

Special offer - pre-owned, fully erected but unused 810 (2 x 405) MW Combined Cycle Gas Turbine Power Plant for immediate delivery with full OEM Warranty available.



CCPP Power Plant – 2 X 405 MW at ISO cond.

ASSET OVERVIEW

810 MW (2 x 405 MW, ISO), combined cycle power plant.

The project comprises of 2 identical streams of 1+1+1 configuration.

Each stream has one 9FA Gas turbine from GE, USA , one steam turbine generator from Alstom, Germany and one HRSG built by L&T along with associated auxiliaries and balance of plant.

The plant is designed to operate on Natural Gas.

The plant generation is at 15.75 KV stepped up to 400 KV for synchronization to the grid.

The plant was constructed by Larsen & Toubro Limited.

The plant was commissioned in Oct 2015 and is not in operation as there is no gas supply.

It is currently under preservation as per OEM norms (GE, Alstom , L&T).

The units can be relocated at a suitable location within a period of approx. 24 months.

Owners have signed a Long Term Service and Parts Supply Agreement with GE for the Periodic maintenance and technical support for the Gas Turbines. They will also provide services for maintenance and spares supply for the Steam Turbines.

All plant and equipment will get warranties and guarantees for performance from respective OEM's.

Optional Features

Plant Capacity	2 X 405.40 MW at ISO conditions. 2 X 383.78 MW at site conditions. Gross Heat Rate – 1515 Kcal/Kwh on LHV basis at ISO conditions. Auxiliary power consumption < 3%.
Fuel requirement:	Natural Gas ~ 1.64 mmcmd at 9500 Kcal/scm, HHV at site conditions.
Water Consumption	25000 cu.m per day.
Emission Limits	Provided with Dry Low NOx burners with NOx and CO limits as 35 ppmv & 15 ppmv @ 15% O2 resp.
Supplementary Duct Firing	33 MW capacity.

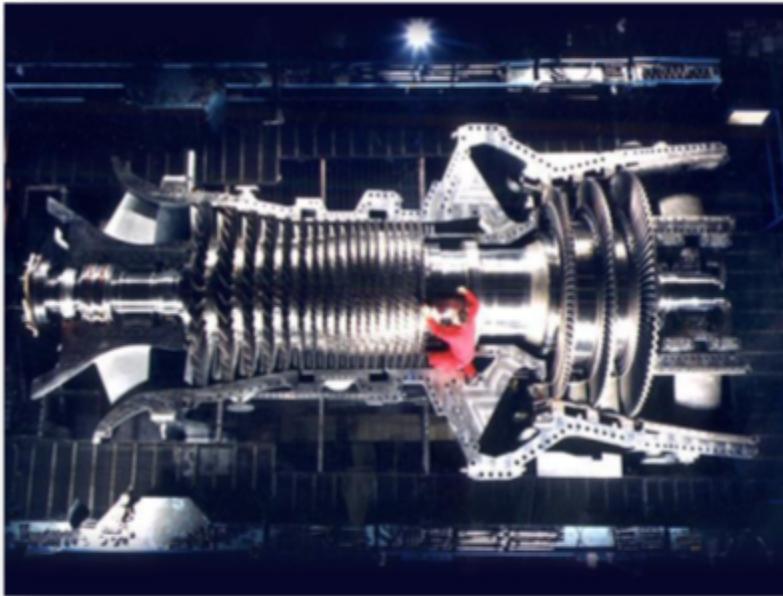
Start up and Controls	<ul style="list-style-type: none">• Islanding capability to meet the house load.• Capable to reach full load in 90 min. under hot conditions.• Possible to start GT from local as well as remote.• Capable of quick response to unscheduled demand.
Gas Turbine Running Hours	<ul style="list-style-type: none">• Unit #1 -2790 Fired hours. (Hot Gas Path Inspection at 24000 hrs. & Major inspection at 48000 hrs.)• Unit #2 -1547 Fired hours. (Hot Gas Path Inspection at 24000 hrs. & Major inspection at 48000 hrs.)

Major Equipment

Sl. No.	Equipment	Capacity
1	Gas Turbine	2 x 240 MW
2	Gas Turbine Generator	2 x 214 MVA, 0.80 P.F lag
3	Steam Turbine	2 x 144 MW
4	Steam Turbine Generator	2 x 169.65 MVA, 0.85 P.F lag
5	HRSG	2 No. Vertical, Triple pressure , Reheat type
6	Power Transformer for GTG	2 x 277 MVA
7	Power Transformer for STG	2 x 170 MVA
8	Unit auxiliary transformer	2 x 28 MVA
9	EDG	2 X 1.01 MVA
10	CW pump	4 X 14260 m ³ /hr.

