



LAMPIRAN 1 : SPESIFIKASI MESIN



T1900

Engine MITSUBISHI S16R-PTA
 Alternator LEROY SOMER LSA512555

STANDARD FEATURES

- Electronic governor
- Mechanically welded chasers with vibration isolators
- Radiator for wiring T° of 50°C [122°F] max with mechanical fan
- Protective grille for fan and rotating parts
- Exhaust outlet with flexible and flanges
- 24 V charging alternator and starter
- Supplied with oil and coolant -30°C
- User manual and commissioning guide



Voltage	Power ESP kW/kVA	Power PRP kW/kVA	Standby Amps	Dimensions	Weight
415/240	1520 / 1900	4382 / 1727	2643	Length: 8497mm [216in] Width: 2256mm [90in] Height: 2479mm [98in]	12601kg [28412lbs] Net 13516kg [29789lbs] Gross
400/230	1520 / 1900	4382 / 1727	2742		
380/220	1520 / 1900	4382 / 1727	2857		

POWER DEFINITIONS

PRP Prime Power is available for an unlimited number of annual operating hours in variable load applications, in accordance with ISO 8529-1. A 10% overload capability is available for a period of 1 hour within 12-hour period of operation, in accordance with ISO 3046-1 - 8529-1. Overload is not allowed.

ESP The standby power rating is applicable for supplying emergency power in variable load applications in accordance with ISO 8529-1. Overload is not allowed.

TECHNICAL DATA

Standard reference conditions 40 °C Air Inlet Temp, 1500 m A.S.L, 60 % relative humidity. All engine performance data based on the above mentioned maximum continuous ratings.

Type	dB(A)@3m	dB(A)@7m	Dimensions	Weight	Tank
ISO40CSI	89	79	Length: 12102mm [480in] Width: 2436mm [96in] Height: 2896mm [114in]	19962kg [43996lbs] Net 20939kg [46150lbs] Gross	500 L





T1900

Engine MITSUBISHI S16R-PTA
Alternator LEROY SOMER LSA512559

STANDARD FEATURES

- Electronic governor
- Mechanically welded chassis with vibration isolators
- Radiator for wiring T° of 50°C [122°F] max with mechanical fan
- Protective grille for fan and rotating parts
- Exhaust outlet with flexible and flanges
- 24 V charging alternator and starter
- Supplied with oil and coolant -30°C
- User manual and commissioning guide



Voltage	Power ESP kW/kVA	Power PRP kW/kVA	Standby Amps	Dimensions	Weight
415/240	1520 / 1900	1382 / 1727	2643	Length: 5497mm [216in] Width: 2286mm [90in] Height: 2479mm [98in]	12891kg [28412lbs] Net 13516kg [29789lbs] Gross
400/230	1520 / 1900	1382 / 1727	2742		
380/220	1520 / 1900	1382 / 1727	2887		

POWER DEFINITION

PRP Prime Power is available for an unlimited number of annual operating hours in variable load applications, in accordance with ISO 8528-1. A 10% overload capability is available for a period of 1 hour within 12-hour period of operation, in accordance with ISO 3045-1.

ESP The standby power rating is applicable for supplying emergency power in variable load applications in accordance with ISO 8528-1. Overload is not allowed.

TERM OF USE

Standard reference conditions 40 °C Air inlet Temp, 1500 m A.S.L, 60 % relative humidity. All engine performance data based on the above mentioned maximum continuous ratings.

Type	dBA @ 1m	dBA @ 57m	Dimensions	Weight	Tank
ISO40CS	89	79	Length: 12192mm [480in] Width: 2438mm [96in] Height: 2896mm [114in]	19962kg [43990lbs] Net 20939kg [46150lbs] Gross	500 L

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ENGINE SPECIFICATIONS

	Manufacturer / Model	SDMO
STANDARD	Manufacturer / Model	SDMO
	Cylinder Arrangement	V
FEATURES	Displacement	66.37L (3989.10 cu in.)
	Bore and Stroke	170mm (6.7 in.) x 150mm (5.9 in.)
	Compression ratio	14.0:1
	Rated RPM	1500 Rpm
	Piston Speed	9m/s (29.52 ft/s)
	Max. stand by Power at rated RPM	1620kW (217159 HP)
	Frequency regulation, steady state	±1.0, 25%
	BMEP	18.5bar (258psi)
	Governor type	Electronic
	EXHAUST SYSTEM	Exhaust temperature
Max back pressure		600mm CE (24 in. WG)
FUEL SYSTEM	110% (stand by power)	389L/h (102.5gal/hr)
	100% (of the Prime Power)	363L/h (95.3gal/hr)
	75% (of the Prime Power)	266L/h (70.3gal/hr)
	50% (of the Prime Power)	188L/h (49.7gal/hr)
	Max. fuel pump flow	598L/h (157.5gal/hr)
OIL SYSTEM	Total oil capacity (withers)	230L (59.5gal)
	Oil pressure (low speed)	1.5bar (20.7psi)
	Oil pressure (rated RPM)	5.8bar (84.0psi)
	Oil supply (rated RPM, load)	1.22L/h (32.3gal/hr)
THERMAL BALANCE	Oil capacity (after)	140L (37.0gal)
	Heat rejection to exhaust	977kW (836284 Btu/hr)
	Radiated heat to ambient	1020kW (864058 Btu/hr)
AIR INTAKE	Heat rejection to coolant	862kW (744458 Btu/hr)
	Max. intake restriction	400mm CE (16 in. WG)
	Engine air flow	1958L/s (433.0 cfm)
	Radiator & engine capacity	340L (91.1 gal)
COOLANT SYSTEM	Max water temperature	94°C (208°F)
	Outlet water temperature	66°C (152°F)
	Fan power	40.2 kW
	Fan air flow w/o restriction	33.5m ³ /s (70669 cfm)
	Available restriction on air flow	20mm CE (0.8 in. WG)
	Type of coolant	Demicon
	Thermostat	82-94°C
EMISSIONS (EPA)	PM	110 mg/Nm ³
	CO	960 mg/Nm ³
	Nox	3800 mg/Nm ³
	HC	100 mg/Nm ³

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ENGINE SPECIFICATIONS

	Manufacturer / Model	SDMO
STANDARD FEATURES	Cylinder Arrangement	VA 16 X
	Displacement	85.37L [3089.1C.I.]
	Bore and Stroke	170mm [6.7in.] X 180mm [7.1in.]
	Compression ratio	14.0:1
	Rated RPM	1500 Rpm
	Piston Speed	9m/s [29.5ft/s]
	Max. stand by Power at rated RPM	1620kW [2171BHP]
	Frequency regulation, steady state	+/-0.25%
	Effective Power Alternator	+/-47.7%
	Governor type	Elec.
EXHAUST SYSTEM	Exhaust temperature	539°C [1002°F]
	Exhaust gas flow	2759.7 [93.3gal/hr]
FUEL SYSTEM	Max back pressure	600mm CE [24in. WG]
	110% (Stand By power)	368L/h [102.5gal/hr]
	100% (of the Prime Power)	353L/h [93.3gal/hr]
	75% (of the Prime Power)	266L/h [70.3gal/hr]
	50% (of the Prime Power)	198L/h [49.7gal/hr]
OIL SYSTEM	Max. fuel pump flow	588L/h [155.3gal/hr]
	Total oil capacity w/ filters	230L [60.0gal]
	Oil Pressure low idle	2.5bar [36.2psi]
	Oil Pressure rated RPM	5.8bar [84.0psi]
THERMAL BALANCE	Oil consumption, 100% load	1.32 [0.35 gal/hr]
	Oil capacity carter	140L [37.0gal]
	Heat rejection to exhaust	977kW [5555Btu/min]
	Radiated heat to ambient	102kW [5800Btu/min]
AIR INTAKE	Heat rejection to coolant	852kW [48445Btu/min]
	Max. intake restriction	400mm CE [16in. WG]
COOLANT SYSTEM	Engine air flow	1900 [41.32cfm]
	Radiator & engine capacity	345L [91.1gal]
	Max water temperature	98°C [208°F]
	Outlet water temperature	95°C [203°F]
	Fan power	40.2 kW
	Fan air flow w/o restriction	33.5m ³ /s [7066cfm]
EMISSIONS LEVEL	Available restriction on air flow	20mm CE [0.8in. WG]
	Type of coolant	Gencool
	Thermostat	82-94 °C
	CO	110 mg/Nm ³
	PM	500 mg/Nm ³
	Nox	3800 mg/Nm ³
	HC	100 mg/Nm ³

