


## **LAMPIRAN**



Lampiran 2 Formulir Revisi Skripsi

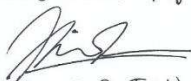
 Universitas Pembangunan Jaya	<b>FORMULIR REVISI SKRIPSI / TA</b>	SPT-I/04/SOP-06/F-05

Nama Mahasiswa : Faishal Hadi Azzahri  
 Prodi/NIM : Teknik Sipil / 2020091046  
 Judul Skripsi/TA : Kajian Stabilitas Tekanan Pada Sistem Transmisi Penyediaan Air Minum SPAM Regional Jatiluhur 1 (Studi Kasus Trase Teluk Buyung)  
 Dosen Pembimbing : 1. Dr. Tri Nugraha Adikesuma, S.T., M.T.  
 : 2.  
 Dosen Penguji : 1.  
 : 2.  
 : 3.  
 Jadwal Sidang : Tempat : Ruang Rapat FTD Hari/Tanggal: Jumat / 17 Januari 2025

Revisi yang dilakukan :

1. Konsep skema, tabel dijelaskan dengan jelas.
2. Kesimpulan dan saran porsinya dicek kembali, harus ada keterkaitannya dengan pembahasan dan analisis.
3. Sistem di lapangan juga perlu dijelaskan.
4. Skema dan skenario simulasi dijelaskan juga.

Tangerang Selatan, ...17... Januari 2025.....

  
 Dosen Penguji Dr. Tri Nugraha Adikesuma, S.T., M.T.



Universitas  
Pembangunan Jaya

FORMULIR REVISI SKRIPSI / TA

SPT-I/04/SOP-06/F-05

Nama Mahasiswa : Faishal Hadi Azzahri  
Prodi/NIM : Teknik Sipil / 2020091046  
Judul Skripsi/TA : Kajian Stabilitas Tekanan Pada Sistem Transmisi Penyediaan Air Minum SPAM Regional Jatiluhur I (Studi Kasus Trase Teluk Buyung)  
Dosen Pembimbing : 1. Dr. Tri Nugraha Adikesuma, S.T., M.T  
: 2.  
Dosen Penguji : 1.  
: 2.  
: 3.  
Jadwal Sidang : Tempat : Hari/Tanggal:

Revisi yang dilakukan :

1. Penulisan yang lebih baik utk abstrak, terutama kalimat terakhir. Jangan memakai kata "diharapkan"
2. Didalam kesimpulan, sebaiknya tidak ada kata "rekomendasi" harus di masukan dalam saran
3. Di dalam saran, hal-hal yang disarankan ~~se~~ adalah hal-hal yg sudah dibahas di bab terdahulu.

Tangerang Selatan, 17 Januari 2021

Dosen Penguji



FORMULIR REVISI SKRIPSI / TA

SPT-I/04/SOP-06/F-05

Nama Mahasiswa : Faishal Hadi Azzahri  
Prodi/NIM : Teknik Sipil / 2020091046  
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Dosen Pembimbing : 1. Dr. Tri Nugraha Adikesuma, S.T., M.T  
: 2.  
Dosen Penguji : 1.  
: 2.  
: 3.  
Jadwal Sidang : Tempat : Hari/Tanggal:

Revisi yang dilakukan :


1. Perbaiki typo, bahasa asing.
2. Banyak tabel yang kelir dihapus.
3. Banyak hal yang tidak dijelaskan dengan baik.
4. Perbaiki laporan.

Tangerang Selatan, 17 Januari 2025.

