

ABSTRAK

OPTIMASI PRODUKSI CONTINNOUS GAS LIFT PADA SUMUR “AMF-29” LAPANGAN “BPP” MENGGUNAKAN SIMULATOR

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Penurunan tekanan reservoir pada sumur-sumur tua menyebabkan laju produksi minyak menurun secara signifikan. Untuk mempertahankan dan meningkatkan produksi, diperlukan metode pengangkatan buatan yang sesuai. Salah satu metode yang banyak digunakan adalah continuous gas lift (CGL) karena fleksibel, mudah diatur, dan mampu diaplikasikan pada berbagai kondisi sumur. Namun, penerapan CGL perlu dilakukan optimasi agar injeksi gas yang diberikan tidak berlebih maupun kurang sehingga produksi dapat tercapai pada kondisi optimum.

Penelitian ini dilakukan pada Sumur “AMF-29” di Lapangan BPP dengan tujuan mengoptimalkan produksi menggunakan simulasi Simulator 2021. Data yang digunakan meliputi data reservoir (tekanan statik, tekanan dasar sumur, temperatur), data produksi (laju produksi minyak, water cut, API gravity, tekanan kepala sumur), data konstruksi sumur (tubing, casing, perforasi), serta data desain existing gas lift (kedalaman katup, laju gas injeksi, tekanan injeksi, dan ukuran port). Analisis inflow dilakukan dengan metode Vogel, sementara analisis outflow menggunakan korelasi Hagedorn and Brown. Proses validasi dilakukan dengan mencocokkan titik potong antara kurva IPR dan kurva tubing pada kondisi aktual.

Hasil penelitian menunjukkan bahwa produksi fluida meningkat dari 333 BFPD menjadi 382.5 BFPD setelah dilakukan optimasi dengan menyesuaikan tekanan injeksi gas sebesar 353.8 psia dan GLR total optimum sebesar 1600 scf/stb. Peningkatan ini setara dengan 14.87% dibandingkan kondisi awal. Selain itu, optimasi juga mengurangi risiko Low Pressure Operation (LPO) dan meningkatkan efisiensi sistem gas lift. Dengan demikian, simulasi menggunakan Simulator terbukti efektif dalam menentukan parameter optimum operasi gas lift yang dapat diaplikasikan pada sumur lain dengan karakteristik serupa.

Kata kunci: *Continous gas lift*, Optimasi Produksi, GLR Optimum, IPR Vogel, Hagedorn and Brown

ABSTRACT

PRODUCTION OPTIMIZATION OF CONTINUOUS GAS LIFT ON WELL 'AMF-29' IN THE 'BPP' FIELD USING SIMULATOR

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Declining in reservoir pressure in mature wells often leads to a significant reduction in oil production rates. To sustain and enhance production, a suitable artificial lift method is required. One of the most widely applied methods is continuous gas lift (CGL) due to its flexibility, ease of operation, and applicability to various well conditions. However, the implementation of CGL requires optimization to ensure that the injected gas is neither excessive nor insufficient, so that production can be maintained at an optimum level.

This study was conducted on Well “AMF-29” in the BPP Field with the objective of optimizing production using Simulator 2021 simulation. The data employed include reservoir data (static pressure, bottomhole pressure, and temperature), production data (oil production rate, water cut, API gravity, wellhead pressure), well construction data (tubing, casing, and perforation), as well as existing gas lift design data (valve depth, gas injection rate, injection pressure, and port size). Inflow performance analysis was carried out using the Vogel method, while outflow performance was analyzed using the Duns & Ros correlation. Model validation was conducted by matching the intersection between the IPR curve and the tubing performance curve with actual well data.

The results show that the liquid production increased from 333 stb/day to 382.5 stb/day after optimization, by adjusting the injection pressure to 353.8 psia and achieving an optimum total GLR of 1600 scf/stb. This corresponds to an improvement of 14.87% compared to the initial condition. Furthermore, the optimization reduced the risk of Low Pressure Operation (LPO) and improved the efficiency of the gas lift system. Thus, simulation using Simulator proved effective in determining the optimum operating parameters of gas lift systems, which can also be applied to other wells with similar characteristics.

Keywords: Continuous Gas Lift, Production Optimization, GLR Optimization, IPR Vogel Method, Hagedorn and Brown.