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ALTERNATOR SPECIFICATIONS

		LERROY SOMER LSA612505
GENERAL	Manufacturer / Type	3
	Number of phase	0.8
	Power factor (Cos Phi)	< 1000 m
	Altitude	2250 rpm
	Over speed	4
	Pole number	AKEP
	Exciter type	H / H
	Insulation class, temperature rise	R449
	Voltage regulator	6 AC
	Sustained short circuit current	< 4 %
	Total harmonics (TGH/THC)	< 50
	Wave form - NEMA = TF - TGH/THC	< 2 %
	Wave form - CEI = FHT - TGH/THC	1
	Bearing number	Direct
	Coupling	+/- 1%
Voltage regulation 0 to 100% load	< 700 ms	
Recovery time (20% Volt dip) ms	N/A	
SKVA with 90% of nominal sustained voltage (at 0.4PF)		
OTHER	Continuous nominal rating @ 40°C	1800 kVA
	Standby rating @ 27°C	1980 kVA
	Efficiency @ 50% load	95.5 %
	Air flow	2.5m ³ /s (5297 l/dm)
	Short circuit ratio (SCR)	0.33
	Direct axis synchro reactance unsaturated (Xd)	374 %
	Quadrature axis synchro reactance unsaturated (Xq)	224 %
	Open circuit time constant 50 (Tdo)	2700 ms
	Direct axis transient reactance saturated (Xd')	33.4 %
	Short circuit transient time constant (Td')	240 ms
	Direct axis subtransient reactance saturated (Xd'')	14.3 %
	Subtransient time constant (Td'')	22 ms
	Quadrature axis subtransient reactance saturated (Xq')	18.4 %
	Zero sequence reactance unsaturated (X0)	3.5 %
	Negative sequence reactance saturated (X2)	16.6 %
Armature time constant (Ta)	39 ms	
No load excitation current	1.5 A	
Full load excitation current (Ic)	N/A	
Full load excitation voltage (Uc)	63 V	
Recovery time (Delta U = 20% transoire)	< 700 ms	
Motor start (Delta = 20% perm. Or 50% trans.)	3600 kVA	
Transient dip (4/4 charge) - PF = 1.8 AR	12 %	
No load losses	10400 W (3000 cal)	
Heat rejection	64.7 kW	



CONTROL PANEL

Option

M80



Specifications
Tachometer, Emergency stop button, inert connection terminal strip, EC certified
Engine parameters
Hours counter, Oil pressure gauge, Water temperature indicator, Oil pressure indicator

Option

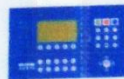
TELYS



Specifications
Frequency meter, Ammeter, Voltmeter
Alarms and faults Oil pressure, water temperature, No start-up, Overspeed, Minimum alternator, Minimum battery voltage, Low fuel level, Emergency stop
Engine parameters Hours counter, Oil pressure, Water temperature, Engine speed, Battery voltage, Fuel level

Option

KERYS



Specifications
Frequency meter, Ammeter, Voltmeter
Alarms and faults Oil pressure, water temperature, No start-up, Overspeed, Minimum alternator, Minimum battery voltage, Low fuel level, Emergency stop
Engine parameters Hours counter, Oil pressure, Water temperature, Engine speed, Battery voltage, Fuel level
Additional specifications: Webstar, Troubleshooting, Assistance and Maintenance, Plotting and logging, Load impact, 8 configurations available, Compliance with international standards.

