

DAFTAR ISI

	Halaman
LEMBAR PENGESAHAN	iii
PERNYATAAN KEASLIAN KARYA ILMIAH	iv
HALAMAN PERSEMBAHAN	v
PRAKATA	vi
ABSTRAK	vii
ABSTRACT	viii
DAFTAR ISI.....	viii
DAFTAR GAMBAR.....	xi
DAFTAR TABEL	xii
DAFTAR LAMPIRAN.....	xiii
DAFTAR SINGKATAN DAN LAMBANG	xiv
BAB I PENDAHULUAN.....	1
1.1 Latar Belakang.....	1
1.2 Rumusan Masalah	1
1.3 Tujuan Penelitian.....	3
1.4 Batasan Penelitian	3
1.5 Lokasi Penelitian	3
1.5.1 Geologi Regional	4
1.6 Luaran Penelitian.....	5
1.7 Manfaat Penelitian.....	6
BAB II LANDASAN TEORI	7
2.1 Tinjauan Pustaka	7

DAFTAR ISI

(Lanjutan)

	Halaman
2.2. Landasan Teori	8
2.2.1 <i>Productivity Index</i> (PI).....	8
2.2.2 <i>Inflow Performance Relationship</i> (IPR)	9
2.2.3 Pengertian Pompa ESP.....	10
2.2.4 Peralatan <i>Surface</i> dan <i>Subsurface</i> Pompa ESP.....	19
2.2.5 Kelebihan dan Kelemahan Pompa ESP	32
2.2.6 Menentukan <i>Design</i> ESP.....	34
BAB III METODOLOGI PENELITIAN	43
3.1 Metodologi Penelitian	43
3.2 Tahapan Penelitian	43
BAB IV OPTIMASI KONVERSI <i>SUCKER ROD PUMP</i> (SRP) KE <i>ELECTRIC SUBMERSIBLE PUMP</i> (ESP) PADA SUMUR ST-010 DI LAPANGAN IFA	47
4.1 Data Awal dan Sejarah Sumur ST-010 di Lapangan IFA	47
4.2 Evaluasi <i>Inflow Performance Relationship</i> (IPR) Sumur ST-010	49
4.3. Laju Alir Optimum Sumur ST-010.....	52
4.4. Konversi dan Desain <i>Electric Submersible Pump</i> (ESP)	54
4.4.1 Penentuan <i>Pump Setting Depth</i> (PSD).....	54
4.4.2 Penentuan <i>Pump Intake</i> Pressure (PIP)	55
4.4.3 Penentuan <i>Total Dynamic Head</i> (TDH)	55
4.4.4 Pemilihan Pompa	56
4.4.5 Pemilihan <i>Motor</i>	60
4.4.6 Pemilihan <i>Power cable</i>	61
4.4.7 Pemilihan <i>Protector/Seal</i>	62
4.4.8 Pemilihan <i>Intake</i>	63
4.4.9 Pemilihan <i>Transformer</i>	65

DAFTAR ISI

(Lanjutan)

	Halaman
<i>4.4.10 Pemilihan Switchboard</i>	66
<i>4.4.11 Pemilihan Junction Box</i>	67
<i>4.4.12 Hasil desain ESP sumur ST-010</i>	68
<i>4.4.13. Pengaruh Konversi dari Well ST-010</i>	69
BAB V HASIL DAN PEMBAHASAN	71
5.1 Evaluasi Sumur ST-010 di lapangan IFA.....	71
5.2 Penentuan Laju Alir Optimum sumur ST-010	71
5.3 Hasil Desain ESP di Lapangan IFA	72
BAB VI KESIMPULAN DAN SARAN	74
6.1 Kesimpulan.....	74
6.2 Saran	74
DAFTAR PUSTAKA	76
LAMPIRAN	71

