

## Full Car and Bogie Performance Test Rig

The Full Car and Bogie Performance Test Rig is a unique tool which mainly consists of four 6 DOF excitation tables and a car simulator for rail car and bogie manufacturers to study:

- » Static and dynamic stiffness and damping of the primary suspension
- » Static and dynamic stiffness and damping of the secondary suspension
- » Bogie steer resistance moment measurement
- » Car inclination suspension coefficient measurement
- » Curve track suspension coefficient measurement
- » Overturning coefficient of the rail vehicle measurement
- » Bogie and/or car center gravity measurement
- » Bogie and/or car moment of inertia measurement
- » Full car excitation
- » Natural frequency
- » Ride comfort
- » Transmissibility
- » Time history reproduction
- » Integration with digital simulation and modeling



### SYSTEM TABLE PERFORMANCE

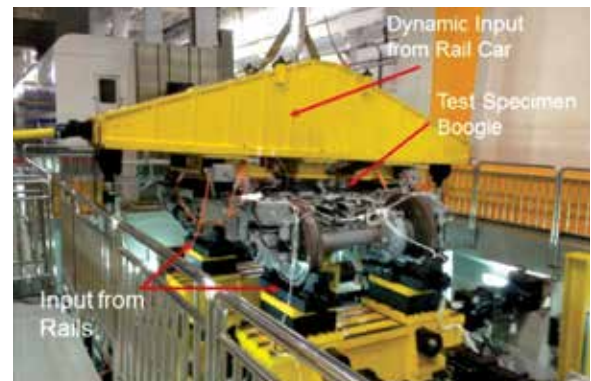
Direction	Table Force Capacity	Table Displacement
<b>Vertical</b>	800 kN	+/- 100 mm
<b>Lateral</b>	400 kN	+/- 114 mm
<b>Longitudinal</b>	400 kN	+/- 85 mm
<b>Pitch single table</b>	600 kN-m	+/- 5.7 deg
<b>Net pitch dual tables 1700 mm</b>	2040 kN-m	+/- 5.7 deg
<b>Net pitch dual tables 3000 mm</b>	3600 kN-m	+/- 3.0 deg
<b>Roll</b>	360 kN-m	+/- 8 deg
<b>Yaw single table</b>	400 kN-m	+/- 8 deg
<b>Net yaw dual tables 1700 mm</b>	510 kN-m	+/- 6.5 deg
<b>Net yaw dual tables 3000 mm</b>	900 kN-m	+/- 5.0 deg

Table acceleration capability:

- » 2 ton total payload on table:
  - Vertical: 10 g
  - Horizontal: 5 g
- » 33 ton payload on table:
  - Vertical: 1.7 g

Table velocity capability:

- Vertical: 750 mm/s
- Lateral: 400 mm/s
- Longitudinal: 750 mm/s

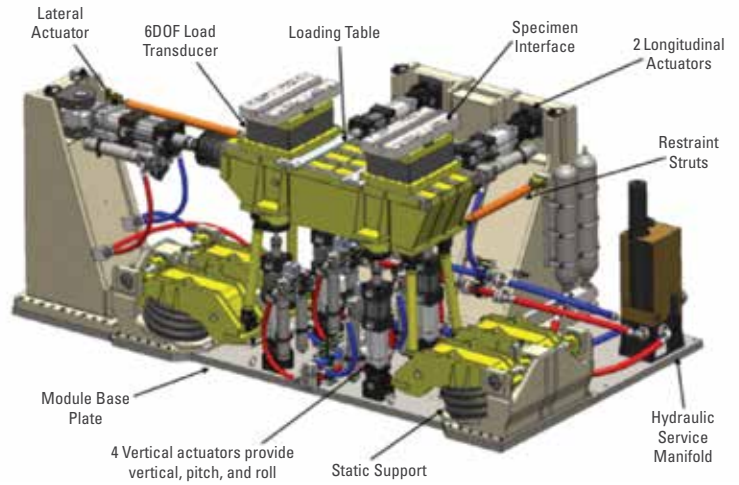


### SIX DEGREE-OF FREEDOM EXCITATION TABLE

For each bogie, there are two axle wheel-set 6 DOF excitation tables with six DOF load cells mounted in line with wheel platform.

