Introduces

TST FDSYS.P™

FOR

PORTABLE WIRE ROPE INSPECTION

TST FLAW DETECTION TECHNOLOGY CO., LTD.
System Description

TST FDSys.P Flaw Detection System is developed on basis of magnetic inductive sensing technology and MFL (magnetic flux leakage) wire rope inspection technique. The system can be applied for the portable inspection of steel wire ropes and steel pipes for the physical damages or material deteriorations.

TS-X1124\X1142\X1160 are the 3 standard models in the portable series for the inspection of steel wire ropes with diameters of 6mm-65mm.

Customized models can be developed based on specific applications of the clients, such as for extra wide wire ropes up to 120mm, and for environments that require Intrinsic Safe and Explosion Proof design.
SYSTEM FEATURES

General
- Nondestructive inspection of wire rope with diameter from 6-65mm
- Detection powered by TST sensor array
- Portable detection of various flaw types including broken wire, corrosion, pitting, abrasion, fatigue etc. for which a magnetic signature will be left due to the occurrence of a flaw event.
- Instant monitoring and evaluation of inspection process with portable 'Control Panel' and 'Screen'
- Data processing with built-in signal processor for portable application
- Evaluating and reporting with built-in and PC software set for portable application

Inspection Speed
- < 15 m/s (or as limited for safe operation)

Defect Types
- LF (Local Fault) LMA (Loss of Metallic Area)
- Physical Damages: Broken wire, Abrasion, Structure Deformation
- Material Deteriorations: Corrosion, Fatigue

Flaw Detection
- Qualitative Flaw Detection
- Quantitative Flaw Detection
- High Repeatability
- High Accuracy
- Waveform Inspection Diagram Output
- Statistical Inspection Result Table Output
## System Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-Regulator Field Strength</td>
<td>&lt; 50mT</td>
</tr>
<tr>
<td>Continual Detection Capacity</td>
<td>&gt; 10⁴ m</td>
</tr>
<tr>
<td>Detection Response Time</td>
<td>≤ 0.5 ms</td>
</tr>
<tr>
<td>E/M Sensitivity</td>
<td>≥ 1.0V/mT</td>
</tr>
<tr>
<td>Working Temperature</td>
<td>-20–50 °C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40–60 °C</td>
</tr>
<tr>
<td>Service Time:</td>
<td>&gt; 8 hours</td>
</tr>
<tr>
<td>Charge Time:</td>
<td>4-5 hours</td>
</tr>
<tr>
<td>Sensor Dissipation Power</td>
<td>&lt; 50mW</td>
</tr>
<tr>
<td>Sensing Range</td>
<td>0-30mm</td>
</tr>
<tr>
<td>Sensor Lifetime</td>
<td>&gt; 27 * 10⁴ hours</td>
</tr>
<tr>
<td>S/N Ratio</td>
<td>S/N &gt; 85dB</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>&lt; 95%</td>
</tr>
<tr>
<td>Cleaning</td>
<td>Volatile organic solvent (ABS safe, Insulation safe, Non-toxic, Non-conductive)</td>
</tr>
<tr>
<td>MODEL</td>
<td>ROPE DIAMETER SPECS</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------</td>
</tr>
<tr>
<td>TS-X1124</td>
<td>$\phi$ 6mm - 24mm</td>
</tr>
<tr>
<td>TS-X1142</td>
<td>$\phi$ 22mm - 42mm</td>
</tr>
<tr>
<td>TS-X1160</td>
<td>$\phi$ 40mm - 65mm</td>
</tr>
</tbody>
</table>
SYSTEM PERFORMANCE

Qualitative Inspection
FDSys.P is able to inspect the wire rope and determine the defect types, such as Local Fault (LF) or Loss of Metallic Area (LMA).

Quantitative Inspection
FDSys.P is able to inspect the wire rope and determine the respective defect values and severity with respect to the % loss of cross sectional metallic area and output in the statistical table with % values and positions.

Reliable Inspection
With the advanced sensor technology, FDSys.P is able to detect the defects with high repeatability and accuracy.
Wide Range Inspection
Due to the optimization of sensor array, the sensor of FDSys.P is able to pick up signals at wide range from the target and inspect the wire rope without interfering the relative movement between rope and device so that good passing ability is achieved. Work efficiency and operation safety is assured.

High Speed Inspection
FDSys.P is able to inspect the wire rope at a high speed without compromising the inspection performance and result.

Intelligent Inspection
FDSys.P is integrated with intelligent data analysis and processing algorithm on a user-friendly operating interface to provide a unmatchable inspection experience and solution.
INSPECTION PROCESS

1. Field Regulating (Magnetizing)

2. Benchmarking
   
   B/H
   B-Mark
   0 → Meter

   Defect Value %
   F2
   F1
   0 → Meter
## INSPECTION PROCESS

### Data Uploading & Analysis

#### Inspection Report

**TST TPS50F for Portable Inspection of Steel Wire Rope**

**Inspection Report**

**Inspector:** Non-Destructive Inspector of Steel Wire Ropes

**Inspector:** [Name]

**Device Model:** TPS50F

**Device Serial Number:** [Serial Number]

**Inspection Date:** [Date]

**Inspector Signature:** [Signature]

**Reviewer:** [Name]

**Reviewer Signature:** [Signature]

**Revision Number:** [Number]

### Inspection Report

**Flaw Detection Result Sheet**

<table>
<thead>
<tr>
<th>Flaw Type</th>
<th>Flaw Size</th>
<th>Flaw Depth</th>
<th>Flaw Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Data]</td>
<td>[Data]</td>
<td>[Data]</td>
<td>[Data]</td>
</tr>
</tbody>
</table>

**Inspection Report**

**Inspector:** [Name]

**Reviewer:** [Name]

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