

Colibri Cable-Deployed Rigless ESP Reduced Installation Costs by 70%, Achieved Payback in Less Than a Year

CHALLENGE

An operator needed to find a more cost-effective solution than gas lift for producing a brownfield well with marginal reserves.

SOLUTION

Deploy a 2.17-in. Colibri ESP to economically produce the well

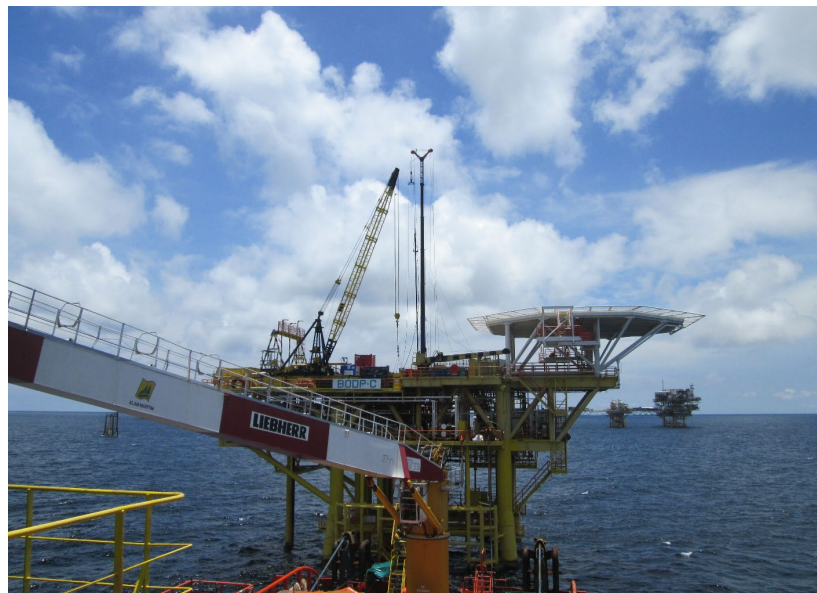
RESULTS

- Reduced costs by 70% compared to conventional tubing-deployed ESP workover and installation
- Achieved total project payback in less than a year
- Increased reserves by more than 200,000 stock tank barrels of oil
- Increased liquid rate by 100% with 200 BOPD produced

Extending the Economic Life of Brownfield Wells

An offshore Malaysia well that was originally completed with a conventional electrical submersible pumping (ESP) system stopped producing after 7 years due to a downhole electrical short. Replacing the ESP would require a workover to remove the failed unit and install a new one. At an estimated 40 million MR (\$9.8 million USD), ESP replacement was not economically feasible on this maturing well. In brownfield wells like this one, the operator had used gas lift in the past. But field-wide poor gas lift performance caused by high water cut and environmental limitations had forced the operator to look for a more effective artificial lift solution.

The operator learned of the [Colibri cable-deployed rigless ESP system](#) and ran a successful pilot test in 2017. They monitored well performance for more than a year. They reported the Colibri system could save 70–86% on installation compared to the rig costs for installing a conventional ESP. With the clear cost advantages over conventional ESPs and performance advantages over gas lift, Colibri technology became a key component in the operator's long-term and short-term cost cutting plans.



The Colibri rigless ESP requires no rig for installation, deployment, or retrieval. It is the only ESP technology in the industry that does not involve rig operations at any stage of implementation.

Malaysia

Given what the operator had learned in the pilot test, they chose to install a Colibri rigless ESP system in their down offshore well. Relatively low production rates and well conditions made the well a good candidate for installing a slim 2.17-in. (55-mm) Colibri ESP to capture the remaining marginal reserves.

Colibri ESP Installation and Results

The well with the failed conventional ESP was located on an unmanned offshore platform. Well preparation turned out to be more challenging than the installation itself. Since Colibri systems require only a modified slickline unit for deployment, retrieval, and replacement, the small footprint on the unmanned platform provided plenty of space for deployment. After 15 days of well preparation by the operator, the Colibri system was installed and commissioned in just 5 days.

The 2.17-in. Colibri system saved the operator over 70% on installation costs compared to a conventional ESP. It improved the liquid production rate by 100% with a registered oil gain of 200 BOPD (31.80 m³/d). After 1.5 years of production, the operator reported uptime for the Colibri ESP at 80%, which they deemed reasonable and acceptable given the job requirements and well conditions.

The Colibri system met the operator's goal of restoring production with a low-cost alternative to gas lift. It extended the economic life of the marginal well and improved asset value through flaring reduction and increased lifting efficiency.

The system paid for itself in less than a year and is responsible for adding 200,000 stock tank barrels of reserves.

About the Technology

The Colibri rigless ESP system requires only reinforced carrying cable to be deployed and retrieved. All operations can be conducted on modified slickline equipment.

The Colibri system is entirely cable deployed and never requires a rig for installation, replacement, or retrieval. It is the only ESP technology in the industry that does not involve rig operations at any stage of implementation.

The system uses permanent magnet motors and high-efficiency pumps to reduce ongoing electrical consumption by 25% or more compared to conventional ESPs. It delivers all the lifting power of a larger, longer submersible pump in a shorter, slimmer design. It is easy to transport and easy to install.

Saving both time and money, cable deployment enables operators to resume production quickly without having to kill the well.

For further reading about this technology and the installations discussed in this case study, refer to [SPE-194390-MS](#) and [IPTS-19474-MS](#).



With operator-estimated savings of 70–86% over the cost to workover and install a conventional ESP, the Colibri system makes ESP deployment economically feasible in many marginal, brownfield, and other wells where ESPs have not previously been a viable option.