



DEALERS & IMPORTERS OF POWER PLANTS & ALLIED MACHINERY

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55MW & 60MW Generator Units Data

I . Steam Turbine

1. Main Parameters:

NO.	ITEM	UNIT	55MW		60MW	
			Numerical designs	Numerical operation	Numerical designs	Numerical operation
1	Main steam pressure	MPa	8.83	8.83 ± 0.49	8.83	8.83 ± 0.49
2	Main steam temperature	°C	535	535 ± 5	535	535 ± 5
3	LP cylinder exhaust pressure	MPa	0.0054		0.0054	
4	Condenser cooling water inlet temperature	°C	20	< 30	20	< 30

2. Vibration condition of the unit (double amplitude vibration value of bearing: u m, From steam turbine (or feed-water pump) to generator, measuring and recording the ⊥ direction of each axle bush)

	55MW unit	60MW unit	1# pump	2# pump	3# pump	4# pump
1 # bearing	8	2	8	2	1	5
2 # bearing	18	3	3	11	4	2
3 # bearing	6	11	16	10	42	5
4 # bearing	6	4	5	7	16	3

3. Do you have detailed technical data and summary of the steam turbine unit?

Answer: Yes, we have

4. How many hours have the steam turbine operated?

Answer: The 50mw unit has operated 39500 hours safely since 2003-2-26.

The 60mw unit has operated 23320 hours safely since 2005-1-26.

5. Have the nomenclature and the speed control system of the steam turbine ever ran into major defects?

Answer: No, never.

II. Boiler

1. Equipment Data?

Answer: We have all the datum of the boiler plant

2. The boiler's output condition: The two boilers have been able to reach the rated output and had over measure since it installed.

(1) Boiler's operating technical data

1) Main Parameters

NO.	ITEM	UNIT	55MW		60MW	
			Numerical designs	Numerical operation	Numerical designs	Numerical operation
1	Rated Evaporation Capacity	t/h	220	220	240	240
2	Saturated steam pressure	MPa	11.28	11.28	11.4	11.4
3	Overheat steam pressure	°C	9.81	9.6—9.81	9.81	9.61--9.81
4	Overheat steam temperature	°C	540	535	540	535
5	Feed-water Temperature	°C	215	210~215	215	210~215
6	Smoke Exhaust temperature	°C	140	130~140	140	130~140
7	Cold air temperature	°C				
8	Hot air temperature	°C	380	385	380	380
9	Boiler Efficiency	%	90.18	90.2	90.17	90.1
	Designed coal rank fuel consumption	t/h	24.17		26.64	
10	Furnace outlet flue gas temperature	°C	1092.6		1095	
11	Section of combustion chamber	length × width mm	7570 × 7570		7890 × 7890	
12	Area of refractory belt	m ²	69.1	9.1	70.4	70.4

2) Burner

	UNIT	55MW	60MW
Type		Regular four corner DC pulverized coal burner	Regular four corner direct current pulverized coal burner
Arrangement		Four corner	Four corner
quantity	Group	4	4

Height from the center to the top	mm	34390	34390
choke type			
Fuel type		0# light diesel oil	0# light diesel oil
Atomization type			
Number of the choke	number	4	4
Output of Single oil gun	T/h	0.637	0.8
Atomization- Type		mechanical Atomization	mechanical Atomization

3) Designing and real coal quality

NO	ITEM	SIGN	UNIT	55MW		60MW	
				Numerical designs	Actual numerical values	Numerical designs	Actual numerical values
1	Carbon	Car	%	66.05		65.05	
2	Hydrogen	Har	%	2.59		2.56	
3	Oxygen	Oar	%	2.69		2.69	
4	Nitrogen	Nar	%	1.05		1.05	
5	sulphur	Sar	%	1.47		2.5	
6	moisture	War	%	8.97		8.97	
7	Ash	Aar	%	17.18		17.18	
8	Low heat value	Qar	KJ/Kg	24970		23023	
9	Combustib basis volatile matter	Var	%	10.09		9	
10	deformation temperature of ash	T1	°C	> 1400		> 1400	
11	softening temperature of ash	T2	°C	> 1400		> 1400	
12	Coal fineness	R90	%	8~10		8~10	
13	Erosive index	Kkm	%	88		88	

