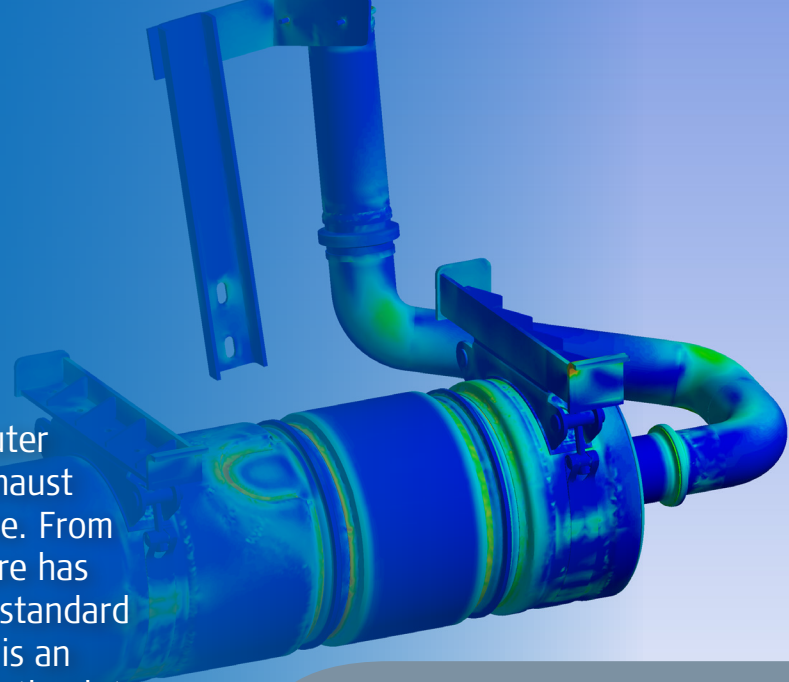


Simulations is the Fast-Track to Solutions

Simulation software, and the concept of Computer Aided Engineering (CAE) has been a tool for exhaust and emission control engineering for a long time. From slow and humble beginnings, simulation software has evolved at a relentless pace and is nowadays a standard development tool in the industry. At Dinex CAE is an integral part of the development process translating into faster and better solutions our customers can enjoy.



going the extra mile

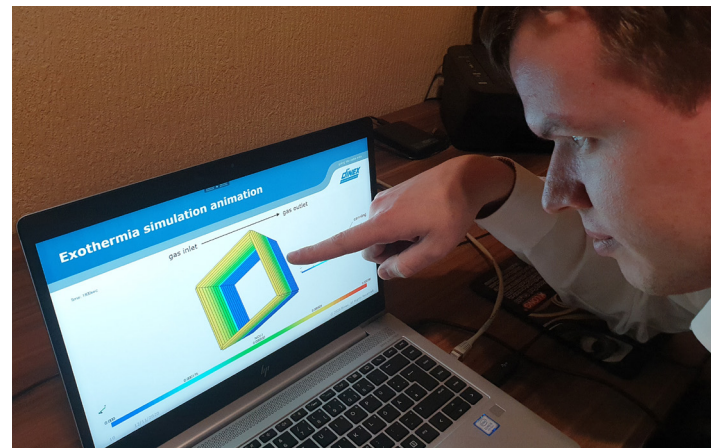


December 2020

Simulation has been a valuable tool for the design of aftertreatment system canning components for quite some time at Dinex. A broad package that covers Computational Flow Dynamics (CFD) simulations to evaluate flow uniformity and pressure drop, to transmission loss, harmonics and other levels of mechanical design like Finite Element Analysis (FEA). At our headquarter offices in Denmark an entire team of skilled professionals has over 20 years of experience in applying the full simulation toolbox to create better solutions for our customers, in a faster, agile and efficient development process with less backflows.

Exhaust emission modelling digs deep within the physical and chemical effects that takes place on the catalyts.

Our simulation software has a comprehensive library of generic reactions for all existing catalyst technologies within Dinex, allowing for fine tuning into accurate reaction models that help the product development and application teams to deliver solutions to our customers problems, even before practical experiments take place.



Emission Simulation

Emission simulation focuses on non mechanical aspects, more specifically it dwells into the kinetic and thermodynamics of the chemical reactions happening in the catalyst. At our R&D facility in Germany, we have a team of specialists leading the development of our own emission models.

This tool allows for the evaluation of transient effects, typical of the conditions our catalyts are exposed to. This includes Oxygen storage, NOx storage, and Ammonia adsorption, as well as washcoat diffusion effects.

What is best, is that it opens the possibility of further development aimed at building very tailored models that are so representative of how our product works, that they can be used to predict performance at a very sophisticated level, saving countless hours and months of expensive testing.

