

Specialists in Automotive Testing

National Technical Systems, NTS, is a world leader in assisting organizations to access domestic and international markets. We are a single source for a full range of integrated engineering solutions, product testing, standards compliance, project management, technical resource solutions and managed services. Globally accredited by leading regulatory agencies, NTS can provide cost-effective programs to meet your requirements at one of our many U.S. or international facilities, or we can provide onsite solutions. NTS is North America's largest independent standards compliance and product testing company serving companies within the aerospace, defense, automotive, telecommunications, electronics, power products, medical device, computer, software and financial markets.

Dynamometer Testing

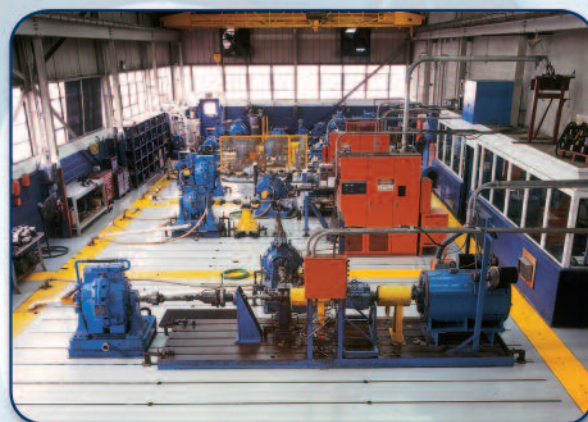
NTS Detroit Dynamometer laboratory offers extensive capabilities, 25 to 600 horsepower, high torque at low rpm and low torque at high rpm, including full automation. Our expertise encompasses practically every aspect of a vehicles drive train: transmissions, transaxles, transfer cases, rear axles, U-joints, half-shafts and complete driveline systems. Innovative on-stand conditioning can induce hot, cold and special environments on any rotating component. A unique test exposes propshafts to hot, cold, salt/sand slurry, torque and speed, while monitoring the bearing temperatures with infrared cameras. Accessory drive components can be exposed to high rpms (up to 24,000), salt, hot, cold with simultaneous performance testing.



The NTS drive-in thermal chamber is 5,000 cubic feet, -40° to +100° centigrade.

Vibration Testing

NTS vibration test systems in thermal chambers can perform random, swept sine, and sine on random vibration as well as half-sine, triangle and trapezoidal shock testing combined with temperature exposure. All of these systems have the capability to reproduce field data. Electrodynamic systems range to 16,000 force pounds, both vertical and horizontal. Servo-hydraulic systems range to 20,000 force pounds with 10 inch stroke. NTS Detroit has an excellent working knowledge of all automotive vibration requirements.



NTS Dynamometer laboratory includes 11 drive lines and over 18 primary movers and absorbers in a high bay with T-slotted flooring, making it easy to adapt to any application.

Climatics

With nearly 100 environmental chambers including a dual vehicle drive-in chamber, NTS can provide thermal shock, thermal cycling, humidity, corrosion (salt spray per ASTM B117 and GM9540P), water and dust (Degrees of Protection Provided by Enclosures, IEC 60529), autoclave (humidity with air in excess of 100 degrees C), atmospheric pressure and vacuum simulation.

Mechanical

Mechanical testing disciplines include servo-hydraulic, linear/rotary fatigue and ultimate strength tests. Fuel tank testing, sloss tests, impact tests, rollover tests, pressure/vacuum tests and mechanical strength tests. Pressure/temperature/vibration testing on hoses. Burst tests on hoses and tanks. Leak testing, Helium mass spectrometer, pressure decay, leak rate measurement and bubble test. Spin testing of tire/wheel/pressure sensors in support of TREAD act.



NTS' computer-aided testing of powertrain components assists engineers in component design as well as making functional efficiency a better quantified parameter.

Highlights and Primary Test Specifications

- Corrosion
- Environmental conditioning, sand and dust
- Life cycle estimation
- Noise evaluation – buzz, squeak, rattle
- Pressure/altitude
- Road testing
- Structural analysis
- Systemic – fuel, electrical, servohydraulic, cooling, braking
- Unique and combined environments – thermal/humidity/vibration
- Warranty/Recall validation

Performance – Components and Systems

- Acceleration
- Air bag systems (initiators, bags, deployment)
- Air cleaners
- Braking/ABS
- Durability/life
- Electrical/electronic systems (instrument panels, radios/DVD players, ignition coils/modules)
- EMC/EMI – 200 V/m to 40 GHz
- Exhaust – headers, catalytic converters
- Fatigue, rotary and linear
- Fuel systems and components
- Heat transfer
- Heating, ventilating, air conditioning
- Hoses – heater and radiator
- Lighting components
- Natural and simulated environments – corrosion, dust, salt fog, temperature/pressure extremes, weathering, rain, snow
- Road data replication
- Safety – seat restraints, FMVSS
- Temperature shock
- Vehicle stability sensors

Engines

- Automatic data acquisition
- Catalyst aging
- Component durability
- Transient cycle testing
- Turboblenders and manifolds

Drive Line Components

- Accelerated life test
- Climatic
- Dynamometer – durability, efficiency, severe service, processing evaluation, design studies, heat transfer
- Efficiency
- Strain gauging
- Torque efficiency/fatigue life
- Transmissions (FWD & RWD), axles, transfer cases, rear ends, drive shafts, coolers, U-joints, transaxles
- Ultimate strengths

Approvals

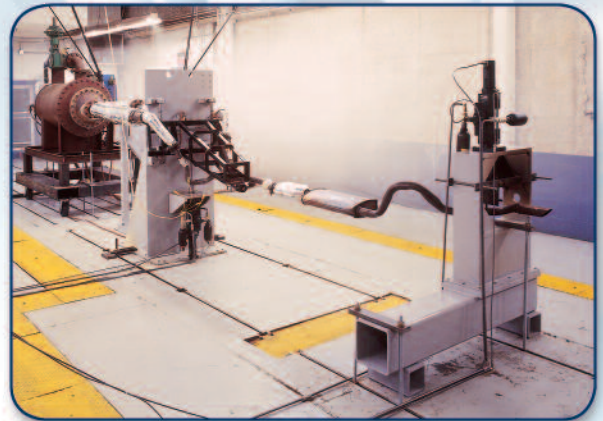
American Association of Laboratory Accreditation (A2LA)
ISO/IEC 17025 Compliant



Headlamp in combined thermal cycling/vibration testing.



Coolant/heater hoses in combined pressure/vibration/temperature testing.



Exhaust system vibration test with real-time input and hot exhaust gas.

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12601 Southfield Road • Detroit, MI 48223 • Tel: 800.946.2687 • Fax: 313.272.1190

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