# Dynamic Bench Test Facility

## Features:

- 2 high precision three-axis motion simulators
- 6 degree of freedom robotic arm
- sun simulator (0.15 solar constants)
- earth simulator
- varying sun/earth constellation
- hardware-in-the-loop tests of
  - multi-satellite systems with focus on formation control and inter-satellite communication links
  - attitude and orbit control systems
  - rendezvous and docking systems
  - space robotics

## Description:

The concept of the Dynamic Bench Test Facility is based on the combined operation of two high-precision three-axis motion simulators, a six degree of freedom robotic arm, sensor stimulators and a simulation computer system. Arranging motion simulators and sensor stimulators into proper geometrical configuration enables hardware-in-the-loop simulations, material stress tests and sensor characterization and calibration.

The Dynamic Bench Test Facility provides therefore a broad range of test services to different industries including automotive, engineering and aerospace.

Especially to the *new space* environment, this unique precision facility offers testing of multi-satellite systems with focus on formation control, relative navigation, inter-satellite communication links and cooperative target observation.

## Specifications:

| Axis | Outer | Middle | Inner | |
|---|---|---|---|---|
| Range | ±120 | ±120 | ∞ | deg |
| Torque | 2*4000 | 2*2500 | 95 | Nm |
| Max. Acceleration | 1000 | 6000 | 2000 | deg/s² |
| Min. Velocity | $10^{-4}$ | $10^{-4}$ | $10^{-4}$ | deg/s |
| Max. Velocity | 150 | 150 | 150 | deg/s |
| Pointing accuracy | $10^{-4}$ | $10^{-4}$ | $10^{-4}$ | deg |
| Orthogonality | | | < 5 | arc sec |
| Intersection | | | < 0.2 | mm |