

The equipment had been designed and manufactured in 1990, the facility had been commissioned in 1992 and was in operation until mid of 2007 (15 years). Since then the plant has been shut down. No signs of extensive mothballing have been observed, even though the plant obviously had been well maintained and kept clean during operation.

The following machines have been reviewed:

1. Stacker (200 t/h for semi-circular stockpile of 100,000 t of blast furnace slag; 60 HP)
2. Hot Gas Generator (24.6 MBTU; 46,000 cfm) utilizing natural gas
3. POLYCOM Roller Press 14/8 with Flender gear reducers, main motors and hydraulic system
4. SEPOL high efficiency classifier SVZ 200/0 with pressure fan, product baghouse + suction fan
5. Auxiliary heaters from 0.5 to 1.0 MBTU utilizing natural gas to heat chutes, material transport equipment and nuisance dust collectors to prevent condensation

A process flow sheet is attached to this report.

1. Stacker (200 t/h for semi-circular stockpile of 100K t of blast furnace slag; 60 HP)



Equipment is outdoors but shows minimum structural corrosion. Equipment seems to be generally sound and intact. It is not expected that any electric equipment can be re-used.

2. Hot Gas Generator (24.6 MBTU; 46,000 cfm) utilizing natural gas



Hot gas generator unit located in a corner of the building on the ground floor level. The photo shows the side with the natural gas control unit. Generally the unit is in good condition but will require cleaning. Made by the John Zink Company (Tulsa, OK) with the Serial number: 77262-1



The HGG is equipped with 2 air supply fans, one thereof shown in the following picture. The fans are rated at 20 HP / 41 inch water DP and 15 HP / 25 inch water DP.



In the warehouse a new, unused heater has been discovered (Type ECLIPSE). Due to a lack of documentation no details are available at this time. Judging by size the heater unit is substantially larger than 1 MBTU but also a lot smaller than 20 MBTU. It is set up for natural gas.



3. POLYCOM Roller Press 14/8 with Flender gear reducers, main motors and hydraulic system

The installation is a typical Polysius POLYCOM unit.



a) Rollers / Bearing units

The installed rollers are “full rollers” (not bandaged or segmented). Over the course of 17 years the rollers have been refurbished / rewelded multiple times but are in very good shape. No cracks of any kind have been observed, no breakouts or any other unusual flaws.



Original roller dimensions: 1.4 m Diameter by 0.75 m width. The actual roller surface is on good shape (minimal wear) as shown in the next photo.



The roller bearing blocks seem to be in good condition with superficial corrosion and the need for cleaning/repainting.



After 6 to 7 years without movement it has to be assumed that the bearing spots under load have flattened out. A detailed inspection of the bearings (dismounting, cleaning, inspection) is mandatory before putting the machine back into operation. The roller lifting frames that double act as transport safety devices were found in the yard and are in usable conditions (minor corrosion, needs cleaning and paint).



b) Gear reducers

The gear reducers have been original made by Flender and are Type PSZA 265.

The rating seems to be 400 kW = 536 HP but the nameplate does not show the markings “kW” in the spot usually used for the rating.

It might be recommendable to clarify with the Flender Company whether the 400 rating refers to kW or HP.

In any case the rating is slightly (536) or significantly (400) below the motor rating of 600 HP.

The turndown ratio is given as 1180 rpm : 21.7 rpm resulting in a roller surface velocity of 1.59 m/s.



The photos on the following page show that the gear reducers are mounted and in fair to good condition. One gear reducer shows the original blue paint while the other is painted in green and shows a nametag of the company “Mull Industries, Wheeling WV”. It is assumed that this gear reducer was rebuilt or repaired by this company at one time. Both gear reducers have Safeset torque couplings mounted and are equipped with a circulating oil lubrication which includes oil/water coolers.

With all parts/components sitting for several years without motion it is recommended to perform a detailed inside and outside cleaning / inspection of all components of the gear reducers / lubrication.



c) Motors

Both motors are from Westinghouse and are rated 600 HP at 4000 Volt with 1189 rpm.



As shown in previous photos the motors are mounted and seem to be in good shape but will need detailed cleaning / testing.

d) Hydraulic unit / Nitrogen Accumulators

The nitrogen accumulators are extremely corroded and will require a thorough refurbishing including renewal of the pressure vessel certifications. It probably is more economical to replace the 2 accumulators entirely. Due to the conditions not nameplate data were legible. Therefore the size of the accumulators is unknown but can easily be recalculated.



The photos on the next page show the hydraulic cylinders on the drive side (non-drive side looks the same), the hydraulic room and the hydraulic cabinet. The shown equipment seems to be in reasonable conditions and needs mainly cleaning, detailed inspection and an exchange of minor parts that will deteriorate over the years (O-Rings, sealings,...). The hydraulic tank unit shows some corrosion at the bottom that is minor but may need repair.



e) Grease unit



The grease system consists out of a pneumatic grease pump (barrel pump – see photo), a set of piping and grease distributors with cycle sensors.

