Southwest Research Institute® (SwRI®) has been conducting truck fuel economy evaluations since 1973. The mild climate in San Antonio allows year-round testing on public roadways and test tracks.

Test Procedures

Experienced test engineers routinely use the following procedures:

- **SAE Recommended Practices**
  - SAE J1321 Joint TMC (Technology & Maintenance Council)/SAE Fuel Consumption Test Procedure Type II (1986 revision)
  - SAE J1321 SAE Fuel Consumption Test Procedure Type II (2012 revision)
  - Interim test method for verifying fuel-saving components for the EPA SmartWay® program (modifications to SAE J1321)
  - SAE J1376 Fuel Economy Measurement Test (Engineering Type) for Trucks and Buses
  - SAE J1526 Joint TMC/SAE Fuel Consumption In-Service Test Procedure Type III

- **TMC Recommended Practices**
  - RP1102 In-service Fuel Consumption Test Procedure Type II
  - RP1103 In-service Fuel Consumption Test Procedure Type III
  - RP1109 Type IV Fuel Economy Test Procedure

SAE Recommended Practice J1321 specifically addresses the needs and operating conditions of long-haul truck fleets. SAE J1376 is the appropriate procedure for testing and evaluating fuel consumption during operating cycles representative of bus, pickup and delivery, and refuse operations. To compare one vehicle to another, SAE J1526 is the preferred method.
Fuel Economy Test Example

For a J1321 program with Class 8 trucks, SwRI leases tractors and trailers unless the client furnishes the test vehicles. Leasing agencies typically have trucks available that are powered by Cummins, Detroit Diesel, Navistar, Volvo, Mack or other popular engines. Fuel consumption is measured by simulating a long-haul route (or other appropriate driving cycle), using weigh tanks for fuel consumption measurement.

EPA SmartWay® Experience

SwRI successfully conducted the U.S. Environmental Protection Agency (EPA) SmartWay program in support of the SmartWay Transport Partnership with the goal of reducing emissions and improving fuel economy in the transportation sector. SwRI measured fuel economy and NOx emissions on two different class 8 truck and engine configurations using the SAE J1321 protocol. A total of 38 J1321 test segments were conducted with four drive cycles, which were defined by the EPA and simulated on an oval test track.

The SmartWay program established the basis for development of the Interim test method for verifying fuel-saving components. The program evaluated fuel economy benefits of single-wide and low rolling resistance tires, trailer aerodynamic components including gap reduction fairings, skirts and boattail features on two types of heavy-duty diesel engines in two different class 8 line-haul trucks.

We welcome your inquiries.
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