



Dr. Brandt
GmbH



TCK.W

TCK.W - Wire Rope Inspection Expert System

Conforming to EN 12927 (ropes)-6/7/8

Innovative Inspection Technology

We've completely solved three existing issues: wire rope's hidden danger, it's waste and it's low efficiency

MRT Device:

1. Low magnetization for wire rope
2. Inspection for broken wires, abrasion, erosion, fatigue and deformation (LF/LMA)
3. Recognition and evaluation for splice displacement

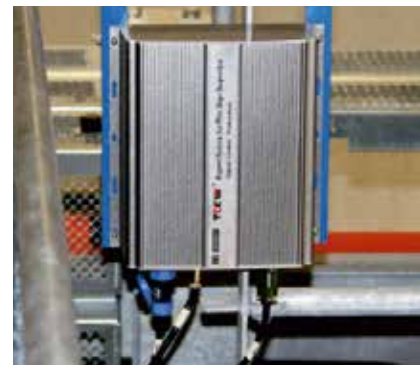
Visual Identification:

1. Accurate inspection for external flaws
2. Recognition and evaluation of numbers of broken wires in the length of 6D and 30D
3. Measuring wire rope diameter variation

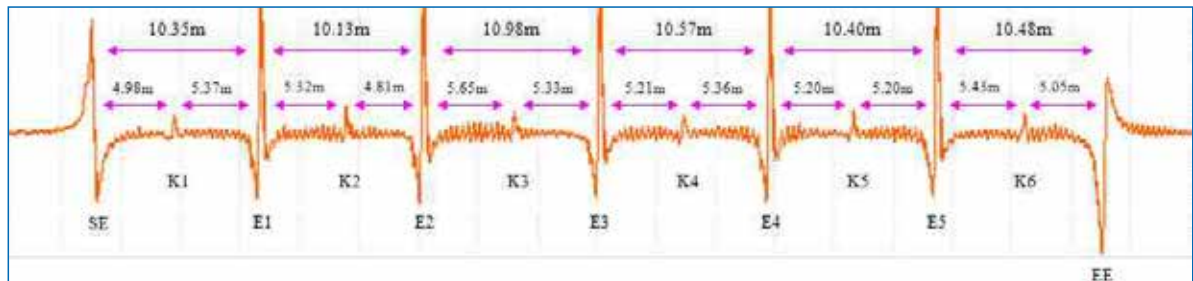


Inspection Report for Track Rope

No	Flaw Position	A. MRT	B. Flaws	C. Diameter Variation	Remark	
1.	132.5-132.9 m				Slight	
		Flaws Value	6x36 1 0 0 0 0 0 0	Normal Diameter		Measured Diameter
		LF % LMA 1.2 %	6D Broken Wire 1 Wire 30D 1 Wire	50 mm		49.7 mm
2.	1286.9-1287.1 m				Slight	
		Flaws Value	6x36 1 0 0 1 0 0	Normal Diameter		Measured Diameter
		LF % LMA 2.0 %	6D Broken Wire 2 Wires 30D 2 Wires	50 mm		49.6 mm
3.		Flaws Value	6x36	Normal Diameter	Measured Diameter	
		LF % LMA %	6D Broken Wire Wire 30D Wire	mm	mm	



Splice Analysis Report for Track Rope



Flaw Statistics

MRT Inspection Report



Unique Technology Advantages

Realizes three management objectives of wire rope's: safety, economy and efficiency

Inspection Accuracy:

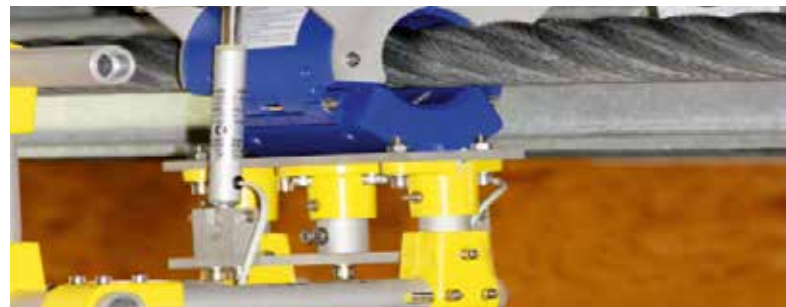
- Severe flaw value: loss of the rope's effective cross-sectional area in the range of 80-100% of the upper discard limit, real-time detection rate: 100%
- Poor flaw value: loss of the rope's effective cross-sectional area in the range of 60-80% of the upper discard limit, real-time detection rate: 100%
- Medium flaw value: loss of the rope's effective cross-sectional area in the range of 40-60% of the upper discard limit, real-time detection rate: 99%
- Slight flaw value: loss of the rope's effective cross-sectional area in the range of 20-40% of the upper discard limit, real-time detection rate: 95%
- Below slight flaw value: loss of the rope's effective cross-sectional area <20% of the upper discard limit, real-time detection rate: 90%

