

SELF-CONTAINED ELECTRO-HYDRAULIC CONTROL SYSTEMS



Paladon Systems Ltd is an actuator manufacturer and valve automation centre. Our business is to design, manufacture and test all types and sizes of valve actuators and control systems. Paladon's philosophy has always been to provide comprehensive, fit for purpose and cost effective valve automation solutions to our clients and the industry sectors they serve. By building close working relationships with our customers, we are able to fully understand their operational requirements and develop all our actuator series to ensure that they meet or exceed those requirements. We have continuously improved our design, engineering, organizational, quality and management capabilities since the Company was founded in 1981.

Paladon's experience in all extremes of operating conditions has enabled us to develop actuation solutions with unsurpassed reliability. Quality is a primary part of our management philosophy, and we have held ISO 9001 certification for over 20 years. We also hold accreditation and approvals from many global institutes, engineering companies and end users.

Being close to our customers has always been a high priority. To support our increasing customer base, Paladon is located in Northampton England, Aberdeen Scotland, Pinarolo Po Italy, Moscow Russia and Kuala Lumpur Malaysia. Our Northampton England headquarters oversees all engineering, quality control and product development to ensure consistency, and to maximize organizational efficiency. To further enhance our customer support, Paladon is backed by agents operating in globally strategic locations.



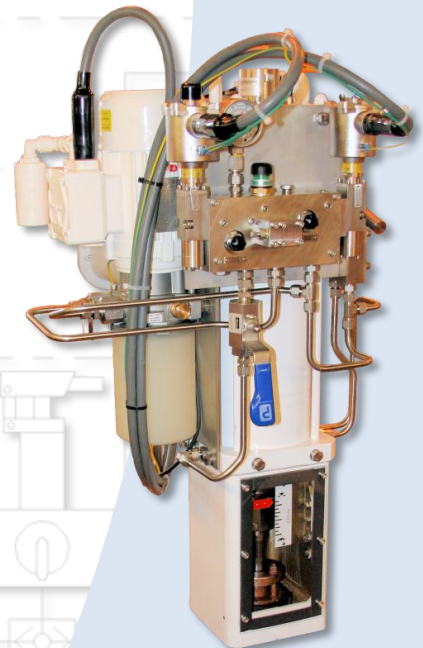
Originally developed for the offshore Oil & Gas Industry, Paladon's Self-Contained Electro-Hydraulic Control Systems provide a rugged and reliable valve automation solution. Typically used in applications in which external pneumatic or hydraulic power sources are unavailable, unreliable or uneconomic, Paladon's fully customizable systems provide :

- The same simplicity and low cost installation as provided by electric actuators
- Fail safe or fail last operation
- The power, precision and compact size of hydraulic systems
- Industry leading control options and system diagnostics

