The life of an Intern in the Dinex Group

Lucas

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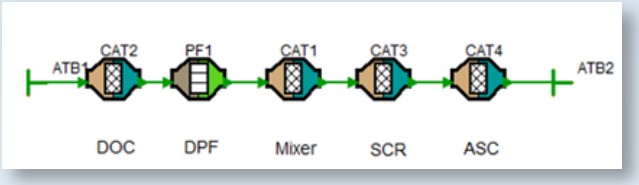
Internship: Dinex Group
Department: Engineering

Exhaust Aftertreatment Simulation

The exhaust aftertreatment systems consist of different catalysts, each with a different purpose. The catalysts convert toxic gases; CO, NOx, HC particles into clean gases like CO2, H2O and N2. These reactions are heavily dependent on the temperature and there are many different chemical reactions happening in parallel. Therefore, it is often difficult to predict and simulate the reactions accurately.

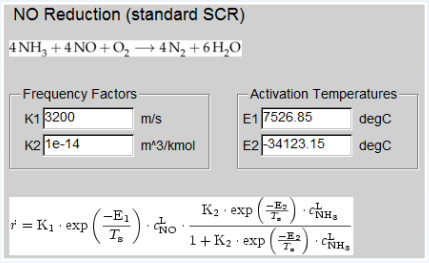


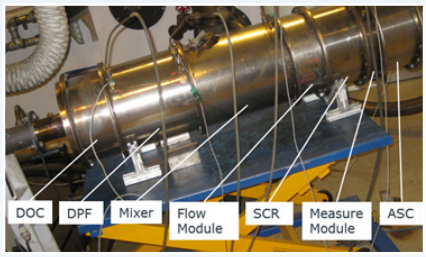
Calibration of parameters

Before doing a simulation I have to calibrate the reactions so that they react correctly. The calibration is done via optimization of parameters and takes much longer than the simulation. I found it is often necessary to approximate a temperature or neglect certain reactions because otherwise it would be too complicated.

Test center

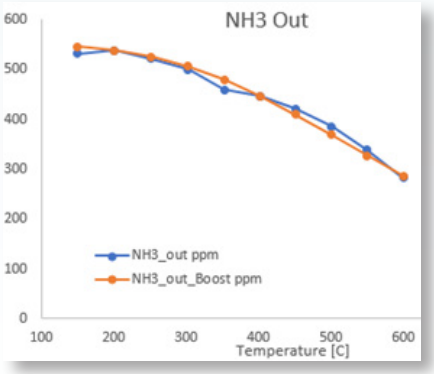
I communicate closely with the people in the test center when we do system testing. We must test the system in order to validate that the simulation results are correct. Unfortunately a test can take a lot of time and work to setup. We also have to consider the many external factors that can influence our test results. So far, I've helped doing tests on the temperature behavior of a EU6 inline system.





Reports and workflow

I have to document all the work I'm doing and write simulation reports every now and then. Organizing the simulations and results, into log files is important and helps a lot. I'm working mostly independently, and my manager/ supervisor don't have much time to give me feedback. I had to learn how to use AVL Boost myself, because my coworkers only had limited experience with it. Despite all this, I spend most of my time organizing test/simulation data in Excel and comparing them.



Internship Overview

During my internship in Dinex, I work with the chemical and physical reactions inside exhaust aftertreatment systems. My role as a 1D Simulation Engineer is simple; using AVL Boost to simulate the performance of different exhaust aftertreatment designs. I work in collaboration with both a design & development team and the engineers in the test center. On the first week of my internship I was already introduced to a technology project I was tasked to work with. I quickly felt like I was contributing to the company in a meaningful way. This is one of the reasons I enjoy my internship at Dinex.

Relevant Courses

The courses Physical Chemistry (3rd semester) and Workshop Course (3rd semester) are both very useful to me for this internship. We learned useful skills such as laboratory testing, assumptions and reporting results and this is relevant to what I'm doing at Dinex.

"Being an intern in Dinex taught me how to solve real problems using innovative skills I learned during my years as a student"

Lucas, Chem. Eng. Student at SDU
Intern at Dinex Group Engineering

going the extra mile

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