FENNER DUNLOP

Splicing & Scanning Services - "Creating Solutions with Technology"

r-scan



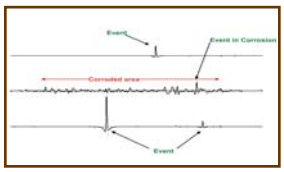


Fenner Dunlop America's Non-Destructive Testing. Where the best built belt is just the beginning.

Solutions Technology to the Power of 3

The rEscan System Methodology

rEscan's technology is the answer to the early detection of cord breaks, corrosion and splice failure. The rEscan system works through magnetic flux leakage; steel cords are magnetized within the belting then measured for the amount of magnetic flux leakage seen in the belt. The key to this system is twin conditioning heads, which aligns all the magnetic domains thus giving a clean strong signal. The system is comprised of a set of two 'conditioning transducers' (permanent magnets), one 'sense transducer' and one Tachometer. As the belt passes by the transducer a signal is sent directly to a Fenner Dunlop computer system, then all data is reviewed on the belt in the Left, Center, and Right orientation. Once the data has been analyzed, the rEscan Technician can accurately tell you where the damage is in your belt down to the closest millimeter in precision.



24 Hour - Remote Scan Reporting Service

Remote Scan System

The rEscan Remote Conveyor Monitoring System is a permanently installed conveyor interrogation tool designed to look for internal cord damage / corrosion and internal splice lay-up on steel cord conveyor systems via a phone line or LAN connection without ever stopping production.

As operations push for extended production periods, maintenance windows continue to shrink. Early detection, mapping and monitoring of damaged areas and splices allow maintenance engineers to plan maintenance windows in advance and to extend the service life of the conveyor systems.

The 'front-end' of the system comprises of a set of two 'conditioning transducers', one 'sense transducer' and one non-contact tachometer. As the belting passes the conditioning transducers, a magnetic field is induced into the steel ropes within the belting. Any breaks or corrosion produce small magnetic fields that induce voltages within the sense transducer. These voltages are then passed back to the Main Computer Housing. The tachometer is mounted to a nearby roller support and a small rare earth magnet is attached to the roller itself. As the roller spins the magnet passes the tachometer, inducing a voltage spike. These spikes are converted into square waves and recorded. This signal is used to measure distances for plotting anomalies, sections and entire belt length.

The main Computer Enclosure is housed in an IP67 Stainless Steel Enclosure; all on-belt hardware is encased in the same material. The system is Windows XP® Professional based and uses the imbedded USB Bus for data collection. A VPN (Virtual Private Network) connection is established via modem / LAN (via Ethernet, Fiber-Optics or Fire-wire) and the data is downloaded and a report is sent out.

The on-site computer has built-in security protocols to inhibit any form of tampering and, should it lose power, it will automatically re-boot on restoration.

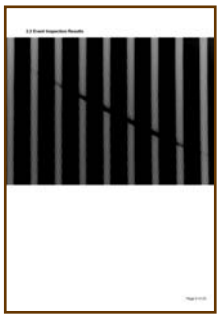
Remote Scan System

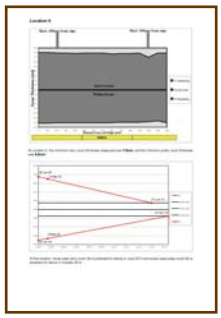
Semi-Remote Scan

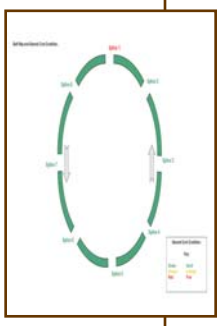
Semi-Remote scanning entails permanently installing the sense and condition heads along with the tachometer on your system; then a trained technician travels onsite and personally extracts the data via laptop when a scan is needed. With this option there is no downtime after initial installation. The data is collected with the conveyor running. A full detailed report is then generated. The report will include Fenner Dunlop's recommendation in order of priority, detailed belt map, life predictions, splice condition and a table of anomalies within the belting.

Full Manual Scan

The **Full Manual** scan entails a trained technician to travel on-site and perform a full longitudinal scan, condition inspection, cover profiles and life predictions of the conveyor belt. After the inspection has been made a fully detailed report is generated and sent to the client. The report will include Fenner Dunlop's recommendations in order of priority, detailed belt map, splice condition and a table of anomalies within the belt that are considered notable. In the event that some of the anomalies need to be looked at closer, Fenner Dunlop's portable X-Ray system can perform highly detailed digital images of these events.