APPLICATIONS

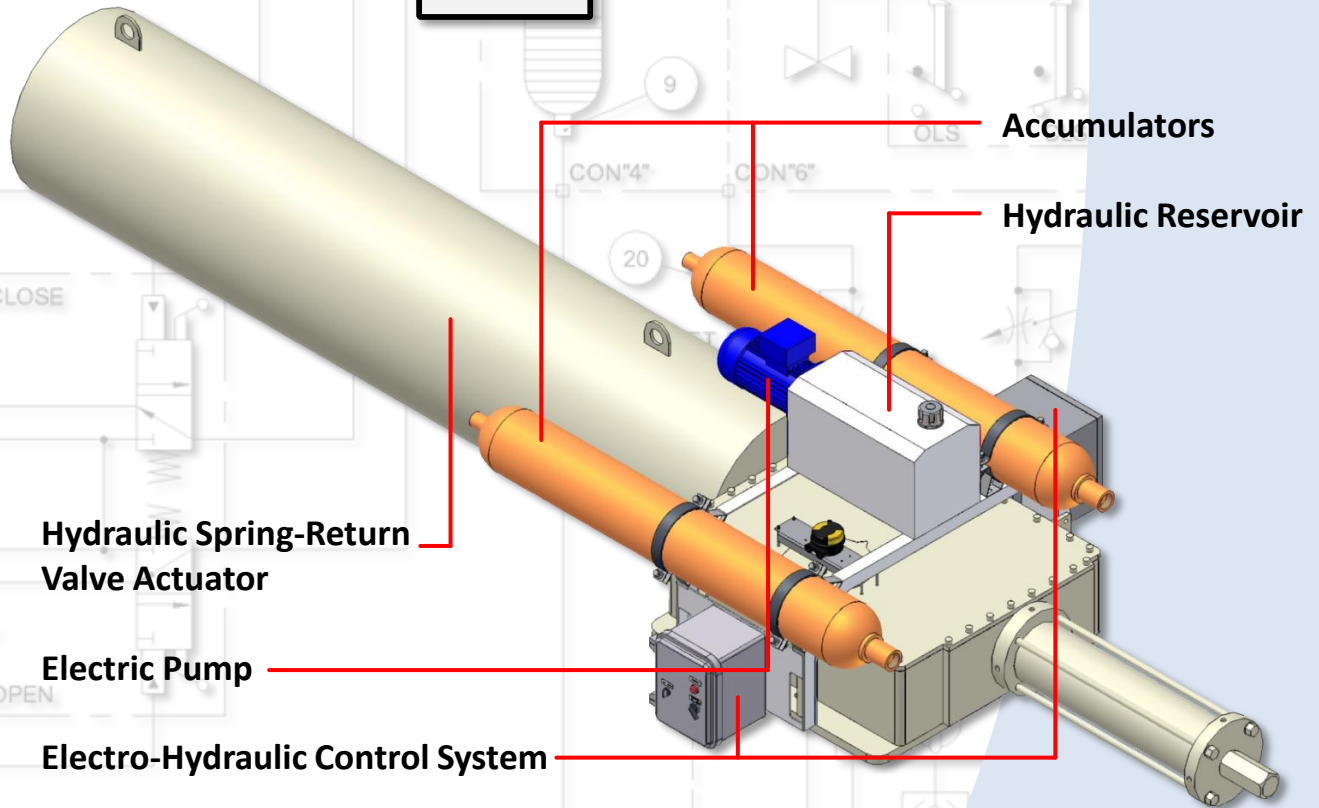
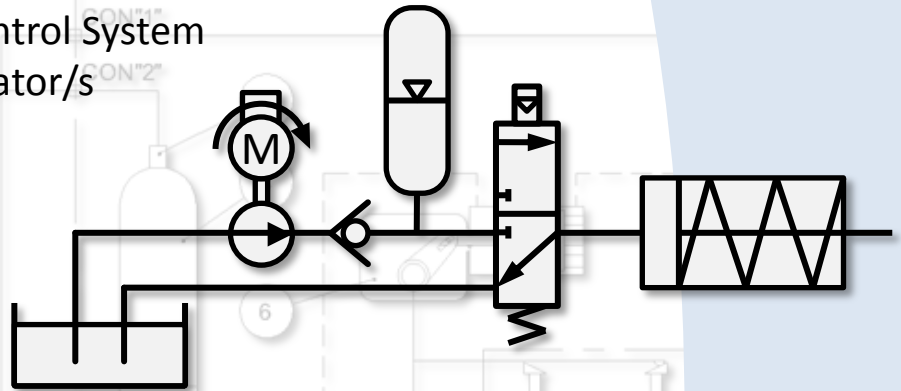
Fully customizable systems are available for practically any application and environment; however, common ones include:

- Partial valve stroking
- Onshore and offshore ESD valves
- Wellhead choke valve positioning
- Control & globe valve positioning
- Water reservoir level systems
- Suction and discharge pump metering stations
- Gas pipeline linebreak shutoff systems
- Ballast systems for FPSOs
- Refinery fire control systems
- Tanker loading/offloading facilities



