NDT Technologies, Inc. Wire Rope Inspection
Using proven MFL Technology.

NDT Technologies has over 30 years of experience dedicated to developing and improving Wire Rope Inspection equipment and methods.

- **Easy Operation** – LMA-TEST™ wire rope testers are easy to operate. Their unmatched inspection accuracy makes chart interpretation direct, clear, easily understood and reliable, even for moderately skilled personnel.

- **Reliability** – Surface as well as internal faults are detected and measured. Inspections are not effected by grease, paint, dirt or plastic sealing material. Permanent inspection records are available.

- **Weight** – Careful design, using ultra-powerful rare-earth permanent magnets, make NDT Technologies Wire Rope Testers lighter than most competing instruments.

- **Battery Operation** – Easy to use, even under adverse field conditions. Furthermore, the use of batteries eliminates electromagnetic interference problems caused by noisy power lines present in many industrial installations.

- **Made in the U.S.A.**

NDT Technologies Wire Rope Testers offer Quantitative Resolution (also called Scanning or Averaging Length) superior by an order of magnitude to any other instrument currently available. This superior inspection accuracy allows economical and safe wire rope operation.
**Systems are available for every Wire Rope application:**

<table>
<thead>
<tr>
<th>Inspection of Mine Hoist and Mine Elevator Ropes</th>
<th>Inspection of Crane Ropes</th>
<th>Inspection of Crane, Diving Bell and Mooring Ropes</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Mine Hoist" /></td>
<td><img src="image2" alt="Crane Ropes" /></td>
<td><img src="image3" alt="Diving Bell" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inspection of Guy Ropes on Flare Stacks</th>
<th>Inspection of Stay Cables of Cable-Stayed Bridges</th>
<th>Inspection of Ski Lift Ropes and various Ropes for Amusement Rides</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4" alt="Guy Ropes" /></td>
<td><img src="image5" alt="Stayed Bridges" /></td>
<td><img src="image6" alt="Ski Lift Ropes" /></td>
</tr>
</tbody>
</table>
NDT Technologies Wire Rope Testers are of the triple-function LMA/WRR/LF type. Three high resolution signals make chart interpretation direct, reliable and simple.

1. The **LMA Signal** measures loss of metallic cross-sectional area (LMA) caused by corrosion, abrasion, etc. The LMA Signal is quantitative and can be calibrated. (Typically, a rope must be retired when the LMA exceeds 10%).

2. The **WRR Signal** measures wire rope roughness (WRR). WRR is defined as the aggregate surface roughness of all wires in a rope. WRR is typically caused by and indicates internal and external corrosion pitting, broken wires and clusters of broken wires. The WRR signal is quantitative and is calibrated together with the LMA Signal.

3. The **LF Signal** can indicate localized flaws (LF), for example broken wires, corrosion pitting, etc. Due to the fact that it is only qualitative and cannot be calibrated, it is of limited value for assessing rope deterioration and for making rope retirement decisions.

**Wire Rope Tester LMA-450**
Five standard systems to cover a full range of Rope Diameters:

<table>
<thead>
<tr>
<th>Model</th>
<th>LMA-75</th>
<th>LMA-125</th>
<th>LMA-175L</th>
<th>LMA-300</th>
<th>LMA-450</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Image</strong></td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
<tr>
<td><strong>Diam. Range</strong></td>
<td>0 to 3/4 in (19 mm)</td>
<td>0 – 1 3/4” (32mm)</td>
<td>0 – 1 3/4” (45mm)</td>
<td>0 to 3 3/4 in. (83 mm)</td>
<td>0 to 4 3/4 inch (120 mm)</td>
</tr>
<tr>
<td><strong>Test Speed</strong></td>
<td>0.5 – 600 fpm 0.003 – 3m/sec</td>
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<td>0.5 to 300 fpm 0.003 to 1.5 m/sec</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>6 lbs. 2.7 kg</td>
<td>22 lbs. 10 kg</td>
<td>35 lbs. 16kg</td>
<td>56 lbs. 25 kg</td>
<td>165 lbs. 75 kg</td>
</tr>
</tbody>
</table>