Dosen Penguji

Lampiran 3 Spesifikasi Pompa Teluk Buyung

6. TELUK BUYUNG/TARUMA JAYA DISTRIBUTION PUMP 45 KW  
SCP-150-350-HA

IEC LV Motors		Technical Data Sheet			
Project		Location			
Department/Author		Customer name		Customer ref	Item name 1.00006
Our ref.		Rev/Changed by A	Date of issue 3/20/2022	Saving ident untitled.xlsm	Pages 1(3)
No.	Definition	Data	Unit	Remarks	
1	Product	TEFC, 3-phase, squirrel cage induction motor			
2	Product code	3GBA 222 220-ADC/IN			
3	Type/Frame	M2BAX 225SMB 4			
4	Mounting	IM1001, B3(foot)			
5	Rated output P <sub>N</sub>	45	kW	dirty wash water pump	
6	Service factor	1			
7	Type of duty	S1 100%			
8	Rated voltage U <sub>N</sub>	380	VD	+10, -10 %	
9	Rated frequency f <sub>N</sub>	50	Hz	+5, -5 %	
10	Rated speed n <sub>N</sub>	1478	r/min		
11	Rated current I <sub>N</sub>	89	A		
12					
13	Starting current I <sub>s</sub> /I <sub>N</sub>	7			
14	Nominal torque T <sub>N</sub>	291	Nm		
15	Locked rotor torque T <sub>L</sub> /T <sub>N</sub>	2.2			
16	Maximum torque T <sub>max</sub> /T <sub>N</sub>	2.9			
17					
18					
Load characteristics		Load %	Current A	Efficiency %	Power factor
19	PLL determined from residual loss	100	89	93.1 / IE2	0.83
20		75	68.6	93.5	0.8
21		50	52	92.6	0.71
22					
23	Thermal withstand time hot	15	s		
24	Thermal withstand time cold	24	s		
25	Insulation class / Temperature class	F / B			
26	Ambient temperature	50	°C		
27	Altitude	1000	m a.s.l.		
28	Degree of protection	IP55			
29	Cooling system	IC411			
30	Bearing DE/NDE	6313-2Z/C3 - 6210-2Z/C3			
31	Sound pressure level (LP dB(A) 1m)	80	dB(A)	at no-load	
32	Moment of inertia J = % GD2	0.4314	kq-m2		
33	Position of terminal box	Top			
34	Direction of rotation	Bi-directional			
35	Weight of rotor	98	kg		
36	Total weight of motor	304	kg		
37	Paint shade	Epoxy Primer 206			
38	Cable size	2R x 3C x 120 sqmm			
39	Vibration	As Per IS 12075			
40	Type of start	VFD			
41	Space Heater	1 x 50 watt, 240V 50HZ			
42	RTD	6 no.s simplex			
43	BTD	2 no.s simplex			
44					
45					
Ex-motors					
46					
47					
48					
Option Variant Codes / Definition					
49	Type of start - VFD				
50	VPI to be done				
51	Efficiency and Temp rise on sinusoidal supply				
52	Motors are suitable for 30 to 100% speed variations				

6. TELUK BUYUNG/TARUMA JAYA DISTRIBUTION PUMP 45 KW  
SCP-150-350-HA

WILO Mather and Platt Pumps Pvt. Ltd



Technical DataSheet

Customer	PT. WILO PUMPS INDONESIA		Consultant	-	
Project	SPAM Bekasi		Application	-	
Pump Model	SCP-150-350-HA		Reference Curve	SCP-2-Y-5024	
Speed	Frequency	Duty Point :	Suction :	Discharge :	
1463 RPM	50 Hz	Q = 360.0 m <sup>3</sup> /hr H = 29.6 m	200 mm	150 mm	
<b>Customer Details</b>					
Address	-		Tag Number	D-P-4201 A/B/C	
Enquiry Date	22/03/2022		Reference:	-	
Offer Date	22/03/2022		Offer No	E_2022_00724	
<b>Operating Conditions</b>					
Capacity	360.0 m <sup>3</sup> /hr		Fluid	Water	
Head	29.6 m		Specific Gravity *	1	
NPSHA	10.92 m		Temperature	20 Deg C	
Suction Pressure *	1 bar		Viscosity	-	
System / Pump in System	Standalone / 1		Solid Size *	-	
Total QTY	3		Frequency	50 Hz	
<b>Performance Data @DP</b>					
Efficiency	83.02 %		NPSHR	3.51 m	
Input	34.96 kW		Shut Off Head	33 m	
Max. Power	39.93 kW		Stage	1	
Speed	1463 RPM		Impeller Dia (Approx)	314 mm	
Max allowable soft solid size	10 mm		Pump Performance Std	ISO-9906-G2B	
<b>Constructional Features</b>			<b>MOC</b>		
Type of Pump	Split Case Pump		<b>Item Description</b>	<b>Specification</b>	
Mounting	Horizontal		CASING BOTTOM HALF	C.I. (IS:210 Gr FG260)	
Impeller Type	Closed		CASING TOP HALF	C.I. (IS:210 Gr FG260)	
Bearing (DE/NDE)	-		IMPELLER	CF8(ASTM A743 Gr CF8)	
Bearing Lubrication	Grease		NECK RING	CF8(ASTM A743 Gr CF8)	
Rotation (from coupling End)	CW		SHAFT	SS ASTM A 276 CL 410	
Recommended Power (Pole)	45.0 kW (4)		SHAFT SLEEVE	SS ASTM A 276 CL 410	
Shaft Sealing	Mechanical Seal				
Flange Type	ANSI B16.1 CLASS 125 FF				
Notes :					
1.Suction Pressure more than Vapour Pressure of fluid.					
2.NPSHA>NPSHR by atleast 0.5m					
3.NPSHR at Impeller CenterLine / Inlet.					
4.Fluid is not aggressive towards pump components chemically / physically.					

