



New lightweight high performance servo actuator revolutionizes robotics

HDD Servo Motors AB and ABB Robotics present a new breakthrough in lightweight servo actuators targeting robotic applications. The servo actuators, demonstrated for the first time at Automatica 2008, make it possible to build more efficient and productive lightweight modular robots for a large spectrum of applications.

By using HDD Servo Motors AB's newly developed motor, brake and sensor technology in tight integration with Harmonic Drives latest speed reducer technology, ABB Robotics could present a outstanding lightweight servo actuator with extremely high performance in relation to weight. The new ultra light servo actuator is a part of the European "SMERobots" project.

More efficient and productive robots

The new servo actuators make it possible to build more efficient and productive lightweight modular robots for a large spectrum of applications.

By mounting the speed reducer directly on the motor shaft and ensuring that no lubricant reaches the motor from the speed reducer, the unit can be tightly integrated. The unique Stritorque® technology is adopted to reach the lowest possible motor weight. It is now possible to create extremely compact and short servo motors with very high torque to volume and torque to weight ratios and very low heat dissipation.

The Stritorque® motor technology has proven to be extremely efficient for integrating into the Harmonic Drive speed reducer technology. Another very important component is the electromechanical safety brake invented and developed by HDD. The new brake technology is developed with very high electromagnetic, mechanical and tribological efficiency, as no useful lightweight brake concept could be found. A new lightweight and compact encoder concept based on a capacitive measurement principle has also been developed by HDD. All the components in the servo actuator were designed to obtain a hollow structure making it possible to have electrical cables passing through the centre of the actuator, saving space. The new ultra light servo actuator also fills up the lack of corresponding space saving light weight products in advanced machine design.

Successfully tested

Extensive testing has shown the servo actuators to be far better than corresponding products on the market today. For example, a servo actuator with a total weight of 2 kg mounted on an ISO standard cooling plate generated a continuous torque of 80 Nm at 50 rpm. This result was obtained with a motor winding temperature increase of only 88K in steady state.

See it at Automatica 2008

New servo actuator prototypes will be demonstrated at Automatica 2008. They will be demonstrated both at a test bench and as actuator modules in a lightweight robot wrist mounted on a new robot that enables affordable robot automation of demanding industrial applications.

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References:

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HDD Servo Motors AB: <http://www.hdd.se/>

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ABBRobotics: www.abb.com/robotics