

## SCHAEFFLER X DIVECAE

# Democratizing CAE: Schaeffler Rolling Bearing Lubricant Flow Simulation

The cloud-native SPH simulation from Dive CAE is integrated into Schaeffler's Bearinx software and enables easy access to a complex calculation method and efficient analysis of lubricant flow in rolling bearings for design engineers.

## The Challenge

Schaeffler addresses sustainability and market needs by advancing low-friction bearing solutions through its Bearinx software. Lubricant flow dynamics impact performance and functionality, necessitating advanced analysis methods, such as computational simulations. Traditional mesh-based Computational Fluid Dynamics (CFD) requires expertise and weeks to deliver results, hindering efficient engineering. Schaeffler's method development aims to reduce simulation time to days, thereby improving the product development, and supporting the development of friction-reduced design and integrated workflows for Bearinx users.

## The Solution

Schaeffler partnered with DiveCAE to integrate a cloud-native Smoothed-Particle Hydrodynamics (SPH) simulation workflow into Bearinx, replacing high-effort and time-consuming mesh-based CFD with automated, lubricant flow modelling. The existing SPH solver technology of DiveCAE

has been used, and the state-of-the-art of this technique had to be pushed to new limits to meet the fidelity demands of Schaeffler. During this project, customised features were implemented in an agile fashion to meet the usability requirements of Schaeffler's method development team and extend the applicability. The status of cloud security was also pushed beyond the status quo to meet industry demands.

## The Outcome

The jointly developed cloud-based solution enables the scaling and broader usage of an expert tool through virtually unlimited hardware availability. The integrated toolchain facilitates full access to CFD investigations for both experts and non-experts. The solution has proven to be commercially viable.

## Project Highlight

The key performance gain was the reduction of time-to-result by 20x and the cost per investigation by more than 10x.

## DiveCAE

Revolutionising computer-aided engineering (CAE): Dive CAE provides simple, fast, and accurate mesh-free simulation software that every engineer can use.

Dive CAE empowers engineers to simulate complex fluid flows within minutes. Built on meshless SPH technology and GPU acceleration, our cloud-native platform streamlines CFD workflows — no installation, no meshing, no steep learning curve. From virtual prototyping to design optimisation, Dive CAE brings high-performance simulation to the browser.



**Headquarters**  
Berlin, Germany

**Founded**  
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**No. Employees**  
11 – 50

**Website**  
[www.divecae.com](http://www.divecae.com)

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## About STARTUP AUTOBAHN powered by Plug and Play

STARTUP AUTOBAHN powered by Plug and Play is an open innovation platform that provides an interface between innovative tech companies and industry-leading corporations.

The basis of the program is the partnership that develops between startups and the corporate business units. The two entities hold an equal footing from the get-go: together they evaluate the potential for a joint venture, move forward to pilot the technology, and work to achieve the ultimate goal – a successful production-ready implementation.

Designed with the intention to exceed startup acceleration, STARTUP AUTOBAHN powered by Plug and Play moderates a community for collaboration with a focus on implementable results.

Over the years, the platform has successfully cultivated over 500 projects with more than 350 startups since its founding in 2016. ■

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