Lampiran 4 Hasil Performance Test

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
08.00			84.0	2.5 BAR
09.00			84.0	2.5 BAR
10.00			84.0	2.5 BAR
11.00			84.0	2.5 BAR
12.00			84.0	2.5 BAR
13.00			84.0	2.5 BAR
14.00			84.0	2.5 BAR
15.00			84.0	2.5 BAR
16.00			84.0	2.5 BAR

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
17.00			84.0	2.5 BAR
18.00			84.0	2.5 BAR
19.00			84.0	2.5 BAR

REMARKS :

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
08.00			83.7	1.5 BAR
09.00			83.7	1.5 BAR
10.00			83.7	1.5 BAR
11.00			83.7	1.5 BAR
12.00			83.7	1.5 BAR
13.00			83.7	1.5 BAR
14.00			83.7	1.5 BAR
15.00			83.7	1.5 BAR
16.00			83.7	1.5 BAR

REMARKS :



TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
17.00			83.7	1.5 Bar
18.00			83.7	1.5 Bar
19.00			83.7	1.5 Bar
REMARKS :				

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
08.00		1480	83.3	2 Bar
09.00		1483	83.3	2 Bar
10.00		1479	83.3	2 Bar
11.00		1482	83.3	2 Bar
12.00		1483	83.3	2 Bar
13.00		1485	83.3	2 Bar
14.00		1486	83.3	2 Bar
15.00		1482	83.3	2 Bar
16.00		1481	83.3	2 Bar

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
17.00		1480	83.3	2.5 Bar
18.00		1483	83.3	2.5 Bar
19.00		1484	83.3	2.5 Bar
20.00		1485	83.3	2.5 Bar
21.00		1481	83.3	2.5 Bar
22.00		1482	83.3	2.5 Bar
23.00		1484	83.3	2.5 Bar
24.00		1481	83.3	2.5 Bar
01.00		1480	83.3	2.5 Bar

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
02.00		1480	83.3	2.5 BAR
03.00		1483	83.3	2.5 BAR
04.00		1484	83.3	2.5 BAR
05.00		1479	83.3	2.5 BAR
06.00		1478	83.3	2.5 BAR
07.00		1483	83.3	2.5 BAR

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
08.00			83.4	1.5 BAR
09.00			83.4	1.5 BAR
10.00			83.4	1.5 BAR
11.00			83.4	1.5 BAR
12.00			83.4	1.5 BAR
13.00			83.4	1.5 BAR
14.00			83.4	1.5 BAR
15.00			83.4	1.5 BAR
16.00			83.4	1.5 BAR

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
17.00		1480	83.4	1.5 bar
18.00		1476	83.3	1.5 bar
19.00		1477	83.2	1.5 bar
20.00		1475	83.5	1.6 bar
21.00		1490	83.2	1.6 bar
22.00		1500	83.1	1.6 bar
23.00		1498	82.8	1.6 bar
00.00		1495	83.1	1.6 bar
01.00		1498	83.4	1.6 bar

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
02.00		1480	83.4	1.6 bar
03.00		1479	83.3	1.6 bar
04.00		1486	83.9	1.6 bar
05.00		1483	83.4	1.6 bar
06.00		1482	83.2	1.6 bar
07.00		1490	83.1	1.6 bar

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
08.00		1390	85.8	1.5 Bar
09.00		1390	83.8	1.5 Bar
10.00		1390	83.8	1.5 Bar
11.00		1390	83.8	1.5 Bar
12.00		1390	83.8	1.5 Bar
13.00		1390	83.8	1.5 Bar
14.00		1390	83.8	1.5 Bar
15.00		1390	83.8	1.5 Bar
16.00		1390	83.8	1.5 Bar

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
17.00		1390	83.8	1.5 Bar
18.00		1390	83.8	1.5 Bar
19.00		1390	83.8	1.5 Bar
20.00		1390	83.8	1.6 BAR
21.00		1390	83.8	1.6 BAR
22.00		1390	83.8	1.6 BAR
23.00		1390	83.8	1.6 BAR
24.00		1390	82.8	1.6 BAR
01.00		1390	83.8	1.6 BAR

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
02:00		1390	83.8	1.6 BAR
03:00		1390	83.8	1.6 BAR
04:00		1390	83.8	1.6 BAR
05:00		1390	83.8	1.6 BAR
06:00		1390	83.8	1.6 BAR
07:00		1390	83.8	1.6 BAR

