

Job category
Form of employment
Location

Students &
Graduates -
Gothenburg, Sweden.

Thesis Work:

Title: Lead in sustainability: tyre wear particles evaluation

Volvo Cars has the ambition to leader in sustainability. Our sustainability ambition is divided into three different areas, Climate action, Circular Business and Ethical and Responsible Business. Connected to the area of being a responsible business is to care about our customers and the environment. Emissions to the atmosphere has a negative impact and to strive for the goals in sustainability our product need to reduce it's emissions to the surrounding. For tyre emissions this needs to be addressed in the form of microplastic emissions and chemical content in these particles.

Many studies suggest tyre wear to be a major contributor of microplastic emissions to the environment. Based on present knowledge and mapping of microplastic sources in Sweden, it can be assumed that at least half of the Swedish microplastic emissions are tyre wear particles [1]. The particles are likely to be persistent in the environment and the particles themselves, as well as hazardous substances in particles, may cause negative effects on the environment and human health [1]. According to literature [1], currently there is very limited knowledge on microplastic generated by tyre and road wear and no standards for the collection, preparation, or analysis of microplastic samples. This makes it difficult to compare different findings. Some existing methods are both time-consuming and expensive to carry out. To be industry leader, there is a necessity to establish test method and standards to ensure a faster tyre particle evaluation procedure at Volvo Cars.

this study aims to develop an in-house test method to examine and differentiate the particle size from multiple tyres of different tyre seasonality. The objective is to to develop (design and help manufacture) a simple and robust measurement methodology that can differentiate the tyre wear characteristics between different tyres (work at Chalmers). Also, to evaluate how these findings can be applied at the test facilities at Volvo cars and suggest further development in the area.



The successful candidates are expected to be master students in e.g. Automotive, Mechatronics, Chemical engineering. You should be self-motivated and explorative. Since the measurements are complex, you should also be meticulous and have a structured approach to data and data evaluation. The thesis requires the students to be active primarily at Chalmers but also at Volvo Cars Corporation to perform the experiments.

Application

CV and transcripts are needed for application.

Duration

The work will start in January 2020 and continue 20 weeks.

1-2 students. This diploma work gives 30 points/student.

Contact

Jonas Sjöblom, Chalmers University of Technology, E-mail: jonas.sjoblom@chalmers.se

Xin Li, Volvo Cars Corporation, E-mail: xin.li.11@volvocars.com

Maria Bernander, Volvo Cars Corporation, E-mail: maria.bernander@volvocars.com

Reference: [1]. Andersson-Sköld, Y., Johannesson, M., Gustafsson, M., Järskog, I., Lithner, D., Polukarova, M. and Strömvall, A. Microplastics from tyre and road wear – A literature review. *VTI technical report: 1028A* (2020)