



Load identification and force transfer path analysis for heavy duty trucks

MSc thesis proposal for 2 students at Chalmers University of Technology, Sweden

Volvo Group Trucks Technology

Background of thesis project

The success of any industrial development and design process relies on comprehensive understanding of the environment in which the product will operate. To several key features of a truck, such as durability with respect to fatigue, noise and vibration harshness and handling, the most important factor of the environment is which forces the product is subjected to. Such forces are however difficult to acquire through direct measurement, often requiring the development of sophisticated, dedicated (and expensive) force transducers for each interface where the forces are to be measured.

In comparison, measuring acceleration and strain locally is easy: There are well-functioning off-the-shelf products to collect such data, making such measurements comparatively easy to conduct even during normal operation.

Suitable student background

Applicants should have a background in mechanical engineering with a specialization within applied mechanics or applied mathematics and have a special interest in FEA and programming. Nastran and Python / Matlab will be used.

Description of thesis work

The thesis work aims to investigate methods for identification of the loads into crucial subcomponents of a truck (such as the cab) through indirect sensing such as through accelerometers or strain gauges. Finite Element Models of trucks are available and should be used, making the problem essentially an inverse problem of the first kind; with known outputs and a known system, what are the inputs?



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Thesis Level: Master

Language: Swedish/English

Number of students: 2

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