

4 x Dual Fuel, 241MW, 50Hz, GE 9FA +e DLN2+ CCGT Package (2 x 750MW CCGT Module)

4 x 241MW GE Frame 9FA Gas Turbine

Gas Turbine Manufacturer	:	GE
Engine Model	:	9FA +e DLN2+
Fuel	:	Dual Fuel
Site Rated Capacity	:	241,000kW
Frequency	:	50 Hz
Generator Manufacturer	:	GE
Generator Capacity	:	310,725kVA
Transformer Manufacturer	:	Hyundai
Transformer Type	:	Oil filled
Year of Commission	:	2011
Transformer Capacity	:	335 MVA (15.75kV)



2 x 276MW GE Steam Turbine

Steam Turbine Manufacturer	:	GE
Steam Turbine Model	:	GE-D11
Steam Turbine Type	:	Condensing
Rated Capacity	:	276,040kW
Type	:	HP-10 Stages, IP-8 Stages, LP-2X5 Stages
Generator Manufacturer	:	GE
Generator Capacity	:	324760kVA
Transformer Manufacturer	:	Hyundai
Transformer Type	:	Oil filled
Transformer Capacity	:	335 MVA (15.75kV)



4 x Triple Pressure CMI HRSG

HRSG Manufacturer : CMI – Belgium
HRSG Type : Triple Pressure, Horizontal Natural Circulation



Auxiliaries/Balance of Plant

The complete auxiliaries and BOP package from Aker Solutions are available which includes; Sterling Wilson Black Start, DCS System, Hammon cooling towers, Hyundai transformers and GE Mark VIe Control System for Gas and Steam Turbines.

- 4 x Frame 9FA installed but unused
- 4 x CMI HRSG around 90% constructed
- 2 x GE Steam Turbine unused, packaged and stored at port

List of Equipment - Module 2 (750 MW)

SL	DESCRIPTION	Original Supplier	UOM	Qty	Location	Status	Remarks
A	Power Block						
1	Gas Turbines and Auxiliaries: Gas Turbine : 9F.03, Dry Low NOx DLN 2.0+ , Static Start. GT Generator : 324 LU, Hydrogen cooled, 310.725 MVA, 15.75 kV, 50Hz, Static Excitation, LCI2100 Startup system, lube/seal, gas, H2, CO2, PEECC -Mark VIe, water wash, vent & AC packages	M/s General Electric, USA	Set	2	Site	Erected	
2	HRSG and Auxiliaries: Horizontal, Natural Circulation, Triple Pressure	M/s CMI, USA	Set	2	Port + Site	Not Erected	
3	Steam Turbine & Auxiliaries: Steam Turbine: D11, TC-Down flow ST Generator : 324H, Hydrogen cooled, 324.760 MVA, 15.75 kV, 50HZ, Static Excitation	M/s General Electric, USA	Set	1	Port	Not Erected	
4	Condenser & Auxiliaries: Non Deaerating surface- two pass ; 42849 m3/h; 25.4 mm OD; 732 tph	M/s Hangzhou Boiler Group	Set	1	Port	Not Erected	
5	Pre-Fabricated Power House Building Structures (design with 57.5 m/s wind speed)	M/s HXSS, China	Ton	4076	Site	Erected	Depends on Station New design. As per Common area need

SL	DESCRIPTION	Original Supplier	UOM	Qty	Location	Status	Remarks
6	Gas Turbines Spare parts Fuel Nozzle (FN) Combustion Liner Caps Stage 1 bucket (s1b) Stage 2 bucket (s2b) Stage 3 bucket (s3b)	M/s General Electric, USA	Set Set Set Set Set Set	1 1 1 1 1 1	Site	Not Erected	
B	Mechanical						
7	Induced Draft Cooling Tower & Auxiliaries: RP Structure, Splash type, 18 cells, 18 fan, G.box, shaft & motor Assembly (415V/3Ph/50 Hz/ 75 KW)	Hamon	Set	1	Site	Erected	
8	Circulating Water Pumps & Motor: Vertical Pump, 23500 m ³ /h, 24 MWC, 2.1MW, 6.6KV, 50Hz, 3 Ph	WPIL	nos	2 Nos PP 3 motor	Site	Not Erected	1 No's PP need to buy
9	Plate Heat Exchanger: 2W + 1S , model : NT 350 S	GEA	Set	1	Site	Not Erected	
10	Horizontal Pumps: (2 Nos DMCCW PP & Motor + 2 Nos HRSG Make Up PP & Motor)	WPIL	Set	4	Site	Not Erected	Following will be needed for One Module. 1. HRSG FILL PP & motor : 2 Nos 2. ACW booster Pump 2 Nos (2 Nos Motor is available)