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LAMPIRAN 2 : DATA ASLI DAN DATA
PERHITUNGAN EFISIENSI

PT. PLN WILAYAH BABEL PLTD MERAWANG

PT SINARINDO WIRANUSA ELEKTRIK

Hari : SENIN

Engine : 1

Mitsubishi S16R-PTA

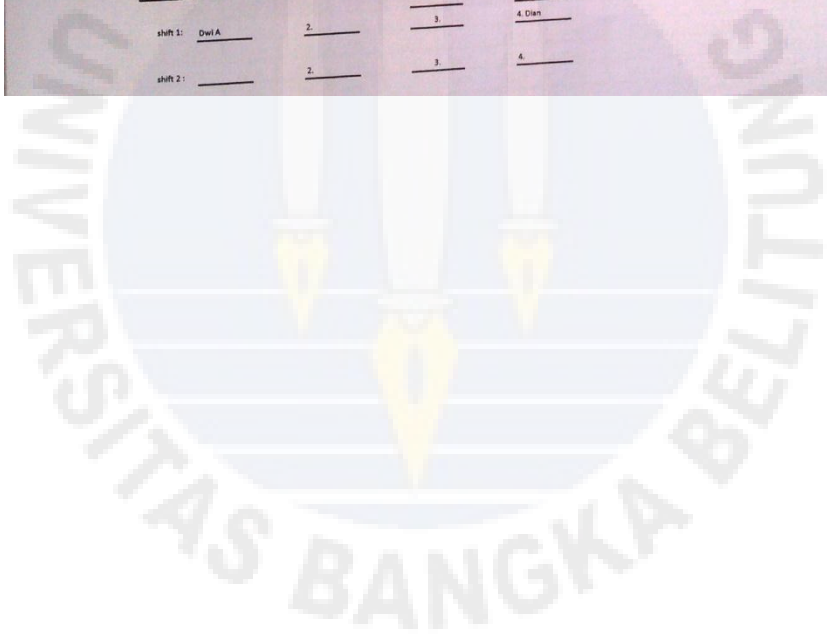
tanggal : 1 Juni 2013

Time	Load kW	RPM	Alternator							Engine parameter			
			volt	Hz	cosphi	AMPERE				Hot water deg C	oil pressure Bar	Air filter indikator	
						R	S	T	Total			Battery	Hm
00.00	1023	1502	400	0,92	1572	1570	1572	4714	7856	79	3,4	27,5	1722
01.00	1024	1503	413	0,98	1489	1489	1487	4465	7441	79	3,4	27,5	1723
02.00	1022	1497	399	0,92	1517	1515	1513	4545	7573	78	3,4	27,5	1724
03.00	1019	1501	400	0,91	1566	1560	1561	4687	7808	78	3,4	27,5	1725
04.00	1024	1503	413	0,98	1566	1560	1561	4687	7808	78	3,4	27,5	1726
05.00	1030	1504	408	0,9	1489	1489	1487	4465	7441	79	3,4	27,5	1727
06.00	1029	1501	408	0,88	1691	1690	1687	5068	8445	80	3,4	27,5	1728
07.00	1023	1503	400	0,92	1567	1560	1563	4690	7813	77	3,4	27,5	1729
08.00	1022	1497	412	0,92	1566	1560	1561	4687	7808	78	3,4	27,5	1730
09.00	1024	1503	413	0,98	1566	1560	1561	4687	7808	79	3,4	27,5	1731
10.00	1019	1501	400	0,91	1566	1560	1561	4687	7808	77	3,4	27,5	1732
11.00	1024	1503	413	0,98	1489	1489	1487	4465	7441	78	3,4	27,5	1733
12.00	1024	1503	413	0,98	1489	1489	1487	4465	7441	77	3,4	27,5	1734
13.00	1024	1503	413	0,98	1489	1489	1487	4465	7441	78	3,4	27,5	1735
14.00	1023	1503	400	0,92	1567	1560	1563	4690	7813	79	3,4	27,5	1736
15.00	1022	1497	399	0,92	1517	1515	1513	4545	7573	76	3,4	27,5	1737
16.00	1024	1503	413	0,98	1489	1489	1487	4465	7441	77	3,4	27,5	1738
17.00	1024	1503	413	0,98	1489	1489	1487	4465	7441	78	3,4	27,5	1739
18.00	1022	1497	399	0,92	1517	1515	1513	4545	7573	79	3,4	27,5	1740
19.00	1024	1503	413	0,98	1566	1560	1561	4687	7808	78	3,4	27,5	1741
20.00	1019	1501	400	0,91	1566	1560	1561	4687	7808	79	3,4	27,5	1742
21.00	1019	1501	400	0,91	1566	1560	1561	4687	7808	80	3,4	27,5	1743
22.00	1023	1502	400	0,92	1572	1570	1572	4714	7856	78	3,4	27,5	1744
23.00	1019	1502	400	0,91	1517	1515	1513	4545	7573	78	3,4	27,5	1745
23.00	1024	1503	413	0,98	1567	1560	1563	4690	7813	78	3,4	27,5	1745

shift 1: Dwi A _____ 2. _____ 3. _____ 4. Dian _____
 shift 2: _____ 2. _____ 3. _____ 4. _____

PT. SINARINDO
SITE MANAGER

(SU/D/15)

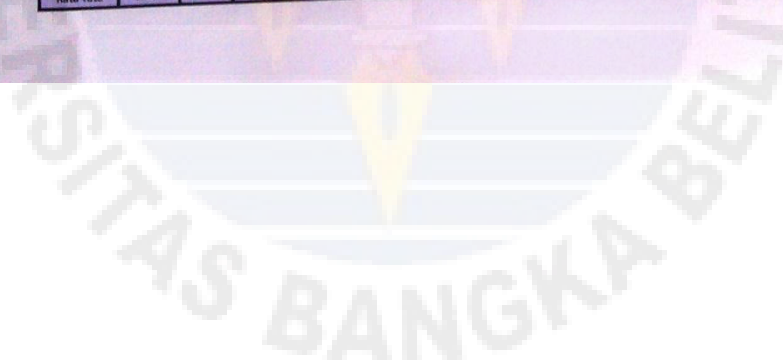


HASIL PERHITUNGAN EFISIENSI

Hari : SENIN
tanggal : 1 Juni 2013

Mitsubishi S16R-PTA

Time	Load KW	RPM	Alternator							Ifrata Ampere	Pin			VA	Po (kVA)	Eff Teori %	EFF Praktis %
			volt	cosphi	AMPERE				Total		1,0204082	0,7456999	P _{in} W				
					R	S	T										
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
00.00	1023	1502	400	0.92	1572	1570	1572	4714	1571.33	1466.95	1.093.91	628.5333333	1086.7	92.710	93.518		
01.00	1024	1503	413	0.98	1489	1489	1487	4465	1488.33	1467.93	1.094.64	342391.5474	1064.7	92.558	93.547		
02.00	1022	1497	399	0.92	1517	1515	1513	4545	1515.00	1462.07	1.090.27	366209.1974	1047.0	92.442	93.739		
03.00	1019	1501	400	0.91	1566	1560	1561	4687	1562.33	1465.98	1.093.18	383550.177	1082.4	92.671	93.214		
04.00	1024	1503	413	0.98	1566	1560	1561	4687	1562.33	1467.93	1.094.64	359415.2705	1117.6	92.686	93.547		
05.00	1030	1504	408	0.9	1489	1489	1487	4465	1488.33	1473.92	1.095.10	607.24	1051.6	92.474	93.713		
06.00	1029	1501	408	0.88	1691	1690	1687	5068	1689.33	1470.98	1.095.91	689.248	1193.6	92.309	93.809		
07.00	1023	1503	400	0.92	1567	1560	1563	4690	1563.33	1467.93	1.094.64	378839.538	1083.1	92.676	93.456		
08.00	1022	1497	412	0.92	1566	1560	1561	4687	1562.33	1462.07	1.090.27	389955.1262	1114.9	92.870	93.739		
09.00	1024	1503	413	0.98	1566	1560	1561	4687	1562.33	1467.93	1.094.64	359415.2705	1117.6	92.686	93.547		
10.00	1019	1501	400	0.91	1566	1560	1561	4687	1562.33	1465.98	1.093.18	383550.177	1082.4	92.671	93.214		
11.00	1024	1503	413	0.98	1489	1489	1487	4465	1488.33	1467.93	1.094.64	342391.5474	1064.7	92.558	93.547		
12.00	1024	1503	413	0.98	1489	1489	1487	4465	1488.33	1467.93	1.094.64	342391.5474	1064.7	92.558	93.547		
13.00	1023	1503	400	0.92	1567	1560	1563	4690	1563.33	1467.93	1.094.64	378839.538	1083.1	92.676	93.456		
14.00	1022	1497	399	0.92	1517	1515	1513	4545	1515.00	1462.07	1.090.27	366209.1974	1047.0	92.442	93.739		
15.00	1024	1503	413	0.98	1489	1489	1487	4465	1488.33	1467.93	1.094.64	342391.5474	1064.7	92.558	93.547		
16.00	1023	1503	400	0.92	1567	1560	1563	4690	1563.33	1467.93	1.094.64	378839.538	1083.1	92.676	93.456		
17.00	1022	1497	399	0.92	1517	1515	1513	4545	1515.00	1462.07	1.090.27	366209.1974	1047.0	92.442	93.739		
18.00	1024	1503	413	0.98	1566	1560	1561	4687	1562.33	1467.93	1.094.64	359415.2705	1117.6	92.686	93.547		
19.00	1019	1501	400	0.91	1566	1560	1561	4687	1562.33	1465.98	1.093.18	383550.177	1082.4	92.671	93.214		
20.00	1019	1501	400	0.91	1566	1560	1561	4687	1562.33	1465.98	1.093.18	383550.177	1082.4	92.671	93.214		
21.00	1023	1502	400	0.92	1572	1570	1572	4714	1571.33	1466.95	1.093.91	628.5333333	1086.7	92.710	93.518		
22.00	1019	1502	400	0.91	1517	1515	1513	4545	1515.00	1466.95	1.093.91	371929.9242	1049.0	92.460	93.152		
23.00	1024	1503	413	0.98	1567	1560	1563	4690	1563.33	1467.93	1.094.64	359645.3204	1118.3	92.800	93.147		
Rata-rata	1022.89	1501.900	405.375	0.935	1547.67	1543.98	1544.08	4693.708	1548.100	1466.862	1093.694	303881.118	1084.880	92.691	93.311		