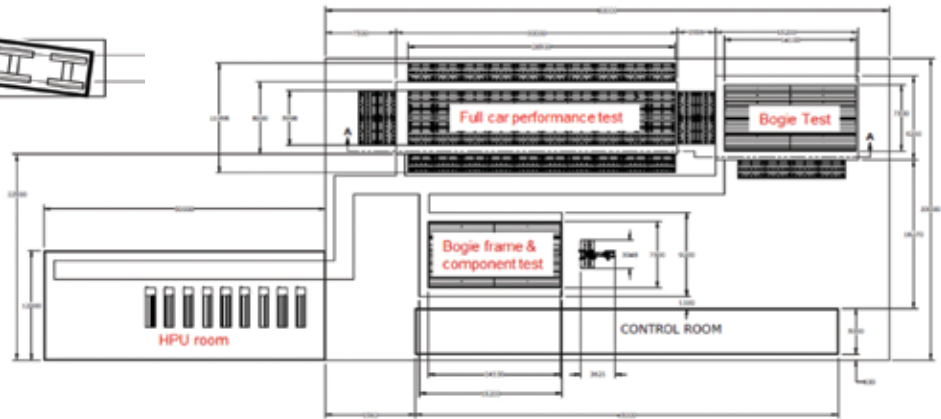
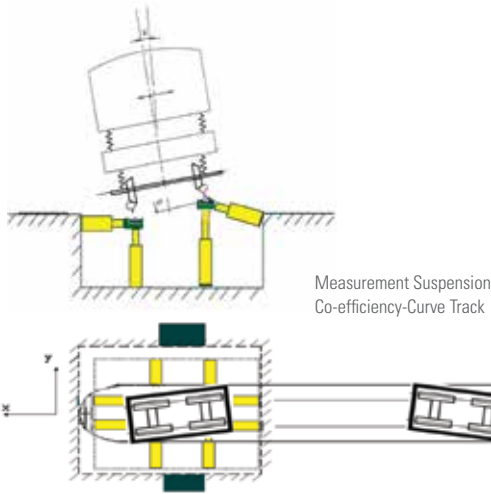
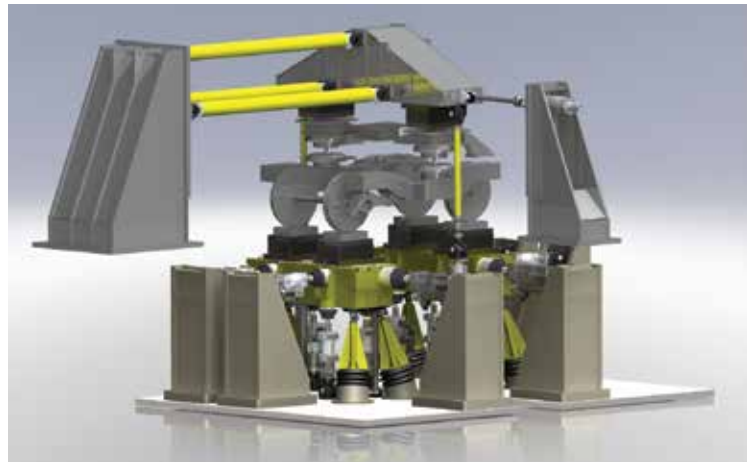
The specification of the 6 DOF load cell:

- » Vertical (Fz): 460 kN
- » Lateral (Fy): 230 kN
- » Longitudinal (Fx): 230 kN
- » Roll (Mx): 66.4 kN-m
- » Pitch (My): 194 kN-m
- » Yaw (Mz): 66.4 kN



### ACTIVE REACTION FRAME (RAIL CAR SIMULATOR)

The four DOF active loading frame simulates car body motion and load to the bogie, or it can be used as a fixed reaction for primary and secondary suspension tests.



Example layout of a full car, bogie and component test lab



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