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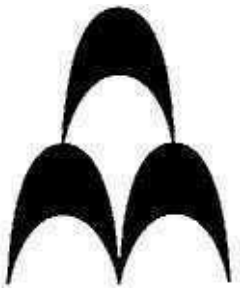

SPECIFICATION FOR TYPE QF-12-2 TURBO-GENERATOR

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TYPE QF-12-2 TURBO-GENERATOR

F30000-JT(e)

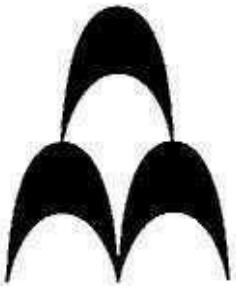
SPECIFICATION

ELECTRICAL MACHINERY INSTITUTE

October 2009

中国长江动力公司(集团)

CHINA CHANGJIANG ENERGY CORP.(GROUP)



QF-12-2 型汽轮发电机
技 术 条 件

SPECIFICATION FOR TYPE QF-12-2 TURBO-GENERATOR

文件代号 Document Code:F30000-JT(e)

2009 年 9 月
Sept. 2009

产品型号及名称 Type / Description	QF-12-2 型汽轮发电机 TYPE QF-12-2 TURBO-GENERATOR
文 件 代 号 Document Code	F30000-JT(e)
文 件 名 称 Document Description	技术条件 SPECIFICATION
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Approved by _____

2009 年 9 月 Sept. 2009

12

This specification is applicable to Type QF-15-2 turbo generator, which is 3 phases、50Hz、speed of 3000r/min.

The items that are not refered in this specification, to meet the regulation "GENERAL TECHNOLOGY REQUIREMENTS OF TURBO-GENENATOR" GB/T7064-2002.

2. Basic data

2.1 This type of generator is driven by steam turbine, rotating direction of generator is clockwise while being seen from turbo side to generator side.

2.2 Generator adopts one inlet and two outlet radial circulating ventilation system, hot air is cooled by air coolers.

2.3 Generator adopts pedestal spherical bearing, lubricating oil is supplied by turbo oil system.

2.4 Stator winding、core and rotor winding adopts F class insulation.

2.5 Stator winding of generator is Y interconnection, outlet terminal number is 6, details in layout of turbo-generator drawing.

2.6 Rated operating data while air temperature is between +20～+40℃:

Table 1

(1)	Type	12 QF-15-2
(2)	Rated power	12000kW～15000kW
(3)	Rated power factor	0.8、0.85
(4)	Rated voltage	6300V、10500V
(5)	Insulation level /Operating lavel	F/B
(6)	Rated speed	3000r/min
(7)	Rated frequency	50Hz
(8)	Short ratio	≥0.45
(9)	Substransient reactance	≥0.1
0)	iency (Guranteen value)	≥97%

3. Technical requirements

3.1 Regular operating conditions of generator.

3.1.1 Altitude is not to exceed 1000m.(If altitude ≥1000m，insulation system is to follow high altitude specification.)

3.1.2 Temperature of cooled air is not to exceed +40℃.

3.1.3 Humidity in generator while operating is not to exceed 50%.

3.2 Temperature detector

3.2.1 2 temperature elements are embedded in each phase of stator slots, and 2 temperature elements are embedded in each phase of stator core.

3.2.2 In order to measure the temperature of inlet/outlet wind, some bimetallic thermometers are equipped with for covers and stator supporter respectively. In order to measure the temperature of outlet oil of bearing, a bimetallic thermometer is equipped at bearing pedestal. View window is set on the outlet of oil, and telemetric temperature device of limiting signals are set on bearing bush.

3.3 Generator output power continuously while the voltage variation range is ± 5% and frequency is ±2% at rated power factor.

3.4 Being seen from steam turbine to the generator,rotating direction of generator is clockwise,and mark U、V、W、U1、V1、W1 on terminal to show the phase sequence of stator voltage.

3.5 Stator winding of generator is Y interconnection, outlet terminal number is 6, details in layout of turbo-generator drawing.

3.6 Generator adopts method of exciting: coaxial DC. exciter、coaxial AC. exciter、static silicon controlled thyrsitor.

3.7 Insulation of generator.

3.7.1 Insulation of both stator and rotor adopts F class,which is a heat resisting material.

3.7.2 Insulation resistance

3.7.2.1 When the temperature of stator winding which has been dried is near operation temperature, the value of insulation resistance to ground and between phases which is measured by 2500V megohmmeter isn’t less than the value calculated by the following formula:

$$R = \frac{U}{(1000 + S_N/100)} \quad \& R_{60"} / R_{15"} > .1.3$$

R --- value of insulation resistance（MΩ）

U --- Rated voltage of the generator winding（V）

SN --- Rated capacity of the generator（kVA）

R60”--- Value of insulation resistance while 60s

R15”--- Value of insulation resistance while 15s

Convert the value of insulation resistance while the measuring temperature lower than the working temperature.

3.7.2.2 The value of insulation resistance of rotor winding of the generator in cool state (+20℃) which is measured by 1000V megohmmeter isn’t less than 1MΩ. 3.7.2.3 The value of insulation resistance of embedded thermo-detecters in the generator stator in cool state which is measured by 250V megohmmeter isn’t less than 1MΩ.

3.7.2.4 Insulation must be made among the bearing near exciter, floor plate and oil pipe. The value of insulation resistance measured by 1000V megohmmeter isn’t less than 1MΩ.

3.7.3 Dielectric test

Before A.C. high voltage test, DC. high voltage test of stator winding is made in manufactory 3.5UN, last for 1min.

Power frequency test last for 1min, table 1.

table 1

Item	Parts of generaotr	Testing voltage(effective value)
1	Stator winding	2UN+1000V
2	Exciter winding①	Rated exciting voltage lower than 500V and below: 10 times of rated exciting voltage, 1500V the minimum. Rated exciting voltage over 500V: Twice of rated exciting voltage +4000V
3		Rated exciting voltage lower than 350V and below: 10 times of rated exciting voltage, 1500V the minimum. Rated exciting voltage over 350V: Twice of rated exciting voltage +2800V

Note: ① Magnetic blow-out switch and rotor discharger which is connected to the exciting winding can withstand voltage value of exciting winding high voltage test.

3.8 Prevention of shaft current

Adopts a appropriate method to prevent harmful shaft current,grounding rotor shaft,make sure the insulation resistance value could be measured while the generator is working.

3.9 Over-speed test for the rotor must be made at the speed of 120% rated speed.

The test must be lasted for 2 min and doesn't cause any harmful deformation.

3.10 Critical speed

Operating the generator in frequency range of rule 3.3 , it will not cause harmful vibration which affective the generator, make sure the design value avert ±10% of rated speed.

3.11 When the loads of three phases of generator are unsymmetric and the current of every phase isn't more than rated current (IN) and the ratio of negative-sequence current (I2) to rated current isn't more than 10%, the generator can continue to operate, When the unsymmetric troubles happen, the product of maximum (I2/In)2 and T (seconds) isn't more than 15.

3.12 The generator can withstand 1.5 times of rated current of stator, last for 30s scatheless.

3.13 Supposing to restrict phase current not to exceed maximum value of three phase short circuit current, the generator can withstand any kind of terminal short circuit and not to cause harmful deformation by shut down inmediately while generator in the condition of rated load and 10.5 times of rated voltage.

3.14 Number of starts

No less than 10000 times mechanical starts in it's operating life.

3.15 Technical requirement of exciter details in SPECIFICATION FOR EXCITER.(While adopts exciter)

3.16 Do the test in no-load condition, stator voltage generated by rated exciting current,(not exceeding 130%), testing time is 1min for mutilcircuit winding and instantaneous for single turn winding.

3.17 Limit value of vibaration

3.17.1 Examining vibaration alone at rated speed of rotor in manufactory. Examining vibaration at no-load and rated condition in the line of shafting. The vibaration value of bearing pedestal is seen in table 2. While vibaration test value of rise-fall speed、postcritical rotating speed in range A and overspeed in range C.

Limit vibration value of bearing pedestal(Unit: μ mpeak-peak value) Table 2

Range	Rated speed (r/min)			
	1500	1800	3000	3600
A	50	42	25	21
B	128	107	64	53
C	324	270	162	135

Note:

① Range A: Vibration value of equipment in this range is considered good and could be operated unlimited.

② Range B: Vibration value of equipment in this range,the equipment could be operated continuously.

③ Range C: Vibration value of equipment in this range, start to alarm, arrange for repairing. The equipment could be running for a finite time, to be repaired until appropriate chance.

④ Range D: Vibration value of equipment exceeding this range, tripping inmediately.

Note: in above Table 1～3:

Range A: the equipment is in good condition and may run without limit if the vibration value within this range.

Range B: the equipment may run over a long period of time if the vibration value within this range.

Range C: if the vibration value falls into this range, an alarm will be given, call attention to repair. In general, this machine may run in a limit period till repair in a proper time.

Range D: If the vibration value exceeds Range C, the machine will trip instantaneously.

3.17.2 Natural vibration frequency of stator winding overhang and frame should be avoid ±10% or more of fundamental frequency and frequency doubling.

3.18 Irregularity of voltage waveform

3.18.1 The line voltage waveform sine distortion rate should not exceed 5% when no load and at rated voltage and rated speed.

3.18.2 The telephone harmonic factor of the line voltage should not exceed1.5% when no load and at rated voltage and rated speed.

3.19 When stator winding of the generator is in the cool state, the difference of D.C. resistance between every phase shouldn't be more than 1.5% minimum D.C. resistance value if the errors caused by lead-out wire length have been considered.

3.20 The water pipe for fire extinguishment be provided inside the air-cooled electrical machine and nearby the end of the stator winding according to requirements, the end head of the pipeline must be led out from the machine base.

3.21 Unless otherwise specified in the agreement, the water inlet temperature of the cooler be designed by 33℃, and the working pressure not be less than 0.17MPa, and the test pressure be two times of maximum working pressure for 15min.

If the water pressure of the cooler is controlled by the water source with pressure higher than working pressure of the cooler through valve or the pressure release device, the cooler should be designed by the pressure of the water source, the test water pressure shall be 1.5 times of the water source pressure, and the water source pressure value shall be provided by the user.

The cooler should be designed for that the electrical machine can run continuously with 2/3 of rated load at least if one cooler is sopped due to clearing, at this

time, the temperature of the effective section in the electrical machine should not exceed the allowable value, and the temperature of the primary cooling air may be higher than design value.

