TUBULAR MAGNETIC FLUX LEAKAGE TESTING

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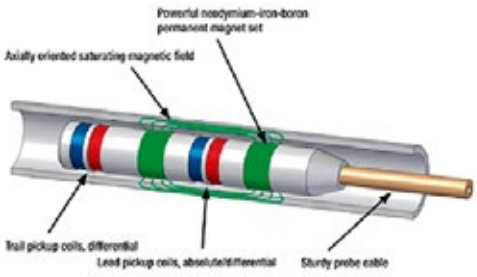
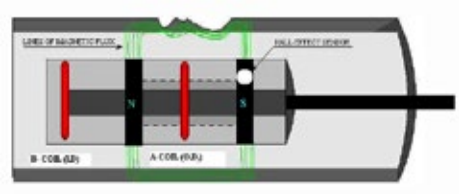
MFL is a technique used for the inspection of tubes made of ferrous materials. This technique will normally be applied as a fast screening technique if small diameter pitting is expected. Because of limitations to its sizing abilities the technique is not often used as a stand –alone technique.



Verification by other techniques is recommended. MFL can also be used on airfin cooler tubes. MFL is sensitive to sharp type defects like pits and grooving. In- and external pits can be detected. Depending on probe configuration MFL can distinguish between in-and external defects and can detect gradual wall-loss. For ID/OD discrimination the probe needs to be equipped with a second coil and to detect gradual defects a Hall-effect sensor in the probe is needed.



Theory

The probe in MFL contains permanent magnets which are utilized to form a magnetic flux field in the tube wall. Defects will influence the path of the magnetic field and will cause some of the flux toleak out of the tube wall. This leakage field will be picked up by the coils and the Hall-effect sensors in the probe. Size of the leakage field is determined by pull speed of the probe and by the shape, the dimensions and the location of defects.

Signals that represent the size of the leakage field and thus the condition of the tube are presented on a computer screen.