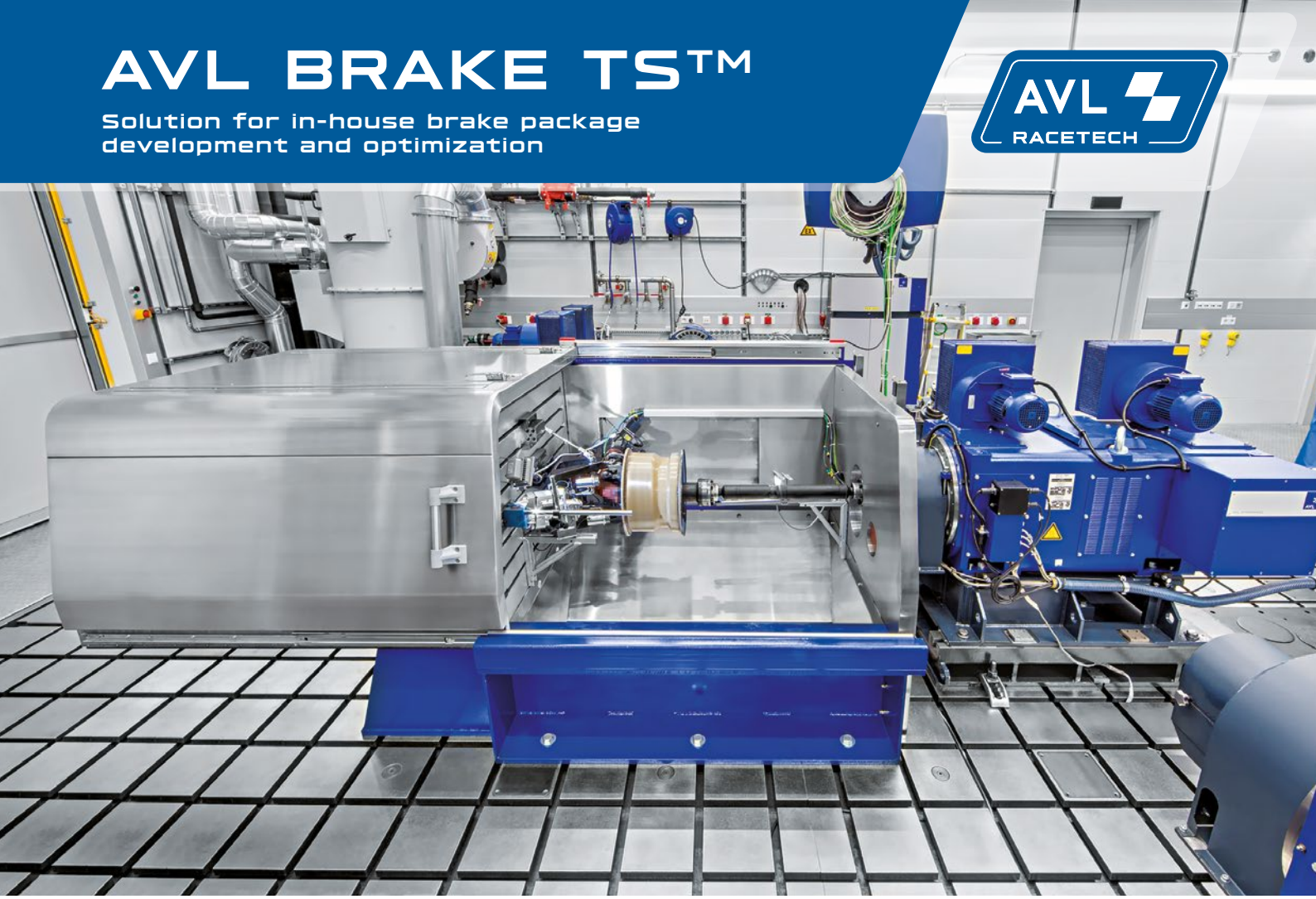
AVL BRAKE TS™

Solution for in-house brake package development and optimization



THE CHALLENGE

Braking performance can make the difference between winning and losing on any given race weekend. Component quality and thermal management of the system are key areas of testing that can extract the maximum performance and durability from the brake package.

Efficiency of testing in realistic conditions is thus necessary for reliable and valuable results, but tight competition, limited testing time and resources pose additional challenges and limitations.

THE SOLUTION

The AVL BRAKE TS™ offers the forefront in brake development and optimization through a specialized in-house testing environment. The system ensures reduced development time and track testing efforts by streamlining brake R&D, performance and durability testing into one unit. This industry-proven solution makes it possible to closely simulate track conditions in order to understand the complex, non-steady thermal behavior of the brakes in house.

