

# **Innovative magnetic flux leakage applications in non destructive testing of metallic ropes**

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The Magnetic Flux Leakage (MFL) principle applied to metallic ropes, also called Magneto-inductive (MI), is not a new non destructive testing (NDT) technique and has been applied from several tens of years in ropeway plants according standards as or CEI EN 12927. The recent evolution of international standards, regarding the discard criteria of metallic ropes in other sectors, as in ISO4309, start to introduce the MFL beside visual inspection in lifting applications. Even if the component under control is always one or more ropes, the discard criteria, the rope conformation and the fault typologies can be influenced by the application sector. Different magnetic detectors have been developed by the Authors in order to satisfy the several technical constraints and practical requirements of the different field of applications. Several new application in industrial and civil sector as hoisting and elevators are starting to use this kind of non destructive methodology and new sensor with peculiar characteristics have been developed and implemented. In this paper recent development on magnetic flux leakage applied on metallic ropes is then presented. Different theoretical and practical experiences in the magnetic design, material characterization of metallic ropes and in the signal filtering system is presented and discussed.