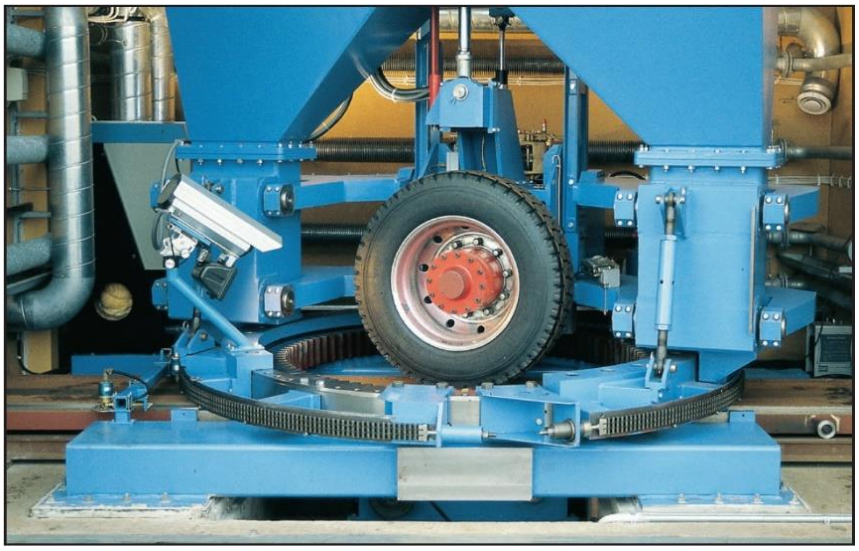

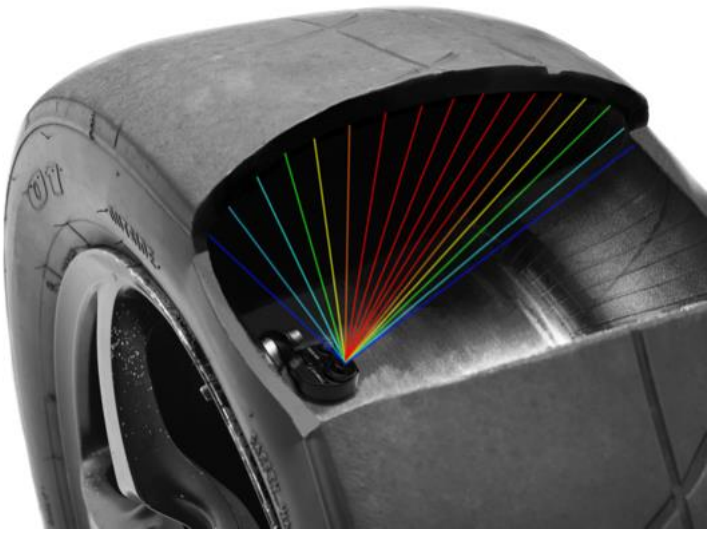

Rolling resistance and temperature

The Swedish National Road and Transport Research Institute (VTI) has an opening for a master thesis student in Linköping at the Vehicle Systems and Driving Simulation unit (FSK). The objective of the master thesis is to examine how rolling resistance is influenced by temperature and the realistic temperature range for a tyre driven in traffic.

VTI

VTI is an independent and internationally prominent research institute in the transport sector. Its principal task is to conduct research and development relating to infrastructure, traffic and transport and its operations include all modes of transport. VTI has about 200 employees and is located in Linköping (head office), Gothenburg, Stockholm and Lund.

Background

Tyre rolling resistance contributes to the green house gas emissions caused by road transports, which makes the reduction of rolling resistance a priority. The rolling resistance of a tyre is influenced by a number of factors, temperature being one of the more prominent ones. The warmer the tyre, the lower the rolling resistance. One of the common ways of determining the rolling resistance of a tyre is through testing the tyre on a test drum. First the tyre is run on the test drum at the specified test speed and load until the temperature reaches steady-state and then the rolling resistance test is made. This method produces rolling resistance results at higher temperature than at ordinary driving.

Purpose of thesis

At VTI, we have a tyre testing facility where the tyre forces can be measured at laboratory conditions. This facility can be used to measure the rolling resistance at chosen temperatures, to get data for the modelling. However, to know the proper temperature range for the rolling resistance measurements, the tyre temperature also needs to be measured when driving in different weathers.

The main objective of this thesis is to investigate how tyre temperature is affected by driving in different weather conditions, how the temperature in turn influence the rolling resistance and model it.

Work outline

The thesis work is planned to start in January 2021 and includes the following tasks:

- Literature reading on the topic
- Performing tyre temperature measurements in traffic
- Performing rolling resistance measurements in VTI's tyre testing facility
- Creating a model for how the rolling resistance is affected by the tyre temperature
- Writing and presenting conclusions

Qualification

- Engineering background within the areas of vehicle dynamics, control, signal processing or a similar area
- Ability to work independently and to take initiatives
- A driving license
- Experience of programming and simulation in Matlab
- Language proficiency: fluent English and/or Swedish

Application instruction

Deadline: Dec 31, 2020
Send your application with CV to: lisa.ydrefors@vti.se

For more information contact:
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