

Magnetic etching as tool to detect strain-induced martensite

Research Project

Supervisor:



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Work content:

Magnetic etching is a very sensitive technique for detecting the formation of stress induced martensite in some types of austenitic stainless steel. Martensite is ferromagnetic and austenite is paramagnetic. A ferrofluid is applied to an electropolished sample and a magnetic field is generated by an electromagnet. The magnetic field produces a specific magnetic pattern and ferromagnetic areas can be distinguished from paramagnetic ones.

In this research project, a test stand for magnetic etching is to be set up and applied to turned samples of the metastable austenitic stainless steel AISI304 and the tool steel 1.3520 in order to detect stress-induced martensite and gain deeper knowledge of the formation mechanism.



Required qualifications:

Work independently, reliability, interest in using non-destructive testing methods

Start:

End of May

Group:

Non-destructive Testing