

Vehicle Vibration Facility

CSTT maintains a vehicle vibration facility capable of exciting fully loaded rail and road vehicles with up to 6 actuators. The facility is equipped to ensure that field measurements of vehicle responses can be accurately duplicated in the laboratory, thus providing opportunities for controlled investigations and accelerated test programs of vehicles and components.



Features

- Accessible from CP Rail line
- 6 hydraulic actuators
- MTS "Remote Parameter Control" enables precise duplication of field-measured accelerations, strains, etc.
- Extensive instrumentation to measure and record excitation inputs and vehicle responses

Applications and benefits

- Enables realistic laboratory duplication of vehicle responses measured/expected in the field
- Accelerated fatigue testing
- Repeatable, controlled conditions
- Provides data input to vehicle dynamics models *(continued on back)*

Specifications

- Number of actuators: 6
- Input: random, sinusoidal, step, sawtooth, etc., or to duplicate field measurements
- **Four MTS 206 actuators**
 - Maximum load per actuator: 260 kN (26.5 t)
 - Actuator stroke: 155 mm
 - Max actuator velocity: 700 mm/s
 - Frequency: DC to 30 Hz, usable to 100 Hz
- **Two MTS 204 actuators**
 - Maximum horizontal load per actuator: 98 kN (11 t)
 - Actuator stroke: 155 mm
- 128-channel, 250 kHz data acquisition system for field and laboratory use
- transducers to measure strain, acceleration, velocity, displacement, force, etc.
- dynamic load measurement at the wheel/rail interface, in the lab and in the field

Some recent/current uses

- structural integrity and cargo tie-down testing for off-road vehicles
- measurement of dynamic response of a prototype deep-well, double-stack rail car designed for CP Rail
- characterization of suspension parameters of VIA Rail LRC locomotive
- characterization of shear, bending, lozenging, and bounce stiffness of CP Rail truck with various spring and wedge combinations
- accelerated life testing of railway brake components

Some recent clients

- Department of National Defence
- Bombardier Inc.
- CN Rail
- CP Rail
- RoadRailer
- Thrall Car Manufacturing Co.
- VIA Rail

For further information, please contact:

Road Vehicles and Military Systems

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