

### Offshore Hydraulic Control System

#### Key Objectives

- Supply hydraulic pressure to the Blowout Preventer (BOP) during drilling and workover operations to ensure the operator does not lose control of the well
- Supply hydraulic pressure to valves on wellheads to control production rate
- Supply hydraulic pressure to the subsurface safety valves during production to ensure the well is closed off in case of an emergency

#### Hydraulic Power Unit (HPU)

An HPU is a critical element of the topside control system for FPSOs (Floating Production Storage and Offloading), drilling platforms and workover platforms. The HPU can be a stand-alone unit or integrated into the wellhead control panel on production platforms and FPSOs. Whether the operator is drilling or the well is producing oil and gas, the HPU is supplying the pressure to remotely control the safety devices and valves that control the well.

HPUs typically utilize electric or diesel engines to power the hydraulic pumps that supply pressure to the wellheads, BOPs and subsurface safety valves. The hydraulic pressure from the HPU is communicated through a regulator to an umbilical which connects the HPU to the subsea equipment.

A typical HPU arrangement includes:

- Transfer pump (fill and recirculate)
- Pumps (electric/pneumatic diesel)
- Separate supply and return reservoirs
- Accumulator banks
- ESD valves (electric/pneumatic)

Different types of HPUs include:

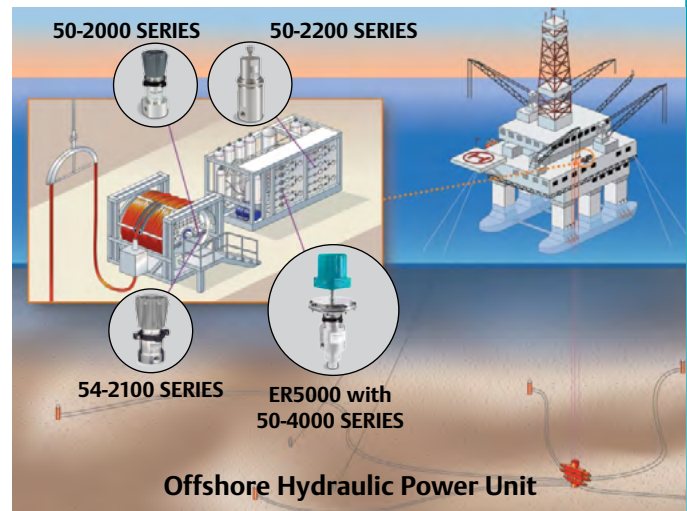
- Production - used continuously during well production. Once umbilicals are pressurized, few adjustments are required.
- Intervention Workover Control System (IWOC) - intermittently used at the completion phase and when there is a need to conduct work on a well. Involves harsher environments than production HPUs and requires more pressure adjustments.
- Flushing - used to flush equipment and clean the fluid.
- Test - used for pressure testing equipment and components, possibly requiring higher pressures.
- BOP - used during drilling and workover operations.

#### Customer Pain

Loss of operational efficiency due to extended umbilical pressurization time, complex startup procedures and premature regulator failures are major concerns for offshore oil and gas companies around the world. In addition to loss of operational efficiency, oil and gas companies identify the maintenance costs associated with regulator failures during start up of production HPUs or BOP/IWOC operations as exorbitant. These issues have only intensified as oil and gas companies push to deeper water and utilize longer subsea tiebacks.

## TESCOM Solution

- TESCOM's offering includes products that can reduce umbilical pressurization time, simplify startup procedures and reduce maintenance costs by significantly extending the life of the regulator.
- TESCOM regulators are specifically designed for extended life operation in high-pressure water-based and hydraulic fluid applications and hazardous environments. Hardened stainless steel seat and stem provide excellent wear resistance in harsh applications. Its robust design provides high reliability and extended service life to reduce downtime and maintenance costs.
- TESCOM offers automated set point control by connecting the regulator to the HPU control system with the ER5000. This system provides accurate and repeatable control that can not be matched with standard manual control.



## Components

- TESCOM 50-2000 & 50-2200 Series Pressure Reducing Regulators (Water-Glycol)
- TESCOM 50-4000 Series Pressure Reducing Regulator (Water-Glycol) Integrated Bypass
- TESCOM 54-2100 Series Back Pressure Regulator (Mineral Oil)
- TESCOM ER5000 Series Electropneumatic Controller



## Applications for HPUs

- Direct Hydraulic Control Systems
- IWOCs
- Flushing
- Test

## Resources

[50-2000 Series Datasheet](#)    [50-4000 Series Datasheet](#)  
[50-2200 Series Datasheet](#)    [54-2100 Series Datasheet](#)  
[ER5000 Series Datasheet](#)

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