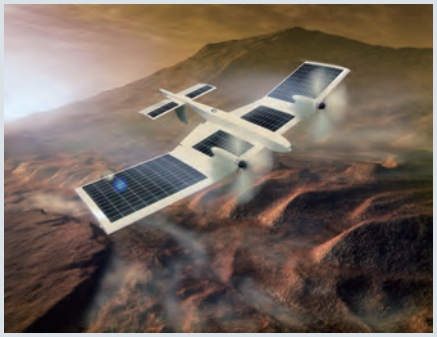
Research and Development of Next-generation Actuators

Project title | Develop the world's best-performing actuators (large/small)

Institutions：ShinMaywa Industries, Ltd., et al. ／ EXTCOM Inc. ／ YASKAWA Electric Corporation ／ MEIJI RUBBER & CHEMICAL CO.,LTD., et al. ／ Adamant Namiki Precision Jewel Co.,Ltd.

Selected topics

1) Develop the world's best-performing electromagnetic motor
   ▶Develop a high power density/ high-efficiency compact motor (50 w/25 g)
   ▶Develop a waterproof and dustproof (1 kw/400 g) high-output motor
   ▶Develop a high-torque (110 Nm/1 kg) actuator system
2) Develop space-resistant sensor systems
   ▶Develop a small and high resolution resolver (ϕ 20 mm resolution 524288)
3) Develop a smart fluidic actuator system
   ▶Contraction force more than three times that of the McKibben artificial muscle

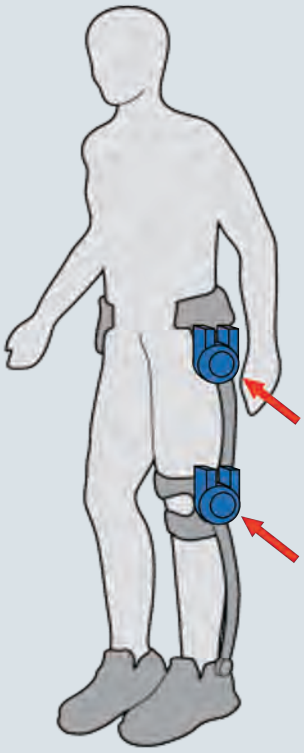


Aerospace application
1. Mars aircraft, drone
2. Mars rover
3. Casting device
4. Two-axis gimbal

Terrestrial application
1. Wind generators / Hydro generators
2. Drones and robots
3. Nursing care products such as power suits and wheelchairs

Ultra-small sensor for absolute angles
Outer dimensions of product :
Squair 20 mm and thickness 7.5 mm
Resolution　1048576

Primary prototype of IP56 clear dustproof and waterproof motor



The torque of the knee joint is approximately 100 N-m