DAFTAR GAMBAR

Gambar.....	Halaman
1.1 Struktur Operasional Lirik Field	3
2.1 Kurva <i>Inflow Performance Relationship</i> (IPR)	10
2.2 <i>Screening Criteria Artificial lift</i>	12
2.3 <i>Electric Submersible Pump</i> (ESP)	14
2.4 <i>Pump Curve Performance</i> ESP.....	14
2.5 <i>Problem downthrust dan upthrust</i> ESP.....	17
2.6 <i>Problem Abrasi</i> ESP	18
2.7 Peralatan <i>Subsurface Electric Submersible Pump</i> (ESP).....	19
2.8 <i>Transformer</i>	20
2.9 <i>Switchboard</i>	21
2.10 <i>Variable Speed Drive</i>	22
2.11 <i>Junction Box</i>	23
2.12 Peralatan <i>Surface Electric Submersible Pump</i> (ESP)	23
2.13 <i>Impeller dan Diffuser</i>	24
2.14 Gas Separator.....	25
2.15 <i>Labyrinth Protector</i>	26
2.16 <i>Blocking fluid Protector</i>	28
2.17 <i>BagType Protector</i>	29
2.18 <i>Motor</i>	30
2.19 <i>Flat Cable Electric Submersible Pump</i> (ESP).....	31
2.20 <i>Round Cable Electric Submersible Pump</i> (ESP)	31
2.21 <i>Voltage drop</i>	41
4.1 History Production Sumur ST-010.....	48
4.2 Grafik <i>Inflow Performance Relationship</i> (IPR) Sumur ST-010.....	52
4.3 Peenentuan Laju Alir Optimum Sumur ST-010	54
4.4 Pump Performance Curve EJP-IND1000	57
4.5 Pump Performance Curve EJP-IND 750	58
4.6 Voltage drop sumur ST-010.....	65
4.7 Kenaikan Produksi Setelah Konversi Sumur ST-010.....	70

DAFTAR TABEL

Tabel.....	Halaman
4.1 Data Reservoir Sumur ST-010	48
4.2 Data Produksi Sumur ST-010.....	49
4.3 Data Completion ST-010	49
4.4 Data Fluida Sumur ST-010.....	49
4.5 Katalog Pump EJP IND-1000	59
4.6 Katalog Motor 456 <i>Series</i> EJP	61
4.7 Katalog <i>Power cable</i> EJP	62
4.8 Katalog <i>Seal/Protector</i> EJP.....	63
4.9 Katalog <i>Intake</i> EJP.....	64
4.10 Katalog <i>Transformer</i> EJP.....	66
4.11 Katalog <i>Switchboard</i> EJP.....	67
4.12 Katalog <i>Junction Box</i> EJP	68
4.13 Data Hasil Perencanaan ESP Sumur ST-010.....	68

DAFTAR LAMPIRAN

Lampiran.....	Halaman
A. Parameter <i>Design</i> ESP di Sumur ST-010.....	90

DAFTAR SINGKATAN DAN LAMBANG

SINGKATAN		SATUAN	HALAMAN
ESP	<i>Electric Submersible Pump</i>		1
SRP	<i>Sucker Rod Pump</i>		1
IPR	<i>Inflow Performance Relationship</i>		1
NPV	<i>Net Present Value</i>		3
POT	<i>Pay Out Time</i>		3
TDH	<i>Total Dynamic Head</i>	ft	5
PI	<i>Productivity Index</i>	STB/d / psi	7
VSD	<i>Variable Speed Drive</i>		20
PSD	<i>Pump Setting Depth</i>	ft	33
Gf	<i>Fluids Gradient</i>	psi/ft	34
PIP	<i>Pump Intake Pressure</i>	psi	34
WFL	<i>Working Fluid Level</i>	ft	34
FOP	<i>Fluids Over Pump</i>	ft	35
BFPD	<i>Barrel Fluid Per Day</i>		36
ID	<i>Inner Diameter</i>	in	36
SG	<i>Specific Gravity</i>		43
BOPD	<i>Barrel Oil Per Day</i>		46
SFL	<i>Static Fluid Level</i>	ft	48
WC	<i>Water cut</i>	%	46
BWPD	<i>Barrel Water Per Day</i>		49
EJP	Epsindo Jaya Pratama		55
LAMBANG			
Q _{max}	<i>Maximum Flowrate</i>	BFPD	7
Q _o	<i>Flowrate Oil</i>	BOPD	7
P _s	<i>Static Bottomhole Pressure</i>	psi	8
P _{wf}	<i>Flowing Bottomhole Pressure</i>	psi	8
Q _w	<i>Flowrate water</i>	BWPD	8
Q _t	<i>Flowrate target</i>	BFPD	35
P _b	<i>Bubble Point Pressure</i>	Psi	47