THE ADDED VALUE

- Replicate on-track testing conditions through reproduction of thermal transients and load dynamics
- Consolidate different brake test applications on one dyno
- New development capabilities
- Security of investment into a professional standardized system with optional future upgrades

AVL BRAKE TS™ – SOLUTION OVERVIEW AND DETAILS

TEST SYSTEM LAYOUT

Dyno Performance

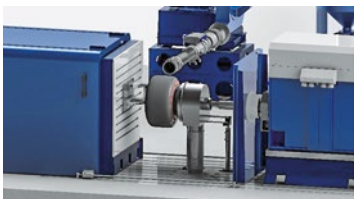
The wheel/rim assembly is driven by a dynamic permanent magnet dynamometer. This allows input of wheel speeds of up to 3,000 rpm, as well as the required speed gradients to replicate and simulate realistic braking maneuvers.

Mechanical Concept

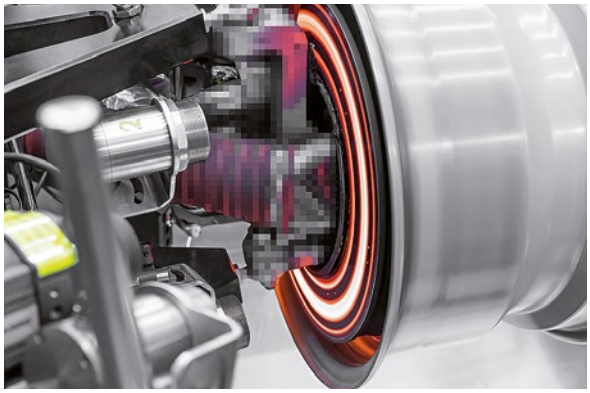
The rigid mounting frame is able to accommodate various brake systems and suspension setups, from brake discs in isolation to the full wheel and tire assembly. This assembly is housed in an enclosure to ensure safety and minimize pollution during operation.

Wind and Exhaust Concept

An air-handling unit with filtered and preconditioned air feeds the wind speed simulation system. A dynamic blower simulates the required air flow rate up to 360 km/h based on the demand value from the automation system into the brake system enclosure. A wet scrubber extracts the exhaust air to separate the partly combustible and explosive brake dust.



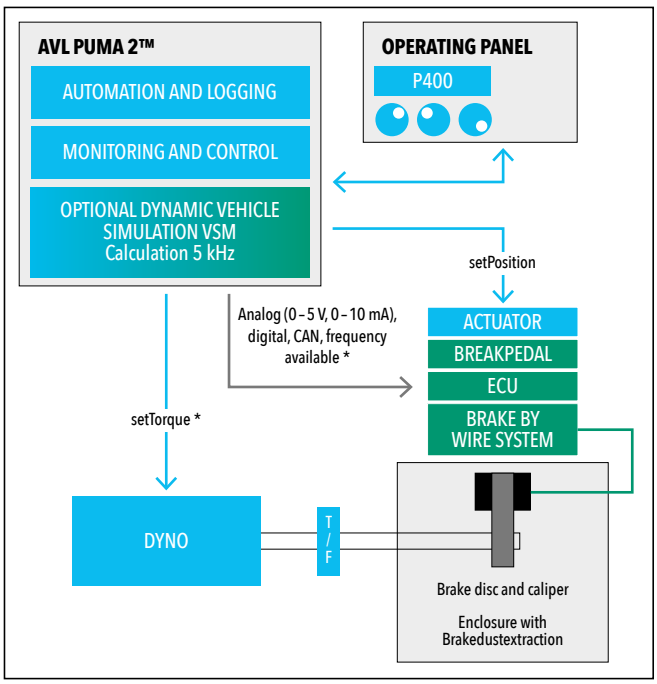
Mechanical concept of the AVL BRAKE TS™



Video-captured brake event

AUTOMATION AND CONTROL

AVL PUMA 2™ Component Testing Software has been utilized for the automation and control of the system. This proven technology combines data acquisition, test-run and facility automation for both manual and fully automated operation. The integration of the AVL Vehicle Simulation Model or customer specific models is also available.



Automation and control layout

USER APPLICATIONS

- Brake characterization
- Frontloading of brake strategy development
- Brake package cooling requirements
- Data generation for aerodynamic development
- Evaluation of race specific brake setups
- Optimization of tire temperature
- Component failure replication

FIND OUT MORE

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