3.22 Temperature rise and permissible value of generator

3.22.1 While the generator is running at the condition of 3.1 operating condition and data of table, the temperature permissible value is accord with table 4

Table 4

Components	Position and measuring method	Termperature limit value while cooling air is 40℃
Stator winding	Embeded thermometer method between layer in slots	85K
Rotor winding	Resistance	90K
Stator core	Embeded thermometer method	80K
Collecting ring	Thermometer method	80K
Core and other parts which are not connected with winding	Temperature rise of this components should not to approach the value which damege the winding and other insulating material near to winding	

3.22.2 Temperature of outlet oil:≤65℃, bearing bush: ≤80℃.

3.23 Take-over test items are as follows

3.23.1 Test items and type test in manufactory

*a. Measurement of insulation resistance values of windings, embedded thermo-detecters and bearings to ground, and of insulation resistance between windings;

*b. Measurement of D.C. resistance of rotor winding in cool state; *c. Test for loss calorimetric of stator core;

*d. Test for rotor dynamic balance and over-speed; *e. Withstand voltage test for winding insulation;

*f. Measurement of the A.C. impedance of exciting winding at different speed;

g. Test for no-load characteristic;

h. Test for short-circuit characteristic in steady state;

i. Measurement of the efficiency;

j. Test for three phases are at the sudden short-circuits;(Details in 3.13)

k. Measurement of distortion ratio of sine voltage waveform and phone harmonious factor;

l. Measurement of reactance and time constants;

m. Test of voltage raised up in short time of stator windings;

n. Check of ordinary machine during non-excitation and measurement of bearing oil temperature and of bearing vibration;

o. Measurement of noise;

p. Temperature-rise tests for stator winding, core and rotor winding. (Made at site);

q. Over current in short time;

r. Determination of adjusting ratios of rated exciting current and rated voltage(Made at side) ;

*s. Vibaration mearsuring of staotr core and frame.

The above items which marking with * are the approval tests.

3.23.2 After unpacking, purchaser、manufactory、installer check the cleaness before installation。

3.23.3 Take-over tests are as follows:

a. Measurement of insulation resistance of stator winding, rotor winding, thermo-detectors, bearings to ground and between the phases of stator winding;

b. Measurement of D.C. resistance values of stator and rotor windings in cooling state;

c. Test for the no-load and short-circuit characteristics in steady state;

d. Withstand voltage test of stator winding insulation, under the voltage that is equal to 80% of the value defined in table 1;

e. Test of voltage raised up in short time of stator and rotor windings;

f. Test of generator cooling system;

g. Measurement of the voltage between two ends of shaft and of the voltage of axle to ground;

h. Mechanical check, measurement of oil temperature and of bearing vibration;

i. Measuring of Excitation windings AC. Impedance in different speed. (Except brushless exciter);

3.24 Nameplate and product No.

3.24.1 The data of cooler nameplate must conform to the National Standard, GB/T7064-2002.

3.24.2 The product No. of the generator must be printed on the end surface of the rotor at the end of shaft coupling.

3.25 Packing、storage

3.25.1 Packing

Generator must be packed and fixed well to prevent from sliding and being damaged during transportation. The package should be marked as follows:

a. Description and type of product;

b. Gross weight and net weight(kg or t);

c. Name and address of manufacturer;

d. Receiver and station of destination;

e. Notices(such as “HANDLE WITH CARE”,“KEEP DRY” and “TO BE PROTECTED FROM IMPACT”).

3.25.2 Storage

The surface of the generator rotor should be painted with antirusting paint,the

lower storage temperature is 5℃. Take steps while temperature lower than 5℃. 3.26 The supply scope of a complete set of the generator details in “The Product Supplied List”.

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
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PELAKSANAAN REVISI LAPORAN AKHIR

Mahasiswa berikut,

Nama : SEFTO JEPERSEN

NIM : 0613 3031 0168

Jurusan/Program Studi : Teknik Elektro / Teknik listrik

Judul Laporan Akhir : .....

.....

.....

Telah melaksanakan revisi terhadap Laporan Akhir yang diujikan pada hari ..Kamis.. tanggal ..04.. bulan ..Agustus.. tahun ..2016.. Pelaksanaan revisi terhadap Laporan Akhir tersebut telah disetujui oleh Dosen Penguji yang memberikan revisi:

No.	Komentar	Nama Dosen Penguji *)	Tanggal	Tanda Tangan
1	Perbaiki Penulisan	Pak Lies	17/8/16	
2	Telah Direvisi	Nofiansah	18/8/2016	

Palembang, Jumat, 19-08-2016

Ketua Penguji **),

(Nofiansah, S.T., M.T.)

NIP 19701116 199502 1001

Catatan:
*) Dosen penguji yang memberikan revisi saat ujian laporan akhir
**) Dosen penguji yang ditugaskan sebagai Ketua Penguji saat ujian LA
Lembaran pelaksanaan revisi ini harus dilampirkan dalam Laporan Akhir.

KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
POLITEKNIK NEGERI SRIWIJAYA
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REKOMENDASI UJIAN LAPORAN AKHIR (LA)

Pembimbing Laporan Akhir memberikan rekomendasi kepada,

Nama	:	Sefto Repersen
NIM	:	0613 3031 0168
Jurusan/Program Studi	:	TEKNIK ELEKTRO / TEKNIK LISTRIK
Judul Laporan Akhir	:	Analisa Perubahan Beban Terhadap Efisiensi Generator Unit 1 Banko Barat di PLTU PT. Bukit Asam (Persero) Tbk

Mahasiswa tersebut telah memenuhi persyaratan dan dapat mengikuti Ujian Laporan Akhir (LA) pada Tahun Akademik 2015 / 2016

Palembang, 27 Juli 2016.

Pembimbing I,	Pembimbing II,
27/7/16	
(Ir. Kasmir, M.T.)	(Anton Firmansyah, S.T., M.T.)
NIP 196511101992031028	NIP 197509242008121001

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KESEPAKATAN BIMBINGAN LAPORAN AKHIR (LA)

Kami yang bertanda tangan di bawah ini,

Pihak Pertama

Nama	: Sefto Jepersen
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Jurusan	: Teknik Elektro
Program Studi	: Teknik Listrik

Pihak Kedua

Nama	: Anton Firmansyah, S.T., M.T
NIP	: 19750924 200812 1001
Jurusan	: Teknik Elektro
Program Studi	: Teknik Listrik

Pada hari ini ..... Rabu ..... tanggal ..... 02-03-2016 ..... telah sepakat untuk melakukan konsultasi bimbingan Laporan Akhir.

Konsultasi bimbingan sekurang-kurangnya 1 (satu) kali dalam satu minggu. Pelaksanaan bimbingan pada setiap hari ..... Rabu ..... pukul ..... 14:00 ....., tempat di Politeknik Negeri Sriwijaya.

Demikianlah kesepakatan ini dibuat dengan penuh kesadaran guna kelancaran penyelesaian Laporan Akhir.

Palembang,

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Kami yang bertanda tangan di bawah ini,

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Jurusan	: Teknik Elektro
Program Studi	: Teknik Listrik

Pada hari ini ..... Selasa ..... tanggal ..... 01/03/2016 ..... telah sepakat untuk melakukan konsultasi bimbingan Laporan Akhir.

Konsultasi bimbingan sekurang-kurangnya 1 (satu) kali dalam satu minggu. Pelaksanaan bimbingan pada setiap hari ..... Rabu ..... pukul 09:30 - 13:00 tempat di Politeknik Negeri Sriwijaya.

Demikianlah kesepakatan ini dibuat dengan penuh kesadaran guna kelancaran penyelesaian Laporan Akhir.

Palembang,

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LEMBAR BIMBINGAN LAPORAN AKHIR

Lembar : 1

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Judul Laporan Akhir : Analisa Pengaruh Beban Terhadap Efisiensi Generator PLTU di PT. Bukit Asam (PERSERO) TBK. Tanjung Enim Sumatera Selatan
Pembimbing ①/ II *) : Ir. Kasmir, M.T.

No.	Tanggal	Uraian Bimbingan	Tanda Tangan Pembimbing
1.	10-02-2016	Proposal LA / jurnal	
2.	16-02-2016	acc Proposal / jurnal	
3.	24-03-2016	Bab I Seminar dg perusahaan	
4.	25-03-2016	Bab II Cantumkan pustaka. Siding akhir. Kalimat yg di arsir	
5.	12-05-2016	Lanjut Bab III dan Bab IV	
6.	16/06/2016	Acc sidang kelengkapan Lanjut Bab V	
7.	17/06/2016	Siapkan data, untuk lapiran. Susun ± dokumen.	

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Nama : SEFTO JEPERSEN
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Jurusan/Program Studi : Teknik Elektro / Teknik Listrik
Judul Laporan Akhir : ANALISA PENGARUH BEBAN TERHADAP EFISIENSI GENERATOR PLTU DI PT. BUKIT ASAM (PERSERO) TBK TANJUNG ENIM - SUMATERA SELATAN
Pembimbing I / II *) : ANTON FIRMANSYAH, S.T., M.T.

No.	Tanggal	Uraian Bimbingan	Tanda Tangan Pembimbing
1.	14/3/16	Perbaiki Penulisan di latar belakang	
2.	16/3-16	Acc Bab I	
3.	6/4/16	Buat outline tiap Bab	
4.	19/4/16	Penambahan judul (Analisa Pengaruh Perubahan beban terhadap efisiensi	
5.		Generator SINKron unit 1 pada PLTU Banko Barat 3 x 10 MW PT. BUKIT ASAM (PERSERO) TBK)	
6.	28/4-2016	Perbaiki Penulisan. Rumus yg digunakan.	
7.	2 Mei 2016	Beri Gambar Bentuk gelombang Jenis beban listrik ; hapus Grafik di Bab III	

Bukit Asam

SINCRONE TURBIN-GENERATOR
FORM INSPECTION CHECK LIST FOR DCS

No. Revisi : 0
Halaman : 1

Tanggal : Sab. 29-03-2016 s/d 25-03-2016

GENERATOR

#1 FHB

ITEM	I	U L	U H	P	Q	F L	F H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,95
10.00	753.20	6.57		7.99	3.29	50.28		0.92
12.00	748.00	6.57		7.89	3.50	50.23		0.91
14.00	742.00	6.54		7.37	4.20	50.29		0.87
16.00	742.00	6.59		7.57	3.83	50.08		0.89
18.00	758.60	6.52		7.54	4.24	50.12		0.87
20.00	799.80	6.51		7.99	4.28	50.25		0.88
22.00	705.60	6,55		7.30	3.52	50,34		0,90
00.00	686.80	6.60		7.32	3.10	50.29		0.92
02.00	755.20	6.59		8.10	3.20	50.36		0.93
04.00	709.6	6.60		7.59	2.95	50.32		0.93
06.00	717.6	6.58		7.55	3.47	50.18		0.91
08.00	715.20	6.59		7.65	3.41	50.23		0.93