LAMPIRAN 3 : HASIL PERHITUNGAN RATA-
RATA EFISIENSI PERHARI

HASIL PERHITUNGAN RATA-RATA EFISIENSI PERHARI
Bulan : JUNI 2013

BULAN: Juni 2013 Engine : 4 Mitsubishi S16R-PTA

TGL	Load kW	RPM	Alternator						Irrata Ampere	Pin		VA	Po (kVA) V/A	Eff Teori %	EFF Praktis %
			volt	cosphi	AMPERE					Irrata BHP	Pin H=...W				
					R	S	T	Total							
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1012	1502	400	0,92	1572	1570	1572	4714	1571,33	1466,95	1.093,91	628533,3333	1088,7	92,710	92,512
2	1011	1503	413	0,98	1489	1489	1487	4465	1488,33	1467,99	1.094,64	614681,6667	1066,7	92,558	92,360
3	1013	1497	399	0,92	1517	1515	1513	4545	1515,00	1462,07	1.090,27	604485	1047,0	92,442	92,913
4	1019	1501	400	0,91	1566	1560	1561	4687	1562,33	1465,98	1.093,18	624933,3333	1082,4	92,671	93,214
5	1018	1503	408	0,91	1635	1637	1633	4905	1635,00	1467,99	1.094,64	667080	1155,4	93,102	92,999
6	1018	1503	408	0,91	1635	1637	1633	4905	1635,00	1467,99	1.094,64	667080	1155,4	93,102	92,999
7	1026	1504	408	0,9	1676	1679	1782	5137	1712,33	1468,91	1.093,36	698632	1210,1	93,399	93,668
8	1013	1501	408	0,88	1691	1690	1687	5068	1689,33	1465,98	1.093,18	689248	1193,8	93,309	92,666
9	1016	1500	408	0,83	1647	1645	1645	4937	1645,67	1465,00	1.092,45	671432	1163,0	93,144	93,002
10	1012	1500	401	0,89	1516	1509	1511	4536	1512,00	1465,00	1.092,45	606312	1050,2	92,463	92,636
11	1016	1501	400	0,91	1566	1560	1561	4687	1562,33	1465,98	1.093,18	624933,3333	1082,4	92,671	92,940
12	1016	1502	400	0,92	1572	1570	1572	4714	1571,33	1466,95	1.093,91	628533,3333	1088,7	92,710	92,878
13	1020	1503	400	0,92	1567	1560	1563	4690	1563,33	1467,99	1.094,64	625333,3333	1083,1	92,676	93,182
14	1002	1497	399	0,92	1517	1515	1513	4545	1515,00	1462,07	1.090,27	604485	1047,0	92,442	91,904
15	1012	1499	399	0,92	1507	1503	1504	4514	1504,67	1464,02	1.091,72	600962	1039,9	92,344	92,598
16	1012	1506	400	0,91	1591	1587	1588	4766	1588,67	1470,86	1.096,82	635466,6667	1100,7	92,784	92,267
17	1016	1502	400	0,91	1412	1410	1411	4233	1411,00	1466,95	1.093,91	564400	977,6	91,949	92,878
18	1016	1502	409	0,91	1424	1420	1423	4267	1422,33	1466,95	1.093,91	581734,3333	1007,6	92,170	92,878
19	1002	1500	413	0,96	1428	1425	1423	4276	1425,33	1465,00	1.092,45	588662,6667	1039,6	92,255	91,720
20	1008	1500	413	0,95	1457	1454	1456	4367	1455,67	1465,00	1.092,45	601190,3333	1041,3	92,404	92,270
21	1020	1503	413	0,98	1504	1500	1509	4513	1504,33	1467,99	1.094,64	621280,6667	1076,1	92,632	93,182
22	1016	1503	413	0,99	1576	1575	1577	4728	1576,00	1467,99	1.094,64	650868	1127,4	92,943	92,816
23	1017	1500	413	0,98	1556	1552	1553	4661	1553,67	1465,00	1.092,45	641664,3333	1111,4	92,849	93,093
24	1016	1500	407	0,88	1662	1662	1664	4788	1596,00	1467,99	1.092,45	614681,6667	1064,7	92,558	91,994
25	1016	1503	413	0,98	1489	1489	1487	4465	1488,33	1465,00	1.092,45	649572	1125,1	92,930	93,002
26	1018	1494	406	0,83	1646	1647	1648	4941	1647,00	1459,14	1.088,08	668682	1158,2	93,118	93,185
27	1007	1494	406	0,83	1646	1647	1648	4941	1647,00	1459,14	1.088,08	668682	1158,2	93,118	92,548
28	1016	1502	407	0,82	1594	1593	1590	4777	1592,33	1466,95	1.093,91	648079,6667	1122,5	92,915	92,878
29	1018	1502	407	0,89	1562	1560	1563	4685	1561,67	1466,95	1.093,91	635538,3333	1100,9	92,785	93,061
30	1016	1505	407	0,91	1612	1610	1611	4833	1611,00	1469,88	1.096,09	655677	1135,7	92,991	92,693
Rata-rata	1014,3	1503,3	406	0,91	1562	1553	1557	4671	1557,00	1466,24	1093,37	632107,43	1094,84	92,73	92,77



