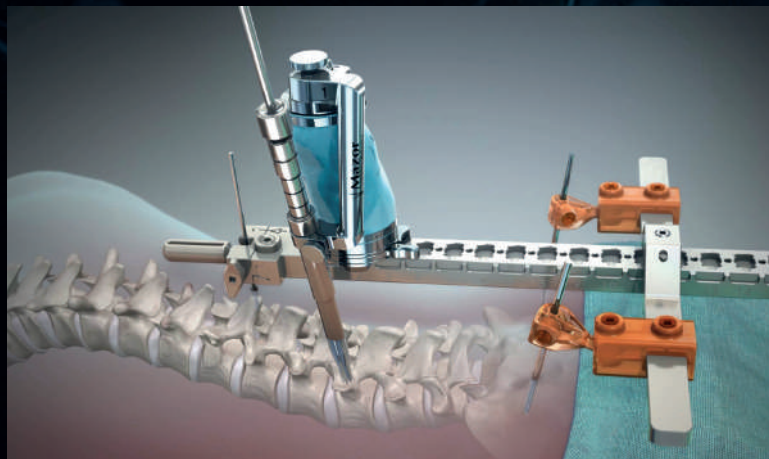




MPS INNOVATIONS FOR ACTIVE IMPLANTS

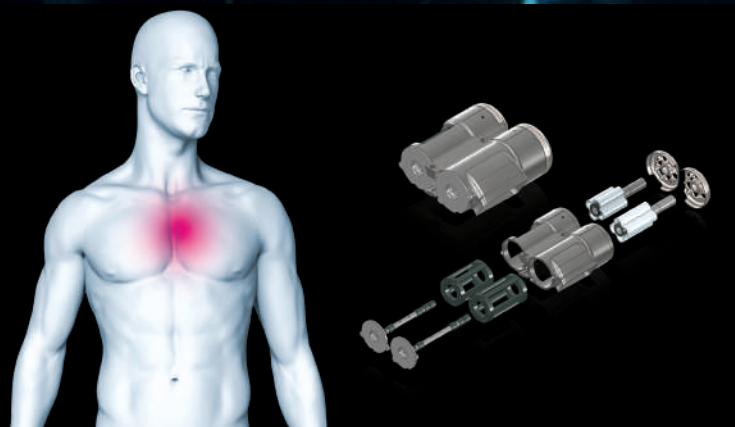
Foundation of MPS success is its culture of innovation that has prevailed for decades. In the field of active implants, MPS has specialized in the design, manufacturing and testing of miniature, biocompatible, powerful, reliable and extremely efficient electromechanical systems. MPS technologies are especially suitable for applications, for which the ratio mechanical performance/dimensions is particularly challenging, such as implantable pumps, bone lengthening, spine straighteners or urethral sphincters.



INNOVATIONS FOR ACTIVE IMPLANTS

INNOVATION IN PRODUCT DESIGN

- Sealing of non-biocompatible components
- Contactless transfer of torque from the sealed drive units to the biocompatible active mechanism
- Contactless transfer of torque from an external drive system to the implant
- Design for MRI compatibility
- Non-corrosive and biocompatible high efficiency bearings and thrust bearings
- Non-corrosive and biocompatible screws and nuts
- Very efficient implantable gearboxes made of CoCr material
- Biocompatible electromechanical systems



