

Cat[®] Terrain

for Draglines



Terrain for Draglines Features

More value for your mine.

- Provides full 3D bucket and machine positioning capability based on Global Navigation Satellite System (GNSS).
- Includes comprehensive, customizable production reporting.
- Monitors up to 35 parameters on each dig cycle to monitor dragline productivity and health.
- Enhances safe operating practices by showing dragline operator equipment working in near vicinity via on-board display.
- Reduces rework and mishandle through accurate tub placement and terrain updates from nearby dozers.



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Cat® MineStar™ System is the industry's broadest suite of integrated mine operations and mobile equipment management technologies configurable to suit your operation's needs.

Terrain, a capability set of Cat MineStar System, enables high-precision management of drilling, dragline, grading and loading operations through the use of guidance technology. It increases machine productivity and provides you real-time feedback for improved efficiency.

Terrain for draglines provides comprehensive production monitoring with real-time information on all dragline activities, right down to individual bucket loads and dump locations.

Terrain for Draglines

Improve performance and payload value.

No machine moves more material, more quickly than a dragline. Small errors in the placement of the tub or execution of the dig sequence can result in a large amount of material being moved incorrectly. These small errors add up to a significant amount of lost revenue. Caterpillar understands the importance of a dragline to the mining business and provides Terrain for draglines to improve productivity and safety. Machine performance, productivity and payload are monitored and organized in reports to optimize dragline output and minimize operating costs.

Production Monitoring

Production Monitoring provides real-time tracking and reporting of dragline operation results. When coupled with GNSS, Production Monitoring empowers miners to plan and control operations. The unparalleled geo-referenced production monitoring capability also records detailed data for subsequent analysis and reporting. Unlike traditional monitoring systems, Terrain for draglines records the complete, detailed data associated with each load cycle. The cycle data is not averaged or filtered, which means that the full data set remains available for additional querying.

3D Bucket Positioning

This feature expands the basic GNSS navigation and Production Monitoring to provide the operator with a plan and profile view of the dragline and cut being excavated. The profile view can also include the bench, cut, beginning locations and final locations.

Load Weighment

Terrain for draglines determines the payload weight during the swing to dump cycle. The load weighment feature calculates running and total shift productivity in actual tons in addition to a theoretical volume. Accurate payload information allows for a more precise measure of true machine productivity.

Boom Stress Monitoring

Boom failure is a catastrophic event for a dragline. Terrain for draglines interfaces with third party boom stress monitoring systems to display information that the operator can use to minimize boom stress. Time-stamped data is recorded and logged enabling the mine office to manage boom life and operational practices.



Features and Benefits

Increases productivity and operator safety.



Increased Accuracy

- Accurate execution of design plan.
- Consistent digging process along bench.
- Spoil side slopes cut to design grade.
- Field survey dependency is greatly reduced or eliminated, allowing for extended bench designs to be more accurately followed.
- The display of a design centerline ensures accurate tub placement and optimizes the designed range capability of the machine.
- Spoil management ensures proper placement, reducing rehandling and spoil pushing, freeing dozers for other productive work.
- Material updates from dozers are displayed on-board the dragline, improving accuracy and reducing rework.

Increased Efficiency

- Increased production leads to more tons of coal uncovered in less time and lower operating cost by minimizing rehandling.
- Material placed in the right location the first time eliminates unproductive dragline and support equipment use, lowering overall mining costs.
- Lower coal dilution.
- Rehandle is reduced by enabling control of spoil height through accurate design execution.

Increased Safety

- Reducing or eliminating survey work that causes personnel to be working on unreliable surfaces near moving equipment.
- Offering a buttonless system that provides operators with an ergonomic alternative to traditional systems.
- Better material tracking and placement allows spoil piles to be built to plan, improving spoil stability.
- Dozers working near the dragline are viewable on-board the display screen enhancing operator awareness of machines working in close proximity.

For more information about how Cat products promote safety at your mine site, visit SAFETY.CAT.COM.



Office Software

Manage your mines from anywhere in the world.

