

Case Study - 4

More than 90% reduction in unwanted gas production with retrofit AICV® installation in a multi-layered formation

An oilfield located in South America produces from a multi-layered structure with API gravities that varies between 14° to 24°. Water injection has been utilized recently to maintain reservoir pressure and improve the recovery factor. Gas migration and water breakthrough have resulted in excessive production of unwanted fluids, leading to problematic well shut-ins and expensive workovers to re-establish production.

Challenges and Objectives

Cased and perforated vertical wells are drilled in this field to access more than 400 ft of net pay from several producing intervals, separated by shale. A commingled production strategy is used, where oil is recovered from 2 main formation units using artificial lift. This inherently creates a challenging production environment, as injection water and/or formation gas can unpredictably break through in any of the formation layers, impacting well performance.

Solutions

The AICV® is the only autonomous device that can shut-off and effectively manage gas and water without interventions. After a careful evaluation, the operator decided to retrofit an existing well with the AICV® technology. InflowControl worked closely with the operator to design and retrofit the well with nearly two dozen AICV® joints with premium screens using swell packers for compartmentalization.

Results

The well was brought to production and the immediate results showed a GOR reduction of 85%, which has further increased to 95% in under a year of production. The oil production returned to pre-gas breakthrough levels and has slightly increased over time with higher ESP pump frequency. The well has not required any further interventions and the ESP pump has been stable in steady conditions. The AICV® technology has not only restored stable oil production, but it has also helped the operator meeting gas-flaring quotas and reducing OPEX costs. Based on InflowControl estimations, the operator has reduced its emission levels by >17,500 ton CO₂/year, which is equivalent to the emissions per year of more than 3,800 cars.

LOCATION

South America

NUMBER OF WELLS

1

OPERATOR

Mid-size International E&P

DEPLOYMENT

Onshore

RESERVOIR

Sandstone reservoir with heterogenous layered structure separated by shales

COMPLETION

4-1/2" AICV® with premium screens and swell packers

Results

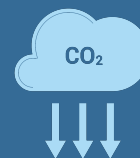


90%

Reduced gas production



Stable oil production
without well shut-ins



17,500 tpa

CO₂ reduction

