

SUBSEA VALVE AUTOMATION SYSTEMS



COMPANY



For over 30 years Paladon Systems has been supplying valve actuators and control systems on a global basis.



Since its inception in 1981, Paladon Systems has continuously developed its design, engineering, organisational, quality and management capabilities. Today Paladon Systems designs and manufactures many valve automation technologies that lead the industry in terms of cost efficiency, operational performance and environmental responsibility.



Paladon Systems' vast experience with supporting the Oil, Gas and Power industries with valve automation solutions for the most critical applications in extreme operating environments has resulted in product designs that offer unsurpassed quality and reliability across all industries and applications.

Holding ISO 9001 certification for over 20 years, today Paladon Systems hold accreditation and approvals from almost all major institutes, engineering companies and end users.



Headquartered in England, Paladon Systems has offices and facilities in Scotland, Italy, Malaysia, the Russian Federation and the United States. With a comprehensive suite of valve automation solutions backed by a dedicated team of field service engineers, Paladon Systems is **Total Valve Control**.



SUBSEA VALVE ACTUATORS

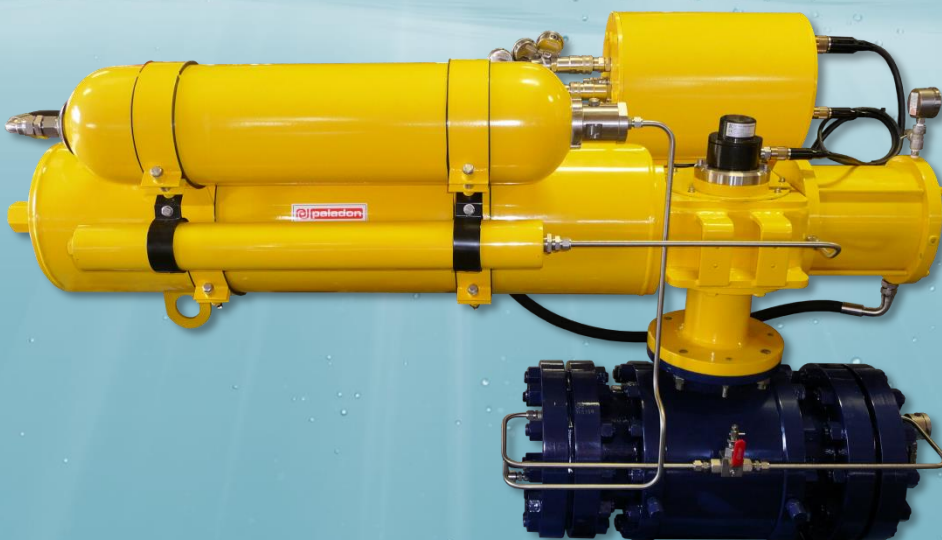
Paladon Systems' S-Series subsea hydraulic valve actuators are used to provide subsea automation of rotary and linear valves, and are available in spring-return and double-acting configurations.

■ Operating Ranges

- ▶ Supply Pressures: 13 to 250 Barg (90 to 3,625 psig)
- ▶ Torque Output: 200 to 680,000 Nm (1,770 to 6,018,000 lb in)
- ▶ Thrust Output: Up to 289,134 N (65,000 lbf)

■ Key Features & Benefits

- ▶ Operation in water depths of 1,000 m (3,281 ft) using pressure compensated design, 150 m (492 ft) for non-pressure compensated designs
- ▶ Springs contained within a fully welded canister (which is post weld heat treated) to guarantee simple and safe removal
- ▶ Springs are scragged (set removal) in order to warrant optimum and stable performance
- ▶ Easy and economical maintenance due to simplified design, no special tools required for installation and maintenance
- ▶ Compliant to PED 97/23/EC
- ▶ Several yoke lever configurations (cants) allowing selection of the actuator output torque that best suits the valve torque characteristic.
- ▶ Suitable for high frequency and high speed operation
- ▶ Guide bar frame design used to eliminate side forces and low friction seals ensure high efficiency



AUTONOMOUS SHUTDOWN VALVE (ASV)

Used in CALM Buoy pipeline systems, the Autonomous Shutdown Valve (ASV) package comprises of a hydraulic actuator and subsea control system to operate the subsea pipeline ball valve on demand by detecting pipeline pressure changes and initiating valve stroking. The ASV provides fully automatic fail-safe operation of a PLEM valve to isolate the pipeline from the flexible riser, irrespective of weather conditions.

■ Key Features & Benefits

- ▶ Fully automatic fail-safe operation of a PLEM valve
- ▶ Reliable and requires no operator intervention
- ▶ Significant operational cost savings
- ▶ Automatic line-break detection and shutdown
- ▶ Reduced risk of pollution and loss of sealine inventory
- ▶ Remote status monitoring, override control and in-situ diagnostics
- ▶ Specifically designed for high reliability in the harshest operating conditions
- ▶ Proven subsea technology across all system components
- ▶ LiMnO₂ batteries provide an expected operational life of 5 to 7 years



HIGH INTEGRITY PRESSURE PROTECTION SYSTEMS

As oil and gas resources become harder to find, producers are forced to operate in environments of ever increasing severity and risk. To help manage the increasing and unprecedented risk, the concepts of Safety Instrumented Systems (SIS) and Safety Integrity Levels (SIL) were created and applied. One such SIS type, is the High Integrity Pressure Protection System (HIPPS). A HIPPS System is an independently instrumented protective device, and acts as the last line of defence for protecting downstream operations from over pressurization. Typically certified to SIL 3, a HIPPS System gives producers the most dependable pressure protection device available in the market today.

■ Key Features & Benefits

- ▶ Full engineering design support for any HIPPS application
- ▶ Full compliance with IEC 61508 Edition 2 up to SIL 3; including system and sub-system calculations and documentation set
- ▶ Fast closure times up to 2 seconds
- ▶ API and ASME valves up to 42"
- ▶ Skid design and fabrication
- ▶ Installation, commissioning and servicing support
- ▶ Valve actuator designs and manufacturing based on over 30 years experience in the Oil & Gas industry
- ▶ World class and proven logic solver
- ▶ Full diagnostics capability
- ▶ Compact manifold design control systems
- ▶ Hydraulic power units
- ▶ All instrumentation



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