



Fig. 1 - Amusement ride

Electrohydraulics in entertainment park a powerful motion control for modern simulators

Atos high performance servoactuators are widely and successfully used in virtual reality simulators for the generation of high dynamics and smooth motion profiles, required to create exciting experiences for the visitors of amusement parks (Fig. 1).

They are equipped with digital drivers and controllers (Fig. 2) to operate the most advanced interactive 3 and 6 axes flight simulators performing quick accelerations and decelerations of high payload withstanding several G's.

They consist of:

- ISO 6020-2 servocylinders with built-in high speed and low friction PTFE + NBR seals to avoid any jerking phenomena during the slow speed motion and digital magnetostrictive transducer with fieldbus interface
- high dynamic servoproportionals in "rugged" execution to perform accurate regulation and fast response time <10ms. The on-board digital controller manage the cylinder's position and speed during the motion cycle and is interfaced with the simulator CNC through fieldbus network (CANopen, PROFIBUS DP, EtherCAT or POWERLINK).
- specific safety circuit with monitored valves, TÜV certified according to Machine Directive 2006/42/CE, to prevent injuries in case of emergency

The most advanced and extreme attractions are operated by high flow servoproportional cartridges in high dynamic execution with digital driver for double closed loop control of the valve regulation. Digital cartridges are available from size 16 up to 100 for dynamic control of high instantaneous flows, up to 16.000 l/min (Fig. 3).

Some examples of outstanding applications:

- "Kingda Ka" rollercoaster in "Six Flags" park (New Jersey, USA); the size-80 servocartridges speed the shuttle launcher at 206 km/h in 3,5 sec acceleration time;
- the stage platform control at MGM dynamic theatre and the "Sky Jump" amusement ride on the top Stratosphere Casino tower, both based in Las Vegas, are operated by 2 and 3 -way servocartridges.

Atos system division, manufactures customized power pack, using modern software to design compact and efficient systems. They are powered by variable displacement piston pump and assisted by accumulators (Fig. 4).

Several successful worldwide applications count on excellent performances and reliability achieved by Atos digital electrohydraulics to bring the illusion as closer as possible to reality.

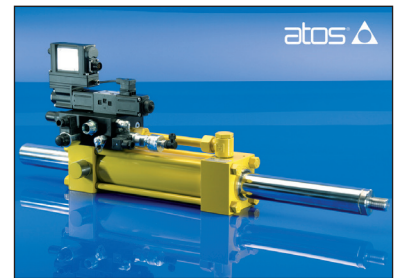


Fig. 2 - Digital servoactuators

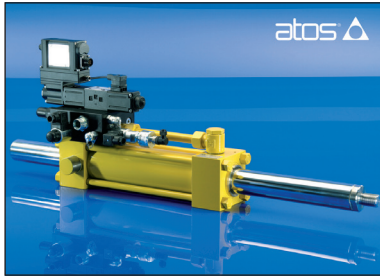


Fig. 3 - Digital servocartridges



Fig. 4 - Power pack + accumulators

For further information look at www.atos.com



Digital servoactuators

Electrohydraulics for entertainment parks

3-6 axes virtual reality simulators, with motion control performed by high dynamic digital electrohydraulic solutions, represent the most exciting experience of modern entertainment parks.

Typical solution for these modern applications are Atos digital servoactuators consisting of:

- ISO 6020-2 servocylinders with built-in high speed and low friction seals and digital magnetostrictive transducer
- high dynamic “ruggedized” servoproportionals with on-board digital controller for closed loop cylinder’s position and speed controls. They are available in CANopen, PROFIBUS DP, EtherCAT or POWERLINK executions
- safety circuit with monitored valves, TÜV certified according to Machine Directive 2006/42/CE

The supply package is completed by relevant hydraulic power units powered by variable displacement piston pump and assisted by accumulators to grant best acceleration and speed. Most advanced and extreme attractions are operated by high-flow digital servocartridge with flow up to 16.000 l/min.

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