

TRT SYSTEM

Product Description

The TRT is a machine that exploits the flow and the pressure of the furnace output gas to produce electric energy. Through a system of regulation managed by PLC it maintains the back pressure of BLT to the desired value.

TECHNICAL FEATURES

Installation Year 2003

Supplier SMS Demag

Power to the turbine shaft 11.430 kW

Power at the generator terminals 11.150 kW

Performance of turbine-reduction unit 0,825

Generator efficiency (full load), 0.8 Costs $\geq 97,5\%$

Turbine rotation speed 3.000 rpm

Generator rotation speed 1.500 rpm

COMPONENTS

➤ Turbine. No. 1.

Installation Year 2003

Revamping Year –

Supplier MAN-TURBO

Type Axial

Degree of reaction about 50%

Stages number 1

➤ Asynchronous Generator. No. 1. Generator to produce the electrical energy.

Installation Year 2003

Supplier ASI Robicon

Nominal Power 16,5 MVA

Nominal tension 10 kV

Nominal costs 0,8

Frequency 50 Hz

Number of poles 4

$WR^2=PD^2/4$ 1422 kgm²

Excitement Brushless

Earth resistance at the star point 10 A/10 s

AC auxiliary generator permanent magnet

Nominal tension: 160 V

Nominal power: 1,5 kVA

➤ Trasformer. No. 1.

Installation Year 2003

Revamping Year –

Supplier OCREV

Nominal power 16,5 MVA

Ratio 11/10 kV

Vacuum on the primary switch +/- 2×2,5%

carrier group Ynd11

Impedance 0,16

➤ BV 001 Valve. No. 1. Valve utilized to intercept the suction line of the turbine.

Installation Year 2003

Supplier ITALVALV

Nominal diameter DN 1.600

Nominal pressure PN 2,5

Type Butterfly

Valve body Long gauge (DN * 0.4 + 150mm)

Flanging PN10/2,5 DIN 2501

Lens bieccentric

Sealing (soft) Perfect (DIN 3230 – BN- BO/1) or (ANSI F CI 70-2 classe VI)

Actuator double-acting hydraulic cylinder

Driving Time opening / closing 5-10 s

BV 002 Valve. No. 1. Second-hand equipment.

➤ Turbine trip valve.

Installation Year 2003

Supplier ITALVALV

Nominal diameter DN 1.600

Nominal pressure PN 2,5

Type Butterfly

Valve body Long gauge (DN * 0.4 + 150mm)

Flanging PN10/2,5 DIN 2501

Lens bieccentric

Sealing (soft) Perfect (DIN 3230 – BN- BO/1) or (ANSI F CI 70-2 classe VI)

Actuator double-acting hydraulic cylinder

and disc springs

Driving Time normal opening / closing 5-10 s

fast closing ≤ 1 s

➤ BV 003 Valve. No. 1. Valve used to regulate the rotation speed during the start phase of the turbine.

Installation Year 2003

Revamping Year –

Supplier ITALVALV

Nominal diameter DN 600

Nominal pressure PN 2,5

Type Butterfly
Valve body Long gauge (DN * 0.4 + 150mm)
Flanging PN10/2,5 DIN 2501
Lens bieccentric
Sealing (soft) Perfect (DIN 3230 – BN- BO/1) or (ANSI F CI 70-2 classe VI)
Actuator double-acting hydraulic cylinder
and disc springs
Driving Time normal opening / closing 5-10 s
fast closing <= 1s

- BV 004 Valve. No. 1. Valve used to intercept the exhaust line of the turbine.

Installation Year 2003
Supplier ITALVALV
Nominal diameter DN 1.600
Nominal pressure PN 2,5
Type Butterfly
Valve body “Wafer” gauge: 350 mm
End flat
Lens centred
Sealing (metal jockey) 0,5% (DIN 3230 – BN- BO/1) o (ANSI F CI 70-2 level III)
Actuator double-acting hydraulic cylinder
Driving Time opening / closing 5-10 s

- BV 005 Valve. No. 1. Valve used to intercept the blast furnace gas main.

Installation Year 2003
Revamping Year –
Supplier ITALVALV
Nominal diameter DN 2.000

- Valve used to bypass in emergency the Bv05 valve.

