

**Qpunkt GmbH: "We need to shift the focus to the ongoing improvement of our methods"**



The Automotive IQ caught up with **Peter Drage**, Head of Branch Office, Graz, Austria with QPunkt GmbH, at the International Forum: Future Automotive Aerodynamics. He offered his views on the challenges for aerodynamics in the automotive industry.



## Automotive IQ

**In your opinion, what are the biggest challenges currently facing the automotive industry with regard to aerodynamics?**

**Peter Drage:** In general, vehicle development is more and more pushed towards the use of simulation. Given the tremendous growth of computing hardware we will soon be able to run extremely detailed simulation models within short turnaround times. However, the methods used today are still not capable of fully dealing with all flow phenomena we encounter during on-road driving. Therefore, we need to shift the focus to the ongoing improvement of our methods in order to cope with the requirements that are involved with virtual development.

## Automotive IQ

**How is your company specifically trying to address these challenges?**

**Peter Drage:** At qpunkt, we are really focused on R&D topics. Especially in the field of unsteady aerodynamics, we invest a lot into developing methods that might facilitate our work in the future.

Currently we are working on coupled Computational Fluid Dynamics (CFD) and Multi Body Simulation (MBS) models to predict the feedback of the vehicle to alternating aerodynamic loads. Among others, this approach is applicable for race cars, where tremendous downforce values change ride heights substantially. With our Lattice-Boltzmann CFD approach, we are able to build up a six-degree-of freedom (DOF) system that reacts to aerodynamic forces. This means that the ride height automatically changes when the downforce of the car varies due to different driving conditions.

Another example is the simulation of overtaking and passing manoeuvres. Every driver has experienced the sensation of being heavily influenced by aerodynamic forces when a truck is passing or while overtaking. The development of suitable vehicle shapes, that are less sensitive to those induced crosswinds, requires suitable simulation methods as well.

## Automotive IQ

Is there any particular area of focus that you are most excited about working on looking forward?

**Peter Drage:** I think that the development of aerodynamics for electric cars will be a fascinating topic in the future. Nowadays, most engineers involved in aerodynamics are more into the development of add-on parts, like underbody covers or separation edges, to improve the stylist's design proposals. The fact that some really innovative styling proposals go hand in hand with the electrification of vehicles, implies on a big opportunity for the aerodynamicist. Hopefully we will manage to have a major influence on the design and help to develop cars with a  $c_d$  of less than 0.2!