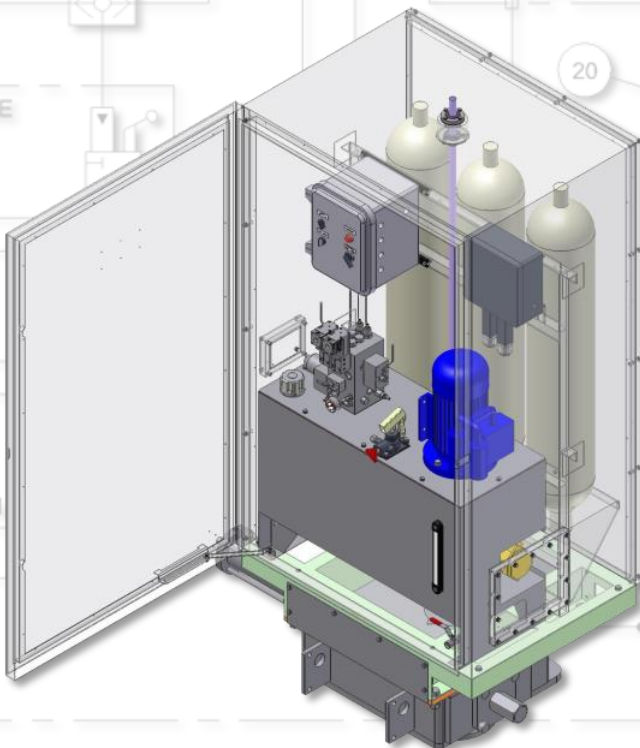
Paladon's Self-Contained Electro-Hydraulic Control Systems are integrally mounted to the actuator, and typically consist of the following basic system components:

- Non-Pressurized Hydraulic Reservoir
- Electric Pump/s
- Hydraulic Accumulator/s
- Electro-Hydraulic Control System
- Hydraulic Valve Actuator/s



KEY FEATURES & OPTIONS

- On/off and modulating operation
- Partial valve stroking
- Compatible with biodegradable fluids
- Compact design
- Direct acting zero leakage solenoid valve for proportional control with accuracy and fast response
- Manifold construction to eliminate pipework and increase system reliability and ruggedness
- Precise valve positioning capabilities using unique TVC Hydraulic Positioner
- Manual override
- Hydraulic accumulators to provide rapid valve operation and back-up valve control on loss of main power supply source
- Systems flushed to NAS1638 Class 8 as standard, NAS1638 Class 6 available
- Full diagnostic capabilities and communication with all industry standard protocols



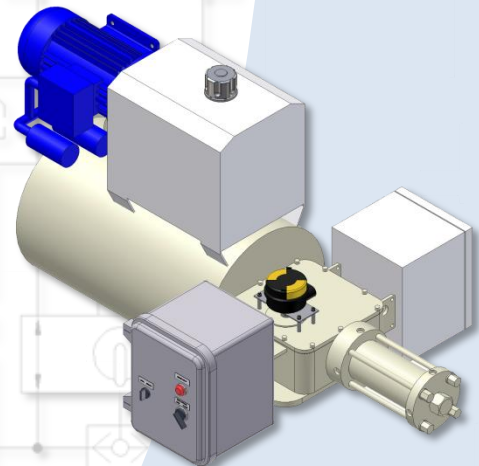
OPERATING RANGES

- **Electrical Power Supplies**
 - ▶ 24VDC
 - ▶ 115/220 VAC, 50/60 Hz, Single Phase
 - ▶ 380/415 VAC, 50/60 Hz, Three Phase
- **Hazardous Area Certification**
 - ▶ ATEX Zones 1 and 2
- **Hydraulic Pressure Output**
 - ▶ 210 to 350 Barg
- **Ambient Operating Temperature**
 - ▶ -60 to +60 C
- **Actuator Output**
 - ▶ 200 to 500,000 Nm
 - ▶ Up to 222,000 N



DIAGNOSTICS

- Pump Running Operational & Standby
- Pump Fault Operational & Standby
- High Oil Pressure
- Low Oil Pressure
- Low Low Oil Pressure
- Low Oil Level
- High Oil Temperature
- Filter Condition



