

# Local emissions from a gasoline plug-in hybrid electric vehicle

Electrified powertrains enable lower CO<sub>2</sub> global emissions by use of renewable electricity. The local emissions (NO<sub>x</sub> and Particulate matter, PM) are limited by tight regulations (currently Euro 6d Temp). Although the local emissions should be very low for real driving conditions (RDE Real Driving Emissions), these emissions are still not very close to zero. The emissions depend on the temperature in the EATS (Exhaust gas AfterTreatment System) and the combustion strategy, which are affected by the hybrid powertrain layout. By increased understanding of the interplay between engine control and EATS, the advancement towards zero emissions becomes possible.

This thesis project will work on a PHEV from Volvo cars (XC90, T8), that will be run in the transient test rig at Chalmers as well as in real traffic. Different RDE cycles will be evaluated and the emissions (mainly NO<sub>x</sub> and PM) will be measured both Engine Out (EO) and at the tail pipe (TP). A PEMS (Portable Emission Measurement System) will be used to compare the performance between measurement techniques and between rig testing and on-road measurements.



We are looking for two highly motivated students from Automotive engineering or Chemical engineering with interest in emission control and knowledge in hybrid powertrains and their control. You must also have a valid Swedish type B driving license.

Start: January 2021

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