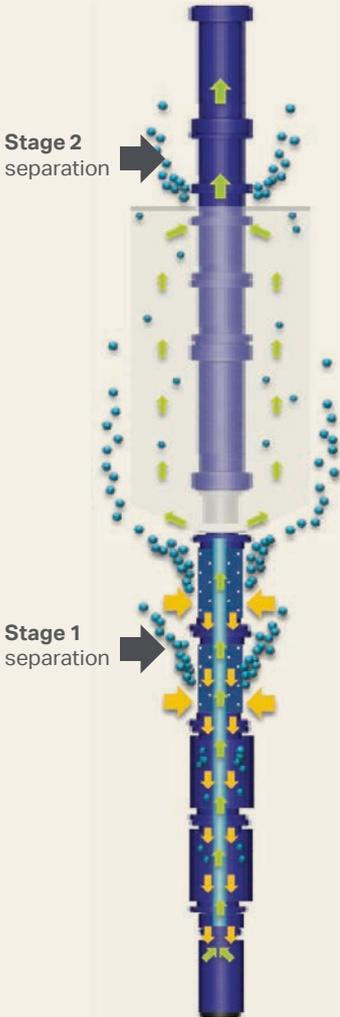


Uneconomic reactive gassy well returned back to production

Encapsulated ESP with double stage gas separation



An operator in Colombia wanted to reactivate a gassy, depleted well in a field where artificial lift methods were deemed unsuitable due to high Gas to Liquid Ratio (GLR). Alkhorayef designed a shrouded ESP with two stages of gas separation that simultaneously increased gas and oil production.

The innovative, patent pending design incorporated equipment used in rod lift applications, utilizing a gas anchor and a series of changing inner diameters to create a venturi effect. Larger bubbles of free gas are separated to the annulus at this first stage and the liquid rich stream is directed up into the shrouded ESP. Inside the shroud a SPECTRUM Vortex Gas Separator removes remaining free gas and a SPECTRUM Gas Processing Unit homogenizes and pressurizes the fluid before entering the production pump.

The produced gas travels up the annulus to surface where it is captured and converted to electrical power to meet the energy requirements of the field.

The creative application design by Alkhorayef has brought a previously uneconomic well back into production with the added bonus of using the produced gas for power generation.

The success of this pilot has encouraged the operator to propose extending the project to other wells in the field.

COLOMBIA



SOLUTION

- Production resumed from previously shut-in well
- Reduced operating costs as field powered by produced gas
- Optimized production – higher drawdown achieved, more inflow & production
- Effective motor cooling
- Good pump efficiency
- Reduced CAPEX & OPEX

BACKGROUND

- Sandstone reservoir
- Previously free flowing
- Increasing WC
- Shut-in field returned to production
- Produced gas converted to meet field electrical requirements

RESULTS

- 140 BOPD
- 700 BWPD
- 400,000 SCFD via the tubing string
- 1,600,000 SCFD via annulus