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Southwest Research Institute is an independent, nonprofit, applied engineering and physical sciences research and development organization using multidisciplinary approaches to problem solving. The Institute occupies 1,200 acres in San Antonio, Texas, and provides nearly two million square feet of laboratories, test facilities, workshops, and offices for more than 3,000 employees who perform contract work for industry and government clients.



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GASOLINE AND DIESEL ENGINE AFTERTREATMENT DURABILITY TESTING

The U.S. Environmental Protection Agency requires emission control devices to function without defect up to 120,000 miles on passenger automobiles and light-duty trucks and 435,000 miles on heavy-duty diesel trucks. Catalytic converters and diesel aftertreatment devices mounted in the exhaust system must withstand a wide range of vehicle operating conditions with harsh temperature and vibration environments. Structural durability testing is a key method for verifying an aftertreatment design for vehicle use.

Southwest Research Institute® (SwRI®), with more than 50 years of experience in engine, fuel and vehicle research, offers complete facilities for testing gasoline and diesel engines and their aftertreatment systems.

SwRI has specialized facilities for gasoline catalytic converter and diesel aftertreatment durability testing.

Capabilities

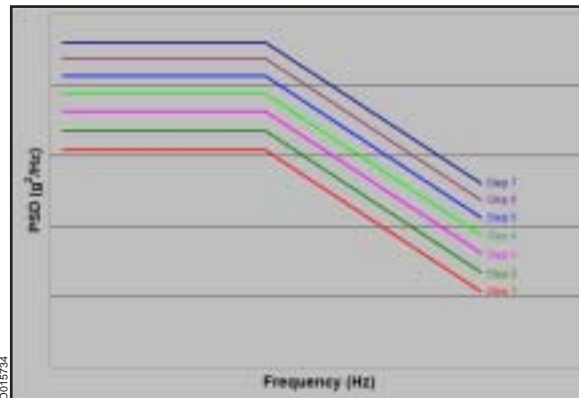
- Exhaust component vibration testing
- Stepped amplitude vibration testing
- Engine exhaust gas temperatures of 200°C to 1050°C
- Thermal cycle testing (150°C to 950°C)
- Water quench testing
- Vibration tests with water spray
- Temperature profile measurements
- Dynamic container deformation measurements

Facilities

- Shaker systems with vibration forces up to 22,000 lbf
- Sinusoid, random, and sine-on-random vibration control
- Vibration fixtures for vertical, horizontal, and angled orientations
- Size accommodation ranging from small pipe converters to large heavy-duty truck aftertreatment

Engine exhaust gas provides the best representation of actual on-vehicle conditions: stoichiometry and flow pulsations.

Catalytic converter design verification testing can be performed to OEM specifications.



DM15724

Stepped increase vibration of amplitude is used to decrease test times.



DM15733

Example of fixture for mounting large-engine catalytic converter at 45° angle.