



Belt Scanner MF — Portable

ELECTROMAGNETIC CONDITION MONITORING — MULTI-CONVEYOR STEEL CORD

— OVERVIEW

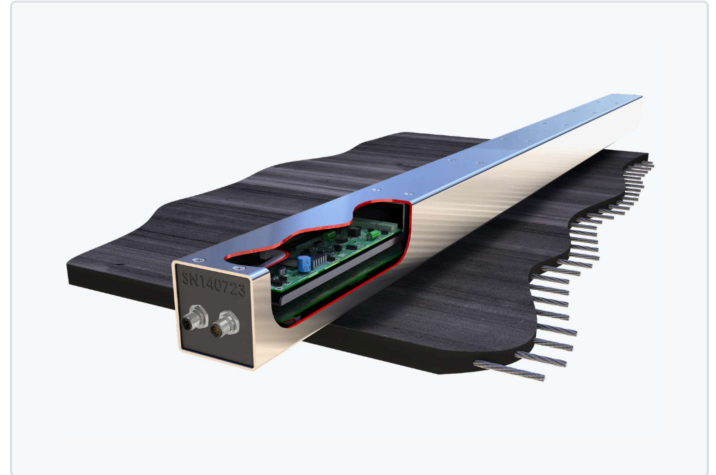
Scan Multiple Conveyors with a Single Unit

The Belt Scanner MF Portable is a non-contact electromagnetic scanning system for steel cord conveyor belts. It detects and quantifies internal carcass damage — broken cords, corrosion, kinks, fatigue, missing cords, and splice anomalies — using magnetic flux leakage technology. The belt passes between permanent magnet conditioning heads while a sensor transducer reads the magnetic signature of each cord.

Unlike the Fixed variant, the Portable system is powered entirely from a laptop via USB — no mains power required. It can be installed on a running conveyor and moved between conveyors, making it suited for fleet-wide condition assessment programmes.

Laptop-powered

· No mains supply required · Installs on running conveyors



— KEY BENEFITS

Why Belt Scanner MF Portable

MULTI-CONVEYOR SCANNING

One system scans multiple conveyors. Move between assets as needed — ideal for fleet-wide condition assessment programmes.

NO SHUTDOWN REQUIRED

Installs on a running conveyor. Magnets and transducer are positioned while the belt is in operation — no production interruption.

LAPTOP POWERED

Powered entirely via USB from a laptop. No 100–240VAC mains supply needed — simplifies location selection enormously.

INDIVIDUAL CORD RESOLUTION

Detects damage at the individual cord level — broken, corroded, kinked, fatigued, and missing cords, plus splice anomalies.

NON-CONTACT

Magnet bars installed 35–50mm from belt surface. Sensor transducer also non-contact. No belt modification required.

RENTAL AVAILABLE

Available for purchase or rental. Contact Beltscan for rental options and data analysis service packages.

Magnetic Flux Leakage Detection

Two permanent magnet arrays (conditioning heads) are installed above and below the belt with matching magnetic poles facing each other. As the belt passes between them, the steel cords are selectively magnetised. Any discontinuity in a cord — even individual filaments — produces an external magnetic field (magnetic flux leakage). The downstream sensor transducer detects this leakage via multiple pick-ups dispersed across the belt width.

01

Condition

Two magnet bars (one above, one below) magnetise the steel cords as the belt passes between them. Installed 35–50mm from the belt surface. Distance decreases for higher ST ratings.

02

Detect

The sensor transducer reads the magnetic signature of each cord. Damaged cords produce flux leakage anomalies. Data is processed and stored in non-volatile memory inside the transducer.

03

Analyse

Scan data is downloaded via USB to the laptop. BSMF Data Viewer and Belt Analysis software identify damage type, severity, and longitudinal position using tachometer data. Magnetic fingerprint comparison enables splice trending.

