

About LRM-NDE Laboratory:

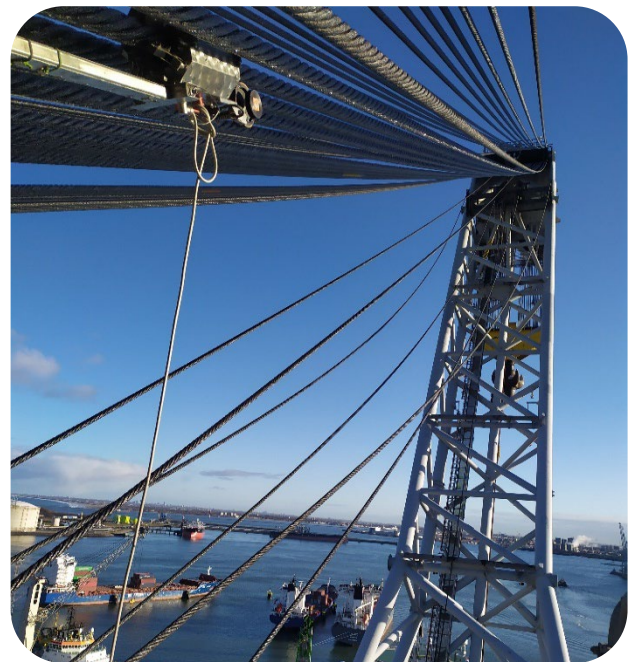
- **LRM-NDE** has almost **50 years of experience in MRT Inspections** of ferromagnetic wire ropes and as well as **manufacture of MRT Equipment**.
- **LRM-NDE** MRT Technology was based on the scientific activities of Roman Martyna. His contribution to the development of the MRT method was confirmed by his PhD dissertation "**Determination of wear of steel wire ropes by magnetic method using digital defectoscope**" in 1980.
- The **LRM^{®XXI}** Diagnostic System has been recognized and used worldwide for many years for MRT Inspection of wire ropes in various industries.
- **LRM^{®XXI}** provides services in direct MRT Inspections, remote MRT data analysis, MRT personnel training, as well as implementation of a wire rope maintenance system based on MRT inspection results.
- **LRM-NDE** has collected wide experience from thousands of wire rope MRT inspections, which it uses to support customers.
- **Qualifications of the MRT Engineers** are confirmed by an international certificate in MRT method (level II & III) - the certificate of competence in NDT according to **ISO 9712**.
- **LRM-NDE** has implemented and applies an integrated system of Quality Management and Industrial Safety Management System conformable with the requirements of the standards: **ISO 9001:2015 & ISO 45001:2018**.
- **LRM-NDE** is a member of IMCA International Marine Contractors Association & O.I.P.E.E.C.

Goals of MRT Inspection:

- MRT inspection is performed to determine the technical condition of the object under examination - wire ropes.
- Define the safety service time of the wire ropes.
- Allows to schedule wire rope replacement at the convenient time.
- Prevention of accidents caused by wear of the wire rope.



Roman Martyna - MRT Inspection in 1975



5000T Crane - Boom Wire MRT Inspection



2500T Crane - Hoist Wire MRT Inspection

LRM-NDE MRT Inspection of multi fall wire rope systems – Heavy Lift Crane :

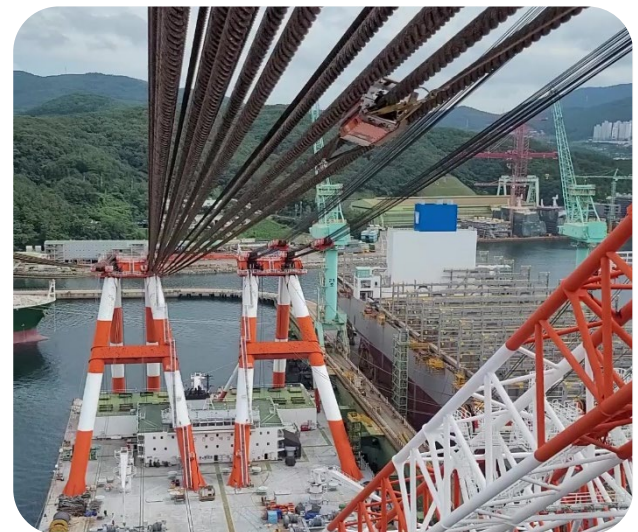
- Qualified and experienced MRT engineers carried out inspections in according to MRT procedures and safety management systems, with the support of qualified rope access personnel (certified by IRATA).
- Using the **MRT (Magnetic Rope Testing)** Equipment with **LF (Local Faults)** and **LMA (Loss of Metallic Area)** sensors, we are able to detect, locate and evaluate defects in the structure and shape of the wire rope under inspection, such as discontinuity of wires, mechanical abrasion, corrosion loss, shape deformation and wires material fatigue in full cross section area.
- The MRT data collected allows to evaluate the technical condition of the inspected object at the time of inspection. Using the results of previous inspections and information on past and future utilization, it is possible to draw a "wear curve" that allows to estimate how long the wire rope can remains in service.
- Due to the use of specially designed measuring heads adapted to work in limited spaces and dedicated mounting brackets, a minimum of 95% of the working sections of hoists and boom wire ropes can be inspected while the wires/crane equipment are in motion. This solution increases safety and significantly reduces inspection time.
- **LRM-NDE** also provides remote MRT data analysis services. Remote MRT data analysis is widely accepted and used in the industry. The vessel's trained crew in performing and collecting MRT data according to the dedicated procedures performs MRT Inspection using the provided MRT equipment. The data collected by the crew is delivered via email to **LRM-NDE**, where qualified personnel prepare an expertise with recommendations according to **ISO 4309:2017**. This MRT inspection approach allows it to be performed at a convenient time when a crane is available.



12000T Crane - Boom Wire MRT Inspection



4000T Crane - Boom Wire MRT Inspection



9000T Floating Crane - Boom Wire MRT Inspection