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Building industry leading test platforms to automate sensing and improve measurements by reducing human errors.

BioSim

Biomechanical Simulator

Biomechanical Simulator (BioSim) is a powerful test system suited for a mechanical and physiological tests of a variety of orthopaedic implants (knee, hip, spinal, cervical, shoulder, elbow), cartilage scaffolds, animal models, etc. A proprietary cube-drive allows independent and synchronized oscillatory angular motion in three axes with controlled angles and frequencies. The cube drive is integrated to the UT-150 robotic platform with precision X, Y and Z drives. This provides BioSIm with powerful six DoF capability for in-vitro testing.

Biofluid dispensing and extraction module, temperature and environment control modules can replicate specific physiological conditions. BioSim is a fully automated desktop instrument that can perform standardized tests but can also comfortably execute fully custom test procedures using a simple user interface.

BioSim's compact footprint and packaging are designed to facilitate human joint studies while minimizing the use of laboratory floor space

Features

- UT-150 robotic platform with precision X, Y and Z drives for accurate positioning, scanning and mechanical testing when coupled with force sensors and motion modules.
- Automated loading with constant, step, ramp and custom load profiles. Interchangeable force sensors
- Single and multi-axis force sensors for monitoring normal and friction forces as well as torque components.
- Compact cube-drive that allows oscillatory angular motion in three axes with controlled angles and frequencies that replicates physiological condtions. Independent control for engaging one drive at a time and synchronized motion of all three drives
- Biofluid dispensing module for conducting physiological testing to reproduce in-vivo condition
- ·Gaseous environment module with enclosure and ports around test area for controlled gaseous environments (hypoxic, normoxic)
- Modular configuration with Interchangeable 2D/3D imaging and inspection modules for surface analysis

BioSim
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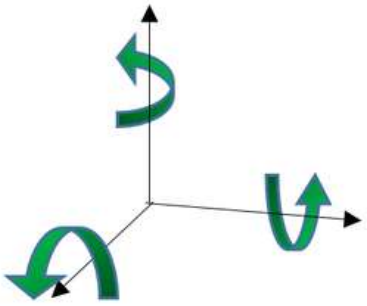
Test area with biofluid recirculation ports



Three rotational DoF for cube drive

- Load: upto 500 N
- Cyclic oscillation angle : 5 to 20 degrees
- Cyclic oscillation frequency : 0.5 to 2 Hz
- Temperature control module : ambient to 50 deg C
- Number of cycles : upto 5 million
- Real-time monitoring and error diagnostics
- Data logging: Continuous acquisition with timestamped traceability
- Sample sizes : 10 to 50 mm diameter, upto 50 mm length

Options

- Friction force module
- Biofluid module
- Surface imaging and inspection modules

Power

- 110 to 230 V, 50/60Hz, 1Ph

Weight & Dimensions

- Net Dimensions: 650 x 620 x 780 mm
- Net Weight: 100 Kg

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Continuing R&D may result in specifications, appearance changes

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