MAGNET SAFETY WARNING

The magnet bars produce a very strong magnetic field. No magnetically sensitive devices (credit cards, mobile phones, watches) should be allowed within 3.0 metres. Never allow a magnet bar to contact the belt directly during installation or removal — this will induce a permanent magnetic “pocket” in the belt carcass which often cannot be erased. When not in use, separate the two magnet bars with 25mm² wooden blocks and tie together.

What It Detects

- Broken cords — complete wire breaks within a cord
- Kinked cords — vertical plane deformation from belt handling damage
- Missing cords — absent cords in the belt cross-section
- Rusted / corroded cords — corrosion-induced magnetic changes
- Fatigued cords — filament discontinuity from plastic deformation and ductile failure
- Splice anomalies — deterioration detected via magnetic signature comparison

Fixed vs Portable

CAPABILITY	FIXED BSMF	PORTABLE BSMF
Conveyors scanned	One (permanent installation)	Multiple (moved between conveyors)
Belt stoppage	Not required	Not required
Power source	24VDC / 110VAC / 240VAC	5VDC via USB (laptop)
Remote scanning	Yes — run scans remotely at any time	No — operator on-site with laptop
Programmed Parking	Yes	No
DED (belt stop protection)	Yes — 24/7 automated belt stop	No
Belt synchronisation	Yes — improves data repeatability	No
Scan data repeatability	Higher (fixed position, belt sync)	Good (varies with installation)
Installation	Permanent — 2-day commissioning	Site-specific mounts per conveyor

What’s Included

Sensor Transducer 316 SS, IP67, multiple pick-ups, non-volatile memory	2× Magnet Bars 316 SS, permanent magnet conditioning heads, span full belt width	USB-RS485 Adapter ABS IP68, powers transducer via laptop USB, data connection
Tachometer Probe + button magnet for idler roller, longitudinal position tracking	Analysis Software BSMF Data Viewer + Belt Analysis — data capture, magnetic fingerprint, trending	Documentation Full installation, wiring, and operation manuals (PDF)

Technical Data

PARAMETER	VALUE
Belt Type	Steel Cord
Contact	Non-contact
Transducer Construction	316 Stainless Steel, IP67
Transducer Size	80 × 80 × L mm (per belt width)
Transducer Weight	9 kg per metre length
Magnet Bar Construction	316 Stainless Steel, IP67
Magnet Bar Size	40 × 40 × L mm (per belt width)
Magnet Bar Weight	9 kg per metre length (each)
Magnet Distance	35–50mm from belt surface
USB Adapter Construction	ABS Plastic, IP68
USB Adapter Size	135 × 65 × 45mm
USB Adapter Weight	1.3 kg
Power Source	5VDC via USB (laptop / PC)
Operating Temp	-25°C to +70°C
Storage Temp	-40°C to +80°C
Humidity	5–95% RH

Installation

Magnet bars: Installed above and below the belt with matching poles (North) facing each other. Must span full belt width plus wander allowance. Higher ST rating = shorter distance to belt surface.

Transducer: Located in a flat belt path with minimal flap and droop. Away from electrically noisy locations (drive motors, switchgear). Can be positioned above or below the running belt.

Tachometer: Sensor probe mounted on an idler roller frame, excited by a button magnet glued to the idler end disc. Confirm no residual magnetic pockets on the end disc before installation. Measure and record roller diameter.

Ongoing Requirements

The Belt Scanner MF Portable requires very little maintenance. Keep the system free from product build-up. No user-serviceable components inside the transducer or USB adapter. Always replace dust caps on connectors after use. Avoid standing on connectors.

Where It’s Used

- Multi-Conveyor Sites
- Fleet Assessments
- Baseline Belt Surveys
- Mining Operations
- Coal Handling Plants
- Port Facilities
- Overland Conveyors
- Splice Condition Trending

Also available on a rental basis with optional Beltscan data analysis service — remote scan review and monthly condition reporting.