REMARKS :

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
08:00		1399	83.4	1.6 BAR
09:00		1399	83.4	1.6 BAR

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
08:00		1410	83.6	2.5 BAR
09:00		1410	83.6	2.5 BAR
10:00		1410	83.6	2.5 BAR
11:00		1410	83.6	2.5 BAR
12:00		1410	83.6	2.5 BAR
13:00		1410	83.6	2.5 BAR
14:00		1410	83.6	2.5 BAR
15:00		1410	83.6	2.5 BAR
16:00		1410	83.6	2.5 BAR

REMARKS :

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
17.00		1410	83.6	2.5 BAR
18.00		1410	83.6	2.5 BAR
19.00		1410	83.6	2.5 BAR
20.00		1410	83.6	2.5 BAR
21.00		1410	83.6	2.5 BAR
22.00		1410	83.6	2.5 BAR
23.00		1410	83.6	2.5 BAR
24.00		1410	83.6	2.5 BAR
25.00		1410	83.6	2.5 BAR

REMARKS :

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
01.00		1410	83.6	2.5 BAR
02.00		1410	83.6	2.5 BAR
03.00		1410	83.6	2.5 BAR
04.00		1410	83.6	2.5 BAR
05.00		1410	83.6	2.5 BAR
06.00		1410	83.6	2.5 BAR
07.00		1410	83.6	2.5 BAR

REMARKS :

TIME	MINUTE	SPEED (rpm)	NOISE (dB)	Pressure Indicator Discharge
				2.5 BAR
				2.5 BAR

REMARKS :

Lampiran 5 Dokumentasi Survey Pipa Transmisi



Lampiran 6 Hasil Olahan Data *Performance Test*

7 Desember 2024							
Pompa 4201 B				Pompa 4201 C			
Time	Speed (rpm)	Noise (dB)	Pressure Indicator Discharge	Time	Speed (rpm)	Noise (dB)	Pressure Indicator Discharge
08:00		83.7	1.5 Bar	08:00		84.0	2.5 Bar
09:00		83.7	1.5 Bar	09:00		84.0	2.5 Bar
10:00		83.7	1.5 Bar	10:00		84.0	2.5 Bar
11:00		83.7	1.5 Bar	11:00		84.0	2.5 Bar
12:00		83.7	1.5 Bar	12:00		84.0	2.5 Bar
13:00		83.7	1.5 Bar	13:00		84.0	2.5 Bar
14:00		83.7	1.5 Bar	14:00		84.0	2.5 Bar
15:00		83.7	1.5 Bar	15:00		84.0	2.5 Bar
16:00		83.7	1.5 Bar	16:00		84.0	2.5 Bar
17:00		83.7	1.5 Bar	17:00		84.0	2.5 Bar
18:00		83.7	1.5 Bar	18:00		84.0	2.5 Bar
19:00		83.7	1.5 Bar	19:00		84.0	2.5 Bar

8 Desember 2024							
Pompa 4201 B				Pompa 4201 C			
Time	Speed (rpm)	Noise (dB)	Pressure Indicator Discharge	Time	Speed (rpm)	Noise (dB)	Pressure Indicator Discharge
08:00		83.4	1.5 Bar	08:00	1480	83.3	2 Bar
09:00		83.4	1.5 Bar	09:00	1483	83.3	2 Bar
10:00		83.4	1.5 Bar	10:00	1479	83.3	2 Bar
11:00		83.4	1.5 Bar	11:00	1482	83.3	2 Bar
12:00		83.4	1.5 Bar	12:00	1483	83.3	2 Bar
13:00		83.4	1.5 Bar	13:00	1485	83.3	2 Bar
14:00		83.4	1.5 Bar	14:00	1486	83.3	2 Bar
15:00		83.4	1.5 Bar	15:00	1482	83.3	2 Bar
16:00		83.4	1.5 Bar	16:00	1481	83.3	2 Bar
17:00	1480	83.4	1.5 Bar	17:00	1480	83.3	2 Bar
18:00	1476	83.3	1.5 Bar	18:00	1483	83.3	2 Bar
19:00	1477	83.2	1.5 Bar	19:00	1484	83.3	2 Bar
20:00	1475	83.5	1.6 Bar	20:00	1485	83.3	2.5 Bar
21:00	1490	83.2	1.6 Bar	21:00	1481	83.3	2.5 Bar
22:00	1500	83.1	1.6 Bar	22:00	1482	83.3	2.5 Bar

