

ZEiTECS Shuttle System Saves USD 95,000 and 5 Days of Deferred Production to Replace ESP

After 520 days in the well, the REDA ESP system was replaced rapidly with an integrated coiled tubing operation rather than a workover rig, Ecuador

CHALLENGE

Minimize workover cost, deferred production, and HSE risks when replacing an ESP.

SOLUTION

Use coiled tubing instead of conventional jointed tubing and a workover rig to run the new REDA* ESP system into the installed ZEiTECS Shuttle* rigless ESP replacement system.

RESULTS

- Completed the replacement in 47 hours compared with at least 7 days for a conventional replacement, saving approximately USD 95,000 in workover costs and eliminating more than 5 days of deferred production.
- Minimized risk profile because the operation required only 12 people instead of the 40 required for a conventional workover rig.



ESP runs 520 days before needing replacement

After experiencing several third party ESP failures in a field in 2015, an operator asked Schlumberger for help to reduce ESP-related workover frequency and duration and thus reduce deferred production. In Ecuador at the time, it was common for rigs and hoists to take 7 to 10 days to respond to an ESP failure and an additional 4 days to pull and replace the ESP on jointed tubing. In addition to the rig spread costs, the operator would defer production for each day the ESP was not operational.

To maximize the ESP run life and thereby reduce the frequency of replacements, Schlumberger recommended a fit-for-purpose REDA 450/400 series ESP system. In addition, to reduce the time and costs for subsequent replacements, Schlumberger installed the new ESP as part of a ZEiTECS Shuttle rigless ESP replacement system.

The new engineered ESP ran flawlessly for 520 days, exceeding the expected run life for the field. The operator asked Schlumberger to replace it—without a rig—and thus demonstrate the value of the ZEiTECS Shuttle system installed earlier.



The ZEiTECS Shuttle system enabled rapid ESP replacement without a workover rig, reducing costs and eliminating more than 5 days of deferred production.

ESP docking station technology speeds up replacements

The ZEiTECS Shuttle system consists of a downhole docking station and retrievable ESP string. The docking station is attached to the end of the tubing. Inside the docking station are three connectors and landing shoulders that support the weight of the ESP and its reactive forces and prevent the motor from counter-rotating on startup. The retrievable ESP string is made up of a motor connector, standard ESP assembly, and a bypass valve. The motor connector contains female wet connectors and has corresponding parts to orient and connect the ESP to the docking station, intake and discharge, as well as a bypass valve to allow fluid to drain on system retrieval.

Integrated, rigless operation saves time and costs

Schlumberger followed a systematic, integrated approach to plan the intervention with a coiled tubing unit instead of a conventional workover rig. The complete rigless solution included a coiled tubing unit, an ESP stinger, and an ESP retrieval tool.

Coiled tubing was rigged up to the well to pull the old ESP string through the tubing without a workover rig. The new ESP was subsequently run into the well using the same tool. When the ESP reached the ZEiTECS Shuttle system's docking station, the motor connector automatically orientated and connected, providing the electrical source to enable powering up.

The operation was completed in 47 hours with no operational or HSE issues and only 12 people involved rather than the 40 typically required to replace an ESP with a workover rig. In addition to saving approximately USD 95,000 by eliminating a rig, the customer avoided at least 5 days of deferred production.

slb.com/zeitecs