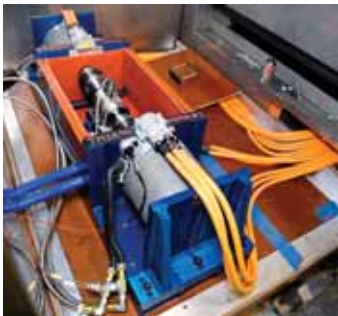


NTS Facility Spotlight: Detroit, Michigan

Specialists in Testing of Products for Mobility



Back to Back e-Motor Dyno Setup



Rotary and Linear Servo-Hydraulics



Custom Measurement and Control System

About NTS Detroit

NTS Detroit is an independent product testing and validation laboratory. We offer a wide range of test and analysis services in our 65,000 sq-ft facility and at customer sites. Our staff of experienced mechanical and electrical engineering specialists can deliver high quality results and fast turnaround time at competitive prices. We serve the Defense, Medical, Automotive, Aerospace, Communications, Electronics, Energy and Agriculture industries. We are a ISO 17025 compliant organization.

Hybrid and Electric Vehicle Systems

NTS Detroit has high speed dynamometers, regenerative power supplies, fluid conditioning systems, control systems and experienced engineers for performance, durability and environmental testing of e-motors, power electronics, cables, and charging systems for EV/HEV applications.

- ▶ 400HP regen dyno for performance testing of EV/HEV powertrains in an environmental chamber, with DC supplied by a 600V/600A battery simulator
- ▶ Specialists in design and construction of high speed back-to-back dyno rigs and controls for EV and HEV motor endurance and thermal cycle testing
- ▶ NTS designs data acq and control systems tailored specifically for e-motor and inverter testing including interfaces for CAN, Fieldbus, and TCP/IP devices

Mechanical and Fluid Dynamics

NTS Detroit offers linear and rotary servo-hydraulic actuators for fatigue and structural analysis, with precision measurement of flow, pressure, force, torque and strain. We design and fabricate test fixtures and build custom test equipment.

- ▶ MTS control systems for programmable load profiles or field data simulation
- ▶ Cyclic torque to 100,000 in-lb and linear force to 35,000 lb
- ▶ Pressure cycling and impulse to 8000 psi at 300 Hz and static fluid to 30,000 psi
- ▶ Fluid control systems capable of -50°C to +150°C cycling at high flow rates
- ▶ Pneumatic actuation, cycling, flow, pressure and leakage up to 6000 psi
- ▶ Fluorinert gross leak and Helium mass spectrometer fine leak

Electrical and Electronics

NTS Detroit has power supplies, load banks and instrumentation for precision measurement of voltage, current, resistance, capacitance and dielectric strength. We can design and build automated systems for operation and measurement of complex systems or large arrays of samples that are being subjected to environmental and dynamic testing.

- ▶ DC supplies to 1000 V, current to 1000 A, up to 150 KW that can be programmed to deliver complex test profiles
- ▶ 200 channels of programmable load up to 24V and 40A per channel, and resistive load banks capable of absorbing up to 150KW

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5,000 sq-ft Dyno Lab High Bay with 10 ton Crane



eTransmission Dyno Test Setup



Combined Vibration, Temperature and Sound Test Chamber



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Dynamometer

NTS Detroit has more than 20 large dynos from 50HP to 600HP. We specialize in design and construction of test fixtures, headsets and drivelines integrated with instrumentation and control equipment tailored to specific customer requirements.

- ▶ Motoring and absorbing at speeds to 15,000 RPM and torque over 6,000 ft-lb
- ▶ Automated control, monitoring, and data acquisition with torque/speed profile, backdrive and shift capability for transmissions, PTUs, gearboxes, axles, driveshafts, along with rotating machinery analysis
- ▶ Simultaneous application of dynamic axial and/or radial loading to rotating components on geared hubs, spindles, CV joints
- ▶ Environmental exposure to rotating components including temperature, slurry and salt spray on motors, alternators, U-joints and bearings

Vibration and Sound

NTS Detroit has many large electro-dynamic and servo-hydraulic vibration systems, most equipped with environmental chambers. We also offer customer site instrumentation and data acquisition.

- ▶ Electro-dynamic vibration up to 3,000 Hz and 100g
- ▶ Servo-hydraulic vibration up to 100 Hz for payloads up to 2,000 lbs
- ▶ Design and fabrication of fixtures and automated equipment for electro-mechanical operation and monitoring of complex systems during vibration (key-life testing)
- ▶ Vibration control and data acquisition for sine, random, sine-on-random, shock, shock response spectrum (SRS) and time domain replication of field data
- ▶ Data acquisition on 32 channels up to 100 KHz and 84 channels up to 2 KHz simultaneous for acceleration, strain, load, torque, sound, pressure and voltage
- ▶ Multi-channel data analysis including order tracking, spectral density, transfer function, octave bands, loudness and time-domain transient analysis for BSR
- ▶ Exhaust system and sensor vib testing with hot air pressure and flow to +700°C

Environmental Simulation

NTS Detroit has more than 30 environmental chambers for temperatures from -100°C to 1,000°C, including a drive in chamber. We can simulate virtually any condition that your product may be exposed to.

- ▶ Cyclic thermal shock chambers for large samples tested from -50°C to 160°C
- ▶ HALT / HASS combined vibration thermal shock and HAST high temp steam chambers
- ▶ Sand, dust, gravel bombardment; slurry and mud exposure for dynamic tests
- ▶ Altitude chamber for large samples and smaller high-vacuum tests
- ▶ Operational testing in salt fog, humidity, cyclic and hi-flow corrosion chambers
- ▶ Chemical exposure, high-pressure water spray, steam jet and rain exposure

About NTS

NTS is a trusted partner that helps organizations to access domestic and international markets. We are your single source for a full range of integrated engineering solutions, product testing, standards compliance, project management and managed services. Globally accredited by leading regulatory agencies, NTS can provide cost effective programs to meet your requirements - at your site or at one of our many US or international facilities. NTS is the nation's largest independent standards compliance and product testing company, serving companies within the aerospace, defense, automotive, wireless and telecom, electronics, energy, medical device, software and hardware markets.