#2 FHB

ITEM	I	U L	U H	P	Q	F L	F H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53		0,8 s/d 0,95

#3 FHB

ITEM	I	U L	U H	P	Q	F L	F H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		,8 s/d 0,9
10.00	777.20		6.61	7.99	4.07	50.27		0.89
12.00	769.00		6.60	8.00	4.21	50.23		0.88
14.00	835.60		6.58	8.28	4.84	50.29		0.86
16.00	779.20		6.56	8.25	3.93	50.08		0.90
18.00	873.60		6.53	9.32	4.27	50.12		0.92
20.00	888.00		6.53	9.39	4.38	50.16		0.91
22.00	758,40		6.57	7.95	3.54	50,34		0,91
00.00	761.20		6.62	8.11	3.45	50.29		0.92
02.00	792.80		6.61	8.16	3.63	50.36		0.91
04.00	816.6		6.63	8.03	3.36	50.36		0.94
06.00	809.6		6.62	8.13	3.92	50.19		0.91
08.00	778.80		6.65	8.08	4.07	50.23		0.89

MSS 1

ITEM	I	U	F I	F H
Unit	A	kV	Hz	Hz
Range	0-290	19-21	48 - 52	
10.00	123.00	20.61	50.27	
12.00	149.76	20.55	50.27	
14.00	135.00	20.39	50.30	
16.00	124.56	20.99	50.08	
18.00	140.40	20.39	50.12	
20.00	149.60	20.30	50.19	
22.00	112.08	20.52.	50.34.	
00.00	75.12	20.69	50.29	
02.00	76.68	20.69	50.36	
04.00	95.4	20.71	50.33	
06.00	79.84	20.60	50.18	
08.00	51.84	20.68	50.26	

MSS 2

ITEM	I	U	F I	F H
Unit	A	kV	Hz	Hz
Range	0 - 330	19 - 23	48 - 52	
10.00	24.96	20.62	50.27	
12.00	65.64	20.57	50.22	
14.00	151.08	20.40	50.30	
16.00	88.30	20.46	50.09	
18.00	63.60	20.41	50.12	
20.00	140.88	20.31	50.19	
22.00	42.36	20.53.	50.34.	
00.00	40.20	20.71	50.29	
02.00	40.20	20.66	50.36	
04.00	41.2	20.73	50.32	
06.00	135.6	20.62	50.19	
08.00	36.84	20.69	50.26	

ANGGREK

ITEM	I	U	F I	F H
Unit	A	kV	Hz	Hz
Range	0-204	19-21	48 - 52	
10.00	238.44	20.75	50.28	
12.00	170.52	20.35	50.22	
14.00	117.48	20.87	50.30	
16.00	170.76	20.57	50.08	
18.00	194.64	20.57	50.12	
20.00	194.88	20.99	50.13	
22.00	204.48	20.64.	50.34.	
00.00	251.16	20.83	50.39	
02.00	272.52	20.77	50.36	
04.00	252.6	20.85	50.33	
06.00	196.16	20.73	50.18	
08.00	188.52	20.82	50.26	

Keterangan :

STEP UP TRAFO 20 kV

ITEM	#1GHB	#2GH2	#3GHB
Unit	A	A	A
Range	0 - 433 A		
10.00	193.5	244.9	237.7
12.00	190.26	244.50	240.2
14.00	192.1	247.72	241.0
16.00	195.3	249.81	230.3
18.00	194.2	245.16	231.2
20.00	198.7	245.61	235.3
22.00	195,3	247.15	228.1
00.00	187.6	245.32	226.7
02.00	198.3	245.60	225.3
04.00	200.10	245.0	230.2
06.00	179.1	245.90	220.10
08.00	195.1	245.07	227.6

STEP UP TRAFO 6,3 kV

ITEM	#1DHB	#2DHB	#3DHB
Unit	A	A	A
Range	0 - 1374 A		
10.00	613.60	764.0	699.00
12.00	609.90	772.0	712.90
14.00	585.60	760.40	760.40
16.00	598.00	779.60	699.20
18.00	598.80	779.60	780.00
20.00	624.80	779.60	806.80
22.00	547.60	778.00	699.00
00.00	546.00	778.00	754.80
02.00	616.00	778.00	688.00
04.00	567.6	777.2	700.6
06.00	560.6	777.00	720.6
08.00	578.00	775.20	691.80

BUS CONNECTION

ITEM	MCBH 1	MCBH 2
Unit	A	
Range	0 - 474 A	

AUXILIARY TRAFO 6,3 kv

ITEM	DHB 1	DHB 2	DHB 3
Unit	A	A	A
Range	0 - 147A		
10.00	30.88	23.76	18.40
12.00	31.16	24.68	18.17
14.00	32.52	27.68	18.32
16.00	29.92	26.92	18.08
18.00	31.96	28.56	17.96
20.00	32.32	26.24	18.24
22.00	44.52	25.00	18.24
00.00	33.28	29.56	18.28
02.00	32.92	29.92	18.60
04.00	31.08	29.24	18.04
06.00	25.2	24.12	18.08
08.00	30.20	25.44	18.16

ID FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 32 A		
10.00	18.92		18.10
12.00	18.74		18.10
14.00	18.52		18.48
16.00	18.66		18.32
18.00	18.58		17.92
20.00	18.62		17.98
22.00	18.74		18.20
00.00	19.00		18.28
02.00	18.96		18.18
04.00	18.96		18.2
06.00	18.78		18.18
08.00	18.92		18.32

PA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 26,9 A		
10.00	14.96		
12.00	14.30		
14.00	14.34		
16.00	14.98		
18.00	14.52		
20.00	14.52		
22.00	14.64		
00.00	14.52		
02.00	14.52		
04.00	14.56		
06.00	14.46		
08.00	14.46		

SA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 30 A		
10.00	14.62	12.86	
12.00	14.99	12.86	
14.00	15.22	12.64	
16.00	15.06	12.82	
18.00	14.44	12.64	
20.00	14.80	12.74	
22.00	14,66	12,78	
00.00	14.55	12.90	
02.00	14.66	12.90	
04.00	14.61	12.89	
06.00	14.69	12.82	
08.00	14.54	12.83	

CW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 35, 12 A			
10.00	12.94	32.54		31.88
12.00	12.99	32.39		31.81
14.00	12.98	32.42		32.14
16.00	12.78	32.70		31.52
18.00	12.72	32.24		31.84
20.00	12.68	32.24		31.84
22.00	12.90	32.32		32.02
00.00	12.90	32.20		31.78
02.00	12.94	32.60		32.04
04.00	12.78	32.60		32.44
06.00	12.94	32.91		31.68
08.00	12.98	32.34		31.78

TW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 30,56 A			
10.00	19.89	20.86		
12.00	19.58	20.80		
14.00	21.10	22.04		
16.00	20.19	21.18		
18.00	20.62	21.52		
20.00	20.80	21.78		
22.00	21.14	22.04		
00.00	20.88	21.92		
02.00	21.10	22.00		
04.00	20.60	21.74		
06.00	21.10	22.14		
08.00	19.72	20.80		

Reported by shift I:
Operator group A/B/C/D

(.....)

Reported by shift II: NUPYADI - PRAMUSYANI
Operator group A/B/C/D

(.....)

Reported by shift III:
Operator group A/B/C/D

(.....)

Notes For Information :

Checked by:

Supv. Grup : .....
NP

Checked by:

Supv. Grup : .....
NP

Checked by:

Supv. Grup : .....
NP

BEST
Bukit Energy Servis Terpadu

Bukit Asam

SINCRONE TURBIN-GENERATOR
FORM INSPECTION CHECK LIST FOR DCS

No. Revisi 0
Halaman 1

Tanggal : 25 · 03 · 2016 s/d 26 - 03 - 2016

GENERATOR

#1 EHB

ITEM	I	U		P	Q	f		Cos φ
		L	H			L	H	
Unit	Ay	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,95
10.00	767.00	6.57		7.91	3.74	50.23		0.90
12.00	761.60	6.57		7.44	3.41	50.04		0.91
14.00	750.60	6.57		7.79	3.67	50.34		0.90
16.00	718.00	6.57		7.39	3.67	50.31		0.90
18.00	797.20	6.55		7.60	3.96	50.33		0.89
20.00	790.40	6.62		7.73	3.73	49.77		0.90
22.00	696.80	6.58		7.45	3.12	50.16		0.92
00.00	726.4	6.61		7.29	4.3	50.26		0.86
02.00	860.96	6.62		8.26	4.76	49.79		0.86
04.00	771.40	6.62		8.05	3.96	50.39		0.90
06.00	765.20	6.58		7.66	1.85	49.94		0.89
08.00	747.20	6.55		7.89	3.81	50.32		0.92

#2 EHB

ITEM	I	U		P	Q	f		Cos φ
		L	H			L	H	
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53		0,8 s/d 0,95
10.00								
12.00								
14.00								
16.00								
18.00								
20.00								
22.00								
00.00								
02.00								
04.00								
06.00								
08.00								

#3 EHB

ITEM	I	U		P	Q	f		Cos φ
		L	H			L	H	
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,9
10.00	791.00		6.61	7.92	4.62	50.25		0.86
12.00	808.00		6.63	8.28	4.33	50.25		0.89
14.00	756.20		6.61	8.80	4.34	50.35		0.87
16.00	834.80		6.61	8.50	4.59	50.32		0.88
18.00	821.20		6.60	8.14	4.86	50.33		0.82
20.00	674.40		6.66	6.66	4.08	49.79		0.86
22.00	712.40		6.61	7.53	3.21	50.17		0.92
00.00	768.4		6.63	7.76	4.58	50.27		0.89
02.00	787.6		6.69	8.06	4.76	49.99		0.87
04.00	771.60		6.63	8.02	3.97	50.33		0.90
06.00	848.20		6.61	8.06	4.82	49.95		0.86
08.00	762.80		6.58	7.88	3.82	50.32		0.90

MSS 1

I	U	f		Cos φ
		L	H	
A	kV	Hz	Hz	
0-290	19-21	48 - 52		
158.64	20.53	50.35		
69.18	20.59	50.35		
71.28	20.59	50.35		
80.64	20.53	50.32		
133.68	20.45	50.35		
62.64	20.75	49.86		
87.96	20.68	50.20		
90.68	20.66	50.25		
111.89	20.62	49.81		
96.72	20.66	50.34		
112.92	20.97	49.95		
103.20	20.98	50.32		