11	Condensate Extraction pump	4 X 570m ³ /hr.
12	HP/IP Boiler Feed Pump	4 X 410 m ³ /hr.

Major Equipment Features



GE PG 9351 FA with DLN2.0+

Heavy duty 9FA gas turbines from the experienced F class fleet with over **25 million hours of operation**.

Features

- Enhanced 24K hardware for increased reliability and availability.
- Cooling Optimization for improved power output and base load efficiency through better management of turbine section clearances and cooling air flows.

Gas Turbine

Capacity	240 * MW (at site conditions). 257 MW at ISO conditions
Fuel	Natural Gas
Starting Means	Load Commutated Inverter (LCI)
Air Filtration	Self-Cleaning
Inlet Air Cooling	Evaporative Cooler
Compressor Cleaning	On-line and Off-line Water Wash

Exhaust System

Exhaust Diffuser with Expansion
Joint for Axial Exit

Emissions Control

Dry Low NOx 2.0+

- Mark VIe Control System controls the gas turbine using real-time physics based modeling, increasing the overall performance, operability, and reliability of the gas turbine.

Gas Turbine Generator

Rating 314 MVA hydrogen cooled

Frequency 50 Hz

Cooling Hydrogen

Power Factor (pf) 0.80 Lagging, Capability to 0.95 Leading

Terminal Voltage 15.75KV

Generator Excitation Digital Static Bus Fed

Major Equipment Features



Features

Alstom – Steam Turbine and Generator

Features

- Turbine:- 2 casing , condensing steam turbine model - HD1CK+MDG160/NE37AA
- Sliding pressure operation.
- Manufactured at Alstom Germany
- 100% bypass capability for HRH /LP.
- Max. inlet temp.= 566 ° C .

Steam Turbine

Make

ALSTOM

Capacity

144 * MW

Main Steam
Parameters

- HP Steam: 296.5 T/hr. @ 141 Bar, 568 Deg C
- IP Steam: 339.3 T/hr. @ 34 Bar, 568 Deg C
- LP Steam: 33 T/hr. @ 4.4 Bar, 287.4 Deg C

Steam Turbine Generator

Rating 169.65 MVA

Frequency 50 Hz

Power Factor (PF) 0.85 Lagging

Terminal Voltage 15.75KV

Cooling Air Cooled

Major Equipment Features



Heat Recovery Steam Generator (HRSG)

Supplier – L&T , Design - CMI

Vertical, Triple pressure , Reheat type HRSG with supplementary duct firing.

Water Circulation:-

HP :- Forced circulation – Pump capacity – 1030 M³/hr.

IP :- Natural Circulation

LP :- Forced Circulation – Pump Capacity – 60 M³/hr.

Make	CMI Design		
Type	Triple Pressure HRSG installed at the exhaust of the Gas Turbines		
Steam Parameters	Unit	HP	IP
- Steam generation	kg/sec	82.377	94.25
- Pressure	Bar (a)	141.01	33.95
- Temp.	°C	567.5	568
			287.4

Major Equipment - Electrical



Power Transformer GTG

Rating

3 phase/ 277 MVA, 0.85 P.F lag

Voltage

15.75/420 KV

Cooling

ONAN/ ONAF/OFAF

Frequency

50 Hz

Unit Auxiliary Transformer -

Rating

3 phase/ 28 MVA

Voltage

15.75/6.9 KV

Cooling

ONAN/ ONAF

Frequency

50 Hz.

Power Transformer STG-

Rating

3 phase/ 170 MVA, 0.85 P.F lag

Voltage

15.75/420 KV

Cooling

ONAN/ ONAF/OFAF

Frequency

50 Hz

Major Equipment - BoP

BALANCE OF PLANT:

DM PLANT 2x20 m³/hr. capacity. Triveni Engineering Ind. Ltd.

Induce Draft Cooling Tower L&T Double row multi cell with total 20 cells serving both units. Circulation Flow – 57040 M³/hr.,

Gas Conditioning System Manufacturer - Gastech Process Engineering. Design flow- 109.17 TPH, Max. Supply press- 45 bar

HP/IP BFP Electric driven pump with a variable speed hydraulic coupling. Manufacturer – KSB Pumps. HP/IP flow – 330/80 M³/hr at 163.36/46.18 Bar.

CW Pumps Vertical mix flow pumps., Manufacturer – Kirloskar Brothers Ltd. 4 X 14260 M³/hr. at 2.2 bar



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400 KV Switchyard SAS with Energy Management system.
 Conventional 1 ½ breaker scheme, 80 MVaR Bus
 Reactor, SCADA system.

DCS Centum VP, Yokogawa.