4) Coal pulverizing system equipment form and System Diagram

NO.	ITEM	SIGN	UNIT	55MW	60MW
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1	Highest low heat value	Qar	KJ/Kg	24662	24662
2	Lowest low heat value	Qar	KJ/Kg	20800	20800
3	Highest volatile matter	Vaar	%	11	11
4	Lowest volatile matter	Var	%	7	7
5	Highest moisture	War	%	10	10
6	Lowest moisture	War	%	5	5
7	Highest ash	Aar	%	32	32
8	Lowest ash	Aar	%	17	17
9	Highest sulphur content	Sar	%	4	4
10	Lowest sulphur content	Sar	%	2	2

NO.	ITEM	UNIT	55MW	60MW
1	coal pulverizing systeme type		intermediate storehouse type	intermediate storehouse type
2	Raw coal bunker	number	2	
3	Pulverized coal bunker	number	1	
4	Coarse pulverized coal separator type		ZD—GB—3400mm	ZD—GB—3400mm
5	Finely-pulverized coal separator type		DF2150	DF2150
6	Coal mill type		DTM290/410;2	DTM290/410;2
7	Coal mill design output	t/h	14	14
8	Coal pulverizing systemdrying medium		air	air
9	Coal pulverizing system drying medium temperature	°C	300	300
10	Coal pulverizing system exhaust steam temperature	°C	80	80
11	Powder exhaust fan type		M9—26NO : 13D	M9—26NO : 13D
12	Powder exhaust fan output	t/h	45630~49655	45630~49655
13	Powder exhaust fan pressure head	Pa	10590	10590

5) Designed blast temperature, air rate

NO.	ITEM	UNIT	55MW	60MW
1	Powder transport mode		Hot wind feed pulverized coal	Hot wind feed pulverized coal
2	Primary air velocity	m/s	24.5	23
3	Primary air rate	%	22	23
4	Primary blast temperature	°C	276	280
5	Secondary air velocity	m/s	45	47
6	Secondary air rate	%	55.8	52
7	Secondary blast temperature	°C	370	400
8	Thrice air velocity	m/s	50	48
9	Thrice air rate	%	18.2	20.7
10	Thrice air temperature	°C	120	120

3. Thermodynamic calculation of each heating surface summary table?

Answer: The manufacturer's data containing all the information and will be enclosed with the equipment

4. Boiler steam system diagram?

Answer: The manufacturer's data containing all the information and will be enclosed with the equipment

5. Deashing method of boiler

Answer: It adopts ESP dry dust removal. Slag adopts Screw Cinder-Cleaner to fish out.

III. Electric

1. What's the cooling mode of power generator, main transformer and HV transformer?

Answer: 55MW generator is Hydrogen-cooled Generator.. 60MW generator is air cooled generator.

55MW, 60MW main transformer, High-volt Transformer is Forced-Air Cooling Oil-Immersed Transformer, the cooling type is ONAF.

2. What's the voltage grade of this equipment? what's the highest voltage grade of transmission circuit and main transformer?

Answer: 55MW, 60MW generator's voltage is 10KV, transmission circuit voltage is 110KV, main transformer's HV is 110KV.

3. What type of the high voltage circuit breaker?

Answer: 55MW unit Parallel in switch is HVAC oil-minimum breaker, 60MW unit Parallel in switch is HV self-energy SF6 circuit breaker.

4. What type of the HV switch and the LV switch?

Answer: 10KV HV switch is GG-1AF vacuum circuit breaker,
 6KV HV switch is GZS1 trolley type circuit breaker
 55MW LV switch is 3WE532 universal circuit breaker
 60MW LV switch is CW1 serial intelligent universal circuit breaker.

5. What's the highest cable grade?

Answer: The highest voltage cable grade is 110KV.

6. What protection type of the generator, transformer, electromotor?

Answer: The protection of 55MW generator, transformer, electromotor is Xu Ji relay protection.

The protection of 60MW generator, transformer, electromotor is NanDuan computer protection.