HASIL PERHITUNGAN RATA-RATA EFISIENSI PERHARI

Bulan : JULI 2013

BULAN: Juli 2013

BULAN: Juli 2013

Engine : 4

Mitsubishi S16R-PTA

TGL	Load kW	RPM	Alternator								Pin			VA	Po (kVA)	Eff Teori	EFF Praktis		
			volt	cosphi	AMPERE				I rata	1,0204082	0,7456999	VA	Po (kVA)					Eff Teori	EFF Praktis
					R	S	T	Total											
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
1	3014	1500	410	0.91	1553	1554	1550	4657	1553.33	1465.00	1.092.45	636456.6667	1102.4	94.871	92.819				
2	3015	1500	410	0.92	1566	1562	1564	4693	1564.00	1465.00	1.092.45	641340	1110.7	92.844	92.910				
3	3016	1497	411	0.92	1602	1600	1609	4811	1603.67	1467.07	1.090.27	659107	1141.6	93.035	93.186				
4	3027	1503	411	0.89	1618	1620	1623	4861	1620.33	1467.99	1.094.64	665927	1153.5	93.092	93.821				
5	3025	1503	411	0.91	1635	1637	1633	4905	1635.00	1467.99	1.094.64	671585	1163.9	93.149	93.639				
6	3021	1504	411	0.92	1676	1679	1782	5137	1712.33	1473.92	1.099.10	702769	1215.0	93.438	92.894				
7	3026	1501	411	0.89	1691	1690	1687	5068	1689.33	1470.98	1.096.51	694316	1202.6	93.355	93.235				
8	3016	1500	411	0.91	1647	1645	1645	4937	1645.67	1465.00	1.092.45	676269	1171.5	93.151	92.907				
9	3023	1501	411	0.92	1665	1663	1663	4991	1663.67	1465.98	1.094.18	683767	1181.3	93.259	93.480				
10	3022	1500	404	0.91	1516	1516	1511	4536	1511.00	1465.00	1.092.45	610448	1068.0	92.515	93.251				
11	3020	1501	397	0.92	1566	1560	1561	4687	1563.33	1465.98	1.093.18	620246.3333	1074.3	92.630	93.306				
12	3017	1502	396	0.92	1572	1570	1572	4714	1571.33	1466.96	1.093.81	622348	1077.8	92.642	92.970				
13	3019	1503	396	0.89	1567	1560	1563	4690	1563.33	1473.53	1.098.81	619080	1072.3	92.607	92.727				
14	3021	1497	396	0.91	1517	1515	1513	4545	1515.00	1467.66	1.094.42	599940	1059.1	92.289	92.281				
15	3006	1499	396	0.92	1507	1503	1504	4514	1504.67	1464.02	1.091.72	595846	1052.0	92.341	92.148				
16	3020	1506	396	0.89	1591	1587	1588	4766	1588.67	1476.47	1.116.00	625115	1099.7	92.716	92.643				
17	3022	1500	396	0.91	1556	1554	1552	4662	1554.00	1470.59	1.096.62	614064	1063.6	92.556	92.196				
18	3023	1506	396	0.92	1551	1552	1549	4652	1550.67	1470.96	1.096.62	570133.3333	987.5	92.013	91.554				
19	3004	1500	400	0.91	1428	1425	1423	4276	1425.33	1470.59	1.096.62	602646	1043.8	91.421	91.727				
20	3006	1500	414	0.92	1457	1454	1456	4367	1455.67	1470.59	1.096.62	614298.3333	1081.3	92.554	92.267				
21	3012	1506	415	0.91	1504	1500	1509	4513	1504.33	1470.86	1.095.81	624298.3333	1081.3	92.555	92.101				
22	3023	1503	414	0.92	1576	1575	1577	4728	1576.00	1473.53	1.098.81	652454	1130.1	92.881	92.469				
23	3025	1500	415	0.92	1556	1553	1553	4661	1553.67	1470.59	1.096.62	644771.6667	1116.8	92.591	92.451				
24	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.225				
25	3023	1501	409	0.92	1556	1554	1556	4666	1555.33	1471.57	1.096.62	639856	1108.3	92.891	93.013				
26	3023	1501	407	0.91	1560	1560	1561	4687	1561.00	1470.59	1.096.62	636131.3333	1101.8	92.791	93.225				
27	3023	1501	407	0.91	1560	1560	1561	4687	1561.00	1470.59	1.096.62	639856	1108.3	92.891	93.013				
28	3022	1502	397	0.92	1453	1454	1450	4377	1453.00	1465.98	1.093.18	635860.6667	1101.4	92.788	92.980				
29	3022	1503	397	0.92	1466	1462	1464	4392	1463.33	1466.96	1.093.81	581398	998.7	92.106	92.427				
30	3023	1497	397	0.92	1502	1500	1509	4511	1502.67	1467.66	1.094.42	596955.6667	1024.0	92.354	92.474				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
31	3012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.99	1.094.64	616170	1067.2	92.575	92.451				
3																			

HASIL PERHITUNGAN RATA-RATA EFISIENSI PERHARI
Bulan : AGUSTUS 2013

BULAN: Agustus 2013

Engine : 4 Mitsubishi S16R-PTA

TGL	Load kw	RPM	Alternator								Pin				Po (kVA)	Eff Teori %	EFF Praktis %
			volt	cosphi	AMPERE					Total	Irata Ampere	1,0204082 BHP	0,7456999 P _{in} W	VA			
					R	S	T	U	V								
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1	1014	1500	410	0.91	1553	1554	1550	4657	1552.33	1465.00	1.092.45	636456.6667	1102.4	92.794	92.819		
2	1015	1500	410	0.92	1566	1562	1554	4692	1564.00	1465.00	1.092.45	641240	1110.7	92.844	92.910		
3	1016	1497	411	0.92	1602	1600	1609	4811	1603.67	1462.07	1.090.27	659107	1141.6	93.025	93.188		
4	1027	1503	411	0.89	1618	1620	1623	4861	1620.33	1467.93	1.094.64	665957	1153.5	93.092	93.821		
5	1023	1503	411	0.91	1635	1637	1633	4905	1635.00	1467.93	1.094.64	671985	1163.9	93.149	93.456		
6	1026	1504	411	0.92	1676	1679	1782	5137	1712.33	1473.92	1.099.10	703769	1219.0	93.438	93.349		
7	1020	1501	411	0.89	1691	1690	1687	5068	1689.33	1470.98	1.096.91	694316	1202.6	93.355	92.989		
8	1016	1500	411	0.91	1647	1645	1645	4937	1645.67	1465.00	1.092.45	676369	1171.5	93.191	93.020		
9	1023	1501	411	0.92	1665	1663	1663	4991	1663.67	1465.98	1.093.18	683767	1184.3	93.259	93.580		
10	1023	1500	404	0.91	1516	1509	1511	4536	1512.00	1465.00	1.092.45	610848	1058.0	92.515	93.643		
11	1006	1501	397	0.92	1566	1560	1561	4687	1562.33	1465.98	1.093.18	620246.3333	1074.3	92.620	92.025		
12	1020	1502	396	0.92	1572	1570	1572	4714	1571.33	1466.95	1.093.91	622248	1077.8	92.642	93.244		
13	1006	1503	396	0.89	1567	1560	1563	4690	1563.33	1473.53	1.098.81	619080	1072.3	92.607	91.554		
14	1021	1497	396	0.91	1517	1515	1513	4545	1515.00	1467.65	1.094.42	599940	1039.1	92.389	93.291		
15	1006	1499	396	0.92	1507	1503	1504	4514	1504.67	1464.02	1.091.72	595848	1032.0	92.341	92.148		
16	1029	1506	396	0.89	1591	1587	1588	4766	1588.67	1476.47	1.101.00	629112	1089.7	92.716	92.460		
17	1023	1500	396	0.91	1556	1554	1552	4662	1554.00	1470.59	1.096.62	615384	1055.9	92.566	93.287		
18	1023	1506	396	0.92	1551	1552	1549	4652	1550.67	1470.86	1.096.82	614064	1063.6	92.551	93.270		
19	1024	1500	400	0.91	1428	1425	1423	4276	1425.33	1470.59	1.096.62	570133.3333	987.5	92.023	93.378		
20	1023	1500	414	0.92	1457	1454	1456	4367	1455.67	1470.59	1.096.62	602646	1043.8	92.421	93.287		
21	1026	1506	415	0.91	1504	1500	1509	4513	1504.33	1470.86	1.096.82	624298.3333	1081.3	92.664	93.543		
22	1020	1503	414	0.92	1576	1575	1577	4728	1576.00	1473.53	1.098.81	652464	1130.1	92.959	92.828		
23	1023	1500	415	0.92	1556	1552	1553	4661	1553.67	1470.59	1.096.62	644771.6667	1116.8	92.881	92.287		
24	1012	1503	414	0.89	1489	1489	1487	4465	1488.33	1467.93	1.094.64	616170	1067.2	92.575	92.461		
25	1023	1501	409	0.92	1556	1554	1556	4666	1555.33	1471.57	1.097.35	630131.3333	1101.8	92.791	93.225		
26	1016	1500	406	0.89	1577	1576	1575	4728	1576.00	1470.59	1.096.62	639856	1108.3	92.830	92.649		
27	1023	1501	407	0.91	1566	1560	1561	4687	1562.33	1469.98	1.093.18	635869.6667	1101.4	92.788	93.580		
28	1023	1502	397	0.92	1453	1454	1450	4357	1452.33	1466.95	1.093.18	576576.3333	998.7	92.105	93.518		
29	1026	1503	397	0.92	1466	1462	1464	4392	1464.00	1473.53	1.098.81	581208	1006.7	92.163	93.374		
30	1022	1497	397	0.92	1502	1500	1509	4511	1503.67	1467.65	1.094.42	598955.6667	1034.0	92.354	93.362		
31	1026	1506	415	0.91	1504	1500	1509	4513	1504.33	1470.86	1.096.82	624298.3333	1081.3	92.664	93.543		
Rata-Rata	1020.13	1501.45	405.48	0.91	1555.81	1553.58	1558.00	4647.39	1555.81	1468.91	1095.36	631091.71	1092.93	92.72	93.11		



