



## MET-TECH | Product Data Sheet

### POWER PLANT - 67 MW - QTY. 2 - 11.6 MW GAS & 44 MW STEAM

**Ref. No.:** POWERPLANT190601

**Year:** 2000

**Brand:** GE, ANSALDO, NUOVO PIGNONE, JEUMONT IND.

Qty. 1 Second-hand complete cogeneration power plant

**Mfc.:** General Electric (designed), Ansaldo Energia, Nuovo Pignone, Jeumont Industrie

This plant, installed in 2000, has operated in connection to a metallurgic plant, recently stopped. This plant is able to burn the waste process gas from metallurgic plant.

The natural gas is mixed with the LDG gas, it can burn the CO residual improving the calorific power of the gas. So it is great cause the low plant emissions respectful for the environment.

In the same time this recovering system improves the capacity of the plant.

## GAS TURBINE-GENERATORS

The gas turbines are multi shaft PGT10S-1s, with separate electric starter motors. There is a blast stack for each gas turbine for start up so the gas turbines can operate in simple cycle, although this mode of operation would not prove to be economical.

The air filters are single stage cartridge filter elements supplied by Donaldson.

The generators for the gas turbine are both of the Vacuum Pressure Impregnated (VPI) type, the stator bars are secured by resin and the stator is then baked in an oven. This is an ASB design, although the VPI design is proving reliable there are some concerns as it is difficult to carry out repairs should a fault develop and in some instances the entire stator has had to be shipped to the manufacturer works for repairs. There has also been a requirement for resin injection for some of these machines due to resin shrinkage.

Details of the gas turbine-generator are included in the table below.

## GAS TURBINE/GENERATOR

General Specifications Gas Turbines GT1 & GT2

Service Status Mainly base load

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Spacing Approximately 20 m adjacent to steam turbine TURBINE  
 Number of units 2

Designer General Electric

Manufacturer / Year Nuovo Pignone / 2001

Compressor / Turbine Stages 11/3

Rating (MW) 11.7

Fuels Natural Gas

Speed 11,000 RPM

GENERATOR Number of units 2

Manufacturer Ansaldo Energia S.p.A.

Rated voltage (kV) 11

Rated (MVA) 13.569

Speed (RPM) 1,500

Power Factor 0.8

**Connection Phases:** Star with accessible neutral

LUBRICATING OIL/SEAL OIL

System/type Mineral Oil

Piping Welded and flanged

Reservoir location Inside dedicated enclosure

VIBRATION MONITORING

Fixed/Portable Fixed

Alarms/Interlocks Adequate alarms

HEAT RECOVERY STEAM GENERATOR (HRSG)

The 2 off heat recovery steam generators are equipped with supplementary firing and have the added advantage in that they can operate autonomously without the need for the gas turbines to be in service. Both are equipped with a forced draft (FD) and gas recirculation (GR) fan. This helps to raise flue gas temperatures when firing syngas with a low calorific value.

HEAT RECOVERY STEAM GENERATORS (HRSGs)

General Specifications HRSG GVR1 & GVR2

Service Status Mainly base load

Spacing Approximately 15 m from gas turbine

GENERAL Number of units 2

Year Manufactured 2001

Type Single pressure, horizontal gas flow, supplementary firing (post combustion).

HP Steam flow (T/h) 43 -71.24

HP Steam press (bar) 130

HP Steam temp (OC) 518

Boiler Fuels GT exhaust, LDG & natural gas

Drum Level Control Via 3 level transmitters (differential pressure) with 2/3 voting logic.

Boiler interlocks (level, temp, press) Adequate, includes independent remote drum level

monitoring in control room via fibre optics.

#### **BOILER FEED PUMPS**

Driver Electric motor - 3 off 50 % Capacity pumps supply

#### **MISCELLANEOUS**

Water Chemistry Testing/Controls

Online analyses for pH, conductivity, dissolved oxygen, sodium and silica are monitored continuously online. The HRSG is dosed with phosphate and carbo-hydrazine.

#### **STEAM TURBINE-GENERATOR**

The steam turbine is of Siemens design and includes three bleeds which supply the deaerator, condensate preheater and 5 tih of steam for the steel works although this is no

longer used.

#### **STEAM TURBINE**

General Specifications Steam Turbine

GENERAL Service Status Base load

Spacing Approx. 20 m adjacent to gas turbines

#### **TURBINE**

Type, N<sup>o</sup> of cylinders & reheat Single flow, single cylinder condensing, 1 stage

action, 62 stages reaction, no reheat

Rating MW 44.5

Speed RPM 3,000

Stop Valve 1

Control Valve 1

#### **GENERATOR**

Designer / Manufacturer Jeumont Industrie

Year Manufactured 2000

Model # JISALT 255

Rated voltage (kV) 11

Rated (MVA) 51.5

Speed (RPM) 3,000

Power Factor 0.8

Connection Phases Star with accessible neutral

#### **STEAM**

Steam Pressure (bar) 110

Steam Temp C 510