MSS 2

I	U	f		Cos φ
		L	H	
A	kV	Hz	Hz	
0 - 330	19 - 21	48 - 52		
85.32	20.54	50.26		
40.44	20.61	50.25		
20.35	20.55	50.36		
56.55	20.51	50.32		
55.32	20.44	50.34		
21.24	20.75	49.86		
24.96	20.67	50.20		
25.96	20.66	50.25		
35.2	20.65	49.81		
57.12	20.68	50.33		
83.28	20.98	49.99		
31.32	20.51	50.32		

ANGGREK

I	U	f		Cos φ
		L	H	
A	kV	Hz	Hz	
0-204	19-21	48 - 52		
152.64	20.66	50.35		
278.84	20.93	50.24		
234.12	20.67	50.35		
255.60	20.66	50.32		
310.72	20.58	50.33		
228.48	20.81	50.30		
237.72	20.79	50.22		
257.12	20.72	50.26		
235.4	20.76	49.81		
245.52	20.80	50.34		
209.64	20.61	49.95		
292.40	20.63	50.33		

STEP UP TRAFO 20 kV

ITEM	#1GHB	#2GHB	#3GHB
Unit	A	A	A
Range	0 - 433 A		
10.00	194.1	24.47	213.8
12.00	195.3	24.52	220.2
14.00	196.2	24.50	220.2
16.00	195.3	24.61	215.3
18.00	196.9	25.10	223.8
20.00	182.7	25.8	208.1
22.00	183.8	25.3	210.8
00.00	190.6	25.7	220.1
02.00	190.8	25.7	221.3
04.00	195.3	24.96	201.7
06.00	180.9	24.30	203.6
08.00	190.3	24.87	203.9

STEP UP TRAFO 6,3 kV

ITEM	#1DHB	#2DHB	#3DHB
Unit	A	A	A
Range	0 - 1374 A		
10.00	616.80	77.20	697.00
12.00	572.80	77.20	720.40
14.00	592.20	79.60	724.40
16.00	577.60	78.80	715.60
18.00	603.20	80.90	705.20
20.00	577.20	76.90	571.20
22.00	569.20	75.30	597.60
00.00	578.6	75.6	734.6
02.00	664.4	79.96	755.6
04.00	631.60	79.40	693.20
06.00	626.40	82.80	766.60
08.00	599.60	79.40	692.00

BUZ CONNECTION

ITEM	MLBH 1	MLBH 2
Unit	A	
Range	0 - 474 A	
10.00		
12.00		
14.00		
16.00		
18.00		
20.00		
22.00		
00.00		
02.00		
04.00		
06.00		
08.00		

AUXILIARY TRAFO 6,3 Kv

ITEM	DHB 1	DHB 2	DHB 3
Unit	A	A	A
Range	0 - 147A		
10.00	44.44	23.20	18.16
12.00	29.84	23.88	17.96
14.00	16.40	26.16	17.96
16.00	24.49	26.08	18.08
18.00	30.28	28.69	18.08
20.00	50.98	24.68	18.08
22.00	30.20	22.69	18.29
00.00	32.32	22.72	18.16
02.00	31.29	22.52	18.16
04.00	32.32	21.48	18.16
06.00	44.08	21.12	18.52
08.00	91.24	21.32	18.08

ID FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 32 A		
10.00	18.88		19.42
12.00	18.84		18.72
14.00	18.30		18.14
16.00	18.62		18.50
18.00	18.70		18.11
20.00	18.08		18.50
22.00	18.89		17.96
00.00	18.91		18.91
02.00	19.22		18.96
04.00	19.06		18.64
06.00	18.83		18.22
08.00	18.62		17.87

PA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 26,9 A		
10.00	17.62		19.58
12.00	17.42		18.06
14.00	14.96		15.10
16.00	19.39		15.18
18.00	19.60		15.21
20.00	19.98		15.28
22.00	19.60		19.58
00.00	19.56		14.89
02.00	19.32		14.61
04.00	19.60		19.66
06.00	19.38		19.59
08.00	19.60		14.44

SA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 30 A		
10.00	12.82		12.86
12.00	12.90		12.82
14.00	12.78		12.78
16.00	12.79		12.75
18.00	12.78		12.68
20.00	13.12		12.71
22.00	12.86		12.94
00.00	13.09		13.50
02.00	13.09		13.49
04.00	12.96		12.82
06.00	13.00		12.90
08.00	12.78		12.78

CW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 35, 12 A			
10.00	32.50			31.78
12.00	32.54			31.84
14.00	33.08			31.88
16.00	32.96			31.89
18.00	32.50			32.00
20.00	33.08			31.78
22.00	32.90			31.92
00.00	32.38			31.98
02.00	31.6			31.98
04.00	32.54			32.00
06.00	32.20			31.62
08.00	32.42			32.10

TW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 30,56 A			
10.00	20.36	21.36		
12.00	20.62	21.28		
14.00	20.59	21.68		
16.00	20.69	21.62		
18.00	20.92	20.92		
20.00	20.62	20.58		
22.00	20.92	20.90		
00.00	20.50	21.26		
02.00	19.84	20.96		
04.00	20.65	21.98		
06.00	20.10	20.88		
08.00	20.32	21.44		

Keterangan :

Reported by shift I :
Operator group A/B/C/D

(.....)

Checked by:

Supv. Grup :.....
NP

Reported by shift II :
Operator group A/B/C/D

(.....)

Checked by:

Supv. Grup :.....
NP

Reported by shift III :
Operator group A/B/C/D

(.....)

Checked by:

Supv. Grup :.....
NP

Notes For Information :

BEST
Bukit Energy Servis Terpadu

Bukit Asam

SINCRONE TURBIN-GENERATOR
FORM INSPECTION CHECK LIST FOR DCS

No. Revisi : 0
Halaman : 1

Tanggal : 26-03-2016

ITEM	GENERATOR																												MSS 1				MSS 2				ANGGREK			
	#1 FHB								#2 FHB								#3 FHB																							
	I	U		P	Q	F		Cos ϕ	I	U		P	Q	F		Cos ϕ	I	U		P	Q	F		Cos ϕ					I	U	F		I	U	F		I	U	F	
		L	H			L	H			L	H			L	H			L	H			L	H																	
Unit	A	kV	kV	MW	mVar	Hz	Hz		A	kV	kV	MW	mVar	Hz	Hz		A	kV	kV	MW	mVar	Hz	Hz						A	kV	Hz	Hz	A	kV	Hz	Hz	A	kV	Hz	Hz
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,95	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53		0,8 s/d 0,95	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,9					0-290	19-21	48 - 52		0-330	19-21	48 - 52		0-204	19-21	48 - 52	
10.00	723.20	6.53		7.45	3.57	50.11		0.90									756.20	6.57		7.64	4.13	50.12		0.88	48.60	20.44	50.11		3.12	20.45	50.11		314.52	20.57	50.11					
12.00	719.20	6.53		7.44	3.53	50.31		0.90									755.20	6.57		7.75	3.95	50.32		0.89	51.96	20.46	50.31		3.36	20.48	50.31		307.60	20.59	50.32					
14.00	745.20	6.51		7.45	4.07	50.06		0.88									755.80	6.55		7.36	4.55	50.06		0.85	177.21	20.34	50.07		2.64	20.34	50.06		186.44	20.47	50.06					
15.00	752.40	6.50		7.51	4.13	50.06		0.88									748.00	6.50		7.61	3.79	50.27		0.89	189.48	20.39	50.29		2.64	20.31	50.27		186.04	20.43	50.29					
18.00	772.00	6.49		7.58	4.43	50.27		0.86									838.00	6.49		8.60	4.01	50.23		0.91	141.72	20.22	50.24		2.88	20.23	50.24		233.84	20.35	50.24					
20.00	~~795.00~~ 790.80	6.49	6.48	7.81	3.16	49.88		0.93									807.80	6.51		8.57	3.12	49.88		0.94	121.44	20.35	49.87		2.64	20.37	49.88		268.32	20.48	49.88					
22.00	768.40	6.56		8.26	3.12	49.77		0.94									803.60	6.58		8.58	3.48	49.76		0.93	154.44	20.39	49.76		2.64	20.60	49.74		234.60	20.74	49.77					
00.00	728.40	6.56		7.96	3.83	50.38		0.89									686.80	6.59		6.93	3.88	50.38		0.87	54.12	20.59	50.37		2.64	20.55	50.36		209.44	20.67	50.36					
02.00	749.00	6.55		7.55	3.99	50.39		0.88									755.60	6.58		7.72	4.01	50.34		0.89	123.84	20.49	50.33		2.64	20.50	50.34		229.52	20.63	50.34					
04.00	741.40	6.56		7.46	4.24	50.33		0.87									770.80	6.57		7.73	4.34	50.33		0.87	119.88	20.43	50.33		2.64	20.44	50.32		240.84	20.56	50.33					
06.00	789.60	6.54		7.98	4.52	50.08		0.86									761.20	6.56		7.93	4.68	50.08		0.87	57.00	20.41	50.03		2.28	20.41	50.01		238.80	20.59	50.02					
08.00	732.00	6.50		7.62	3.35	50.17		0.92									769.20	6.52		8.02	3.53	50.18		0.92	82.44	20.34	50.17		2.64	20.36	50.18		280.32	20.48	50.18					