HASIL PERHITUNGAN RATA-RATA EFISIENSI PERHARI

Bulan : Oktober 2013

Bulan : OKTOBER 2013

Engine : 4

Mitsubishi S16A-PTA

TGL	Load kW	RPM	Alternator						Ifrata Ampere	Pin			VA	P ₀ (kVA)	EFF Taoi	EFF Praktis
			volt	cosphi	AMPERE					I ₀₂₀₄₀₈₂	I ₀₇₄₅₆₉₉₉	I ₀₁₁				
					R	S	T	Total								
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	1032	1500	414	0.92	1877	1870	1870	5637	1872.33	1465.00	1.092.45	775.146	1342.6	94.056	90.267	
2	1024	1500	414	0.89	1566	1562	1564	4692	1564.00	1465.00	1.092.45	647.896	1121.5	70.309	69.704	
3	1014	1497	407	0.91	1432	1431	1435	4298	1432.67	1462.07	1.092.27	583095.3333	1010.0	61.147	61.005	
4	1032	1503	408	0.92	1594	1593	1590	4777	1592.33	1467.93	1.094.64	649672	1125.3	62.981	64.278	
5	1018	1503	408	0.92	1562	1560	1563	4685	1561.67	1467.93	1.094.64	637240	1125.6	61.862	62.059	
6	1023	1504	408	0.89	1612	1610	1611	4833	1611.00	1474.51	1.095.36	651288	1138.5	63.007	63.059	
7	1032	1500	414	0.92	1877	1870	1870	5637	1872.33	1470.59	1.096.42	775.146	1342.6	94.056	94.108	
8	1016	1500	414	0.89	1566	1562	1564	4692	1564.00	1465.00	1.092.45	647.896	1121.5	61.309	61.001	
9	1023	1497	407	0.91	1432	1431	1435	4298	1432.67	1467.65	1.094.42	583095.3333	1010.0	61.147	61.474	
10	1032	1503	408	0.92	1594	1593	1590	4777	1592.33	1473.53	1.098.81	649672	1125.3	62.981	63.520	
11	1028	1503	408	0.92	1562	1560	1563	4685	1561.67	1467.93	1.094.64	637240	1125.6	61.862	61.913	
12	1032	1504	408	0.89	1612	1610	1611	4833	1611.00	1468.91	1.095.36	657288	1138.5	63.007	64.215	
13	1015	1500	414	0.92	1877	1870	1870	5637	1872.33	1465.00	1.092.45	647.896	1121.5	61.309	61.724	
14	1024	1500	414	0.89	1566	1562	1564	4692	1564.00	1465.00	1.092.45	583095.3333	1010.0	61.147	61.005	
15	1014	1497	407	0.91	1432	1431	1435	4298	1432.67	1462.07	1.090.27	583095.3333	1010.0	61.147	61.547	
16	1024	1503	408	0.92	1594	1593	1590	4777	1592.33	1467.93	1.094.64	649672	1125.3	62.981	63.373	
17	1015	1503	408	0.92	1562	1560	1563	4685	1561.67	1474.51	1.095.36	637240	1125.6	61.862	61.130	
18	1024	1504	408	0.89	1612	1610	1611	4833	1611.00	1465.98	1.093.18	647.896	1121.5	61.309	61.757	
19	1014	1501	408	0.89	1588	1587	1586	4761	1587.00	1465.98	1.092.45	663272	1148.8	63.066	63.643	
20	1023	1500	408	0.92	1627	1625	1625	4877	1626.67	1465.00	1.090.27	604483	1047.0	62.442	63.373	
21	1018	1497	399	0.92	1517	1515	1513	4545	1515.00	1462.07	1.091.72	600362	1039.9	62.394	62.148	
22	1006	1499	399	0.92	1507	1503	1504	4534	1504.67	1464.02	1.091.72	661917.6667	1146.5	63.262	64.045	
23	1018	1497	399	0.92	1507	1503	1504	4534	1504.67	1471.57	1.097.35	643070.3333	1113.8	62.863	63.834	
24	1016	1497	400	0.92	1605	1601	1605	4879	1626.33	1467.85	1.094.42	621466.6667	1079.9	62.655	63.270	
25	1023	1506	400	0.92	1561	1558	1557	4676	1603.67	1470.86	1.096.81	587999.6667	1018.4	62.247	63.254	
26	1024	1502	401	0.92	1468	1465	1466	4399	1466.33	1472.55	1.098.81	609311	1049.3	62.459	63.580	
27	1014	1503	401	0.89	1512	1510	1511	4533	1511.00	1475.53	1.093.18	620812.6667	1075.3	62.626	62.282	
28	1023	1501	394	0.91	1576	1577	1574	4727	1445.33	1465.98	1.093.18	576142.6667	996.3	62.086	63.679	
29	1006	1501	398	0.92	1448	1445	1443	4336	1611.00	1469.88	1.096.09	555677	1125.7	62.991	62.282	
30	1029	1505	407	0.91	1612	1610	1611	4833	1611.00	1473.53	1.098.81	608.921	1045.5	62.459	63.282	
31	1014	1503	401	0.89	1512	1510	1511	4533	1511.00	1473.53	1.098.81	608.921	1045.5	62.459	63.282	
Rata-rata	1021.67	1501.13	406.67	0.91	1585.80	1583.37	1584.07	4733.23	1584.41	1467.87	1.096.07	648642.84	1116.55	62.84	63.33	



