Nondestructive inspection of steel wire ropes

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Abstract:
Steel wire ropes deteriorate during operation and need inspection throughout their service life for safety of personnel and operations, economic and safe extension of rope life, and satisfying regulatory agency requirements. On-site inspection can be carried visually and with use of special instrumentation, normally utilizing magnetic or electromagnetic principles of operation. Visual inspection enables operator to reveal defects located on the rope surface, but still has sufficient disadvantages including impossibility to gain information from internal wires, and is time consuming. Modern instruments and technologies of nondestructive inspection of wire ropes make possible not only to detect individual broken wires and measure loss of metallic area due to corrosion and abrasion, but also to assess residual broken strength and residual life of ropes. This information enables to increase safety of rope use, and reduce losses from premature discard of ropes

Keywords: Rope, magnetic inspection, broken wires, residual life, safety