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# Offshore

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# Reliable Flow Control for Mainstream and Ancillary Offshore Applications



Improved HVAC reliability  
for CLOV FPSO.

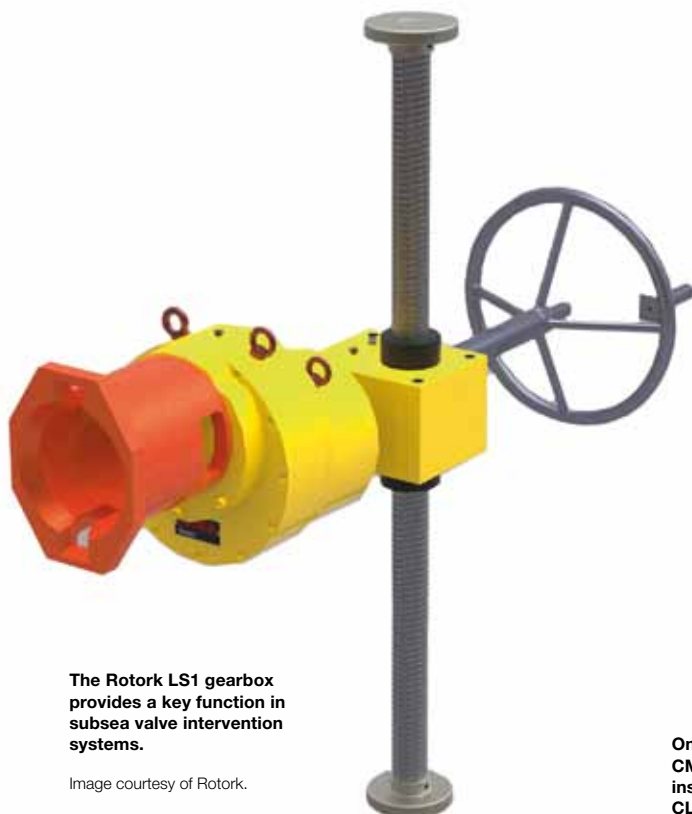
Photo courtesy of Total

ROTORK FLOW CONTROL PRODUCTS ARE USED IN OIL AND GAS APPLICATIONS THROUGHOUT VIRTUALLY ALL UPSTREAM, MIDSTREAM and downstream activities, ranging from offshore production facilities through refining and processing to transportation of finished products via pipelines or vessels.

They deliver reliable and accurate performance, operating valves and controlling the flow in every area, often at high pressures and in difficult environments where safety is paramount. In addition to mainstream duties, the scope of Rotork's experience and range of products also delivers solutions in ancillary offshore applications. Two recent examples of this are the improved HVAC reliability on an FPSO and an innovative gearbox for vital subsea maintenance.

## Improved HVAC Reliability on Giant FPSO

The giant CLOV FPSO vessel is the hub for 34 subsea wells in four deep offshore oilfields, Cravo, Lirio, Orquidea and Violeta, operated by Total off the coast of Angola. The vessel relies on its HVAC system not only for the comfort and safety of crewmembers but also to provide a stable operating environment for programmable logic controllers (PLC) and associated critical control equipment. The application demands precise accuracy to maintain air quality and ventilation in the many enclosed cabins, offices, sub-stations and PLC rooms contained inside the massive vessel. The temperature has to be accurately controlled and the air supply has to be reliable. When actuators were needed on the HVAC air-handling units and cooling-water supply, Rotork modulating CMA and CVA electric process control valve actuators were selected for their proven field performance. Working with the CLOV HVAC maintenance team, engineers from Rotork South Africa installed and commissioned the new actuators, which were supplied in accordance with the Total CLOV marine specification. Operating from the existing 4-20mA control signal, the actuators provide precise and responsive valve positional control and feedback, with repeatability and resolution at less than 0.1%. Following the installation, CLOV has reported that the HVAC system is operating at 100% efficiency and there have been no failures.



**The Rotork LS1 gearbox provides a key function in subsea valve intervention systems.**

Image courtesy of Rotork.

**One of the Rotork CMA actuators installed on the CLOV HVAC system.**

## Innovative Gearbox for Vital Subsea Maintenance

In the UK, Rotork's Gears division has designed and manufactured an innovative gearbox to provide a key function in subsea valve intervention systems used for diver-less applications. The LS1 (Linear Subsea Model 1) gearbox is currently installed in a Choke Insert Running Tool (CIRT) that is used for the maintenance of retrievable choke valves in shallow and deep-water subsea locations. In this demanding application, a CIRT is lowered onto the top of the valve and attached to the choke valve insert, which is then lifted out of the valve and brought to the surface inside the CIRT. A second CIRT containing the replacement valve insert is then lowered onto the valve and the insert is lowered into the valve. The key duty in this process is the lifting and lowering of the valve insert and this is the function performed by the LS1 gearbox. It is designed as a linear screw jack system and can be operated either by an ROV or manually by a diver via a hand wheel. Reliability is vital for this function so the gearbox design incorporates pressure compensation for subsea applications at any depth. In spite of its small dimensions, the LS1 gearbox has a maximum lifting capacity of five tonnes. The screw jack system can also be configured horizontally, providing increased flexibility to suit other subsea applications. The LS1 design allows an increase in the number of input turns when used with an ROV.

**i. [www.rotork.com](http://www.rotork.com)**



Photo courtesy of Rotork.