ITEM	STEP UP TRAFO 20 kV			STEP UP TRAFO 6,3 kV			BUZ CONNECTION		AUXILIARY TRAFO 6,3 Kv			ID FAN			PA FAN			SA FAN			CW PUMP				TW PUMP			
	#1GHB	#2GHB	#3GHB	#1OHB	#2OHB	#3OHB	MLBH 1	MLBH 2	OHB 1	OHB 2	OHB 3	#1	#2	#3	#1	#2	#3	#1	#2	#3	#1	#2	#3	#4	#1	#2	#3	#4
Unit	A	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Range	0 - 433 A			0 - 1374 A			0 - 474 A		0 - 147A			0 - 32 A			0 - 26,9 A			0 - 30 A			0 - 35, 12 A				0 - 30,56 A			
10.00	180.4	24.00	236.7	577.20	74.40	739.20			40.64	21.92	18.24	18.52		17.76	14.38			14.28	12.74	12.82		32.28	31.88		20.24	20.92		
12.00	187.6	23.37	246.5	566.80	76.40	668.60			43.56	22.72	18.32	18.58		17.62	14.46			14.28	12.74	12.72		32.50	32.10		20.44	21.40		
14.00	187.5	23.21	243.3	596.20	75.20	684.40			52.52	23.08	18.60	18.16		17.26	14.20			13.80	12.64	12.68		31.98	31.04		20.88	20.14		
16.00	185.6	24.22	240.1	603.20	78.80	689.20			39.88	26.00	18.74	18.36		17.66	14.38			13.58	12.64	12.56		32.96	32.40		20.36	21.86		
18.00	186.2	24.22	240.2	613.60	78.80	700.96			39.24	25.38	18.24	18.36		17.62	14.46			14.40	12.60	12.78		32.64	32.34		20.62	21.58		
20.00	184.2	24.60	240.2	584.80	75.20	613.20			53.28	29.40	18.32	18.48		17.54	14.30			14.30	12.79	12.54		32.20	31.62		19.32	20.40		
22.00	180.6	24.59	285.2	622.86	76.40	611.20			42.09	24.48	18.16	18.52		18.06	14.42			14.14	13.00	12.90		32.00	31.48		19.88	20.86		
00.00	174.4	24.88	240.6	586.80	74.40	605.20			36.56	21.72	18.40	18.70		17.91	14.49			14.51	12.88	12.78		32.72	32.09		20.32	21.19		
02.00	180.8	24.51	239.7	609.80	74.40	659.00			37.08	22.08	18.64	18.70		17.88	14.60			14.21	12.82	12.77		32.89	31.96		20.32	21.18		
04.00	182.3	24.68	199.3	603.20	76.40	672.00			36.48	22.64	18.40	18.58		17.44	14.60			14.44	12.74	12.60		32.72	32.04		19.84	21.00		
06.00	184.9	24.71	204.5	649.60	75.20	685.20			37.72	23.08	18.52	18.70		17.88	14.52			14.70	12.86	12.69		32.16	31.70		19.98	20.66		
08.00				581.60	75.20	670.40			40.12	21.48	18.36	18.36		17.58	14.38			14.70	12.56	12.46		32.38	31.74		21.18	21.74		

Keterangan :

Reported by shift I:
Operator group A/B/C/D

( )

Reported by shift II:
Operator group A/B/C/D
- Muliyanto
- Aji Saputro

( )

Reported by shift III:
Operator group A/B/C/D

( )

Notes For Information :

Checked by:

Supv. Grup :
NP

Checked by:

Supv. Grup :
NP

Checked by:

Supv. Grup :
NP

BEST
Bukit Energy Servis Terpadu

Bukit Asam

SINCRONE TURBIN-GENERATC

FORM INSPECTION CHECK LIST FOR DCS

No. Revisi 0

Halaman 1

Tanggal : 27-03-2016

GENERATOR

#1 FHB

ITEM	I	U L	U H	P	Q	F L	F H	Cos ϕ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8s/d 0,95
10.00	749.40	6.49		7.71	3.48	50.26		0.91
12.00	762.40	6.47		7.65	3.98	50.31		0.89
14.00	760.40	6.45		7.41	4.32	50.32		0.86
15.00	748.80	6.48		7.66	3.67	50.00		0.90
18.00	709.80	6.47		7.13	3.80	50.29		0.88
20.00	719.20	6.43		7.40	4.68	50.12		0.87
22.00	721.60	6.50		7.68	3.10	50.31		0.93
00.00	736.40	6.57		7.48	3.89	49.96		0.89
02.00	744.60	6.56		7.57	4.11	50.25		0.88
04.00	730.40	6.57		7.50	3.89	50.11		0.89
06.00	744.40	6.49		7.68	3.62	50.10		0.90
08.00	726.80	6.55		7.40	3.82	49.85		0.89

#2 FHB

ITEM	I	U L	U H	P	Q	F L	F H	Cos ϕ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53		0,8 s/d 0,95
10.00								
12.00								
14.00								
15.00								
18.00								
20.00								
22.00								
00.00								
02.00								
04.00								
06.00								
08.00								

#3 FHB

ITEM	I	U L	U H	P	Q	F L	F H	Cos ϕ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,9
10.00	719.60		6.52	7.35	3.63	50.27	0.90	
12.00	753.20		6.49	7.50	4.08	50.31	0.88	
14.00	803.60		6.48	7.96	4.38	50.32	0.88	
15.00	738.80		6.51	7.45	3.91	49.99	0.89	
18.00	732.80		6.50	7.41	3.97	50.30	0.88	
20.00	822.60		6.46	8.03	4.85	50.12	0.87	
22.00	780.40		6.55	7.50	3.63	50.32	0.90	
00.00	730.80		6.60	7.24	4.32	49.95	0.89	
02.00	774.40		6.55	8.16	3.41	50.26	0.92	
04.00	756.80		6.58	7.94	3.56	50.31	0.91	
06.00	796.40		6.53	8.31	4.04	50.11	0.88	
08.00	826.60		6.54	8.09	4.73	49.86	0.86	

MSS 1

ITEM	I	U	F L	F H
Unit	A	kV	Hz	Hz
Range	0-290	19-21	48-52	
10.00	76.49	20.31	50.26	
12.00	173.52	20.19	50.30	
14.00	178.20	20.12	50.36	
15.00	69.49	20.27	50.00	
18.00	99.40	20.22	50.28	
20.00	125.09	20.09	50.19	
22.00	63.98	20.43	50.33	
00.00	129.16	20.52	49.95	
02.00	139.92	20.42	50.23	
04.00	50.16	20.54	50.31	
06.00	56.40	20.37	50.11	
08.00	95.76	11.81	49.85	

MSS 2

ITEM	I	U	F L	F H
Unit	A	kV	Hz	Hz
Range	0-330	19-21	48-52	
10.00	2.28	20.34	50.26	
12.00	2.04	20.20	50.29	
14.00	2.28	20.12	50.35	
15.00	2.28	20.27	50.00	
18.00	2.28	20.25	50.26	
20.00	2.07	20.05	50.12	
22.00	2.28	20.45	50.30	
00.00	2.04	20.53	49.96	
02.00	2.04	20.45	50.24	
04.00	2.28	20.53	50.31	
06.00	2.04	20.35	50.12	
08.00	0.00	0.28	49.85	

ANGGREK

ITEM	I	U	F L	F H
Unit	A	kV	Hz	Hz
Range	0-204	19-21	48-52	
10.00	264.48	20.47	50.26	
12.00	156.72	20.31	50.29	
14.00	180.12	20.24	50.34	
15.00	261.89	20.40	50.00	
18.00	249.00	20.35	50.25	
20.00	233.48	2019	50.10	
22.00	278.16	20.48	50.24	
00.00	212.52	20.64	49.96	
02.00	212.41	20.56	50.25	
04.00	303.84	20.68	50.31	
06.00	291.12	20.46	50.11	
08.00	356.92	20.61	49.85	

Keterangan :

STEP UP TRAFO 20 kV

ITEM	#1GHB	#2GHB	#3GHB
Unit	A	A	A
Range	0 - 433 A		
10.00	183.6	25.13	204.3
12.00	191.3	24.59	210.9
14.00	182.5	24.87	209.3
16.00	195.8	25.16	201.8
18.00	187.1	25.31	205.8
20.00	195.8	24.90	230.1
22.00	190.3	24.81	215.7
00.00	184.7	24.64	221.3
02.00	187.9	25.15	213.8
04.00	187.2	25.26	220.8
06.00	181.8	24.63	216.3
08.00	182.4	24.00	224.5

STEP UP TRAFO 6,3 kV

ITEM	#1DHB	#2DHB	#3DHB
Unit	A	A	A
Range	0 - 1374 A		
10.00	584.00	78.00	648.40
12.00	604.40	77.20	691.20
14.00	590.80	78.00	728.20
16.00	608.40	78.80	686.00
18.00	566.80	78.00	698.40
20.00	603.80	76.90	753.60
22.00	579.60	76.40	676.40
00.00	599.60	74.40	716.40
02.00	604.80	75.20	669.60
04.00	588.40	76.40	652.80
06.00	590.00	75.20	677.20
08.00	592.00	73.60	748.40

BUZ CONNECTION

ITEM	MLBH 1	MLBH 2
Unit	A	
Range	0 - 474 A	
10.00		
12.00		
14.00		
16.00		
18.00		
20.00		
22.00		
00.00		
02.00		
04.00		
06.00		
08.00		

AUXILIARY TRAFO 6,3 Kv

ITEM	DHB 1	DHB 2	DHB 3
Unit	A	A	A
Range	0 - 147A		
10.00	50.72	23.52	18.89
12.00	40.48	23.32	18.40
14.00	52.84	23.08	18.24
16.00	29.32	24.96	18.68
18.00	41.44	25.28	18.24
20.00	45.68	22.88	18.90
22.00	48.92	22.52	18.76
00.00	29.48	22.72	18.84
02.00	32.92	22.92	18.60
04.00	32.84	22.96	18.68
06.00	39.16	22.28	18.84
08.00	24.80	22.12	18.84

ID FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 32 A		
10.00	18.32		17.66
12.00	18.22		17.40
14.00	18.06		17.36
15.00	18.26		17.58
18.00	18.26		17.80
20.00	18.10		17.90
22.00	18.98		18.45
00.00	18.80		18.14
02.00	18.62		17.86
04.00	18.66		17.89
06.00	18.44		17.70
08.00	18.84		17.88

PA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 26,9 A		
10.00	14.82		14.54
12.00	14.34		14.76
14.00	14.46		14.66
15.00	14.08		14.59
18.00	14.92		14.66
20.00	14.58		14.89
22.00	14.96		14.80
00.00	14.26		14.50
02.00	14.42		14.76
04.00	14.38		14.70
06.00	14.24		14.58
08.00			14.76

SA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 30 A		
10.00	12.56		12.52
12.00	12.52		12.38
14.00	12.38		12.34
15.00	12.60		12.58
18.00	12.56		12.92
20.00	12.98		12.94
22.00	12.78		12.57
00.00	12.90		12.78
02.00	12.78		12.60
04.00	12.86		12.69
06.00	12.64		12.56
08.00	12.82		12.86

CW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 35, 12 A			
10.00	32.59			32.09
12.00	32.64			32.10
14.00	32.72			32.14
15.00	32.78			31.66
18.00	32.89			31.98
20.00	32.94			32.09
22.00	32.50			31.92
00.00	31.90			31.48
02.00	32.54			31.92
04.00	32.60			31.89
06.00	32.28			31.56
08.00	32.46			31.84

FW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 30,56 A			
10.00	20.98	21.78		
12.00	21.28	21.88		
14.00	21.54	22.44		
15.00	20.58	21.70		
18.00	20.98	21.74		
20.00	21.10	22.22		
22.00	20.72	21.66		
00.00	20.32	21.00		
02.00	20.98	21.84		
04.00	21.02	21.18		
06.00	20.72	20.84		
08.00	20.58	21.66		

Reported by shift I: NURYADI - GUNTUR

Operator group A/B/C/D

(.....)

