

Bachelor Thesis / Mini Thesis

Topic:

Literature survey on the available methods to measure fatigue crack propagation rate in metals

Description:

Fatigue cracks propagate under opening, in-plane or out-of plane shear deformation modes and their combinations, based on the loading conditions. They are denoted by Mode I, II and III deformations respectively (ref. Fig. 1). To measure the rate at which these cracks grow, several apparatuses like in Fig. 2 have been developed according to the propagation mode(s) under investigation. The aim of the thesis is to perform a literature study on these apparatuses and to find out the best apparatus for investigating crack propagation in railway wheels.

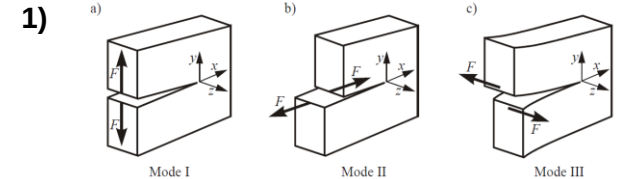
Tasks:

- Literature survey on the apparatuses and standards available to measure the propagation rate of cracks under different deformation modes.
- Collecting information of the conditions at which tests are performed on each apparatus.
- Evaluation of these apparatuses based on their pros and cons with respect to material testing for railway wheels.
- Provide suggestions on improving present methods or propose new method(s)
- Documentation

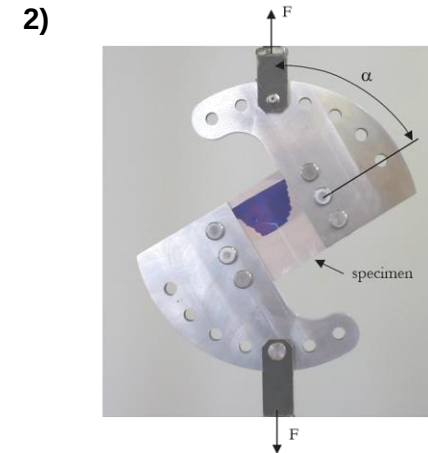
Requirements

- Independent working

If interested, please apply with your CV and Transcript



Source: Ermüdungsrisse – Richard, H. A., Sandler, M.



Source: Stress intensity factor solutions for CTS mixed mode specimen – F.V. Antunes et. Al.

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