SwRI®

SOUTHWEST RESEARCH INSTITUTE

Traffic Simulator Integrated Vehicle Dynamometer

In recent years, the need for evaluating vehicles in real-world situations has increased. Real driving emissions (RDE) testing, connected and autonomous vehicles (CAV), collision avoidance, advanced cruise control, etc., require vehicle evaluation tests in real-world situations.

Generating a repetitive traffic scenario for testing vehicles on a road or test track is challenging and at times not feasible. Some traffic patterns are dangerous and weather patterns create noise interference. Further, it is unknown whether calibrations and control strategies are producing the desired effect or whether environmental factors are influencing results.

Interactive traffic simulator

Southwest Research Institute® (SwRI®), with more than 50 years of experience in automotive research, development, and testing, offers a chassis dynamometer with an integrated traffic simulator to test vehicles in real-world traffic situations in a controlled and safe environment.

Vehicle positioned on dynamometer for testing

SwRI Traffic Simulator Integrated Dynamometer

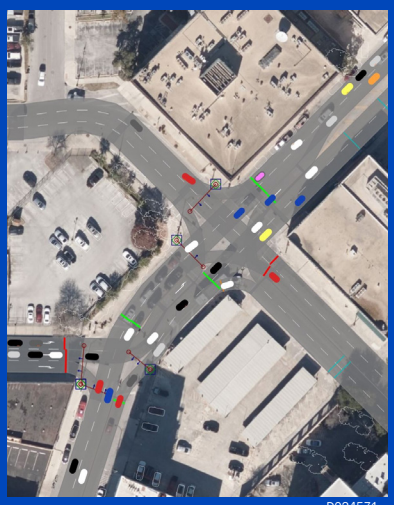
- An interactive traffic simulator is integrated with a chassis/hub dynamometer.
- The human driver is shown a display of a first-person simulated roadway.
- The vehicle-on-dynamometer speed is transmitted to the 'digital twin' of the test vehicle in simulation.
- Neighboring traffic in the simulation reacts to decisions taken by the human driver on the dynamometer.

Infrastructure Upgrade

- SwRI can integrate the traffic simulator with the client's existing chassis dynamometer on site.
- Desired traffic scenarios can be programmed in the simulator.
- Driver-in-the-loop operation can be validated.

Advantages of Testing at SwRI

- Client vehicles can be tested on SwRI's 2WD or 4WD chassis dynamometers integrated with traffic simulators.
- Testing for calibrations and emissions can be performed by SwRI engineers or client personnel.
- Models of multiple real-world scenarios include urban and highway driving.
- Grade simulation as a function of location is achieved by interfacing with the chassis dynamometer controls.
- Testing is scalable for connected and automated vehicles.



Numerous simulated real-world scenario options

We welcome your inquiries.
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SOUTHWEST RESEARCH INSTITUTE

Southwest Research Institute® is a premier independent, nonprofit research and development organization. With eleven technical divisions, we offer multidisciplinary services leveraging advanced science and applied technologies. Since 1947, we have provided solutions for some of the world's most challenging scientific and engineering problems.

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