But does it work?

Thanks to our long history of working extensively with both simulation tools and full size emission testing we have built an extensive database of knowledge and experience that forms the backbone of our models, allowing for the continuous closing of the gap between theoretical and practical results. As can be seen in Fig. 1 and Fig. 2 we have come a very long way already, and we will continue to improve so our customers can enjoy a fast and safe route to the right solutions.

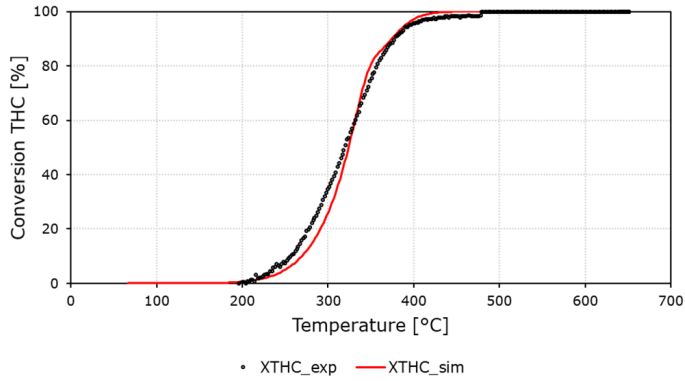


Figure 1. Match between Simulated and Experimental (SGB) light off curve for THC with Dinex model.

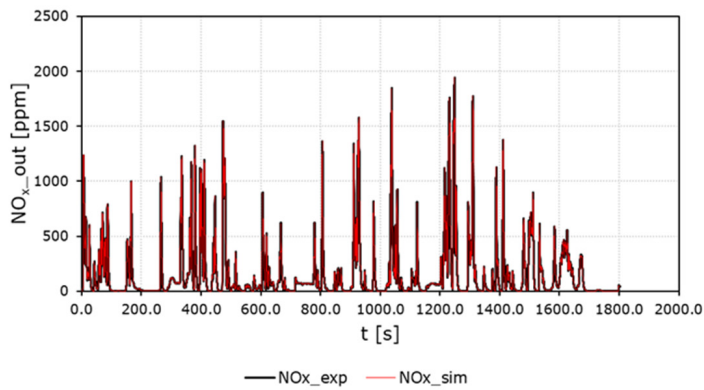
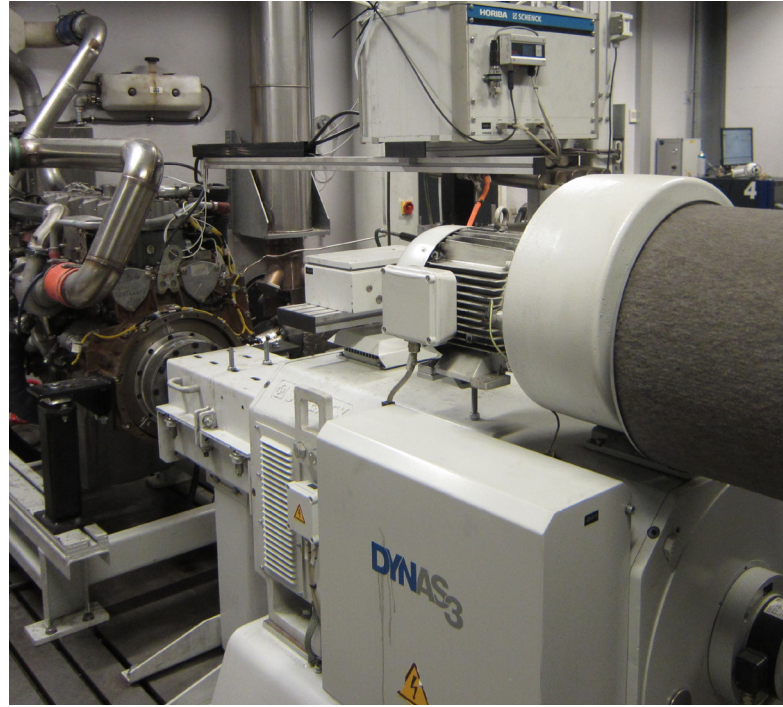


Figure 2. Match between simulated and experimental WHTC NOx emissions with Dinex model.



Want to learn more? Don't hesitate to reach out to our CSO Mr. Lennart Rasmussen or our CTO Mr. Evangelos Georgiadis.



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“The integration of this powerful tool into Dinex’s development cycle allows for the reaching of new heights on the level of our technical services. We look forward to a year 2021 in which this tool will play a major role in the various key projects Dinex has under development”.



Jörg Riedl
Head of Application Engineering
Dinex Germany