Checked by:

Supv. Grup :.....

NP

Reported by shift II:

Operator group A/B/C/D

(.....)

Checked by:

Supv. Grup :.....

NP

Reported by shift III:

Operator group A/B/C/D

(.....)

Checked by:

Supv. Grup :.....

NP

Notes for Information :

BEST

Bukit Energy Servis Terpadu

Bukit Asam

SINCRONE TURBIN-GENERATOR
FORM INSPECTION CHECK LIST FOR DCS

No. Revisi : 0
Halaman : 1

Tanggal : 20-03-2016

GENERATOR

ITEM	#1 EHB								#2 EHB								#3 EHB							
	I	U L	U H	P	Q	f L	f H	Cos φ	I	U L	U H	P	Q	f L	f H	Cos φ	I	U L	U H	P	Q	f L	f H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz		A	kV	kV	MW	mVar	Hz	Hz		A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,95	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53		0,8 s/d 0,95	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,9
10.00	742.6	6.54		7.61	3.99	50.22		0.90									796		6.57	7.53	4.04	50.21		0.88
12.00	760.40	6.68		7.72	3.97	50.29		0.89									738.40		6.56	7.31	4.22	50.29		0.87
14.00	810.00	6.48		7.68	5.01	50.12		0.84									813.20		6.51	7.69	5.15	50.12		0.83
16.00	719.60	6.51		7.53	3.25	49.99		0.92									770.80		6.52	8.16	3.20	50.01		0.93
18.00	736.40	6.50		7.70	3.25	50.09		0.92									839.20		6.56	8.59	4.26	50.09		0.90
20.00	715.20	6.50		7.43	3.29	50.27		0.91									717.60		6.52	7.50	3.21	50.22		0.92
22.00	742.80	6.50		7.79	3.24	50.23		0.92									738.00		6.52	7.76	3.22	50.23		0.92
00.00	726.00	6.60		7.76	3.20	50.29		0.92									715.20		6.62	7.62	3.21	50.29		0.92
02.00	696.00	6.60		7.36	3.35	50.15		0.92									697.80		6.63	7.33	3.40	50.15		0.91
04.00	709.20	6.61		7.73	2.78	50.28		0.94									666.40		6.63	7.19	2.87	50.28		0.93
06.00	776.40	6.51		7.64	4.43	50.12		0.87									767.20		6.53	7.52	4.49	50.13		0.86
08.00	720.6	6.54		8.04	3.02	50.02		0.90									828.4		6.53	8.54	3.90	50.03		0.91

ITEM	STEP UP TRAFO 20 kV			STEP UP TRAFO 6,3 kV			BUS CONNECTION		AUXILIARY TRAFO 6,3 Kv			ID FAN			PA FAN			SA FAN			CW PUMP				FW PUMP			
	#1GHB	#2GHB	#3GHB	#1DHB	#2DHB	#3DHB	MLBH 1	MLBH 2	DHB 1	DHB 2	DHB 3	#1	#2	#3	#1	#2	#3	#1	#2	#3	#1	#2	#3	#4	#1	#2	#3	#4
Unit	A	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Range	0 - 433 A			0 - 1374 A			0 - 474 A		0 - 147A			0 - 32 A			0 - 26,9 A			0 - 30 A			0 - 35, 12 A				0 - 30,56 A			
10.00	187.1	24.61	217.1	603.2	77.20	656.4			26.09	23.8	18.6	18.58		17.90	19.96			14.60	12.69		12.96		32.96	31.92	20.84	21.52		
12.00	190.6	24.53	210.6	622.00	77.20	660.00			27.00	23.60	18.96	18.62		17.84	19.64			19.88	12.68		12.60		32.64	31.92	20.32	21.90		
14.00	189.3	25.16	218.3	642.00	77.20	726.00			26.92	23.88	18.52	18.48		17.54	19.42			14.80	12.56		12.38		32.96	31.70	20.62	21.66		
16.00	187.1	25.82	218.6	590.80	78.00	780.00			24.72	26.16	18.32	18.52		17.90	19.30			15.02	12.64		12.56		32.42	31.70	21.10	20.28		
18.00	186.7	25.54	219.9	593.60	78.00	741.60			25.40	25.36	18.32	18.40		17.92	19.96			14.96	12.64		12.64		32.46	31.74	20.98	21.92		
20.00	188.6	25.87	221.5	558.00	75.20	680.80			24.40	22.36	18.52	18.36		17.76	19.56			14.80	12.60		12.56		32.60	32.00	20.92	21.90		
22.00	187.6	25.56	220.8	592.00	78.80	664.20			26.40	25.20	18.40	18.40		17.62	19.46			14.78	12.64		12.56		32.38	32.00	20.62	21.62		
00.00	188.2	25.50	223.2	585.60	75.20	648.20			32.84	22.52	18.48	18.92		17.96	19.36			14.62	12.86		12.82		32.58	32.10	20.32	21.19		
02.00	189.2	25.60	226.2	556.40	76.40	626.80			33.04	22.88	18.52	18.52		17.36	19.46			14.66	12.90		12.86		32.12	31.78	20.32	21.36		
04.00	188.7	24.72	225.1	575.60	76.20	592.80			26.72	22.88	18.60	19.06		17.70	19.56			14.58	12.96		12.64		32.38	31.88	20.72	21.66		
06.00	189.6	25.22	227.3	618.40	75.20	707.60			26.84	22.88	18.84	18.38		17.66	19.52			14.76	12.64		12.60		32.58	31.84	20.62	21.78		
08.00	183.80	25.10	220.1	642.6	78	744.4			31.60	25.46	18.9	18.66		19.61	19.52			14.50	12.74		12.60		32.26	31.86	20.60	21.92		

MSS 1

I A	U kV	f L Hz	f H Hz
0-290	19-21	48-52	
65.04	20.46	50.10	
106.92	20.39	50,23	
148.20	20.18	50.13	
73.32	20.39	50.01	
96.48	20.40	50.11	
57.00	20.41	50.22	
114.96	20.40	50.23	
117.24	20.37	50.29	
149.84	20.90	50.15	
78.24	20.80	50.28	
89.24	20.30	50.12	
105.6	20.44	50.06	

MSS 2

I A	U kV	f L Hz	f H Hz
0-330	19-21	48-52	
2.28	20.46	50.21	
2.28	20.41	50.23	
2.28	20.21	50.13	
2.04	20.42	50.01	
2.28	20.41	50.11	
2.28	20.41	50.22	
2.28	20.41	50.22	
2.04	20.37	50.32	
2.28	2.091	50.15	
2.01	20.81	50.28	
2.04	20.33	50.12	
3.28	20.46	50.06	

ANGGREK

I A	U kV	f L Hz	f H Hz
0-204	19-21	48-52	
269.10	20.58	50.21	
212.04	20.53	50.29	
199.80	20.33	50.14	
279.96	20.53	50.01	
284.40	20.54	50.12	
276.36	20.53	50.26	
241.32	20.54	50.23	
229.68	20.89	50.30	
169.68	20.82	50.15	
250.68	20.94	50.28	
224.28	20.43	50.12	
279.6	20.59	50.06	

Keterangan :

Notes For Information :

Reported by shift I: NOPRADI - RUDIANSYAH
Operator group A/B/C/D

( )

Checked by:

Supv. Grup :
NP.

Reported by shift II:
Operator group A/B/C/D

( )

Checked by:

Supv. Grup :
NP.

Reported by shift III:
Operator group A/B/C/D

( )

Checked by:

Supv. Grup :
NP.

BEST
Bukit Energy Servis Terpadu

Bukit Asam

SINCRONE TURBIN-GENERATOR
FORM INSPECTION CHECK LIST FOR DCS

No. Revisi : 0
Halaman : 1

Tanggal : 29-08-2016

GENERATOR

#1 FHB

ITEM	I	U L	U H	P	Q	F L	F H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,95
10.00	795.20	6.53		7.47	4.07	50.26		0.88
12.00	757.60	6.52		7.40	9.43	49.85		0.86
14.00	788.80	6.50		7.69	4.60	50.26		0.86
16.00	747.20	6.53		7.45	4.17	50.28		0.87
18.00	794.20	6.49		7.58	4.89	50.32		0.84
20.00	797.80	6.45		7.61	3.51	50.29		0.91
22.00	732.00	6.44		7.53	3.34	50.30		0.91
00.00	723.20	6.50		7.46	3.48	50.27		0.91
02.00	731.00	6.50		7.55	3.57	50.46		0.91
04.00	725.20	6.51		7.53	3.26	50.35		0.89
06.00	772.00	6.53		7.98	4.13	50.08		0.88
08.00	783.60	6.59		7.71	3.93	50.08		0.92

#2 FHB

ITEM	I	U L	U H	P	Q	F L	F H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53		0,8 s/d 0,95
10.00								
12.00								
14.00								
16.00								
18.00								
20.00								
22.00								
00.00								
02.00								
04.00								
06.00								
08.00								

#3 FHB

ITEM	I	U L	U H	P	Q	F L	F H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,9
10.00	761.20		6.55	7.65	3.88	50.27		0.88
12.00	852.40		6.59	8.56	4.57	49.85		0.88
14.00	882.40		6.25	8.15	4.56	50.27		0.87
16.00	769.80		6.54	7.69	4.16	50.29		0.88
18.00	857.20		6.50	8.49	4.74	50.32		0.87
20.00	776.20		6.47	7.85	4.26	50.29		0.88
22.00	762.00		6.48	7.69	3.87	50.30		0.89
00.00	709.40		6.52	7.26	3.37	50.27		0.91
02.00	658.20		6.51	7.16	3.16	50.50		0.90
04.00	707.40		6.53	7.38	3.14	50.35		0.92
06.00	759.20		6.57	7.32	4.61	50.08		0.85
08.00	785.20		6.59	8.11	4.09	50.06		0.89

