Electromagnetic acoustic resonance: Wall thickness measurement of a copper mould in steel production

**Description:**
An electromagnetic acoustic transducer (EMAT) is an ultrasonic transducer capable of generating and measuring ultrasonic waves in solid structures without contact. With this transducer, a thickness gauging method referred to as Electromagnetic acoustic resonance (EMAR) can be performed in order to measure thicknesses in the sub-mm region. EMAR shall be used in this thesis to measure the wall thickness and wear of a copper mould used in a continuous casting process for steel making.

**Goal:**
The aim of this work is to characterize the EMAR method for the wall thickness measurement of the copper mould and to identify possible cross-sensitivities (e.g. temperature) and their influence on the accuracy of the EMAR method.

**Working steps:**
- EMAT and EMAR working principle
- Simulation of temperature influence on copper and ultrasonic wave propagation
- Measurement based verification of the EMAR method over temperature in laboratory environment

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