



# DB Systemtechnik

Your experts for rail vehicle and rail infrastructure aerodynamics



# Aerodynamics

Aerodynamics play an important role at the interface between rail vehicles and rail infrastructure, not only from a commissioning and safety perspective. Wherever pressure and fluid mechanics are at play in rail operations, we provide profound expertise and bespoke solutions to accelerate your project. Solving rail aerodynamics problems early can minimise risks and increase economic efficiency, especially in the high-speed sector and in the planning of new rail lines. Due to our global operations as a technical service provider, we have the entire rail system in our sights.



## Our know-how

- **Designing vehicles, trackside objects and infrastructure:** Train-induced effects are included in strength calculations and partly determine the appropriate scope of work.
- **Safety aspects:** crosswinds, air turbulence, fire protection and component certification: we are the right point of contact
- **Comfort issues:** calculation and evaluation of micro-pressure wave emissions and train-induced pressure gradients in tunnels
- **Approval issues:** for vehicles and components as well as for all relevant railway aerodynamic issues
- **Simulations and calculations:** Covering a wide width on railway aerodynamic issues with modern tools and In-house simulation tools



## Your advantages

- **Cost savings** through specialist design and approval of vehicles, structural facilities and infrastructure in compliance with the relevant standards
- All rail aerodynamics **solutions from a single source:** engineering, consulting, documentation and measurements
- **Many years of profound expertise** and an extensive measurement database
- **Risk minimisation** by solving safety and pollution problems early
- **Optimisation of energy consumption** using aerodynamics solutions
- **Compliant documentation** for commissioning rail vehicles and rail infrastructure
- **Leading European provider** of solutions for managing crosswind and micro-pressure waves

## Selected references



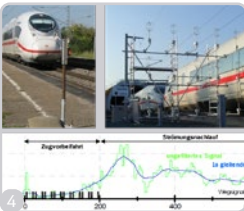
**VDE 8** (German Unity Transport Project)  
Developing structural countermeasures to attenuate the micro-pressure wave effect



**VDE 8.1**  
Simulating smoke propagation in a tunnel



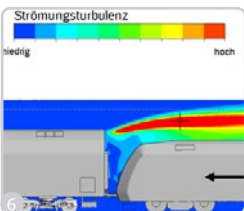
**Second core route in Munich**  
Numerical evaluations of air surge in underground passenger stations



**High-speed line Gothenburg-Borås**  
consulting and engineering services: Crosswind, tunnel design, loads on vehicles, pressure comfort, drag in the tunnel, micro-pressure wave emissions, analysis of the fluid mechanics in an underground station linked to an HSR tunnel



**New-build line Ulm-Wendlingen**  
Wind loads on the Filstal bridge, wind zone adjustment and calculating aerodynamic form factors using CFD



**Aerodynamic loads for rail vehicle design**  
Drafting the regulations and calculating the aerodynamic loads for Vossloh and Skoda vehicles

## Contact



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