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Cherokee

New test tracks, new locations and new targets: Jeep goes all-out to develop a vehicle it can sell in 150 countries

SHOW ISSUE

Full preview of Automotive Testing Expo North America, October 22-24, Novi, USA

Extreme vehicles

We investigate the test methods and challenges behind mobile cranes, mining trucks and tanks



Sensors

A roundup of the latest sensing technologies for automotive testing

VÜHL 05

The full development story behind Mexico's first trackday sports car

Simulation

Jaguar Land Rover is investing heavily in virtual development for its new-model programs

Driving simulators

Full details of two exciting new projects, including Europe's largest simulator

Michigan focus

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Editor's note

➤ You'd be forgiven for thinking that the Goodwood Festival of Speed (FoS) is all about motoring history rather than being an important window on the future of the automotive industry. That might once have been the case, but a visit to this year's event showed that what was once a competitive hillclimb for historic racing cars and motorcycles has morphed into one of the world's top motor shows.

Thursday's Moving Motor Show is just that: a chance for people to get behind the wheel of new machinery for a quick blast up Lord March's smoothly asphalted driveway. But in truth the entire four-day spectacle represents a major marketing opportunity for the car companies: witness the sprawling show stands and the queue of cars making their dynamic debut: Alfa 4C, McLaren P1, Škoda Octavia vRS, and many more. There's also the FoS-Tech pavilion showcasing alternative powertrains and other forward-looking technologies from industry specialists.

But perhaps the value of the FoS is best reflected in the caliber of engineers and other executives who turn up to take a look around. Let's face it, Goodwood is much more fun than a couple of days wearing out your shoes in the vast show halls at the IAA in Frankfurt, valuable as that event is. So it was that I hooked up with Guillermo Echeverria, co-founder of the new VÜHL car company, to discuss the development of the Mexican firm's new trackday car, the 05. Turn to page 9 for the full story.

Thousands of car experts, minus the casual enthusiasts, are also expected at Automotive Testing Expo North America, which will be back in Novi, Michigan, October 22-24. There's a show preview in this issue from page 77, together with a series of articles focused on Michigan's vibrant automotive test and development community. This section begins with our Nissan interview on page 24; enjoy!

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VÜHL 05

An ambitious new manufacturer from Mexico has turned to some of the biggest names in the business to deliver a thoroughly developed two-seat sports car

WORDS BY GRAHAM HEEPS

➤ There's seldom a shortage of interesting new, low-volume sports car projects with enthusiastic backers. Sadly, many hit the skids when the financial limitations of a start-up company result in inadequate vehicle development, production delays and a customer base that's melted away before it ever got established.

That doesn't seem to be the case with a newcomer from Mexico. VÜHL Automotive (the name derives from Vehicles of Ultra Light Weight and High Performance) was started in 2007 by Alberto Chapa and brothers Iker and Guillermo Echeverría (industrial and transportation designers who

ABOVE: Power Torque in Coventry, UK, developed the ECU for the 05's Ford EcoBoost motor

BELOW: The mid-mounted engine is largely stock, which should aid reliability

run a Mexican-American transport consultancy, ETXE). All have invested in the project, with additional backing from the Mexican federal government. The company's first product, the 05 'trackday supercar' (the number adorned their father's race car), has the input of numerous auto industry big-hitters, both for components and testing and development, to give it the best possible chance of success.

Before starting work on its first car, VÜHL spent considerable time working with TechBA [Technology Business Accelerator] in Detroit to create a thorough development plan. A year of digital design followed, beginning in May 2010, before a

single, bodyless mule car was created around a simplified version of the aluminum monocoque and the 2-liter Ford EcoBoost engine that also appears in the production 05. This vehicle doubled up as an experimental prototype for an initial durability test program. As a result, almost 400 design changes were fed back into the digital design, including tweaks to the steering system and gearshift to remove friction, and to an engine mount where a small fracture had appeared.

"One of the nicest surprises on the project was how well the monocoque fared in these tests," says project director Guillermo Echeverría. "We were particularly keen to see if we'd selected the correct adhesives, which were developed with 3M. We'd done the simulations but you always have a small doubt as to what will come out of the testing. Nothing happened to the monocoque after running the durability program. We then analyzed the joints in the lab and even did some destructive testing and the results were fantastic."

Three validation prototypes (VPs) have followed in 2013, built from production tooling; two of these cars appeared at the Goodwood

