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Royal Netherlands Aerospace Centre (NLR) is the place with a passion for technology. Do you want to use your talents and develop yourself personally? As an intern you get all the space you need at NLR!

Measuring residual stresses in laser peened samples: An experimental comparison between different methods

Master's thesis

The assignment

NLR, a research organization focused on aerospace engineering, is offering a Master's thesis project opportunity to investigate validation methods for residual stress measurement methods. The aim is to develop NLR's capabilities to measure residual stresses in the surface of structural metals, particularly for laser peening. Laser peening is a process that involves creating compressive stress in the metal's surface to increase its resistance to cracking or corrosion, which improves the lifetime of components.

By finding a relationship between the process parameters of the laser peening process and residual stresses it is possible to facilitate the development of a predictive model for the induced stresses by laser peening. However, a reliable stress measurement method is essential for this purpose. The focus of this assignment is to explore and evaluate both destructive and non-destructive techniques for measuring residual stresses through a comprehensive literature review. Furthermore, an experimental investigation will be conducted to compare and contrast the effectiveness of various measurement methods on laser peened AA7075 samples. Moreover, a prescribed stress can be applied to metal test coupons with an experimental setup to validate a residual stress measurement method.

Result

The internship is suited for a Master's thesis and is flexible with regards to start dates. It will take place at the **NLR location at Voorsterweg 31, 8316 PR Marknesse**. At the end of the assignment it is expected that the student has delivered a report including a literature study and an experimental study in which different methods to measure residual stresses are compared.

NLR offers the student €470/month gross. Moreover, a certificate of conduct (Verklaring Omtrent het Gedrag, VOG) is required to be able to do an internship at NLR.

Residual stress measurement methods
Master's thesis
NLR Marknesse
€470/month
Interested? Contact: m.luckabauer@utwente.nl
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