Installation Year 2003

Supplier ITALVALV

Nominal diameter DN 1.200

Nominal pressure PN 2,5

Type Butterfly

Valve body Long gauge (DN * 0.4 + 150mm)

Flanging PN10/2,5 DIN 2501

Lens bieccentric

Sealing (soft) Perfect (DIN 3230 – BN- BO/1) or (ANSI F CI 70-2 classe VI)

Actuator double-acting hydraulic cylinder

and disc springs

Driving Time normal opening / closing 5-10 s

fast closing ≤ 1 s

- GV 001 Valve. No. 1. Valve used to intercept the inlet line of the turbine.

Installation Year 2003

Supplier ZIMMERMANN

Nominal diameter DN 1.600

Nominal pressure PN 2,5

Type Google valve

Valve body Gauge 1.200 mm

Flanging PN10/2,5 DIN 2501

Lens bieccentric

Sealing (soft) Perfect (DIN 3230 – BN- BO/1) o (ANSI F CI 70-2 level VI)

Actuator Locations Opening: hydraulic jacks

Rotation: hydraulic motor

Driving Time opening / closing 30 s

- GV 002 Valve. No. 1. Valve used to intercept the exhaust line of the turbine.

Installation Year 2003

Supplier ZIMMERMANN

Nominal diameter DN 2.400

Nominal pressure PN 2,5

Type Google valve

Valve body Gauge 1.200 mm

Flanging PN10/2,5 DIN 2501

Lens biecentric

Sealing (soft) Perfect (DIN 3230 – BN- BO/1) o (ANSI F CI 70-2 level VI)

Actuator Locations Opening: hydraulic jacks

Rotation: hydraulic motor

Driving Time opening / closing 60 s

Continuous Wash System High Pressure. No. 1. Second-hand equipment + Various new spare parts.

- Washing system of the turbine blades.

Installation Year 2003

Supplier Engineering of SMS Demag

Flow 5 m³/h

Pressure 150 bar

Tank for storage and water recirculation Volume: 1,25 m³

Diameter: 1.000 mm

supply valve with pneumatic actuator (n.) 1

High pressure pump Type: Piston

Flow: 5 m³ / h

Head: 150 bar

Continuous Wash System Low Pressure No. 1. Second-hand equipment + Various new spare parts.

- Cooling System. No. 1. Second-hand equipment + Various new spare parts.

Installation Year 2003

Revamping Year –

Supplier Engineering of SMS Demag

Recirculation pumps Number: 2

Flow: 120 m³ / h

Rotation speed: 3000 rpm

Pressure 5 bar

Capacity heater exchanger (n.3 fan) 600.000 kcal/h

Expansion Tank volume 0,5 m³

- MCC. No. 1. Second-hand equipment + Various new spare parts.

Distribution panel.

Installation Year 2003

Supplier APIERRE

Insulation voltage 660 V

Nominal tension 380 V

Rated main busbar current 630 A

Thermal current 50 kA – 1s

Input switch 400 A

Power switch interruption 50 kA

Differential relay on all the switches

Contactors type AC3

Single-phase 220 V with single-phase transformer of 380/220 V 10kVA isolation

Batteries Charging System and UPS. No. 1. Second-hand equipment + Various new spare parts.

➤ Batteries charging panel and UPS.

Installation Year 2003

Supplier CONVEL

Rectifier Power: 380 V – 50 Hz

Nominal output voltage: 100 Vdc

Total output current: 160 A

Battery Type: Ni Cd

Capacity: 84 Ah

Quantity: 92

Inverter Input voltage: 110 VDC

Output voltage: 220V – 50Hz single-phase

Power at 0.8 power factor: 15kVA

Static switch Continuous current: 90 A

Switching time: <1 ms

Input switch

Power switch interruption 50 kA

Differential relay on all the switches

Contactors type AC3

Single-phase 220 V Single-phase transformer of 380/220 V 10kVA isolation

➤ Metal Clad Panel. No. 1. Second-hand equipment + Various new spare parts.

Quadro metal clad.

Installation Year 2003

Supplier APIERRE

Insulation voltage 12 kV

Nominal current 1250 A

Momentary current 25 kA – 1s

Switch type extractable SF6

Power outage / restoration 25/62 kA

➤ Lubrification System. No. 1. + Various new spare parts.

Installation Year 2003

Supplier Engineering of SMS Demag

Type of lubricant ISO VG 46

Running oil flow rate 500 lt/min

Emergency tank capacity 1.500 lt

Supply oil pressure to utilities 3,5 bar

Supply temperature oil 50°C max

Return temperature oil 74°C max

Capacity main tank 5.000 l

Oil cooling fluid Demineralized water