DB Systemtechnik

Vehicle Dynamics Simulations

Reliable Planning for Signalling and Train Control Systems

Are you planning a reduced distant signal spacing, an extended approach route, or a special signalling concept and need to verify whether the proposed distances and operating speeds can be implemented safely and in compliance with regulations?

DB Systemtechnik is your trusted partner.

Our Competence Center for Brakes, Couplers, Doors, Braking Operations and Simulation supports signalling engineers, infrastructure managers, and project teams with vehicle dynamics simulations for signalling and train control applications. By analyzing realistic train performance and braking behavior in accordance with applicable standards and regulations, we enable reliable planning, ensure regulatory compliance, and support stable railway operations — from concept development to project implementation.

Our services

- **Braking distance and speed validation** for reduced distant signal, danger point, and braking distance spacing, as well as for speed restriction (Lf) and speed indication (Zs 3) signalling concepts.
- **Assessment of special signalling and track layouts**, including extended approach routes (late divergence), entries into stub tracks, and trailing and intermediate turnouts.
- **Speed supervision analysis** and design of speed monitoring systems, including applications for urban and suburban rail networks.
- **Time and distance calculations**, such as train running time calculations for level crossings and distance verification for hot axle box detection and wheel slide detection systems.
- **Project-specific vehicle dynamics studies** for unique operational, infrastructure, or signalling requirements

Your advantages

- **Planning reliability** through sound vehicle dynamics assessments based on realistic train performance and braking characteristics.
- **Regulatory compliance** through calculations performed in accordance with applicable standards and regulations (incl. DB Guidelines 457, 819 & 859).
- **Real-world applicability** through the consideration of actual operating conditions and relevant train categories.
- **Flexibility and independence** through simulations using reference trains or customer-defined vehicle configurations
- **A single point of contact** for competent support with complex signalling and train control system challenges.
- **Reliable solutions** – even for challenging special cases and boundary conditions

Your contact

Christiane Nowak
Minden-Fahrdynamik@deutschebahn.com