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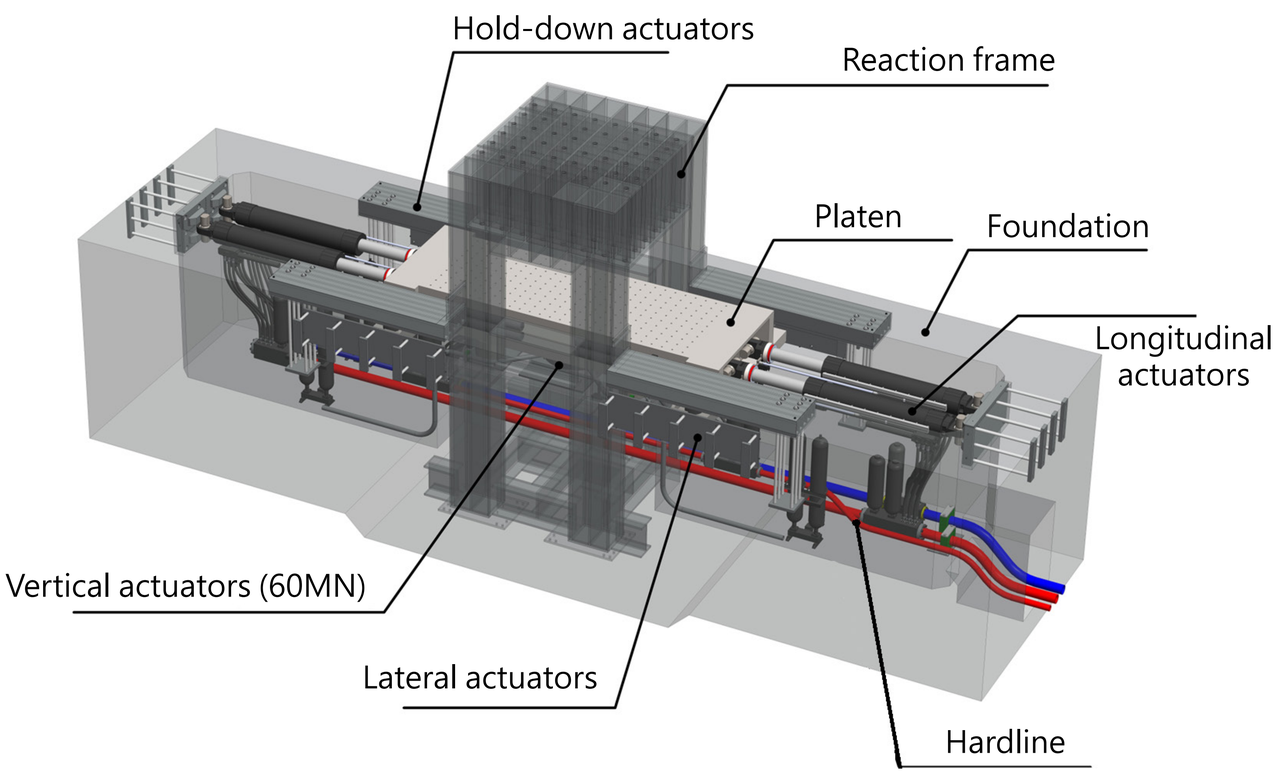
承諾・熱情・創新

Bi-Axial dynamic Testing System (BATS)

Seismic isolation technology has been regarded as one of the most effective strategies to enhance safety and functionality of buildings, infrastructures, and equipment. The bi-axial dynamic testing system (BATS) was designed and built to serve the industry and academia for conducting performance tests and further research on full-scale seismic isolators.



Bi-Axial dynamic Testing System (BATS)

Specifications of BATS

Description	Value
Static vertical compression force (MN)	30
Dynamic vertical compression force (MN)	30
Total vertical compression force (MN)	60
Vertical tension force (MN)	8
Vertical compression velocity (+/- m/s)	0.15
Vertical displacement (+/- mm)	75
Longitudinal force (+/- MN)	4
Longitudinal velocity (+/- m/s)	1
Longitudinal displacement (+/- mm)	1200
Roll, pitch, and yaw (+/- deg)	2

The steel reaction frame was designed and analyzed by NCREE researchers in order to lower the cost of BATS. The appearance of BATS is very similar to the existing MATS in NCREE; however, the dynamic capacity is enhanced significantly to meet the experimental requirements for full-scale seismic isolators. The maximum longitudinal stroke, velocity, and force capacity of BATS are ±1.2 m, ±1.0 m/s, and ±4.0 MN, respectively. Meanwhile, the maximum vertical stroke and velocity are ±75 mm and ±150 mm/s, correspondingly. A maximum of 60 MN vertical compressive force which includes 30 MN dynamic force and 30 MN static force can be achieved. In addition, 8.0 MN vertical tensile force is obtainable to allow BATS to apply cyclic loading on test specimens vertically. The hydraulic distribution system was designed to provide flexibility to meet various testing scenarios. As a result, a peak flow rate of 18,620 lpm is available in BATS when the earthquake simulator is not conducting any tests.

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