

automotive testing technology international

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Raniero Bertizzolo

Q&A with the Maserati Quattroporte's product development manager

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Full preview of Automotive Testing Expo North America, October 28-30, Novi, USA

Autonomous cars

What to test, and where and how to test it: the challenges facing the developers of driverless vehicles

Digital EVs

The role of virtual prototyping and simulation test technologies in shortening EV programs

Heat soaked

Behind the scenes at Hyundai-Kia's proving ground in the Mojave desert

Weathering

Following a 10-year study, new standards have been drawn up to test component coatings

Brake testing

An innovative facility at General Motors makes more stops in less time

Cadillac

Developing cars to appeal to new markets



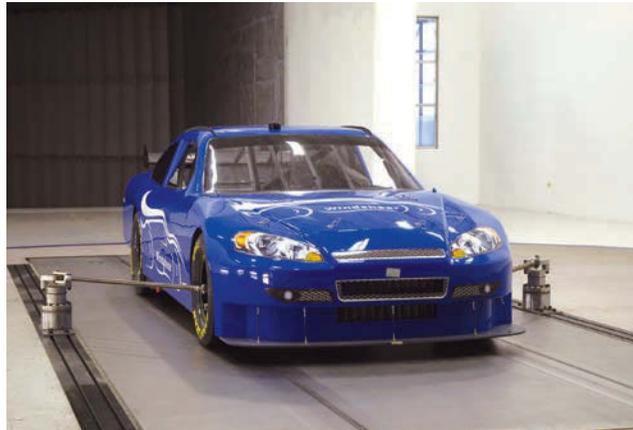
Wind tunnels

We tour Fiat's upgraded rolling road aerothermal facility at Orbassano, Italy

Automated test software

529 Jacobs' automated test and measurement software, Test SLATE, is the test control/data software of choice for automotive, motorsport, and aerospace technical facilities around the globe. Test SLATE is a proven solution for integrating diverse hardware, managing test configurations, and transforming data into meaningful results.

Test SLATE provides auto manufacturers with crucial driveability, emissions, aerodynamic, thermodynamic, acoustic, climatic and safety test data. The software is designed to make it easier to move road testing into the laboratory, where it can be used to test an automobile at



virtually any climatic condition – eliminating expensive, time-intensive outdoor/location testing.

Test SLATE features an automated test sequencer that supports automated operations,

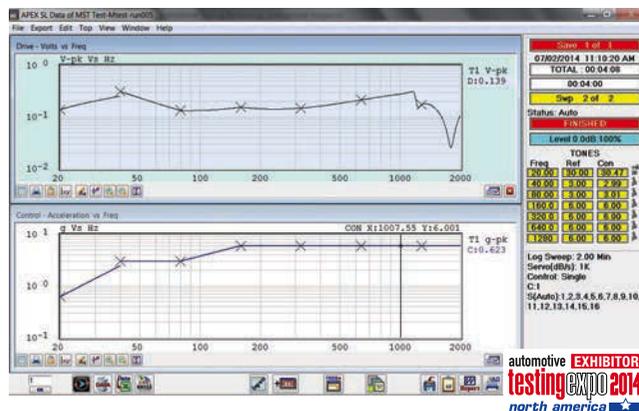
and which can be tailored to accommodate specific test applications, including drive sequences. Full API support also enables the operator to create custom Test SLATE plug-ins that can be fully integrated into Test SLATE.

Test SLATE is used by Windshear Inc in NASCAR's first dedicated wind tunnel facility and by numerous F1 motorsport customers, Ford, GM and numerous other OEM and Tier 1 companies throughout the automotive market.

Jacobs Technology

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Multi-sine vibration tests



530 Many automotive components, particularly those that are engine- or drivetrain-mounted, require vibration durability testing. These parts must survive significant, and in some cases severe, vibration test levels. Since the greatest damage occurs at or near the test items resonance frequency, a wide band sine sweep is often used. This is a proven technique – however it requires numerous, long-duration sweeps that consume a significant amount of valuable test lab time.

To reduce test time, the multi-sine option is now available for Unholtz-Dickie's new APEX SL vibration control system. The multi-sine mode provides for multiple (up to 12) combined sine tones (fixed or swept) used to simulate

automotive engine vibration. Operating multiple sine tones simultaneously in small segments that, when combined, cover a broad frequency range, can shorten overall test time considerably. For example, a typical test requirement states a part must undergo 20 30-minute sweeps for a total test time of 600 minutes (10 hours). Using the multi-sine test mode, with two sine tones sweeping simultaneously at the same rate, the total test time is reduced to five hours, while the same test with four tones will reduce total test time to just two and a half hours.

Unholtz-Dickie Corp

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Exhaust gas simulation

531 Seoul Industry Engineering has approximately 20 years' experience in developing automotive testing equipment. In particular, it provides state-of-the-art exhaust gas simulation equipment to customers in Korea, and overseas in China, India and Germany.

Typical applications of this system include performance test and durability testing of exhaust gas systems, EGR systems, EGRC systems, turbocharger systems and intercooler systems. Improvement of these systems is critical to reduce emissions and improve vehicle fuel economy. The trend in the industry has moved from using engine dynamometers to exhaust gas simulation systems for this purpose.

This equipment is very compact, easy to handle, and equipped with user-friendly in-house software using LabVIEW from National Instruments.

A wide range of exhaust gas air temperature and exhaust gas airflow can be accurately simulated in the system. Control parameters are

temperature, gas mass flow rate, gas pressure, coolant flow rate and coolant pressure.

Various tests can be performed using the system including thermal fatigue tests, efficiency tests, gas pressure drop tests and coolant boiling tests. A multiple number of samples can be tested simultaneously. An adjustable height control system is used to accommodate various models.

This system can also be combined with a vibration test system to simulate road vibration conditions. Through using the exhaust gas simulation system, man-hours are reduced and test efficiency is maximized.

Seoul Industry Engineering

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