STEP UP TRAFO 20 kV

ITEM	#1GHB	#2GHB	#3GHB
Unit	A	A	A
Range	0 - 433 A		
10.00	157.6	25.53	217.5
12.00	186.3	25.50	220.7
14.00	176.3	23.70	218.7
16.00	202.6	25.48	213.8
18.00	210.9	24.50	214.9
20.00	211.2	24.53	218.8
22.00	201.1	24.56	214.7
00.00	200.7	24.50	216.2
02.00	210.2	24.70	220.2
04.00	203.1	23.21	220.7
06.00	205.1	25.36	221.1
08.00	198.3	25.28	225.7

STEP UP TRAFO 6,3 kV

ITEM	#1DHB	#2DHB	#3DHB
Unit	A	A	A
Range	0 - 1374 A		
10.00	600.90	78.00	721.60
12.00	616.80	77.20	809.20
14.00	641.20	77.20	732.80
16.00	608.90	78.00	698.00
18.00	646.40	80.40	783.60
20.00	593.60	77.20	721.60
22.00	575.60	78.00	686.80
00.00	579.60	77.20	626.20
02.00	599.40	76.40	624.20
04.00	579.60	75.20	621.60
06.00	613.60	75.20	682.40
08.00	597.40	75.20	712.00

BUZ CONNECTION

ITEM	MLBH 1	MLBH 2
Unit	A	
Range	0 - 424 A	
10.00		
12.00		
14.00		
16.00		
18.00		
20.00		
22.00		
00.00		
02.00		
04.00		
06.00		
08.00		

AUXILIARY TRAFO 6,3 Kv

ITEM	DHB 1	DHB 2	DHB 3
Unit	A	A	A
Range	0 - 147A		
10.00	29.92	29.29	18.76
12.00	29.69	29.68	18.60
14.00	29.64	23.52	19.96
16.00	29.08	29.76	18.60
18.00	31.68	27.24	18.84
20.00	15.29	23.76	18.52
22.00	45.40	23.96	18.24
00.00	31.32	23.96	18.16
02.00	31.00	22.88	18.76
04.00	33.28	21.64	18.40
06.00	44.52	22.24	18.68
08.00	31.36	21.89	18.96

ID FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 32 A		
10.00	18.52		17.84
12.00	18.62		17.82
14.00	18.32		17.84
16.00	18.32		17.58
18.00	18.22		17.76
20.00	18.22		17.50
22.00	18.26		17.58
00.00	18.57		17.70
02.00	18.49		17.54
04.00	18.52		17.80
06.00	18.66		17.84
08.00	1889		17.81

PA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 26,9 A		
10.00	19.39		
12.00	19.00		
14.00	19.16		
16.00	19.30		
18.00	19.60		
20.00	19.68		
22.00	19.60		
00.00	19.56		
02.00	19.74		
04.00	19.82		
06.00	19.72		
08.00	19.52		

SA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 30 A		
10.00	14.58	12.69	12.69
12.00	14.89	12.68	12.56
14.00	14.92	12.56	12.64
16.00	14.36	12.56	12.60
18.00	15.22	12.60	12.52
20.00	14.62	12.98	12.69
22.00	14.70	12.56	12.52
00.00	14.52	12.36	12.56
02.00	14.88	12.60	12.60
04.00	14.92	12.88	12.92
06.00	14.92	12.68	12.68
08.00	14.88	12.68	12.70

CW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 35, 12 A			
10.00		32.29		31.89
12.00		32.08		31.44
14.00		32.54		32.00
16.00		32.58		32.19
18.00		32.60		31.92
20.00		32.68		31.96
22.00		32.82		32.04
00.00		32.64		31.96
02.00		32.91		32.18
04.00		32.82		32.20
06.00		32.34		31.86
08.00		32.16		31.79

MSS 1

ITEM	I	U	F L	F H
Unit	A	kV	Hz	Hz
Range	0-290	19-21	48 - 52	
10.00	78.24	20.39	50.27	
12.00	135.48	20.29	49.85	
14.00	141.72	20.35	50.27	
16.00	104.04	20.34	50.28	
18.00	99.04	20.17	50.33	
20.00	92.88	20.11	50.22	
22.00	152.16	20.21	50.30	
00.00	63.24	20.34	50.27	
02.00	90.04	20.37	50.47	
04.00	128.76	20.41	50.35	
06.00	89.52	20.39	50.08	
08.00	66.60	20.51	49.99	

MSS 2

ITEM	I	U	F L	F H
Unit	A	kV	Hz	Hz
Range	0 - 330	19-23	48 - 52	
10.00	2.28	20.90	50.26	
12.00	0.72	20.31	49.83	
14.00	3.36	20.27	50.26	
16.00	3.36	20.37	50.28	
18.00	3.60	20.19	50.33	
20.00	3.60	20.13	50.23	
22.00	3.60	20.22	50.32	
00.00	3.36	20.36	50.27	
02.00	3.60	20.39	50.46	
04.00	3.60	20.43	50.35	
06.00	3.36	20.40	50.08	
08.00	3.36	20.52	49.96	

ANGGREK

ITEM	I	U	F L	F H
Unit	A	kV	Hz	Hz
Range	0-204	19-21	48 - 52	
10.00	268.32	20.51	50.26	
12.00	227.88	20.92	49.84	
14.00	239.96	20.38	50.28	
16.00	226.80	20.49	50.27	
18.00	206.60	20.31	50.32	
20.00	243.48	20.25	50.24	
22.00	193.08	20.34	50.29	
00.00	266.28	20.48	50.27	
02.00	220.32	20.96	50.46	
04.00	198.28	20.55	50.25	
06.00	284.32	20.51	50.08	
08.00	289.92	20.69	49.99	

FW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 30,56 A			
10.00	21.02	22.04		
12.00	20.28	20.96		
14.00	21.06	22.00		
16.00	21.06	21.96		
18.00	21.06	22.18		
20.00	20.44	21.40		
22.00	20.84	21.74		
00.00	20.96	21.32		
02.00	20.50	21.44		
04.00	20.88	21.70		
06.00	19.08	21.08		
08.00	18.32	22.18		

Keterangan :

Notes For Information :

Reported by shift I: NUPYADI - Pamungkas.
Operator group A/B/C/D

( )

Checked by:

Supv. Grup :
NP

Reported by shift II:
Operator group A/B/C/D

( )

Checked by:

Supv. Grup :
NP

Reported by shift III:
Operator group A/B/C/D

( )

Checked by:

Supv. Grup :
NP

BEST
Bukit Energy Servis Terpadu

Bukit Asam

SINCRONE TURBIN-GENERATOR
FORM INSPECTION CHECK LIST FOR DCS

No. Revisi : 0
Halaman : 1

Tanggal : 30 - 3 - 2016 - 31 - 5 - 2016.

GENERATOR

#1 FHB

ITEM	I	U L	U H	P	Q	f L	f H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,95
10.00	789.90	6.98		8.20	3.61	50.29		0.91
12.00	813.60	6.50		8.24	4.21	50.10		0.89
14.00	766.00	6.44		7.79	3.25	50.13		0.90
16.00	721.60	6.50		7.23	3.91	50.26		0.88
18.00	790.9	6.43		7.53	4.98	50.13		0.89
20.00	765.60	6.41		7.96	3.29	50.30		0.93
22.00	761.20	6.42		7.93	3.17	50.35		0.93
00.00	698.40	6.50		7.40	2.92	50.37		0.93
02.00	720.40	6.49		7.52	3.26	50.29		0.92
04.00	747.20	6.50		7.89	3.19	50.55		0.93
06.00	728.40	6.48		7.41	3.67	50.31		0.90
08.00	730.40	6.51		7.64	3.43	50.45		0.91

#2 FHB

ITEM	I	U L	U H	P	Q	f L	f H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53		0,8 s/d 0,95
10.00								
12.00								
14.00								
16.00								
18.00								
20.00								
22.00								
00.00								
02.00								
04.00								
06.00								
08.00								

#3 FHB

ITEM	I	U L	U H	P	Q	f L	f H	Cos φ
Unit	A	kV	kV	MW	mVar	Hz	Hz	
Range	0 - 1375	5,985 - 6,615		0 - 12	0 - 9	47,5 - 53 Hz		0,8 s/d 0,9
10.00	700.00		6.50	6.99	3.91	50.39		0.87
12.00	806.40		6.52	8.05	4.35	50.10		0.88
14.00	800.00		6.47	8.17	3.81	50.36		0.91
16.00	737.20		6.53	7.30	4.21	50.27		0.87
18.00	759.6		6.45	7.74	4.65	50.15		0.89
20.00	762.80		6.43	7.98	3.10	50.31		0.93
22.00	692.00		6.43	7.15	3.05	50.36		0.92
00.00	794.80		6.55	8.30	3.69	50.36		0.91
02.00	767.80		6.54	7.81	3.99	50.29		0.89
04.00	759.20		6.54	7.83	3.73	50.54		0.90
06.00	808.00		6.52	8.11	4.36	50.32		0.88
08.00	745.70		6.54	7.61	3.85	50.44		0.89

MSS 1

I	U	f	H
A	kV	Hz	Hz
0-290	19-21	48 - 52	
104.28	20.28	50.37	
108.24	20.25	50.10	
200.28	20.17	50.12	
175.72	20.31	50.25	
102.6	20.00	50.13	
148.20	20.08	50.36	
166.20	20.08	50.38	
145.68	20.42	50.36	
187.60	20.35	50.29	
139.16	20.39	50.54	
158.14	20.24	50.31	
141.48	20.38	50.43	

MSS 2

I	U	f	H
A	kV	Hz	Hz
0 - 330	19-21	48 - 52	
3.36	20.27	50.39	
3.36	20.29	50.10	
3.36	20.19	50.12	
3.36	20.33	50.25	
3.60	20.01	50.19	
3.60	20.11	50.35	
3.60	20.12	50.37	
3.60	20.43	50.36	
3.60	20.36	50.30	
3.36	20.40	50.54	
3.60	20.27	50.32	
3.36	20.38	50.43	

ANGGREK

I	U	f	H
A	kV	Hz	Hz
0-204	19-21	48 - 52	
218.76	20.91	50.37	
264.72	20.42	50.10	
189.96	20.31	50.12	
278.96	20.45	50.25	
279.6	20.15	50.1	
228.12	20.22	50.36	
192.84	20.21	50.36	
218.76	20.56	50.36	
193.60	20.49	50.30	
238.20	20.51	50.54	
219.00	20.38	50.31	
221.64	20.50	50.4	

Keterangan :

