BRAKE TESTING AS KEY TO SUCCESS IN MOTORSPORTS

Out-Brake your Competition with AVL RACING

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Confidential
MOTIVATION

Electrification and Hybridization drive System Complexity
Brakes and Powertrain interact significantly
Brakes are Performance Differentiator
BRAKE TESTBED: AVL’S APPROACH

Dynamic Electric Dyno
Dust Extraction
Wind Speed Simulation
CORRELATING THE THERMAL TRANSIENT

Full Car Aerodynamics

Thermal Car Model

Isothermal Testbed Model

Testbed air flow map
Velocity dependent mass flow correction for each brake duct

Thermal Testbed Model

*HTC… Heat Transfer Coefficient
RACING BRAKE TESTBED APPLICATIONS

Lap Replication/Performance Prediction
Characterization/Optimization of Brake Systems
Cooling vs. Aerodynamics
Influence on Tyres
Brake Temp/Wear/Performance Modelling
BRAKE MODEL APPLICATIONS

Brake Balance Setup
Brake Performance Analysis
Vehicle Dynamics Handling and Stability Tuning
Tire Temperature and Pressure cross-influence
ADVANCED REAL-TIME BRAKE MODEL

Based on AI Methods
IMPROVEMENT OF DRIVING SIMULATORS

Realistic Simulation of Brake Bite, Grip & Wear
IMPROVEMENT OF BRAKE-BY-WIRE SYSTEMS

Feed Forward Control
Optimized Recuperation Strategies
MOTORSPORTS TO DRIVE ROAD CAR TECHNOLOGY

Instrumentation of Force/Torque
Brake Dust Particle Emissions
Residual Brake Torque
Brake-By-Wire HiL