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**8 Desember 2024**

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<b>Pompa 4201 B</b>				<b>Pompa 4201 C</b>			
<b>Time</b>	<b>Speed (rpm)</b>	<b>Noise (dB)</b>	<b>Pressure Indicator Discharge</b>	<b>Time</b>	<b>Speed (rpm)</b>	<b>Noise (dB)</b>	<b>Pressure Indicator Discharge</b>
23:00	1498	82.8	1.6 Bar	23:00	1484	83.3	2.5 Bar
00:00	1495	83.1	1.6 Bar	00:00	1481	83.3	2.5 Bar
01:00	1498	83.4	1.6 Bar	01:00	1480	83.3	2.5 Bar
02:00	1480	83.4	1.6 Bar	02:00	1480	83.3	2.5 Bar
03:00	1479	83.3	1.6 Bar	03:00	1483	83.3	2.5 Bar
04:00	1480	83.9	1.6 Bar	04:00	1484	83.3	2.5 Bar
05:00	1483	84.4	1.6 Bar	05:00	1479	83.3	2.5 Bar
06:00	1482	83.2	1.6 Bar	06:00	1478	83.3	2.5 Bar
07:00	1490	83.1	1.6 Bar	07:00	1483	83.3	2.5 Bar

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**9 Desember 2024**

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<b>Pompa 4201 B</b>				<b>Pompa 4201 C</b>			
<b>Time</b>	<b>Speed (rpm)</b>	<b>Noise (dB)</b>	<b>Pressure Indicator Discharge</b>	<b>Time</b>	<b>Speed (rpm)</b>	<b>Noise (dB)</b>	<b>Pressure Indicator Discharge</b>
08:00	1390	83.8	1.5 Bar	08:00	1410	83.6	2.5 Bar
09:00	1390	83.8	1.5 Bar	09:00	1410	83.6	2.5 Bar
10:00	1390	83.8	1.5 Bar	10:00	1410	83.6	2.5 Bar
11:00	1390	83.8	1.5 Bar	11:00	1410	83.6	2.5 Bar
12:00	1390	83.8	1.5 Bar	12:00	1410	83.6	2.5 Bar
13:00	1390	83.8	1.5 Bar	13:00	1410	83.6	2.5 Bar
14:00	1390	83.8	1.5 Bar	14:00	1410	83.6	2.5 Bar
15:00	1390	83.8	1.5 Bar	15:00	1410	83.6	2.5 Bar
16:00	1390	83.8	1.5 Bar	16:00	1410	83.6	2.5 Bar
17:00	1390	83.8	1.5 Bar	17:00	1410	83.6	2.5 Bar
18:00	1390	83.8	1.5 Bar	18:00	1410	83.6	2.5 Bar
19:00	1390	83.8	1.5 Bar	19:00	1410	83.6	2.5 Bar
20:00	1390	83.8	1.6 Bar	20:00	1410	83.6	2.5 Bar
21:00	1390	83.8	1.6 Bar	21:00	1410	83.6	2.5 Bar
22:00	1390	83.8	1.6 Bar	22:00	1410	83.6	2.5 Bar
23:00	1390	83.8	1.6 Bar	23:00	1410	83.6	2.5 Bar
00:00	1390	83.8	1.6 Bar	00:00	1410	83.6	2.5 Bar
01:00	1390	83.8	1.6 Bar	01:00	1410	83.6	2.5 Bar
02:00	1390	83.8	1.6 Bar	02:00	1410	83.6	2.5 Bar
03:00	1390	83.8	1.6 Bar	03:00	1410	83.6	2.5 Bar
04:00	1390	83.8	1.6 Bar	04:00	1410	83.6	2.5 Bar



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**9 Desember 2024**

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<b>Pompa 4201 B</b>				<b>Pompa 4201 C</b>			
<b>Time</b>	<b>Speed (rpm)</b>	<b>Noise (dB)</b>	<b>Pressure Indicator Discharge</b>	<b>Time</b>	<b>Speed (rpm)</b>	<b>Noise (dB)</b>	<b>Pressure Indicator Discharge</b>
05:00	1390	83.8	1.6 Bar	05:00	1410	83.6	2.5 Bar
06:00	1390	83.8	1.6 Bar	06:00	1410	83.6	2.5 Bar
07:00	1390	83.8	1.6 Bar	07:00	1410	83.6	2.5 Bar
08:00	1394	83.8	1.5 Bar	08:00	1410	83.6	2.5 Bar
09:00	1394	83.8	1.5 Bar	09:00	1410	83.6	2.5 Bar