STEP UP TRAFO 20 kV

ITEM	#1GHB	#2GHB	#3GHB
Unit	A	A	A
Range	0 - 433 A		
10.00	199.2	25.97	198.6
12.00	201.7	25.63	203.5
14.00	201.5	23.62	201.6
16.00	185.6	25.68	198.7
18.00	190.3	25.35	203.8
20.00	201.6	25.76	210.8
22.00	199.3	25.16	211.3
00.00	201.8	25.75	212.8
02.00	200.3	25.41	209.8
04.00	200.7	25.85	205.3
06.00	198.9	25.48	201.9
08.00	191.3	25.38	215.3

STEP UP TRAFO 6,3 kV

ITEM	#1DHB	#2DHB	#3DHB
Unit	A	A	A
Range	0 - 1374 A		
10.00	631.60	81.60	626.00
12.00	675.60	79.60	689.60
14.00	624.80	80.40	689.60
16.00	578.00	78.80	666.40
18.00	639.60	79.80	689.6
20.00	609.00	80.40	689.80
22.00	618.40	81.60	656.40
00.00	556.40	80.40	726.40
02.00	583.20	79.60	695.00
04.00	600.40	79.60	680.00
06.00	580.40	79.60	732.60
08.00	596.00	80.40	659.20

BUZ CONNECTION

ITEM	MLBH 1	MLBH 2
Unit	A	
Range	0 - 474 A	
10.00		
12.00		
14.00		
16.00		
18.00		
20.00		
22.00		
00.00		
02.00		
04.00		
06.00		
08.00		

AUXILIARY TRAFO 6,3 Kv

ITEM	OHB 1	OHB 2	OHB 3
Unit	A	A	A
Range	0 - 147A		
10.00	24.24	26.00	18.32
12.00	24.00	26.44	18.76
14.00	34.96	36.96	18.32
16.00	30.20	29.48	18.60
18.00	31.96	29.76	18.84
20.00	43.64	26.44	18.16
22.00	31.44	26.44	18.40
00.00	31.80	25.92	18.92
02.00	31.24	25.36	18.60
04.00	24.88	25.64	18.76
06.00	46.92	25.36	18.76
08.00	21.08	25.92	18.96

ID FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 32 A		
10.00	18.66		17.40
12.00	18.68		17.76
14.00	18.32		18.02
16.00	18.62		17.99
18.00	18.32		14.98
20.00	18.10		17.18
22.00	18.90		17.29
00.00	18.52		17.74
02.00	18.32		17.94
04.00	18.32		17.70
06.00	18.10		17.62
08.00	18.44		17.68

PA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 76,9 A		
10.00	4.78		14.78
12.00	3.42		14.52
14.00	14.34		14.52
16.00	14.52		14.52
18.00	14.60		14.60
20.00	14.52		14.52
22.00	14.34		14.34
00.00	14.52		14.52
02.00	14.42		14.42
04.00	14.46		14.46
06.00	14.42		14.42
08.00	14.38		14.38

SA FAN

ITEM	#1	#2	#3
Unit	A	A	A
Range	0 - 30 A		
10.00	19.62	12.68	12.80
12.00	14.70	12.68	12.80
14.00	14.30	12.56	12.60
16.00	14.70	12.79	12.26
18.00	15.08	12.64	12.04
20.00	14.66	12.38	12.12
22.00	14.84	12.42	12.20
00.00	14.96	12.74	12.60
02.00	14.24	12.60	12.40
04.00	14.88	12.64	12.62
06.00	14.96	12.64	12.52
08.00	14.96	12.74	12.56

CW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 35, 12 A			
10.00	32.60		32.19	
12.00	32.34		31.78	
14.00	32.54		31.92	
16.00	32.64		31.78	
18.00	32.54		31.96	
20.00	32.90		32.26	
22.00	32.86		32.10	
00.00	32.68		32.10	
02.00	32.68		32.10	
04.00	32.68		32.26	
06.00	32.86		31.92	
08.00	32.64		32.42	

FW PUMP

ITEM	#1	#2	#3	#4
Unit	A	A	A	A
Range	0 - 30,56 A			
10.00	21.92	23.02		
12.00	20.98	21.92		
14.00	21.96	20.78		
16.00	21.50	22.90		
18.00	21.88	22.90		
20.00	21.76	22.79		
22.00	21.92	23.10		
00.00	22.84	22.14		
02.00	22.78	22.06		
04.00	21.24	22.30		
06.00	22.52	21.88		
08.00	22.78	22.84		

Notes / or Information :

Reported by shift I:
Operator group A/B/C/D

( )

Checked by:

Supv. Grup :
NP.

Reported by shift II:
Operator group A/B/C/D

( )

Checked by:

Supv. Grup :
NP.

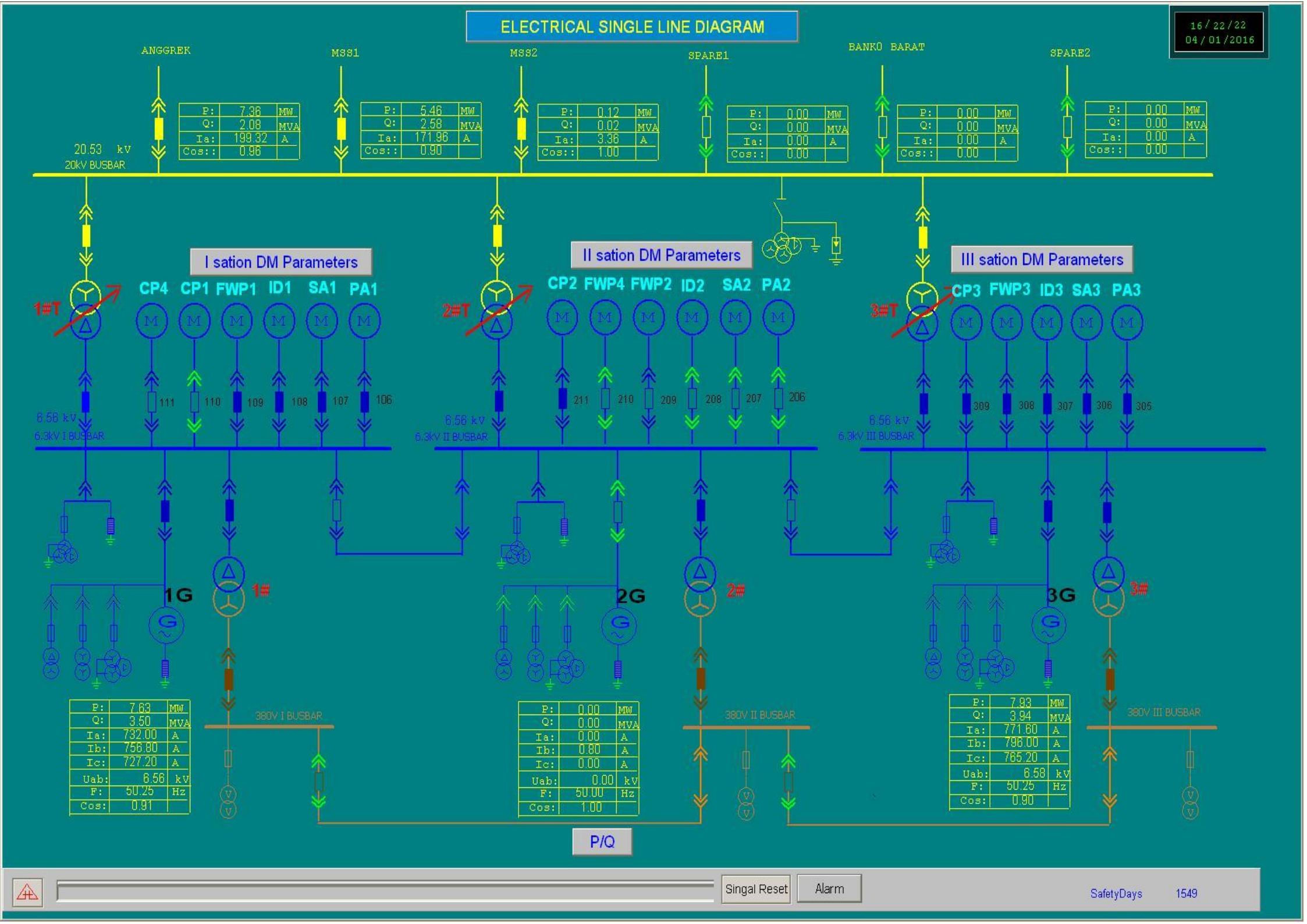
Reported by shift III:
Operator group A/B/C/D

( )

Checked by:

Supv. Grup :
NP.

BEST
Bukit Energy Servis Terpadu


ELECTRICAL SINGLE LINE DIAGRAM
16/22/22
04/01/2016
ANGGREK
MSS1
MSS2
SPARE1
BANKO BARAT
SPARE2
P: 7.36 MW
Q: 2.08 MVA
Ia: 199.32 A
Cos:: 0.96
P: 5.46 MW
Q: 2.58 MVA
Ia: 171.96 A
Cos:: 0.90
P: 0.12 MW
Q: 0.02 MVA
Ia: 3.36 A
Cos:: 1.00
P: 0.00 MW
Q: 0.00 MVA
Ia: 0.00 A
Cos:: 0.00
P: 0.00 MW
Q: 0.00 MVA
Ia: 0.00 A
Cos:: 0.00
P: 0.00 MW
Q: 0.00 MVA
Ia: 0.00 A
Cos:: 0.00
20.53 kV
20kV BUSBAR
I sation DM Parameters
II sation DM Parameters
III sation DM Parameters
1#T
2#T
3#T
CP4 CP1 FWP1 ID1 SA1 PA1
CP2 FWP4 FWP2 ID2 SA2 PA2
CP3 FWP3 ID3 SA3 PA3
111 110 109 108 107 106
211 210 209 208 207 206
309 308 307 306 305
6.56 kV
6.3kV I BUSBAR
6.56 kV
6.3kV II BUSBAR
6.56 kV
6.3kV III BUSBAR
1G
2G
3G
1#
2#
3#
P: 7.63 MW
Q: 3.50 MVA
Ia: 732.00 A
Ib: 756.80 A
Ic: 727.20 A
Uab: 6.56 kV
F: 50.25 Hz
Cos: 0.91
380V I BUSBAR
P: 0.00 MW
Q: 0.00 MVA
Ia: 0.00 A
Ib: 0.80 A
Ic: 0.00 A
Uab: 0.00 kV
F: 50.00 Hz
Cos: 1.00
380V II BUSBAR
P: 7.93 MW
Q: 3.94 MVA
Ia: 771.60 A
Ib: 796.00 A
Ic: 765.20 A
Uab: 6.58 kV
F: 50.25 Hz
Cos: 0.90
380V III BUSBAR
P/Q
Singal Reset
Alarm
SafetyDays 1549