

TRITRONICS 9000 SERIES 3 DRAGLINE MONITOR



The Tritronics 9000 Series 3 Dragline Monitor provides material weights, material volumes, and detailed equipment delay information to mining personnel. This technology operates on over 90 draglines worldwide today. Data availability is in excess of 99% and system maintenance is minimal. It is a robust, accurate, reliable tool for measuring dragline performance. *It is the most advanced dragline monitoring system available today.*

Cost Effective

The dragline monitor has three purposes: to increase productivity and reduce costs, measure the success of special projects, and improve excavation quality.

• **Productivity Increase**

Productivity increases arise from the ability to reduce the variation between different operators' performance across different shifts. Operators see their own performance in real time graphics and are able to easily compare that to previous shifts. It is also easy to compare operators and shifts using the office reporting.

Productivity increases also arise from the availability and use of the GPS option of the Series 3 Dragline Monitor. With this option the operator and office personnel see where every bucket was excavated and what was the diggability of that bucket. The diggability is a measure of how much work the motors did to excavate the bucket. Therefore, the GPS source of every bucket is known and the diggability of that bucket is known too. With this information, diggability maps are plotted that visually display the effectiveness of the blasting technique used.

This is an invaluable tool in improving blasting effectiveness and hence improving dragline productivity.

• **Special Project Success**

The Monitor allows the success of special engineering projects such as various dig sequences or motor upgrades to be measured.

• **Excavation Quality**

Excavation quality is improved using the GPS option on the Series 3 Dragline Monitor. With this option the operator can see where every bucket was excavated and where it was dumped. The operator also sees where the dragline is positioned in relation to the mine plan. Office personnel also see the bucket and dragline location information, as well as what time every cycle took place.

Electrical Compatibility

The 9000 Monitor is compatible with all types of dragline electrical controls—PLC systems, static field systems, or step field systems. And it is compatible with all styles of hoist, drag, and swing motors. The Series 3 monitors multiple motor loops at one time.

Information provided by the Monitor to Operator

- Material weight in each bucket
- Material volume in each bucket
- Cycle times and times for every cycle component
- Key Performance Indicators (patent pending)
- Detailed delay information
- Dig method for each bucket
- Boom Overload Alarms
- Ability to email messages via the mine's email system
- When used with GPS, diggability of each bucket

OPERATOR TOUCH SCREEN



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Operator Feedback

The operator interface is a full VGA (10") LCD touch screen. The panel is a crisp and clear sunlight readable display to allow good visibility and can be adjusted to reduce brightness at night.

- Operating Statistics – Measurement of real time key performance indicators (KPI). Site specific KPI's can be input for certain operating conditions. Therefore, benchmark performance is entirely peer generated, rather than set by the mine management, hence raising operator acceptance.
- Comparisons - The operator can compare himself to his peers in similar digging conditions.
- Delay Codes - The panel displays a list of delay codes. The displayed order of the codes is definable by each site. A voice synthesizer prompts the operator to input a delay code when the Monitor detects an idle period beyond a preset time.
- Cycle Time – Detailed breakdown of entire cycle - drag, fill, swing, dump, and return.

Information provided with the GPS Option:

- Source location of every bucket – engage and disengage
- Dump location of every bucket
- Dragline location relative to the mine plan in real time on the operator's screen

Bucket Calibration

Bucket calibration using the Monitor requires no external software/hardware and is performed by operators in about 20 minutes.

Office Software Tools

- Windows 2000 Server operating system
- Online HELP with indexes
- Easily generated production, operator, and delay reports
- Easily generated 3D performance graphs
- Automatically emailed reports
- Automatically printed reports
- Exception reporting
- User defined reports using Crystal Reports
- Compatible with Microsoft Office Suite
- Advanced data editors for data entry corrections
- Secure fully SQL compliant database for mass data storage with a completely open and transparent database structure

Integrated Mining Systems

The Monitor is fully integrated into Integrated Mining System (IMS) database.

Measurement Accuracy

Bucket weighing is within +/- 4% of the true weight.

Boom Overload Alarm

A payload weight can be set in the office database. If the actual moving average exceeds this value, an alarm message (visual and audible) will be sent to the operator.

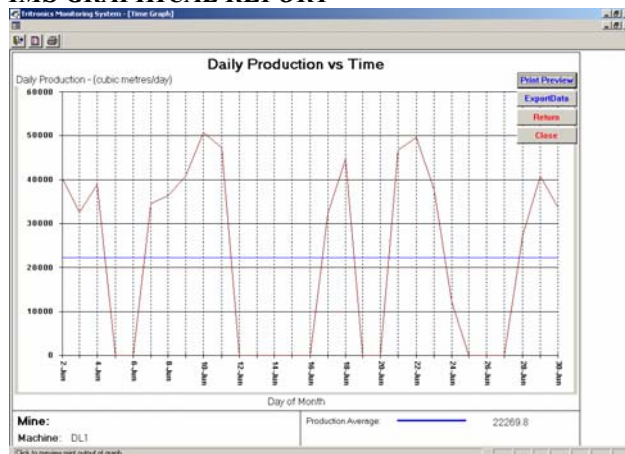
Radio System

UHF and Spread Spectrum radio systems are supported.

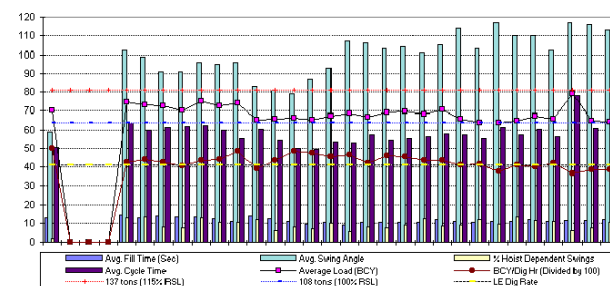
Diagnostics

The Monitor reports to the operator and the office database comprehensive hardware diagnostics.

IMS GRAPHICAL REPORT



USER DEFINED EXCEL PRODUCTION GRAPH



Thunderbird Mining Systems

17090 Avondale Way N.E.

Redmond, WA 98052 USA

Phone: (425) 869-2727 Fax: (425) 869-2735

Email: mining@tbirdpac.com

Visit our web site: www.tbirdpac.com