V. Thermal control system

1. Main Parameters

Name	parameter	Type	Manufacturer
Steam drum pressure	11.28Mpa	JZ—5000Series Intelligent digital display and control instrument	HU DI
Superheater pressure	9.81 Mpa	JZ — 5000 Series Intelligent digital display and control instrument	HU DI
Superheater temperature	540℃	JZ — 5000 Series Intelligent digital display and control instrument	HU DI
Drum water level gauge	0	UDZ—II Electrolysis Point liquid level apparatus	HU DI
Feed water flow	220 t/h	XSF—2000 General Intelligent Flow Totalizer	HU DI
Main steam flow	220 t/h	XSF—2000 General Intelligent Flow Totalizer	HU DI
Main steam pressure	8.83 Mpa	JZ — 5000 Series Intelligent digital display and control instrument	HU DI
Main steam temperature	535℃	JZ — 5000 Series Intelligent digital display and control instrument	HU DI
Exhaust pressure	0.00539 Mpa	JZ — 5000 Series Intelligent digital display and control instrument	HU DI
2 out of 3 tachometer	3000r/min	VT Smart speeding protection device	
Zero-speed	3000 r/min	WZ—3	SHEN ZHEN-WAN XIANG

2. Does the unit have all diagram of the control system's electric continue, principle and equipment

structure assembly?

Answer: Yes, It does.

3. Does the unit have detailed automatic and protective fixed value parameters of the heat control system ?

Answer: Yes, the unit adopts conventional instrument and have heat control system protection diagram.

4. What brand does the DCS control system adopt? How many points do output and input I/O have?

Answer:The unit adopts conventional instrument, but doesn't adopt DCS control system.

5. Can main unit's primary equipment content the overmeasure which adjusted by automatic and protective control system?

Yes, of course.

6. Primary element parameters

Primary element name	Type	Manufacturers	Remarks
Thermal couples	WRN2—621K	Shang Hai WangGui Instrument Co., Ltd.	
Thermal resistance	WNP—220	ShangTong Instrument Co., Ltd.	
Transmitter	WT—1151 capacitive transmitter	BeiJing RuiPu SiDeSi Instrument Co., Ltd. ShangHai Wei ErTai Instrument Co., Ltd.	

Boiler

Produced code				7#boiler	8#boiler	Remarks
Serial No.				CG—220/9.81— M18	CG—240/9.81— M	
type				Coal boiler	Coal boiler	
Rated evaporate capacity				220t/h	240t/h	
Rated pressure				9.81 Mpa	9.81 Mpa	
Rated temperature				540℃	540℃	
Production Date				2002.7—12	2004..9	
Operation Date				2003.2	2005.1	
Decommissioning date				2007.10	2007.10	
Manufacturers				SICHUN BOILER PLANT		

Generator

Production code							7#generator	8#generator
Type							QFQ-50-2-B	QF-60-2
Rated output							62500/50000KVA/KW	75000/60000KVA/KW
Rated voltage							10500V	6300/10500V
Rated current							3440A	6873/4124A
Field curren							527A	1643/1655A
Power factor							0.8	0.8
Rated frequency							50Hz	50Hz
Rated speed							3000r/min	3000r/min
insulation							B	
Winding connection							2-Y	
Serial NO.							94-12-1B-13	
Production Date							1994.6	2004.12
Operation Date							2003.2	2005.1
Decommissioning date							2007.10	2007.10
Manufacturers							Dong Fang electrical machinery works	DeYang east power station

Main transformer

Production code						7#master transformer	8#master transformae
Type						SF9—75000/110	SF9—90000/110
Capacity (KVA)						75000	90000
Voltage(V)						121±2×2.5%/10.5KV	
Current(A)						357.86/4123.93	429/4948.7
Impedance						10.07%	10.17%
Type of cooling						ONAF	ONAF
No-load current						0.10%	
No-load lossKW						42.80	
Load LossKW						268.43	
Wiring groups						YNd11	YNd11
frequency	50Hz						
Phase number	Three phases						
Production Date						2002.11	2004.12
Operation Date						2003.2	2005.1
Manufacturers						Xin Jiang Te Bian	Shen Yang

NITIN CORPORATION

Steam turbine

Production code							7# steam turbine	8# steam turbine
Type							N50-8.83-1	N60-8.83
Rated output							50MW	60MW
Rated speed							3000r\min	3000r\min
Inlet pressure							8.83MPa	8.83MPa
Inlet temperature							535℃	535℃
Exhaust pressure							0.0054MPa	0.00539MPa
Extraction steam pressure								
Cooling water temperature							20℃	20℃
Serial No.							NO.12	NO.1
Production date							1994.1	2004.12
Operating date							2003.2	2005.1
Decommissioning date							2007.10	2007.10
Manufacturer							DongFang Steam turbine works	DongFang machinery electric engineering Technology co., LTD

PRODUCT IMAGES





NITIN CORPORATION