Utilizing an easy to deploy, web-based architecture, Terrain allows mines to more efficiently manage their operations by sharing information such as machine location, operational status, and progress to the work plan. User login and roles ensure staff can only access the data and functions necessary to do their job without jeopardizing sensitive operational data.

The office software, when coupled with the appropriate on-board hardware and software, gives mines the ability to define and manage various applications, enhance safety through avoidance zones/operational borders and pre-operation checklists, and track the location and job status of machines. Four additional capabilities can be optionally licensed to maximize productivity and reinforce the site's operational practices. Packages include:

Productivity

Productivity allows the mine to track and analyze machine utilization and productivity by machine type and operator. Reporting tools generate information on machine utilization, timelines, operator productivity and other parameters to help identify and correct operational inefficiencies. It also enables the assignment of job tasks to grading and loading tools. Operators can even request the creation and assignment of a task to another operator (such as clean-up a spill). The information about each task is tracked and stored for reporting purposes.

Position & Material

The Position & Material capability package allows machines to share position and job status information both on-board and in the office. This knowledge helps reinforce safe operating practices when working in close proximity. The Position & Material capability package also enables machine-to-machine cut and fill status sharing within grading and loading applications in real-time including sharing cut/fill information from draglines to dozers.

Data Share

Allows Terrain to share data made available via the licensed capability packages with other applications such as competitive fleet management systems, data reporting systems, and position monitoring systems via an industry standard interface.

Multi-Site

Allows for management of multiple Terrain-equipped sites from a single control center. By licensing the optional Multi-Site package at each mine, customers can monitor and manage work activities for multiple mines based on their universally defined user access permissions.

On-Board Components

Built-to-last in harsh mining environments.

Touch Screen Display

The touch screen graphical display provides real-time production information to the operator through an easy-to-use interface. Designed for reliable performance in extreme operating conditions, the unit is built to withstand shock and vibration and is sealed against dust and moisture.

GNSS Receiver

The MS992 is the next generation GNSS receiver from Caterpillar. The rugged housing and internal shock isolation system of the MS992 enable it to withstand the harsh conditions encountered on mine sites. Two MS992 GNSS receivers on each dragline compute positions and heading with centimeter-level accuracy to ensure precise machine location. The MS992 supports the newest GPS and GLONASS signals, faster system initialization times, better tracking and accuracy characteristics, and leverages increased satellite availability for mines with deep pits or locations in the far northern and southern hemispheres.

Communications Radio

A rugged ethernet port on the touch screen display allows convenient connection to third party radios.

Third Party Integration

Terrain for draglines provides an integrated solution for enabling the collection and management of a variety of existing data from third-party or mine-developed software, expert software, and tools for analyzing strain gauge data.



Support

Global and local.

For more than 25 years, Caterpillar has been providing electronic components and systems for the mining industry — real-world technology solutions that enhance the value of Cat products, making customers more productive and profitable. Your Cat dealer is ready to assist with matching technology systems to your application and obtaining knowledgeable support.

From sales and implementation to support and service, count on your Cat dealer to provide all your technology product needs. Repair options for select dragline components are available from factory-trained technicians at the Cat Machine Control & Guidance Repair Center.



Touch Screen Display

Display screen	264 mm (10.4 in) LCD display, 800 × 600 transfective color SVGA
Electrical input	9 to 32 V DC
Memory drive	2 GB RAM, 8 GB internal compact flash
Operating temperature	-20° C to 70° C -4° F to 185° F
Storage temperature	-50° C to 85° C -58° F to 185° F
Humidity	100%
Height	236.8 mm 9.3 in
Width	282.6 mm 11.1 in
Depth	122.9 mm 4.8 in
Weight	5.4 kg 12.0 lb

GNSS Receiver

Horizontal accuracy	10 mm 0.39 in
Vertical accuracy	20 mm 0.79 in
Operating range	Up to 10 km (6.2 miles)
Network connector	16-pin
Electrical input	9 to 32 V DC
Operating temperature	-40° C to 70° C -40° F to 158° F
Storage temperature	-50° C to 85° C -67° F to 185° F
Height	147 mm 5.8 in
Width	232 mm 9.1 in
Depth	251 mm 9.9 in
Weight	3.8 kg 8.3 lb

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For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at www.cat.com

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