**METHOD:** magneto-inductive testing (MIT) is a check technique based on sliding the wire rope through a device, which generates a magnetic-inductive field inside. The system is connected to a recorder, which precisely records the magnetic flux that crosses the rope itself.

Any defect (normally translated as reduction in section, as they seek wires of broken strands, crushing, local breaks, etc.) causes a local variation and a total field originally induced. In terms of acquisition, if there is an abnormal signal (peak) due to a defect, the amplitude can be qualitatively compared to a reference signal due to test wire (places on a stretch of the rope, to simulate an increase section).

The final result is a track of the examination (in analog or digital format) over the entire length of the rope.

**MAIN ELEMENTS**

This inspection technique is mainly dedicated to the control of wire ropes; the wide variety of diameters of the ropes is subject to verification, involving the use of appropriate equipment suitable to meet the test specification.

The main element is, precisely, the magneto-inductive type of equipment used: it may appear as two half-shells, with opening/closing of a "book" (for the control of slings hauling, carrying-hauling) or opened at the bottom, which allows the passage of the support elements of the rope itself (for example: for the control of cable cars ropes, which, being fixed, rest on elements predisposed).

The signal of completion is determined by the tachometer, which records the progress through the absolute or relative motion of the rope.

The other key element is the acquisition system (digital or analog) that allows the visualization of the magnetic signal induced by the rope and the possible anomalies.

**PRINCIPLES OF THE METHOD**

The method exploits the variation of the induced magnetic field through the rope, which originates from a variation in the section of the rope itself.

Basically, due to the anomaly, there is a dispersion of magnetic field through the acquisition system results in a signal visible to the operator.

**LIMITS**

- The increasing the diameter of the rope in question, increases the mass of the equipment;
- High experience on methodology and interpretation of the signals;
ADVANTAGES

- Control on the entire rope;
- Reduction of time compared to any other non-destructive method.
- Possibility to view any type of signal.

EXAMPLES OF DEFECTS

Some classic examples of defects found during the MI testing.

Example 1

Broken wires on external haul rope and relevant test chart.
Example 2

Indentations on external wires of a carrying rope (Hercules) and the relevant test chart.
Indication of broken wire in output from a “shoe” of a support rope; test performed with open device (U UPSIDE DOWN).

Example 4

Representation of a test chart in digital form for the carrier rope.
Example 5