INNOVATIONS FOR ACTIVE IMPLANTS

APPLICATIONS



Implantable drug pump

LVAD / Heart pump



Urethral sphincter

Spine & bone lengthening



Trileaflet aortic valve

Micro robot for spine surgery



SOLUTIONS FOR THE MEDICAL INDUSTRY

INNOVATION IN PRODUCT TESTING

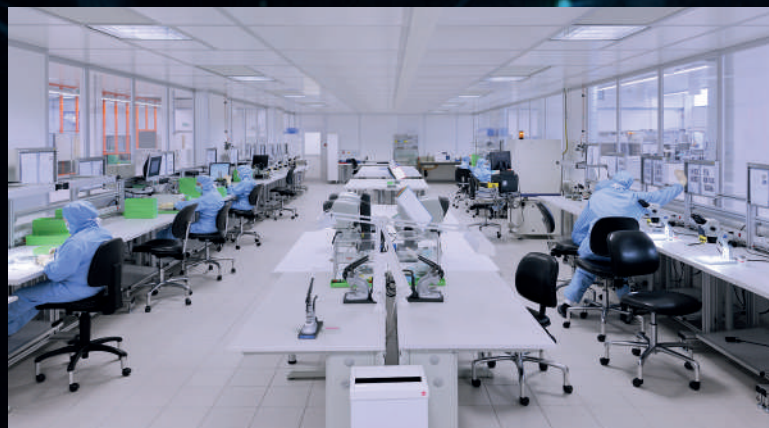
- Friction testing
- Measurement of energy consumption and efficiency
- Mechanical accuracy and repeatability
- Mechanical performance (torque, force, speed, acceleration etc.)
- Lifetime testing



In-line friction testing equipment



Bench for torque measurement of a pumping unit



SOLUTIONS FOR THE MEDICAL INDUSTRY

INNOVATION IN MANUFACTURING AND ASSEMBLY PROCESSES

- Development of specific tooling to ensure uniformity of tolerances and surface roughness during grinding and polishing processes on complex surfaces.
- Development of specific tooling to test residual friction in micro-assembly.
- Design and validation of tools and equipment required to achieve assembly precision and system reliability
- Setting up combinations of manufacturing, polishing and washing processes to ensure
- biocompatibility, cleanliness and adherence to tolerances



MPS COMPETENCES

RESEARCH & DEVELOPMENT

The high level of training and experience of its microsystems engineers allows MPS to quickly develop innovative solutions that meet the needs of its customers. Our developments and documentation meet the international standards of the medical market.

Fully equipped, the prototyping workshop guarantees the production and modification of rapid prototypes, free from the logistical constraints of mass production. The equipment includes lathes, milling machines, wire erosion machines and grinding machines.

The test laboratory equipment is used to carry out service life tests, noise measurements, traction tests, torque measurements and other mechanical tests.

MANUFACTURING

(precision as a key value of MPS)

The turning & milling workshop has a series of CNC and EDM machines. Each work bench is equipped with measuring instruments for controlling, at any time, the quality of the products manufactured.

Acquired over many decades, MPS's heat treatment knowledge is essential to achieve the material properties needed for the performance of the systems manufactured. MPS also has expertise in deburring and washing components.



MPS COMPETENCES

MICRO ASSEMBLY

MPS specialises in the micro-assembly of complex systems which require specialist knowledge and specific expertise.



The size of parts and the required precision necessitate a controlled atmosphere in the entire assembly workshop, with continual air change and filtration. A clean room ISO 7 is

available for implantable medical applications.

Our main skills include the assembly of micro-components, laser welding, laser marking, gluing, precision lubrication, washing and pairing, enabling adjustments of less than 0.2 μm . The workshop is organised according to «lean manufacturing» principles. Dedicated cells are set up when necessary.

QUALITY

The MPS Quality department ensures the continuation of certification : ISO 9001 - ISO 13485 - ISO 14001.

In order to guarantee the delivery of products that observe legal requirements, MPS prepares the files that are essential for certifications (European Directives 93/42/EC, 90/385/EEC, 21CFRpart820, etc.) and for medical devices to be placed on the market.

PROJECT MANAGEMENT

In our project development process, customers are in close contact with a dedicated project manager who ensures close communication and coordination with the internal project team and external partners.

The MPS management system integrates the project management process.



MPS GROUP

EXPERTS IN CUSTOM-MADE MICROSYSTEMS



WHERE TO FIND US

MPS Micro Precision Systems AG
Chemin du Long-Champ 95
2504 Biel/Bienne | Switzerland
+41 32 344 43 00
microsystems@mpsag.com
www.mpsag.com

