ProSim

MEDICAL SIMULATOR
Universal

UNIVERSAL · ELECTROMECHANICAL SIMULATOR

Universal Joint Simulator.

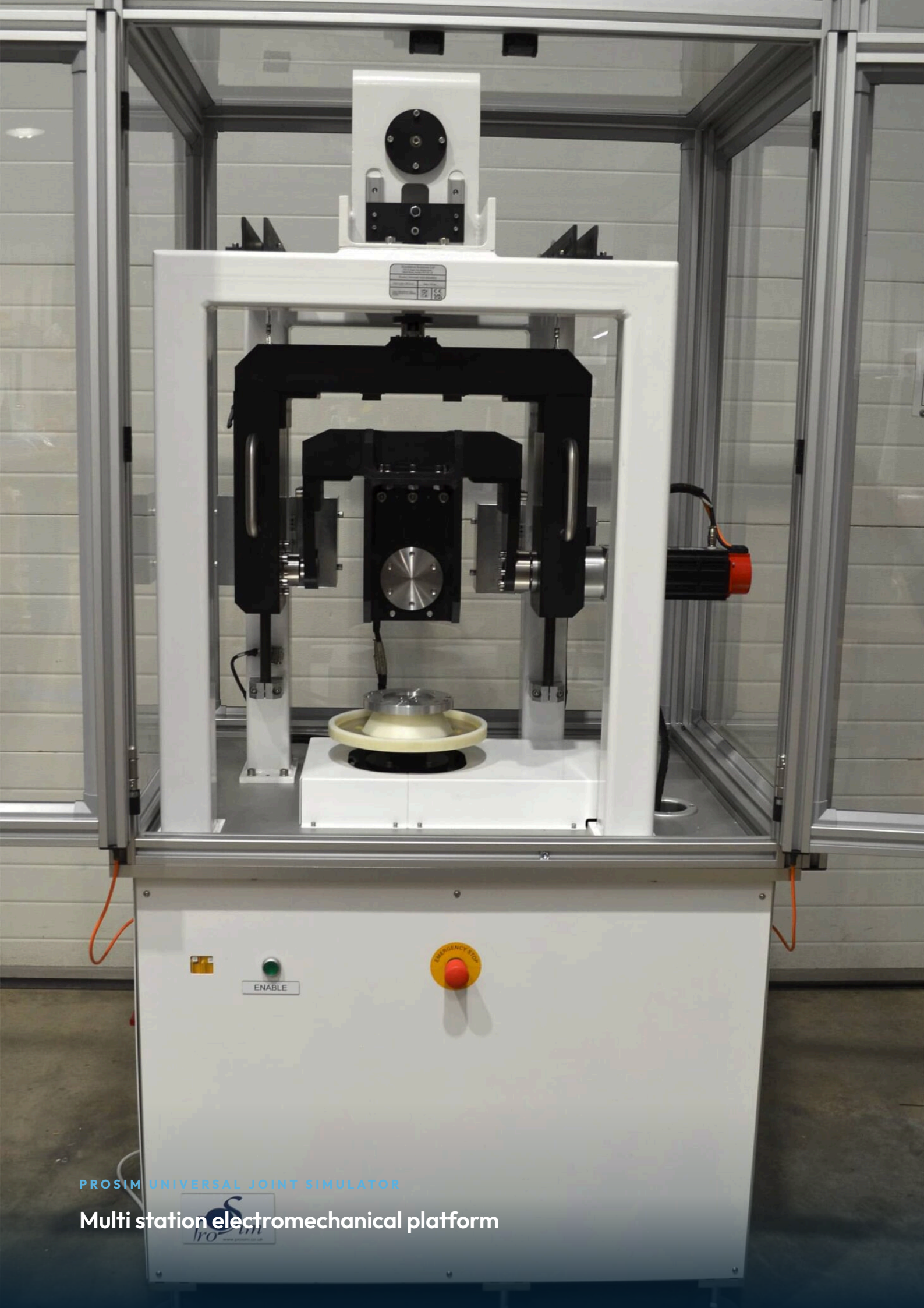
A flexible platform supporting orthopaedic testing across multiple joint types, including ankles, shoulders, elbows, fingers and cadaveric specimens.

Multi joint platform · Custom configurations

6 axes
INDEPENDENTLY CONTROLLED, ELECTROMECHANICALLY DRIVEN

10M+
CYCLE TEST DURATION CAPABILITY

Multi
KNEE, HIP, SPINE, SHOULDER, ELBOW, ANKLE + CADAVERIC



PROSIM UNIVERSAL JOINT SIMULATOR

Multi station electromechanical platform

ABOUT PROSIM

A research partnership turned *global product range.*

ProSim, a division of Simulation Solutions Group, designs and manufactures advanced electromechanical wear and fatigue simulators for orthopaedic implant testing, in long standing partnership with the University of Leeds.

Since the 1990s, ProSim, a division of the Simulation Solutions Group, has been at the forefront of orthopaedic implant wear testing through a long standing partnership with the University of Leeds. Together, we have developed advanced wear and fatigue simulators with over 100 stations of testing capacity across leading global orthopaedic manufacturers and testing houses.