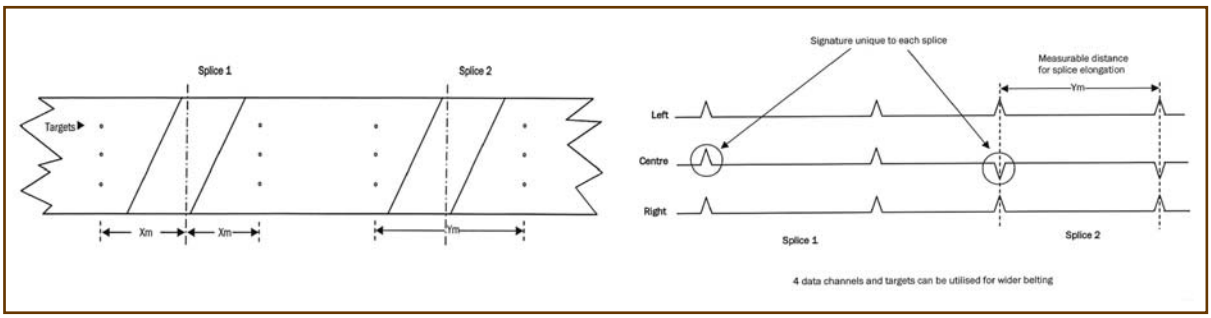






The SMS System

The **Splice Monitoring System** allows the remote measurement of splice elongation. The SMS monitors all types of splices in fabric conveyor belting by imbedding small targets into the belting at a set distance on either side of each splice. The rEscan SMS system monitors these distances each time a splice passes its 'sense' transducer. This distance can be accurately measured and, should any splice fall outside set limits, Fenner Dunlop can alert on-site personnel, who can then inspect the offending splice/s.

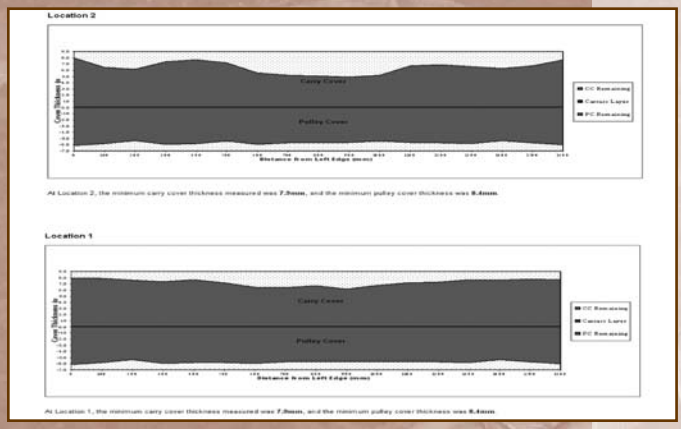


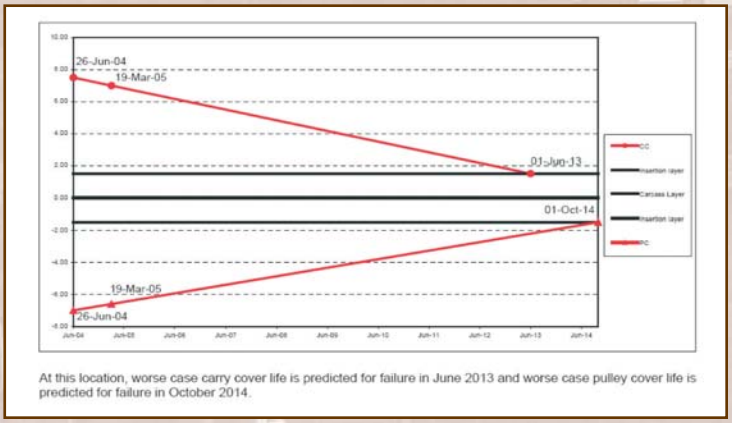
Also Available R.A.D.A.R. "Rip Analysis Detection and Recording". (Rip detection system and splice monitoring for fabric belting.)

The AIM System

An **Analogue Inductive Meter (AIM)** can quickly and accurately ascertain cover thickness on steel cord conveyors. This device uses an Inductive Proximity Probe to sense the distance between itself and the nearest metal object. The output of the probe is a linear voltage that relates directly to the distance measured. This output is sent to a Digital Panel Meter that samples the output from the probe and scales / converts it to a distance measurement in millimeters.

Once a Fenner Dunlop technician has performed at least two contiguous sets of profiles on a particular conveyor over time, an expected cover life prediction can be made. Predictions are just that - a prediction based on current wear rates holding true for each given location measured. Predictions become more accurate as each successive measurement is made at each location. In the example shown below, rEscan measured the covers at the same location on two separate dates and the prediction was extrapolated.





At this location, worse case carry cover life is predicted for failure in June 2013 and worse case pulley cover life is predicted for failure in October 2014.

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