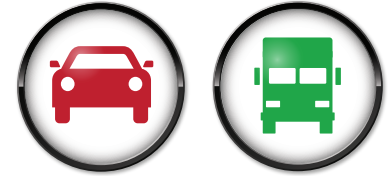


# QuadDS and HexDS

## MECHANICAL SIMULATION

World's most validated vehicle dynamics software serves as the foundation for Mechanical Simulation's Engineering Driving Simulators



Mechanical Simulation Corporation designs and manufactures two turnkey Engineering Driving Simulators for applications requiring accurate vehicle dynamics with the ability to interface with a company's existing engineering tools, vehicle data, and test plans.

Engineering Driving Simulators are tools that can be used by multiple engineering and technical marketing disciplines to expedite the product design process and demonstrate complex technologies to a wide range of drivers.

The simulators use the same CarSim and TruckSim software used by a majority of the world's automotive manufacturers and Tier 1 suppliers. Companies already using Mechanical Simulation software can drive the same vehicle data and controller models (SIL or HIL) that have been developed and validated by their engineering departments.



QuadDS simulator running TruckSim



CarSim's visualization and plotting tools are used to analyze driver and vehicle performance during or after a simulation run.

### Engineering Driving Simulator Features:

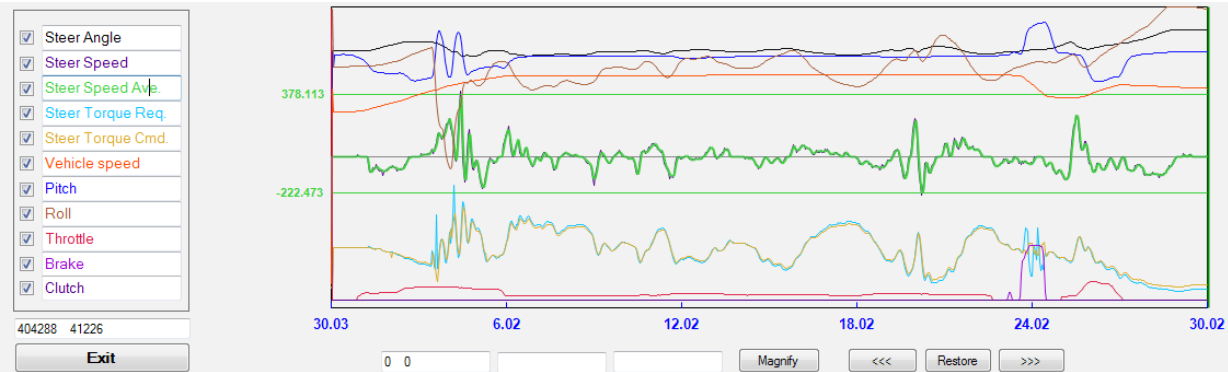
- A vehicle math model that is extensively used and validated by vehicle manufacturers. CarSim and TruckSim are the primary vehicle dynamics tools for many of the world's largest vehicle manufacturers and suppliers.
- A system that executes the vehicle math model, motion control algorithm, and control models on a single real-time computing platform to minimize data transport delays and jitter.
- Open architecture hardware interface allowing customers to integrate custom hardware such as ECUs, driver monitoring devices and HMI controls.
- A vehicle math model that is well documented and can be extended by customers.

## Applications for Engineering Driving Simulators

- Design, test, and tune electronic stability controllers, active braking systems, and other adaptive controllers.
- Design, test, and tune ADAS and driver convenience systems such as active cruise control, lane keeping, active parking assist, and collision avoidance.
- Develop and evaluate hybrid and electric powertrains.
- Evaluate powertrain and transmission calibrations.
- Evaluate active suspension design options.
- Capture data describing driver behavior (impaired/distracted drivers, HMI interaction, vehicle response to cross winds).
- Showcase technologies at trade shows or technology events.
- Model based evaluation of tires and steering systems.
- Distracted driving education.
- Driver training and course familiarization.
- Evaluate multi-vehicle and V2V technologies using interconnected/networked driving simulators.



HexDS simulator running TruckSim RT



QuadDS multi-channel plotting tool

### QuadDS Specifications

#### Four Post Motion Platform

- Three Degrees of Freedom + vibration
- Four Linear Actuators (35 mm stroke)
- Reconfigurable Instrument Cluster
- Windows 7 running CarSim or TruckSim
- Power Requirements: 20A 120VAC circuit

#### Driver Controls

- Steering - Torque feedback OEM Electric Power Steering Unit
- Pedals - OEM pedals
- Shifter - OEM Automatic Shift Lever
- Car or Truck/Bus seating configurations
- 8 user-defined push buttons

#### Audio Visual

- Three 60" LED displays (other sizes are optional)
- 5.1 Surround Sound

#### Interfaces

- MATLAB/Simulink
- Multichannel plotting
- AI Traffic and Networked Simulator Traffic
- HIL connectivity via CAN channel (optional)

### HexDS Specifications

#### Hexapod Motion Platform

- Six Degrees of Freedom (X, Y, Z, roll, pitch, yaw)
- Six Linear Actuators (300 mm stroke)
- LabView RT running CarSim RT or TruckSim RT
- Power Requirements: 30A 208 3P and 15A 120VAC

#### Driver Controls

- Steering - Torque feedback servo motor with 40,000 counts/revolution
- Pedals - OEM pedals
- Shifter - OEM Automatic Shift Lever
- Car or Truck/Bus seating configurations
- 16 user-defined push buttons

#### Audio Visual

- Three 40" LED displays
- 5.1 Surround Sound

#### Interfaces

- MATLAB/Simulink
- HIL connectivity via CAN channel