EMS Technik

WTS150-WT
MINE WINDER SAFETY MONITORING SYSTEM

Accurate, Impartial End-of-Wind Testing

As if safety and cost saving are not enough, the EMS Technik WTS150-WT offers distinctly simple, yet the most technically advanced personal computer based Winder Dynamic Testing System available to mines today

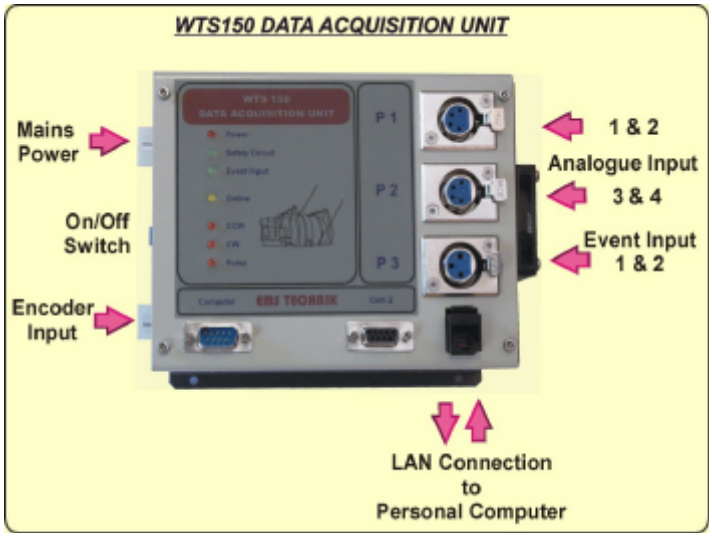
Using sophisticated embedded industrial computer technology the revolutionary WTS150-WT sets the trend for solid state mine winder monitoring systems.

The WTS150-WT systems consists of a WTS150 data acquisition system and a Windows® Operating Programming Suite.

The data capture process is automatic, measurements are accurate and repeatable. Computer generated test results are immediately available and printed reports can be initiated on site. Should a test query arise an immediate re-test can be executed. Current Winder Test results can be compared with previous tests and the slightest degradation in performance can be detected instantly.

The EMS Technik WTS150-WT End-of-wind Test System is ***Cost-effective, accurate, impartial and uncomplicated to use.***

WTS150 Data Acquisition Unit



State of the art embedded industrial computer technology is employed in the design of the WTS150 Data Acquisition unit. This technology provides a stable platform for providing reliable data acquisition and data handling processes.

The WTS150 Data Acquisition System is equipped with the necessary Signal Input Interfaces to capture and store the following signals:

- 1 x Shaft Encoder input
- 4 x + 10VDC Analogue inputs
- 2 x Optically isolated event inputs

The shaft encoder input is a 4 wire input which accepts current sink signals from encoders with quadrature pulse outputs.

The first two Analogue Inputs are typically assigned to the brake application linear transducers on the brake engine. The remaining inputs may be left unused or may be assigned to such parameters as Hydraulic Pressure, Motor Current, Strain Gauges for stress analysis etc.

The first Event Input is typically assigned to the winder trip status output from the control system. The second input may be left unused or may be assigned in accordance with the user's requirements.

An Ethernet Local Area Network port on the system ensures the orderly output of the data to the personal computer.

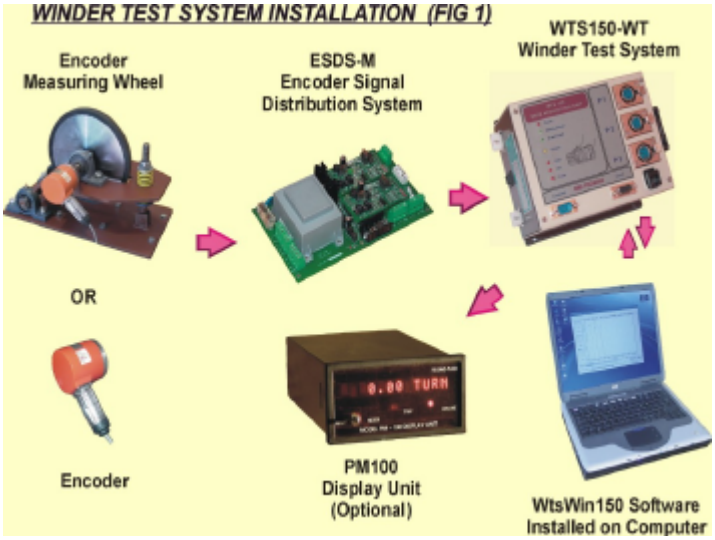
A portable version of the WTS150 Data Acquisition system is also available for situations where a fixed system is not suitable.

Software Programmes

WTSWin150 System

The supplied EMS Technik WTSWin150 Programming Suite is fully menu-driven and provides the following user interfaces:

- Facilitates the execution of End-of-Wind, Mid-Shaft Trip-out ,Static, Multiple Trip-out (Optionally) and Long-term Trending (Optionally) tests.
- Test management Functions for controlling the acquisition of data by die WTS150 Data Acquisition System
- Calculations of Rope Speed and Deceleration from the data obtained from the Shaft Encoder.
- Calculates and displays graphical relationships between Rope Speed, Analogue Input and Event Input vs. Time.
- Displays Trip, Maximum Speed and Deceleration instances against time and distance.
- Calculates and display test parameters of Speed at Instance of Trip, Distance Travelled and Time taken from the Trip Instance to the final Stopping Position as well as Stopping Position relative to the False Level Position. Average and Maximum Deceleration on the Under-Lay and Over-Lay Drum, Under-Lay and Over-Lay Drum-Speed at Instance of Maximum Deceleration and Degree of Protection as well as parameters specified by DME
- Facilitates absolute and relative Distance, Speed and Time measurements with on-screen support cursors.
- Waveform Zooming.
- Reporting as per DME's MD1201 report.
- Prints all above to hardcopy printers and PDF files
- Paradox® Database



Peripheral Equipment

EMS Technik supplies the following equipment that compliment the WTS150 installation (Refer to Figure 1) :

Encoders

It is essential to take care in selecting the right encoder for your installation. EMS Technik can assist you in making the right choice so that the encoder not only match the mounting requirements but also is compatible with the WTS150 Data Acquisition system

Encoder Measurement Wheel

EMS Technik supplies an idler wheel that facilitates a reliable and accurate interface between the Winder's drum and the encoder.

Encoder Signal Distribution System

System to generate multiple copies of a single shaft encoder's output signals. Each copy is galvanically isolated from each other as well as from the original signal. The unit also provides conditioned power to the master encoder The output signals can be individually configured to match their target system's input requirements. A supervisory circuit continuously check the health status of the system. This status is made available to the user through a potentially free relay contact.

PM-100 Display Unit

The PM-100 Display Unit displays certain parameters inside the drivers cabin and forms part of the industry proven series of Mine Winder related instrumentation products designed by EMS Technik. The unit interface to the WTS150 Data Acquisition Unit to display Drum Turns, Drum Rotational Speed and Rope Speed.

The PM-100 is a full *12 character alpha numerical* microprocessor based indicator which receives the information to be displayed from the WTS150 through a RS232 communication port.

The Display Unit is equipped with a *Mode Toggle Switch* on the front panel which allows the user to select between Drum Turns, Drum Rotational Speed, Rope Speed, Date and Time and other allotted display modes.

The toggle switch also double acts as a *Turns Reset Switch* to reset the displayed Drum Turns to Zero. This feature is helpful during shaft maintenance exercises where it is necessary to move the conveyance up or down the shaft relative to a certain fixed point.

A Winder Trip LED is also provided to display the status

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