HASIL PERHITUNGAN RATA-RATA EFISIENSI PERHARI
Bulan : NOVEMBER 2013

Bulan : November 2013

Engine : 4 Mitsubishi S16R-PTA

TGL	Load kW	RPM	Alternator							Pin			Po (kVA)	Eff Teori %	EFF Praktis %
			volt	cosphi	AMPERE				I rata Ampere	1,0204082 BHP	0,7456999 Pi = W				
					R	S	T	Total							
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1015	1501	413	0,91	1555	1567	1568	4690	1563,33	1465,98	1.093,18	645656,6667	1118,3	92,890	92,849
2	1024	1500	410	0,92	1600	1603	1604	4807	1602,33	1465,00	1.092,45	656956,6667	1137,9	93,004	93,734
3	1014	1497	408	0,92	1489	1489	1490	4468	1489,33	1462,07	1.090,27	607648	1052,5	92,479	93,005
4	1020	1501	407	0,89	1710	1711	1712	5333	1711,00	1465,98	1.093,18	696377	1206,2	93,373	93,306
5	1015	1500	413	0,91	1572	1570	1572	4714	1571,33	1465,00	1.092,45	648860,6667	1124,0	92,323	92,919
6	1012	1500	412	0,92	1567	1560	1563	4690	1563,33	1470,00	1.096,18	644093,3333	1115,6	92,874	92,321
7	1014	1497	412	0,92	1517	1515	1513	4545	1515,00	1467,06	1.093,99	624180	1081,1	92,663	92,689
8	1017	1503	412	0,92	1507	1503	1504	4514	1504,67	1467,93	1.094,64	619922,6667	1073,7	92,616	92,508
9	1015	1503	412	0,92	1591	1587	1588	4766	1588,67	1467,93	1.094,64	654530,6667	1133,7	92,979	92,725
10	1006	1504	412	0,92	1412	1410	1411	4233	1411,00	1468,91	1.095,36	581332	1006,9	92,155	91,842
11	1010	1501	411	0,92	1691	1690	1687	5068	1689,33	1465,98	1.093,18	694316	1202,6	93,355	92,391
12	1016	1500	409	0,89	1647	1645	1645	4937	1645,67	1465,00	1.092,45	673077,6667	1165,8	93,160	93,602
13	1023	1501	409	0,91	1556	1554	1556	4666	1555,33	1465,98	1.093,18	636131,3333	1101,8	92,791	93,580
14	1014	1500	406	0,91	1577	1576	1575	4666	1576,00	1465,00	1.092,45	639856	1108,3	92,830	92,819
15	1020	1501	407	0,91	1566	1560	1561	4687	1562,33	1465,98	1.093,18	635869,6667	1101,4	92,788	93,306
16	1013	1502	397	0,92	1453	1454	1450	4357	1452,33	1466,95	1.093,91	576576,3333	998,7	92,105	92,504
17	1011	1503	397	0,92	1466	1462	1464	4392	1464,00	1467,93	1.094,64	581208	1006,7	92,163	91,960
18	1002	1497	397	0,89	1576	1575	1577	4728	1576,00	1462,07	1.090,27	625672	1083,7	92,679	91,904
19	1012	1499	396	0,91	1556	1552	1553	4661	1553,67	1464,02	1.091,72	615252	1065,6	92,565	92,698
20	1012	1499	396	0,92	1489	1489	1487	4465	1488,33	1470,86	1.096,82	595333,3333	1031,1	92,335	92,267
21	1002	1497	399	0,92	1553	1554	1550	4657	1552,33	1467,06	1.093,99	619381	1072,8	92,610	91,904
22	1009	1499	399	0,92	1566	1562	1560	4692	1564,00	1464,02	1.091,72	624036	1080,9	92,662	92,267
23	1012	1506	400	0,92	1602	1600	1600	4811	1603,67	1470,86	1.096,82	641666,6667	1111,1	92,847	92,889
24	1020	1502	400	0,92	1618	1620	1623	4861	1620,33	1472,55	1.098,08	648133,3333	1122,6	92,915	92,889
25	1019	1502	409	0,92	1635	1620	1623	4905	1635,00	1472,55	1.098,08	668715	1158,2	93,118	92,798
26	1018	1500	413	0,89	1676	1679	1782	5337	1732,33	1465,00	1.098,08	707191,6667	1224,9	93,468	93,185
27	1017	1500	413	0,91	1691	1690	1687	5068	1689,33	1465,00	1.092,45	697604,6667	1208,4	93,385	93,993
28	1026	1506	434	0,92	1647	1645	1645	4937	1645,67	1470,86	1.096,82	681306	1180,1	93,217	93,343
29	1022	1503	413	0,92	1478	1478	1475	4431	1477,00	1467,93	1.094,64	610001	1056,6	92,505	93,364
30	1009	1503	417	0,89	1556	1556	1553	4665	1555,00	1467,93	1.094,64	648435	1123,1	92,918	92,377
Rata Rata		1014,83	1501,33	407,23	0,92	1570,43	1549,77	4713,77	1571,36	1466,41	1093,80	63977,28	1108,47	93,01	92,70



