

Non-Destructive Inspection of Steel Cord Conveyor Belts

- Automatic detection of broken cords and splices
- Feasible to use within monitoring system
- Inspection during production run
- Assessment of residual strength

INTROCON is designed for non-destructive on-line inspection of steel cord conveyor belts, installed on conveyor in mining and cement industries, seaports and steel plants.

Operation of steel cord conveyor belts requires reliability and safety as they carry bulk subjects, and accident with the belt may cause great losses. In some cases it is allowed to convey people by conveyors with steel cord belts, and safety aspect becomes the priority. The belt contains number of steel cords, which are subject to corrosion mainly due to mechanical damage of rubber layer. Most of defects in steel cord structure, which may entail accident, are hidden and may be detected only by non-destructive methods. Sections of manufactured belt are joined by a vulcanized splice. Splice in the belt is made on-site according to special procedure, and should be inspected during operation in order to assure integrity of the belt.



INTROCON principle of operation is based on eddy current method. The instrument contains scanner and basic unit.

The scanner has exciting and measuring coils, powered by basic unit. Width of the scanner is variable and depends on the width of the inspected belt. The scanner is positioned above the belt nearby the drum, where the belt is plane. The distance between scanner and belt is adjustable to maximum 20 mm.



Basic unit is connected to the scanner with cable up to 8 m in length. It is battery powered and equipped with 2 displays. Data are stored in the built-in data logger and can be downloaded after inspection using software Wintrocon®, which is powerful mean to analyze data and compose inspection report.

The belt does not require preparation for inspection, and the scanner is installed above the belt in fast and easy way. As inspection is performed during normal conveyor run, it is possible to implement INTROCON into conveyor monitoring system. INTROCON enables to detect individual broken and missing cords, pitting corrosion, and splice integrity of steel-cord conveyor belts; it measures the gap between broken cords in the splices. Explosive proof version of the instrument is available. For assessment of residual strength of the belts on basis of inspection data relevant math model of the belt has been developed, and operator can use appropriate nomograms.

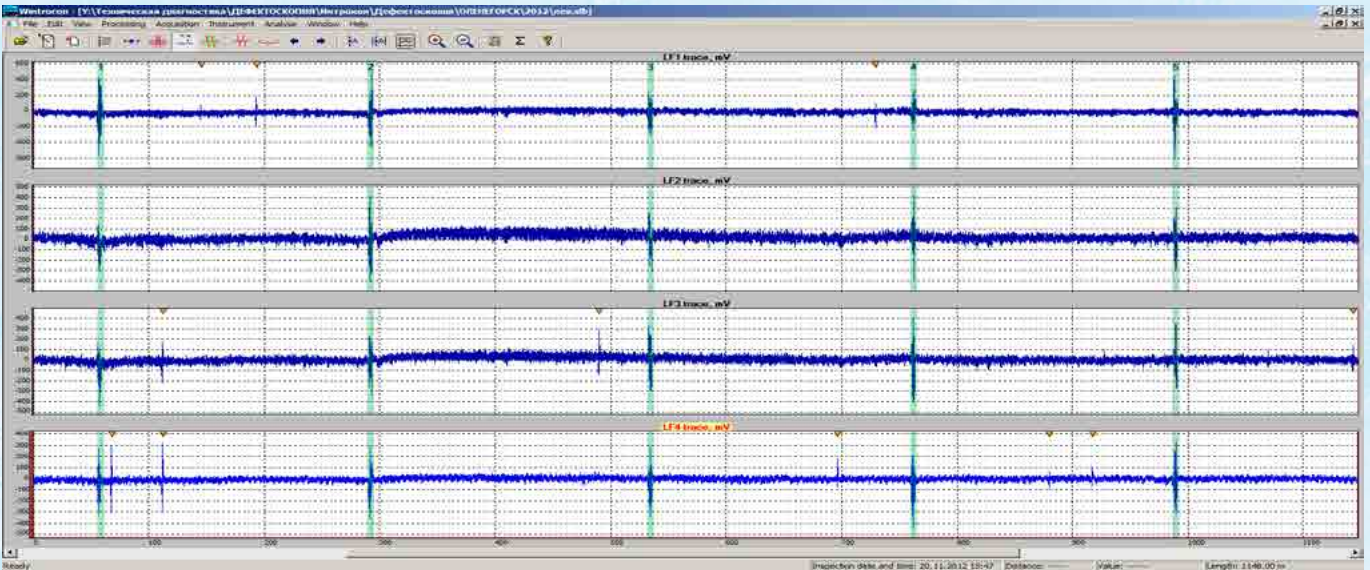
Training of customers, operating INTROCON, is available. Skilled certified personnel of INTRON PLUS can provide inspection of steel cord conveyor belts.