The TVC Hydraulic Positioner is designed specifically to provide precise positional control of hydraulic actuators with on-off or proportional solenoid valves. The TVC can accept positional feedback from a three wire potentiometer or a position transducer with a current output. Key features include:

Basic System

- Zone 1 / 2 Infrared communication interface using an Exia keypad
- Large graphics LCD with comprehensive status and data display
- Three way galvanic isolation – command in, actual position out and power supply
- Selectable sinking or sourcing actual position 4-20mA output
- Local / remote configuration enable input and open drain status output
- Selectable solenoid drive sense for failsafe operation
- Selectable default operation on command signal/feedback signal break
- ESD solenoid output - 24VDC open drain
- Fault output - 24VDC open drain
- Hydraulic pump drive controlled by demand or external pressure sensors
- External fault contact monitoring
- Selectable interlock between ESD and fault outputs
- Stepping mode with adjustable ON and OFF times
- Low power - normal operation less than 2W plus solenoids

Enhanced System

- HART communication channel on re-transmitted actual position signal
- Foundation Fieldbus interface
- 3 analog inputs for hydraulic system monitoring and condition monitoring
- Performance logging with USB download
- 2.5A proportional solenoid drive with PID control
- Partial stroke valve testing with logging

- **PN & HY-Series Scotch-Yoke Actuators**

PN & HY-Series actuators are high performance pneumatic and hydraulic scotch-yoke actuators designed to operate any quarter-turn mechanism in both double-acting and spring-return configurations.

- **PNL & HYL-Series Linear Actuators**

PNL & HYL-Series are high performance pneumatic and hydraulic actuators designed to operate any linear valve or mechanism in both double-acting and spring-return configurations.

- **Positional Control Systems**

Paladon's Electro-Hydraulic Positional Control Systems are suitable for the accurate positioning of Choke, Control, Globe or Ball Valves; either for continual modulation or stepping functions.

- **GH-Series Gas-over-Oil and DG-Series Direct Gas Actuators**

GH-Series and DG-Series actuators are typically used in gas pipeline applications. For GH-Series, the hydraulic supply pressure is provided by the pipeline gas pressure acting on oil within the tanks in the control system. For DG-Series, the pipeline gas is used directly to power the actuator.

- **Subsea Actuators**

The robust and flexible design does not require pressure compensation for depths down to 200m. For deeper applications, a pressure compensated design is available for depths down to 2,000m.

- **Autonomous Shutdown Valve (ASV)**

The ASV is designed to be applied to pipeline loading systems, Calm Buoy, SLS and similar systems. The ASV provides full automatic fail-safe operation of subsea valves to isolate pipelines from flexible risers.

CONTACT DETAILS



■ Paladon Systems Ltd

Ferro Fields, Brixworth, Northampton, NN6 9UA, England

Tel: +44 (0)1604 880700 Fax: +44 (0)1604 882424

info@paladonsystems.com

■ Paladon Systems Ltd

Howemoss Drive, Kirkhill Industrial Estate, Dyce, Aberdeen,
AB21 0GL, Scotland

Tel: +44 (0)1224 772442 Fax: +44 (0)1224 772868

info.scotland@paladonsystems.com

■ Paladon Italia

Via Barbieri, 24, 27040 Pinarolo Po, PV, Italy

Tel: +39 0383 878524 Fax: +39 0383 878042

info.italia@paladonsystems.com

■ Paladon SDT

121352 Davydkovskaya Str. 12/3. Moscow, The Russian Federation

Tel/Fax: +7 495 735 28 07 (08) (09)

info.russianfederation@paladonsystems.com

■ Paladon Systems Ltd

Asia Pacific Region

Lot 3-4, Jalan Tanjung Keramat 26/35, Seksyen 26,
40400 Shah Alam, Selangor, Malaysia

Tel: +603 5102 5063 Fax: +603 5102 5100 Mobile: +6012 311 3247

info.asiapacific@paladonsystems.com

■ www.paladonsystems.com

■ info@paladonsystems.com