Today, ProSim offers a comprehensive suite of electromechanical simulators for both medical and industrial tribological and wear fatigue testing. Our flexible, cost effective approach has enabled us to expand into both mature and emerging global markets.

We work closely with customers and academic partners to design simulators that exceed appropriate standards, replicating real world conditions, wider ranges of motion, and higher loads to better understand adverse wear. At the heart of ProSim is a 30 year legacy of innovation, trusted collaboration, and a relentless drive to push the boundaries of fatigue research.

Through participation in major European research initiatives like the Lifelong Joints Project, ProSim has consistently pushed the boundaries of implant wear research.

OVERVIEW

Universal Joint Simulator.

The ProSim Universal Joint Simulator enables comprehensive testing of shoulder, elbow, and ankle joint prostheses, as well as natural human and porcine joints. It also supports detailed wear and friction testing for single knee, hip, and lumbar spinal joint prostheses and corresponding biological specimens.

The end result is a simulator that is equally at home being used for the biomechanical study of cruciate ligaments in a cadaveric knee sample as it is for running a 'quick and dirty' 1 million cycle adverse wear test on a new coating for an implant.

Featuring six independent axes of articulation, all electromechanically driven, and a Peltier temperature control system that maintains the test fluid media at 37°C ±2°C, the ProSim Universal Joint Simulator pushes the mechanical envelope of adverse wear testing of biomechanical implants much further than it had gone before.

The ProSim Six Axis Universal Joint Simulator supports test durations in excess of 10 million cycles and allows the facility to pause the test cycle at any point to allow assessment of the wear of the sample.

AT A GLANCE

STANDARDS
ISO 7206-6 + others

AXES OF ARTICULATION
6 independent

FREQUENCY (BIOMECH.)
0.01 to 0.5 Hz

FREQUENCY (TRIBOLOGY)
0.5 to 2.5 Hz

CYCLE DURATION
10M+ cycles

DRIVE
Electromechanical, all 6 axes

FEATURES

Features *and benefits*.

Every capability published for the Universal Joint Simulator, sourced from the ProSim product page and product documentation.

- Supports testing of ankles, shoulders, elbows and fingers in addition to major joints
- Supports testing of cadaveric specimens
- Custom configurations co developed with researchers and clinical partners
- Bespoke fixturing for specific implant geometries or research protocols
- Designed to support both standards based and exploratory studies
- Built on the same electro mechanical drive principle as the wider ProSim range
- Backed by ProSim service & support, install, training, follow up, PM, remote support
- Up to 50 programmable profiles

SPECIFICATION

Technical *specification.*

Complete machine specification for the Universal Joint Simulator.

PARAMETER	VALUE
Test stations	Up to 3 stations
Axes of articulation	6 independently controlled, electromechanically driven
Joints supported	Knee, hip, lumbar spinal, shoulder, elbow, ankle
Specimen types	Implants & natural human/porcine joints
Frequency	Up to 2.0 Hz
Activity profiles	Up to 50 programmable profiles
Control	Both force and displacement on all six axes
Temperature	37°C ±2°C Peltier heater/cooler
Drive	Electromechanical (motors, drives, gearboxes)
Standards	ISO 14241-1; ISO 14243-1; ISO 14243-3; ISO 14242-4; ISO 18192-1; ISO 22622; ISO 16436-1; ISO 16436-2; ISO 7206-6; ISO 14879-1; ISO 16402; ASTM F2790; ASTM F2777-10; ASTM F2028

Specification sourced from the ProSim Universal Joint Simulator product page on prosim.co.uk. For full configuration details or to discuss a custom build, contact ProSim directly.

APPLICATIONS

Applications.

Common use cases for the Universal Joint Simulator.

01
Biomechanical cadaveric study

Equally at home being used for the biomechanical study of cruciate ligaments in a cadaveric knee sample, low frequency, displacement controlled.

02
Adverse wear coating evaluation

"Quick and dirty" 1 million cycle adverse wear testing of new coatings for implants, higher frequency, force controlled.

03
Shoulder, elbow & ankle prostheses

Comprehensive testing of shoulder, elbow, and ankle joint prostheses on a single platform.

04
Single station hip / knee / spine

Detailed wear and friction testing for single knee, hip, and lumbar spinal joint prostheses and corresponding biological specimens.

CUSTOMISATION

ProSim is able to offer customisation of its simulators to meet a client's specific testing requirements. We are always happy to look at the customisation of existing equipment or design and build projects to a customer's specifications.

ProSim

— UNIVERSAL · MULTI JOINT

Arrange a *consultation.*

If you have any specific requirements not fully addressed here, please get in touch. ProSim is always happy to discuss customisation of existing equipment or design and build projects.

TELEPHONE

+44 (0)161 947 9113

EMAIL · WEB

contact@prosim.co.uk
www.prosim.co.uk

ADDRESS

Unit 10, Rugby Park
Bletchley Road, Heaton Mersey
Manchester SK4 3EJ, UK