**Control Console CC-04-USB**

- USB Computer Interface
- Integral 2-Channel Strip Chart Recorder with Auto Start/Stop circuitry and Distance Markers.
- Displays LMA, LF and Distance.
- Portable with Rechargeable High Capacity NiMH Batteries.
- External Battery Charger/Eliminator 120/240 VAC; 50/60 Hz.
- Housed in a weather-proof enclosure.
- Pit-Worthy, Rubber-Jacketed Connecting Cable - 25 feet long (any length available).
- Compatible with all Sensor Heads.
- Extra Chart Paper available.
- Data Acquisition output (D37F connector).
- Shipped in a rugged carrying case.
Software

NDT_CARE Signal Foundry™ software package for computer-assisted evaluation of wire rope. This program suite was designed for use with NDT Technologies LMA-Test™ (USB) electromagnetic wire rope inspection equipment.

The rope analysis system consists of two separate parts:

1. **Signal Foundry™** Data Acquisition hardware and software

2. **NDT_CARE™** (Computer Aided Rope Evaluation) software package for computer-assisted data analysis and chart evaluation.

**Signal Foundry™ Data Acquisition**

For data acquisition, any PC can be connected to the CC-04-USB Signal Console with a USB cable via the USB Ports of the computer and the CC-04-USB console.

The Signal Foundry™ software is used for data acquisition and display. The Signal Foundry™ software is pre-calibrated and pre-programmed for a wide variety of rope sizes and constructions. This feature, together with detailed prompting, allows automatic test setup and calibration with just one push of one of the Function Keys (F1....F5) on the computer keyboard.

Signal Foundry™ allows a real-time graphical display of data during acquisition and playback. The program allows scrolling, rescaling, stretching and printing of the acquired charts during recording and playback.

The acquired data is stored in the Excel-compatible ASCII (*.txt) format, which is required by the NDT_CARE™ software.
NDT CARE™ Software Package

Excel Add-In. The Add-In is easy to use. It exploits the advanced charting and data processing features of Excel. Here are some highlights of the NDT CARE™ software.

- The exclusive and proprietary Wire Rope Roughness (WRR) Analysis method makes NDT Technologies wire rope NDE equipment the only available instrumentation that reliably detects and provides quantitative characterization of internal broken wires (single and in clusters) as well as corrosion pitting. Internal broken wires and broken wire clusters typically occur in multi-strand non-rotating and IWRC ropes, WRR Analysis is indispensable for the inspection of crane ropes, diving bell ropes, or IWRC ropes. WRR Analysis is especially suited for the inspection of so-called high value wire ropes (i.e., large diameter (>100mm) subsea construction ropes with lengths in excess of 2000m). This approach also shows great promise for the inspection of spiral strand wire ropes.

- The program makes test results completely independent of rope speed and it allows scaling and customized formatting of charts.

- Test results can be displayed in the forward or reverse direction. This is useful for comparing results from subsequent inspections that were performed with the rope running in opposite directions.

- An overview chart of the entire rope length on a single page allows easy identification of critical rope sections for a more careful evaluation.

- The program’s Post-Calibration feature offers an alternative approach to calibration. The Post-Calibration procedure is graphical and is performed by clicking-and-dragging on one of the charts.

- The software allows baseline adjustment of the LMA trace. This is important when the inspection is started on a deteriorated section of the rope. The adjustment procedure is graphic and consists of a click-and-drag operation on any one of the charts.

- Using Excel VBA (Visual Basic for Applications), the user can write his or her own sub-routines that are custom tailored to specialized requirements. This feature is particularly useful for research projects.

- Using the chart formatting capabilities of Excel, the user can change the appearance of all charts as desired.

- Many other features, too numerous to mention, are also available. For example, the program is completely compatible with MS Office and charts can be exported into word processor documents, data bases, presentation graphics, etc.