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 >=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
WR2=PD2/4 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

➢ Transformer. No. 1.
   Installation Year 2003
   Revamping Year –
   Supplier OCREV
   Nominal power 16,5 MVA
   Ratio 11/10 kV
   Vacuum on the primary switch +/- 2x2,5%
   carrier group Ynd11
   Impedance0,16

➢ 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 diameterDN 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 <= 1s

➢ 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 diameterDN 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 joke) 0.5% (DIN 3230 – BN- BO/1) or (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 <= 1s

➢ 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 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 60 s


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.


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

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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


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