SL	DESCRIPTION	Original Supplier	UOM	Qty	Location	Status	Remarks
11	Vertical Pumps 1 No. Raw water PP (1350m ³ /hr, 26MWC) & Motor + 1 no.s ACW Pumps & Motor (1650m ³ /hr, 28MWC) + 1 no.s CT Make up pumps & Motor 350m ³ /hr, 26MWC)	Flowmore	Set	3	Site	Not Erected	Following will be needed for One Module. 1 Nos Raw water PP & Motor + 1 no.s CT Make up pumps & Motor + 2 nos. Service water & 2 no.s Potable water pump)
12	Butterfly Valves: 2000 mm -4 no.s (for condenser) 2000 mm - 3 no.s (CW pump discharge) 450 mm - 2 no.s (CT Make up) 500 mm - 1 no.s (ACW PP discharge) 700 mm - 2 no.s (DMCW pp suction) ACW + DMCCW + PHE system valves (27 no.s) 500 mm / 600mm - 8 no.s (ACW booster pump) Misc Valves	Fouress	Set	1	Site	Not Erected	part Supply
13	Rubber Expansion Joints: Condenser , CW pumps & Misc. pumps	SRM Exoflex	Set	1	Site	Not Erected	

SL	DESCRIPTION	Original Supplier	UOM	Qty	Location	Status	Remarks
14	Electric Overhead Travelling (EOT) Cranes: 95 /15 T - 1 no. Double girder 90/15 T -1 no. Double girder	Anupam	no	2	Site	Erected	
15	Misc Cranes & Hoists:	Reva	Set	1	Site	Not Erected	
16	Chlorination Plant: for cooling tower and Raw water system	Airox Nigen	Set	1	Site	Not Erected	partial supply
17	Cooling Water Treatment Plant: Circulating water dosing system	Thermax	Set	1	Site	Not Erected	partial supply
18	Low Pressure piping: Miscellaneous	Rounaq	Set	1	Site	Not Erected	partial supply
19	Stop Log Gates: Circulating water system + Raw water system	Mechsol	Set	1	Site	Not Erected	partial supply
20	Fuel Gas Conditioning: knock out drums, gas scrubber, condensate tank, filter separator, piping & system	Multitex	Set	1	Site	Not Erected	partial supply
21	Power Cycle Piping	Dee Development	Set	1	Site	Not Erected	partial supply
C	Electrical						
22	Gas insulated Switchyard GIS (400 KV): 400KV GIS : 2 for out going lines, 3 for generators, 1 for bus coupler, 1 for Bus PT, 1 for Reactor Bay.	M/s Xian, China	Set	8	Site	Erected	Depends on Station New design. Start Up Transformer bay may need to buy
23	Generator Circuit Breaker & Fittings: HECS-100L Plus, SF6, 25.3 KV, 13,000 A, 50 Hz	M/s ABB Schweiz AG	nos	2	Site	Erected	

SL	DESCRIPTION	Original Supplier	UOM	Qty	Location	Status	Remarks
24	Generator Transformer: Oil Filled; OFAF/ONAF/ONAN; 335/268/201 MVA; 420/15.75 kV; 3Ph; 50 Hz	M/s Hyundai, Korea	nos	3	Site	Erected	
25	Dry Type transformers: 2 MVA , 6.6KV , 0.433 KV -8 no.s	M/s QRE, China	nos	8	Site	Erected	Depends on Station New design. may need to buy: 1 MVA , 6.6 KV/0.433 KV - 2 no.s for 00 KV GIS
26	400KV EHV cables: 800 Sqmm Cable	M/s SFC, Japan	km	1.7	Site	Erected	
27	Instrument Transformer: 400KV Capacity Voltage Transformer; outdoor type; 4400 pF, 1 phase	Alstom T&D India Ltd.	nos	6	Site	Erected	
28	Reactor: 125 MVAR, 420KV, 3 phase, 50 Hz.	Alstom T&D India Ltd.	Set	1	Site	Erected	
29	Unit Auxiliary Transformer: 31.5 MVA; 15.75/6.9 KV; 3 Ph; 50 Hz	Alstom T&D India Ltd.	nos	2	Site	Erected	
30	Wave Trap: 400 KV, 3150 A, 1.0mH, 1 Phase, Outdoor, pedestal mounting	Alstom T&D India Ltd.	nos.	4	Site	Erected	
31	Isolated Phase Bus Duct: 17.5 KV ; Aluminum alloy	C & S ELECTRIC LIMITED	Set	3	Site	Erected	

SL	DESCRIPTION	Original Supplier	UOM	Qty	Location	Status	Remarks
32	Electrical BOP Supply: 2000A Emergency PMCC-1 nos; 4000A CT PMCC-1 no; 3000A MCC -3nos (each GT & ST), 800 A ventilation MCC -1 no 1250 A MCC for STG - 1 no. 630 A MCC -2 no.s (for STG) 400A ACDB -1 no.s 800A / 125 V DCDB-1 no. 630A/220V DCDV -1 no. 170A / 220V battery Charger - 2 no.s 450A / 125V battery Charger - 2 no.s Misc. item for Bus ducts, SPBD, NSPD etc.. Emergency Diesel genset 1250 KVA - 2 nos	L&T	Set	1	Site	Part Erected	
33	HT SWGR (6.6 KV): 2no.s SWGRS, vacuum circuit breaker	L&T	lot	2	Site	Erected	
34	Control & Relay Panel: for 400 KV GIS _ Control and protection	SIEMENS LIMITED	lot	1	Site	Erected	
35	LT Cables:	TERACOM	lot	1	Site	Erected	partial supply
36	Aux Transformer(Oil Type): 2.5 MVA ,6.6KV/0.433KV	VICTORY ELECTRICALS LTD	lot	3	Site	Erected	