Technical Parameters:

1. Statistical error for numbers of broken wires in the length of 6D and 30D: <1
2. Measuring error for wire rope diameter reduction: $\pm 1\%$
3. Variation error for wire rope splice displacement: $\pm 1-5$ mm
4. Measuring error for wire rope lay length: $\pm 1\%$
5. Allowed tolerance (P): $\pm 1\%$
6. Flaw positioning accuracy: $\geq 99\%$
7. Rope speed for inspection: up to 4 m/s,
Rope speed for monitoring: up to 15 m/s
8. Wire rope diameter range: $\phi 26-76$ mm
9. Sensor working sensitivity: ≥ 1.5 V/mT
10. MRT maximum sampling frequency response: 2048 times/m
11. Visual identification, sampling frequency 20 frames/second
12. System working voltage: AC220V $\pm 10\%$ @50Hz/60Hz
13. System rated power: 300W
14. Wire rope oscillating range: <10 mm
15. Required space for device installation: $\phi 175$ mm x 1200 mm
16. Sensor working temperature: -20°C-55°C,
Humidity: $\leq 95\%$ RH
17. Ingress protection: IP67

Unique Advantages:

1. Safety control for the entire service life of the wire rope
2. Synchronized inspection during high-speed operation
3. Replaces manual inspection with mechanical visual identification inspection
4. Integration of MRT&VI system
5. Internet + expert inspection with remote diagnosis



Dr. Brandt GmbH

TCK.Ws products have served 2500 clients in 42 countries

Four Core Capabilities:

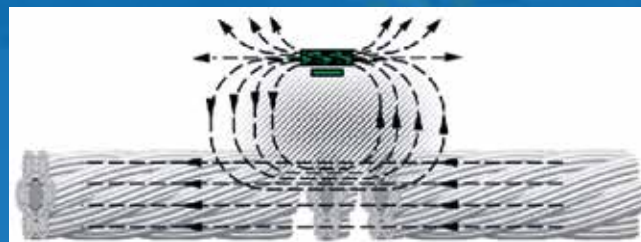
- Efficient and accurate inspection capability for broken wires, abrasion, erosion, fatigue, splice displacement and other flaws
- Efficient and accurate identification capability for numbers of broken wires in the length of 6D and 30D
- Efficient and accurate measuring capability for wire rope diameter variation
- Efficient and accurate positioning capability for wire rope flaw verification

Ropes are the „lifeline“ of any cable car. For some reason, almost all the other parts of the cable car are monitored and secured on a permanent basis, but not the cable itself. Therefore, there is always a risk of rope failures during operation due to long-term strength loss. The antiquated manual inspections including visual inspection and callipering are less efficient and limited, and current MRT methods for cableway rope cannot inspect flaws while the cableway is running.

However, TCK.W Wire Rope Inspection Expert System is designed to replace manual inspection with intelligent inspection, and innovatively solves the challenges with real-time detection technology. In other words, TCK.W Wire Rope Inspection Expert System is the most advanced instrument in the world that conforms to European and American inspection requirements.

Conforms with:

- Standard practice for electromagnetic examination of ferromagnetic steel wire rope (ASTM-E1571-2011)
- Cranes-wire ropes-care and maintenance, inspection and discard (ISO-4309-2004)



TCK.W by  **Dr. Brandt**
GmbH



Precise. Durable. Innovative.

Rombacher Huette 9
44795 Bochum
Germany

Phone: +49-234-94393-0
Fax: +49-234-433431

Mail: info@strip-tension.com
Web: www.strip-tension.com

A Company of Group 