

## RINGKASAN

Lapangan AD merupakan lapangan tua dengan mayoritas sumurnya menggunakan *sucker rod pump*. Hal tersebut menimbulkan permasalahan sumur, yakni akibat masalah pompa bocor, *sucker rod* aus/putus, dan masalah tubing bocor akibat friksi dengan *sucker rod*. Salah satu cara untuk menanggulangi masalah tersebut adalah dengan melakukan konversi *artificial lift* pada sumur kajian, yakni sumur KWG-022T, KWG-028, KWG-055, KWG-071, KWG-072, KWG-P04, KWG-P08, KWG-P17, KWG-P18, dan KWG-PHz3 di Lapangan AD.

Skrining *artificial lift selection* dilakukan dengan tahap evaluasi keteknikan dan tahap evaluasi keekonomian. Evaluasi keteknikan dilakukan dengan skoring setiap sumur terhadap matriks dari beberapa parameter, yakni lokasi sumur, tipe sumur, kedalaman sumur, laju produksi, *sand handling*, *paraffin handling*, *scale handling*. Persentase kesesuaian analisa keteknikan sumur terhadap masing-masing metode adalah untuk ESP sebesar 20%, PCP sebesar 60%, dan HPU sebesar 20%. Tahap evaluasi keekonomian dilakukan dengan menghitung *net revenue* proyeksi dan *profitability index (PI)*. Persentase kesesuaian analisa keekonomian untuk ESP sebesar 40%, PCP sebesar 20%, dan HPU sebesar 40%. Desain HPU yang digunakan yakni *stroke length* besar di atas 100 in dan SPM rendah di bawah 6 untuk meminimalkan friksi *sucker rod* dengan *tubing*. Pompa ESP yang digunakan yakni IND1300 dan IND400 sesuai kapasitas produksi sumur. Pompa PCP yang digunakan disesuaikan dengan laju produksi sumur, yakni PCP 400-4100 OB DE.

Hasil *runlife* pada semua sumur yang dilakukan konversi mengalami perbaikan, seperti pada ESP KWG-P08 meningkat hingga hampir 10 kali lipat dari sebelumnya. Perbaikan *runlife* terbesar pada sumur HPU KWG-055 yang naik hingga 5 kali lipat. Kenaikan *runlife* untuk sumur PCP masih belum signifikan sehingga masih perlu diobservasi lebih lanjut. Nilai *Profitability Index* seluruh sumur juga lebih dari 1 yang mengindikasikan bahwa konversi *artificial lift* ekonomis.

## ABSTRACT

AD oilfield is a brown field where the majority of wells use a sucker rod pumping unit as their artificial lift. This causes problems for the well, namely due to the problem of a leaky pump, worn out / broken sucker rod, and a leaky tubing problem due to friction with the sucker rod. One way to overcome this problem is to convert artificial lifts to the wells, there are KWG-022T, KWG-028, KWG-055, KWG-071, KWG-072, KWG-P04, KWG-P08, KWG-P17, KWG-P18, and KWG-PHz3 in the AD oilfield.

Artificial lift selection screening is carried out with an engineering evaluation stage and an economic evaluation stage. Engineering evaluation is carried out by scoring each well against a matrix of several parameters, namely well location, well type, well depth, production rate, sand handling, paraffin handling, and scale handling. The percentage of suitability of the well engineering analysis for each method is 20% for ESP, 60% for PCP, and 20% for HPU. The economic evaluation stage is carried out by calculating the projected net revenue and profitability index (PI). The percentage of conformity of economic analysis for ESP is 40%, PCP is 20%, and HPU is 40%. The HPU design used is a large stroke length above 100 in and a low SPM below 6 to minimize the friction of the sucker rod with tubing. The ESP pumps used are IND1300 and IND400 according to the well's production capacity. PCP method uses a pump that is adjusted to the well production rate, namely PCP 400-4100 OB DE.

The runlife results for all wells that were converted have improved, as in the ESP KWG-P08 it increased almost 10 times from the previous one. The biggest run-life improvement was in the HPU KWG-055 well which increased by 5 times. The increase of PCP wells runlife is still not significant so it still needs further observation. The Profitability Index value of all wells is also more than 1 which indicates that the conversion of artificial lift is economical.