

Applus+ IDIADA adopts driverless misuse testing solution

Driving robots improve the safety, accuracy and precision of misuse testing at IDIADA's Spanish proving ground.



Misuse testing in the automotive industry

Misuse track testing explores how vehicles behave in extreme situations, with tests commonly involving driving vehicles into gravel banks, through potholes, over railway sleepers, into kerbs and over ramps to become airborne.

Traditionally, expert test drivers conduct these tests, which can be arduous and generally unpleasant. Repeated tests or unexpected vehicle behaviour could also lead to driver fatigue.

The solution

To solve the problem leading automotive proving ground, Applus+ IDIADA, adopted one of our driverless test solutions. The solution automates vehicles using driving robots (for steering, pedal, and gear control), telemetry, software, a controller, a power supply unit and an inertial navigation system.

Vehicles are remotely managed from a command centre van situated close to the track which includes Ground Traffic Control software, radio base station, server and safety controller system.

Our engineers worked closely with IDIADA to ensure the integration of the solution into their vehicle testing operation was seamless. The user-friendly software interface guides test operators through the test set-up and running process.

Our support team is also on hand to help with any ongoing installation, technical or programming issues.

Results

This system completely removes the need for a test driver in the vehicle. Test scenarios are simple to set up using the software and can be saved to build a library of tests.

The driverless solution can typically control the vehicle under normal driving conditions to an accuracy of 2 cm, the speed to within 0.5 km/h and steering angle to within 0.5 degrees. This level of precision means robots get the test right, first time, which is particularly important for misuse testing. It also enables extreme vehicle manoeuvres to be programmed that simply can't be reliably achieved through human control.

In addition to accuracy and precision, safe management of vehicles was a key requirement for IDIADA. The solution features multiple layers of safety functionality including continuous diagnostic error checking, speed and steering limits, geofences, a safety brake system and a remote engine kill system. Operators can remotely stop the driverless vehicle at anytime should a hazard arise.

On selecting the solution from AB Dynamics, Òscar Durro, Product Manager, Vehicle Misuse, IDIADA commented: "Prior to adopting AB Dynamics' driverless solution all our misuse tests were conducted manually with a driver in the vehicle. The solution improves safety and enables us to increase the accuracy and repeatability of our testing for customers. This not only leads to more valuable results but helps to minimise unnecessary damage to vehicles."



Applus⁺
IDIADA

Applus IDIADA is a global partner to the automotive industry with over 30 years' experience supporting its clients in product development activities by providing design, engineering, testing and homologation services.

About AB Dynamics

AB Dynamics is a leading global provider of automotive test and verification solutions that facilitate the development of vehicles that are safer, more efficient and sustainable. As part of the AB Dynamics Group of companies we enable customers to develop and test in virtual environments, validate on the track and then evaluate vehicles on public roads.

For more information:
www.abdynamics.com
info@abdynamics.com

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