



Auto Flow Valve's Solids Management System Prevents PCP Failure

Zenith™ PCP-AFV eliminates pump blockage, damage and failure issues caused by descending debris; avoiding downtime, lost production and equipment replacement costs.

Challenge

A PCP-produced well offshore Australia was experiencing regular issues in restarting the pump following routine shut downs to allow for reservoir pressure build up.

On pump shut down, descending debris was settling on top of the rotor causing high torque when restarting, rendering the rotor unable to spin resulting in complete loss of production. The PCP needed to be pulled from the well in order to clean out the damaging debris and resume production.

High torque was placing the pump at risk of parted rod or pump failure.

Solids entering the pump could also lead to elastomer damage and the resulting costly requirement to replace the PCP stator.

Solution

GE's new-technology Zenith Auto Flow Valve for PCP completions (PCP-AFV) was installed above the pump delivering reliable protection from descending sand and debris. The valve's annular flow ports automatically and instantly open when the pump is switched off, allowing the tubing column to drain directly into the annulus thus avoiding debris build up and defending against pump damage



CHALLENGE

Debris descending onto PCP following shut downs.

Pump frequently unable to restart due to blockage.

PCP requires pulling in order to be released and resume production.



SOLUTION

GE's Zenith Auto Flow Valves (AFV) are engineered to deliver reliable protection of ESP and PCP equipment by effectively preventing sand and debris descending into the pump on shut-down.



BENEFITS

Costly workovers and equipment replacements can be avoided with proactive pump protection using the Zenith AFV; preventing blockages and safeguarding from elastomer damage caused by harmful solids entering the pump.

Benefits

Following installation of the PCP-AFV, the well was shut down and restarted a number of times without issue and continues to operate reliably, saving the operator significant lost time, production, pulling equipment hire and pump replacement costs.

“Downtime, and the cost of deferred production whilst awaiting hoist attendance, and the time required to pull, clean, and re-run the entire completion adds significantly to an approximate \$20,000 cost for the hoist itself.

In addition, replacing a damaged PCP stator can add \$Ks to operator costs.”

Operation

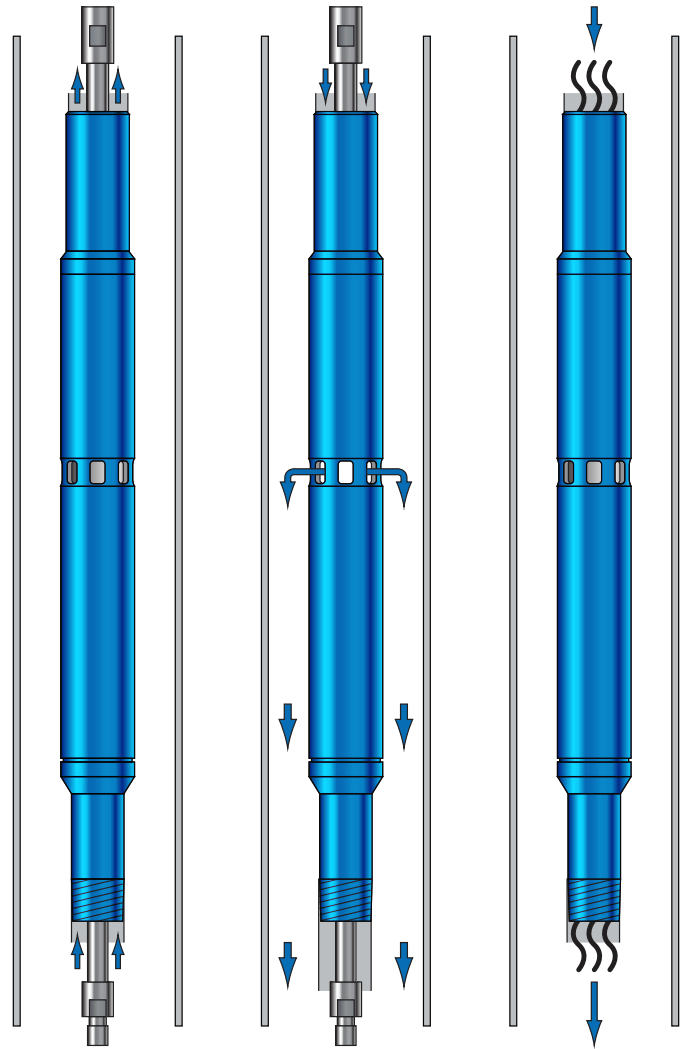


Fig. 1: The valve is installed above the pump stator allowing passage of well fluids upward through production tubing to surface while the pump is running.

Fig. 2: On pump shut-down, the valve immediately shuts off the flow path down through the pump, opening a series of annular ports to divert the fluid column from upper production tubing into the annulus along with any solids, preventing problematic build-up of production solids on top of the pump rotor / stator assembly.

Backflush operations

The re-engineered Zenith PCP-TDV with backflush capability is designed to allow the pump rotor to be retracted and reset without running out of hole.

Fig. 3: Backflush operations may be carried out by simply retracting the rotor far enough to clear the stator then flushing fluids and chemicals down the production tubing and through the stator. On completion of backflush operations, the rotor is run back to depth in the PCP stator. Pump operation can then recommence.