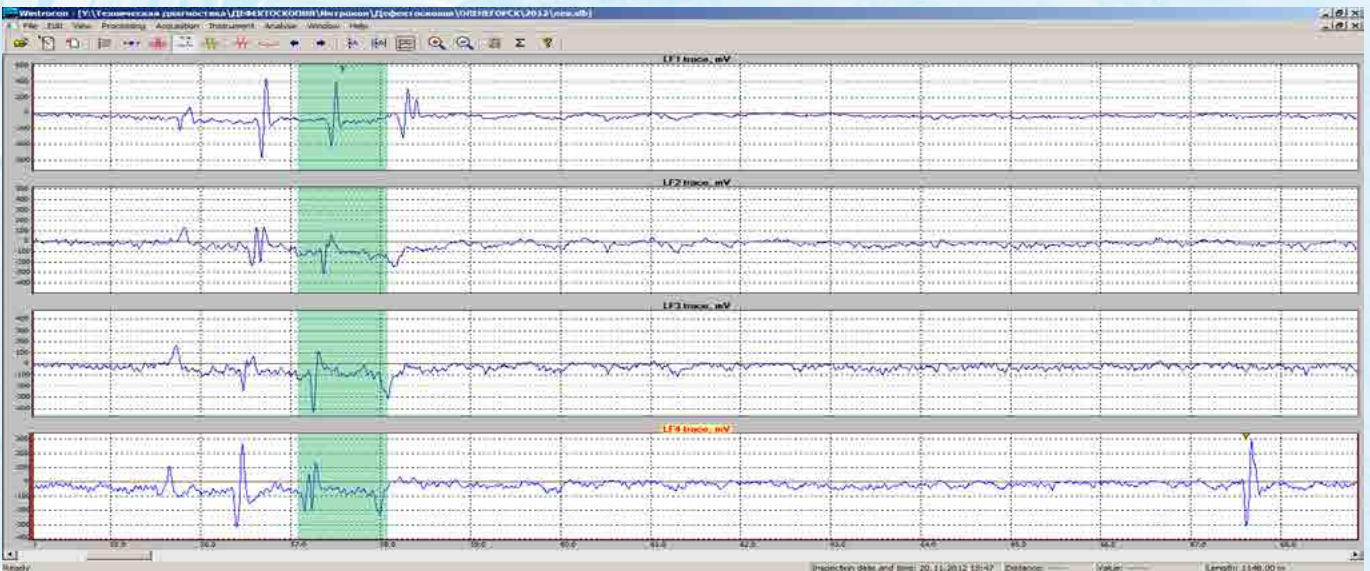
Installation of the scanner above the belt at driving drum of conveyor



Inspection of the conveyor belt



Traces of belt 1150 m length with automatically marked 5 splices (green) and broken cords (orange).



Zoom-in section of the belt with marked splice at distance 56-58 m and marked broken cord on LF4 trace at 67,7 m.

Technical specification

Principle of operation	Eddy current
Width of belt	From 600 to 3000 mm
Thickness of belt	From 10 to 50 mm
Inspection speed	Up to 7 m/s
Number of steel cords in the belt	From 50 to 200
Diameter of steel cords	From 3 to 15 mm
Weight of the scanner	From 10 to 32 kg (depends on width)
Weight of the basic unit	0,7 kg
Ambient temperature	From -30 to +50°C
Ingress protection of the scanner	IP54
Ingress protection of the basic unit	IP65
Explosion proof version	Yes

INTRON PLUS also produce equipment and provide services for non-destructive inspection of steel wire ropes and steel plates, including above ground storage tank floor.



Ver. 09/14. Specifications subject to change without notice.