum condition at all times.

■ **Overview of KOMTRAX**



Accessing equipment location through GPS

Information Technology-based Construction

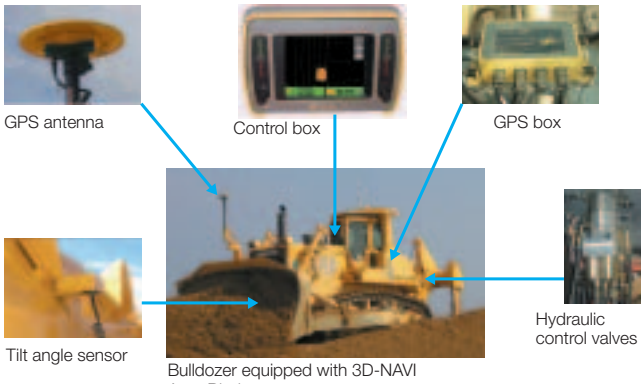
Komatsu and Topcom Corporation have developed jointly the "3D-NAVI Auto Blade®" system, an information-technology based construction system utilizing high-precision GPS tracking.

Features of the 3D-NAVI Auto Blade® System

The 3D-NAVI Auto Blade® system is a network computerized machine that renders construction projects to be implemented exactly as designed. Digital design data created by means of 3D-CAD technology are checked against the location data for the construction equipment as measured by RTK-GPS. The appropriate construction height from the ground is calculated and then the movement of the blade is controlled automatically. The position of the blade and its approach are verified by GPS and gradient sensors.

The use of leading frames and measuring during construction, as well as the corrective construction work that results, have all been unavoidable until now. However, by using this system, they are no longer needed, making possible a reduction in both costs and construction time. Moreover, the need for measurement-taking and work on leading frames done in the immediate vicinity of construction equipment disappears, increasing on-site safety.

■ **Equipment Used in the 3D-NAVI Auto Blade® System**



Bulldozer equipped with 3D-NAVI Auto Blade® system

Construction Test Using 3D-NAVI Auto Blade® System

To compare information technology (IT)-based construction with conventional construction, a test was conducted in which banked terrain with a roughly 10% gradient was to be leveled to a 200m x 50m area with a drainage gradient of 1%.

In comparing the degree of accuracy*, the conventional method was off by 12cm, while the IT-based method was off by only 10cm. In addition, with regard to time required to complete the task, the IT-based method reduced construction time by approximately 50% compared to the conventional method. Because there was no need to use leading frames, measurement-related and other work was reduced by 6 hours. Furthermore, the time to create a level area with a 1% traverse gradient was reduced by 3.5 hours. Reducing the time required to complete construction makes it possible to enhance productivity while reducing environmental impacts, including those resulting from CO_2 emissions.

*Using a standard deviation of 3σ

■ **Comparison of Time Required to Complete Construction**