Harmonic Drive Systems
Harmonic Drive Systems offers the machine and motion control design engineer the widest choice of harmonic drive gearing products. Multiple manufacturing facilities in the United States, Japan and Germany maintain the high quality, precision and reliability standards required by the industry.

Actuators
These electromechanical actuators have many superior performance features including zero backlash, high accuracy, fast response time, high vacuum compatibility and are available in a wide range of sizes and hollow shaft designs. These servo actuators are easy to use and offer quick implementation. They are compatible with most industry-standard controllers and amplifiers. Servo actuators are an assembly of a brush or brushless servo motor, zero backlash harmonic drive gear and a high capacity output bearing. These elements are contained within a housing.

Gearheads
These gearheads can be easily adapted to any OEM servo motor. Harmonic Drive products offer zero-backlash with gear ratios from 30:1 to 160:1. Precision planetary gearing products are available with gear ratios from 3:1 to 45:1 with backlash maintained below 1 arcmin. High capacity output bearings are utilised for robust and accurate support of loads. Other benefits include flange and shaft output configurations, hollow shaft designs and sizes ranging from 0.625 inches to over 10 inches in diameter.

Component Sets
Harmonic Drive component sets are the core motion control mechanisms. These zero backlash products offer the widest design flexibility. Products can be selected which offer the optimum dimension and performance based on the available ratio within the customer-designed housing. High Torque, Ultra Flat, and Hollow Shaft Options are available. Customers can use these high accuracy gearing components which are core building blocks for custom high performance servo actuators and motor control mechanisms. Customer-supplied servo motors can be easily integrated into the design.
Industrial Applications

**Machine Tools**
The precision, repeatability, compactness and high torque to weight ratio of Harmonic Drive Gearing make them a preferred choice of design engineers in the machine tool industry. Many different types of machine tools benefit from Harmonic Drive Gearing.

**Medical**
Applications benefiting from Harmonic Drive gearing include patient beds, rehabilitation equipment, and MRI / Cat scan gantries. Other uses for harmonic drives include radiation therapy equipment, imaging camera positioning and surgical robots.

**Robotics**
Harmonic Drives offer robot manufacturers many benefits including zero backlash, high positional accuracy, low vibration and a compact design. They can be used in any of the robot axes and their light weight design contributes minimal weight to the robotic arm which increases robot payload capacity.

**Semiconductor**
Semiconductor robots rely on the zero backlash, repeatability, low vibration, and compact design of Harmonic Drive gearing and actuators. Actuators provide a complete, compact drive unit which eliminates assembly steps and can be designed to satisfy customer specific requirements.

**Printing & Converting**
Harmonic Drives are an excellent gear system for building mechanical differentials. When used as a mechanical differential, Harmonic Drives offer a number of advantages including zero backlash, accurate positioning, high-resolution adjustment and no slippage.

**Aerospace**
There are two basic types of aerospace applications benefiting from the zero backlash, repeatability and high torque of Harmonic Drive Gearing Technology: Space based and land based applications.