



TRAILER TESTING – PINTLE MOTION BASED SIMULATOR (PMBS)

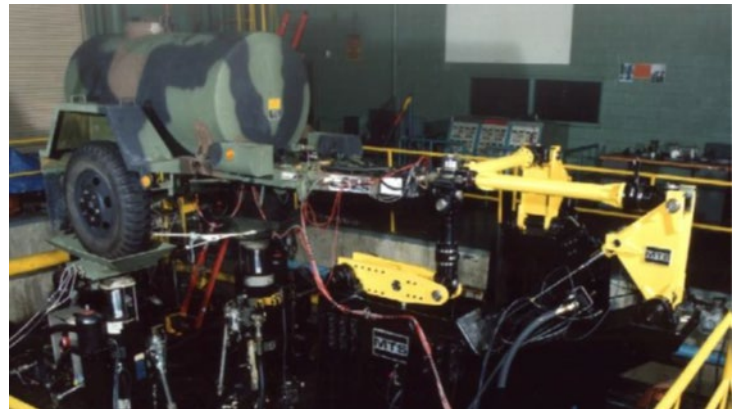
Combat Capabilities Development Command (CCDC) Ground Vehicle Systems Center's (GVSC) Physical Simulation Team (PST) operates a Pintle Motion Based Simulator (PMBS) which is utilized to conduct durability and performance tests on lunette trailers. It provides motion and force inputs to the test trailer's tires and lunette to reproduce dynamic conditions experienced at proving grounds.

Benefits

- Laboratory trailer testing offers the repeatability of dynamic events, and can eliminate performance variables such as weather conditions, driver variability and course maintenance.
- Extensive range of application design to integrate early stage development with flexibility to provide meaningful information that will minimize costs, accelerate development and compress test schedules.
- Provides a high-fidelity, multi-axial simulator that provides experimental test conditions for finite element analysis.



Single Axle / Static Load Trailer



Single Axle / Dynamic Load Trailer



PINTLE MOTION BASED SIMULATOR (PMBS)



Single Axle / Static Load Trailer

Maximum Force

- Lunette
 - Vertical = $\pm 18,000$ lbs
 - Lateral = $\pm 11,700$ lbs
 - Longitudinal = $\pm 27,300$ lbs
- Tires-Vertical: = $\pm 25,000$ lbs
- System Bandwidth
 - Lunette: 40 Hz
 - Tires: 60 Hz
- Max Payload = 20,000 lbs

Axial Displacement

- Lunette
 - Vertical = ± 8 in
 - Lateral = ± 5 in
 - Longitudinal = ± 5 in
- Tires-Vertical: = ± 10 in

Application

- Structural Testing of Design Prototype
- Comparison Testing of Loads and Engineering Changes
- Component Failure Analysis
- Characterization

FOR FURTHER INFORMATION:

U.S. ARMY COMBAT CAPABILITIES
DEVELOPMENT COMMAND — GROUND
VEHICLE SYSTEMS CENTER:
<https://tardec.army.mil/>

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