Bulan : Desember 2013

HASIL PERHITUNGAN RATA-RATA EFIISIENSI PERHARI

Bulan : DESEMBER 2013

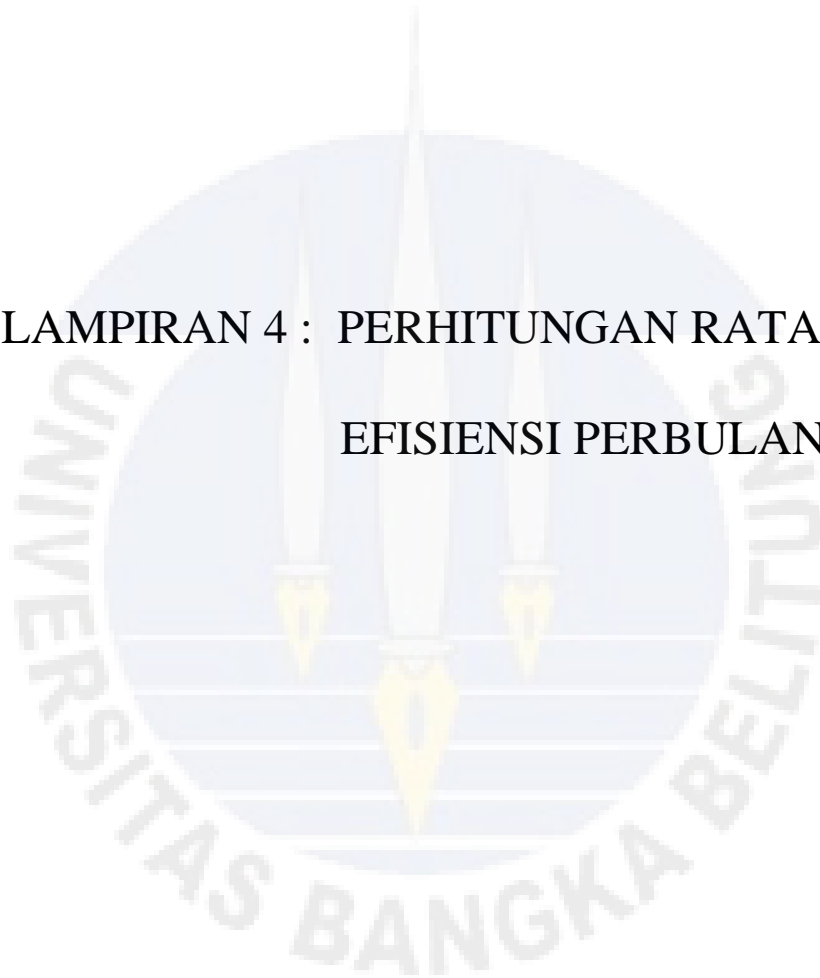
Engine : 4 Mitsubisi S16R-PTA

TGL	Load kw	RPM	Alternator				AMPERE				Pin			VA	Po (kVA)	Eff Teori	EFF Praktis
			volt	cosphi	R	S	T	Total	I rata Ampere	1,0204082 BHP	0,7456999 Pi = ... W	VA	Po VA				
1	1015	1500	414	0,91	1553	1554	1550	4657	1552,33	1465,00	1.092,45	642666	1113,1	92,809	93,310		
2	1024	1500	414	0,91	1566	1562	1564	4692	1564,00	1465,00	1.092,45	647496	1121,5	92,809	93,324		
3	1014	1497	407	0,89	1665	1663	1663	4991	1663,67	1462,07	1.090,27	677112,3333	1172,8	93,158	93,005		
4	1012	1503	408	0,89	1516	1509	1511	4536	1512,00	1467,93	1.094,64	616896	1068,5	92,583	92,451		
5	1018	1503	408	0,91	1566	1560	1561	4687	1562,33	1467,93	1.094,64	637432	1104,1	92,805	92,999		
6	1022	1504	408	0,92	1572	1570	1572	4714	1571,33	1474,51	1.096,54	641104	1110,4	92,843	92,948		
7	1026	1501	408	0,92	1567	1560	1563	4690	1563,33	1471,57	1.097,35	637840	1104,8	92,809	92,496		
8	1016	1500	408	0,92	1517	1515	1513	4545	1515,00	1465,00	1.092,45	618120	1070,6	92,557	93,002		
9	1023	1501	407	0,82	1665	1663	1663	4991	1663,67	1471,57	1.097,35	677112,3333	1172,8	93,158	93,225		
10	1012	1500	401	0,89	1516	1509	1511	4536	1512,00	1470,59	1.096,62	606312	1050,2	92,463	92,284		
11	1015	1501	400	0,91	1566	1560	1561	4687	1562,33	1465,98	1.093,18	624933,3333	1082,4	92,671	92,849		
12	1010	1502	400	0,92	1572	1570	1572	4714	1571,33	1466,95	1.093,91	628533,3333	1088,7	92,710	92,350		
13	1011	1503	400	0,89	1567	1560	1563	4690	1563,33	1467,93	1.094,64	623333,3333	1083,1	92,676	92,360		
14	1002	1497	399	0,91	1507	1503	1504	4514	1504,67	1464,02	1.091,72	600362	1039,9	92,354	93,614		
15	1022	1499	399	0,92	1591	1587	1588	4766	1588,67	1476,47	1.101,00	635466,6667	1100,7	92,784	92,643		
16	1020	1506	400	0,92	1517	1410	1411	4338	1446,00	1472,55	1.098,08	578400	1001,8	92,128	92,235		
17	1016	1502	400	0,92	1507	1420	1423	4350	1450,00	1466,95	1.093,91	591950	1027,2	92,328	93,518		
18	1023	1502	409	0,92	1591	1425	1423	4439	1479,67	1470,59	1.096,62	611102,3333	1058,5	92,518	93,013		
19	1020	1500	413	0,92	1412	1560	1563	4535	1511,67	1470,59	1.096,62	624313,3333	1081,4	92,665	93,104		
20	1021	1500	413	0,92	1428	1503	1504	4435	1476,33	1473,53	1.098,81	614376	1064,1	92,555	93,178		
21	1022	1506	414	0,89	1424	1515	1513	4452	1484,00	1470,59	1.096,62	610551,6667	1057,5	92,512	93,101		
22	1023	1503	413	0,91	1428	1503	1504	4435	1476,33	1474,51	1.099,54	603544	1149,3	93,068	93,112		
23	1026	1504	408	0,92	1624	1627	1628	4879	1626,33	1465,98	1.093,18	654296	1133,3	92,377	92,945		
24	1016	1501	408	0,92	1605	1601	1605	4811	1603,67	1465,98	1.093,18	639386	1101,5	92,789	93,287		
25	1023	1500	408	0,92	1561	1558	1557	4676	1558,67	1470,59	1.096,62	609386	1101,5	92,352	93,225		
26	1023	1501	407	0,92	1468	1465	1466	4399	1466,33	1471,57	1.092,45	605911	1049,5	92,459	93,294		
27	1024	1500	401	0,89	1512	1510	1511	4533	1511,00	1465,00	1.097,35	596787,6667	1091,7	92,729	93,407		
28	1025	1501	400	0,91	1576	1577	1574	4727	1575,67	1471,57	1.097,35	602066,6667	1091,7	92,088	94,045		
29	1032	1501	398	0,92	1448	1445	1443	4336	1445,33	1471,57	1.097,35	575242,6667	996,3	92,391	92,603		
30	1016	1505	407	0,91	1612	1610	1611	4833	1611,00	1469,88	1.096,09	655777	1135,7	92,588	93,043		
31	1021	1501	398	0,92	1448	1445	1443	4336	1445,33	1471,57	1.097,35	575,242667	996,3	92,67	93,03		
Rata-rata	1019,07	1501,43	406,00	0,91	1543,60	1539,53	1540,14	4673,27	1541,09	1469,01	1.096,44	625689,17	1083,73				



LAMPIRAN 4 : PERHITUNGAN RATA-RATA

EFISIENSI PERBULAN



**PERHITUNGAN EFISIENSI RATA-RATA PERBULAN
PERIODE SATU SEMESTER
Mitsubishi S16R-PTA**

Bulan	Load kw	RPM	Alternator				Pin				VA	Po (kVA) VA	Eff Teori %	EFF Praktis %	
			volt	cosphi	AMPERE				I rata Amper	1,02041 BHP					0,7457 Pi = ... W
					R	S	T	Total							
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Juni	1017,9	1501,3	407	0,91	1569	1560	1565	4694	1564,81	1466,07	1093,25	113358,88	1103	92,798	93,108
Juli	1018,06	1501,35	405,45	0,91	1555,32	1553,23	1557,29	4665,84	1555,28	1468,81	1095,29	200553	1092,48	92,734	92,949
Agustus	1020,13	1501,45	405,48	0,91	1555,81	1553,58	1558	4667,39	1555,8	1468,58	1095,12	200402,53	1092,93	92,737	93,152
September	1020,13	1501,45	405,48	0,91	1555,81	1553,58	1558	4667,39	1555,8	1468,58	1095,12	200402,53	1092,93	92,737	93,152
September	1019,7	1500,8	406,77	0,91	1604,2	1611,33	1623,3	4838,83	1612,94	1468,39	1094,98	212390,69	1136,57	92,996	93,125
September	1019,7	1500,8	406,77	0,91	1604,2	1611,33	1623,3	4838,83	1612,94	1468,39	1094,98	212390,69	1136,57	92,996	93,125
Oktober	1021,67	1501,13	406,67	0,91	1585,8	1583,37	1584,07	4753,23	1584,41	1467,97	1094,67	263527,91	1116,55	92,879	93,331
Oktober	1021,67	1501,13	406,67	0,91	1585,8	1583,37	1584,07	4753,23	1584,41	1467,97	1094,67	263527,91	1116,55	92,879	93,331
Oktober	1021,67	1501,13	406,67	0,91	1585,8	1583,37	1584,07	4753,23	1584,41	1467,97	1094,67	263527,91	1116,55	92,879	93,331
November	1014,63	1501,13	407,23	0,91	1570,63	1569,77	1573,37	4713,77	1571,26	1466,48	1093,55	287569,45	1108,47	92,831	92,783
November	1014,63	1501,13	407,23	0,91	1570,63	1569,77	1573,37	4713,77	1571,26	1466,48	1093,55	287569,45	1108,47	92,831	92,783
Desember	1019,07	1501,43	406	0,91	1543,6	1539,53	1540,13	4623,27	1541,09	1469,01	1095,44	207841,67	1083,73	92,680	93,028
Desember	1019,07	1501,43	406	0,91	1543,6	1539,53	1540,13	4623,27	1541,09	1469,01	1095,44	207841,67	1083,73	92,680	93,028
Rata-rata	1018,7	1501	406,4	0,91	1569,2	1567,3	1571,6	4708	1569,4	1467,9	1094,6	240806	1104,8	92,807886	93,06811