The grease pumps looks reasonable; however, the piping and grease distribution system should be replaced.

f) Feeding device

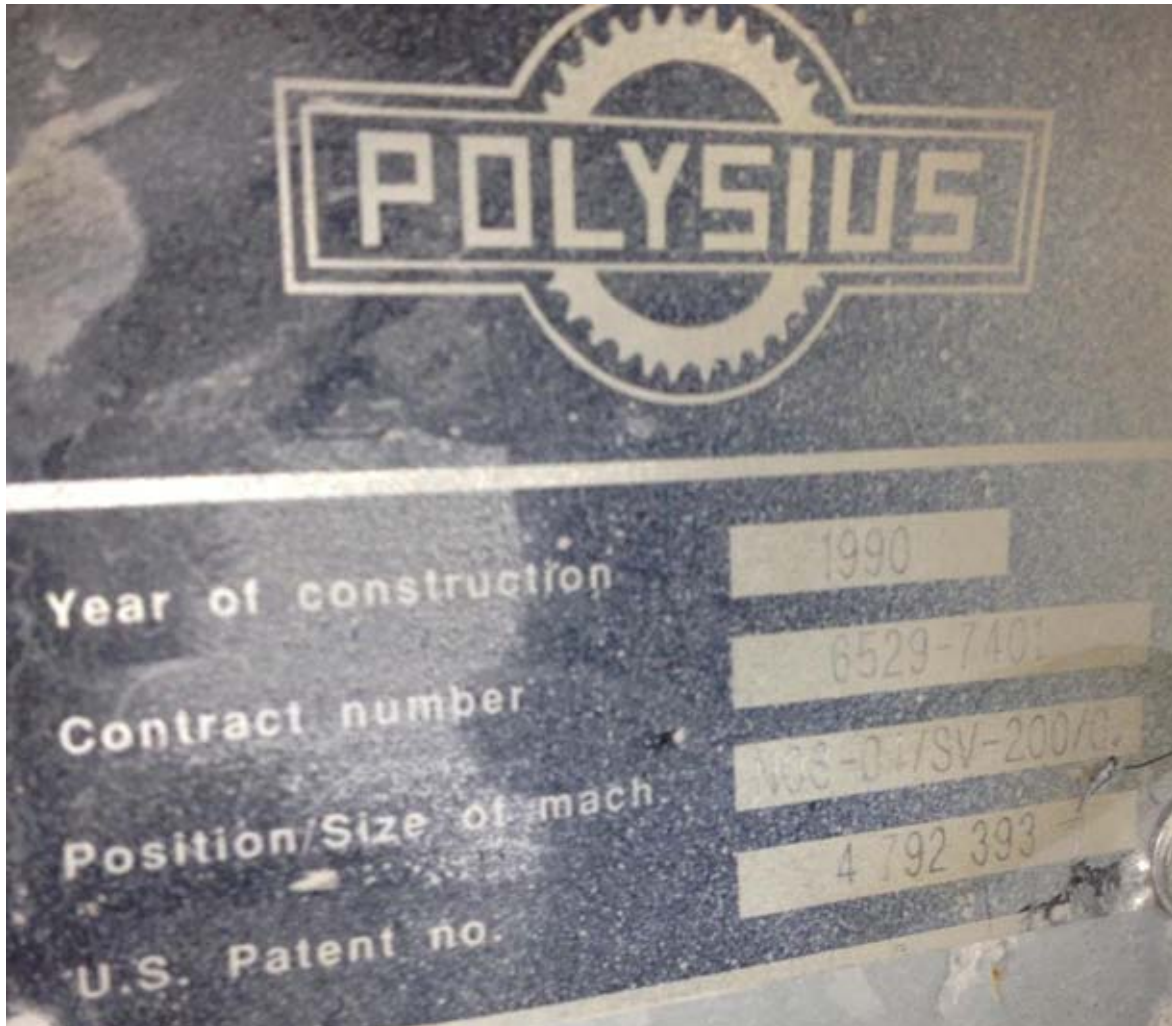


The feeding device is NOT the typical Polysius design (manual adjustable chute side walls in combination with hydraulic adjustable, angles shut of plates) but is a simple, non-adjustable chute that also cannot be shut off for a non-load start of the main motors.

4. SEPOL high efficiency classifier SV 200/0 with pressure fan, product baghouse + suction fan

a) SEPOL SV 200 / 0

The installed Polysius SEPOL classifier has been manufactured in 1990 but was installed / commissioned in 1992. The SEPOL Type is SV-200/0 which has a rotor cage size of Diameter = 2.0 m versus Height = 1.34 m resulting in 8.4 m² rotor classifying area. The rated gas flow for this type is 61,800 cfm.



The photos on the following pages show the top feed into the classifier, a side view and the gas inlet duct. An inside inspection showed that the classifier rotor and its seal seems to be in good condition. Also the lower bearing and the bearing supports show superficial corrosion only. It was not possible to open the side inspection door towards the static flaps. However, a complete set of new static flaps was found in the warehouse (see photo).







The following photos show the classifier drive. Due to the thick layer of hardened material no nameplate / tag was visible. A thorough cleaning and inspection will be needed. The installed motor was manufactured by the company “Reliance” and is rated as 200 HP @ 460 Volt and 1785 rpm max..



RELIANCE
ELECTRIC

XE

RELIANCE ELECTRIC COMPANY
2000-40 / 1000

DUTY MASTER

SERIAL NO.	02MAR65015 G 001 GA	FRAME SIZE	
HP	200	VOLTS	460
RPM	1785	AMPS	218
DESIGN		AMB	55 °C
TYPE		DUTY	SF
INSUL CLASS		ENCL	CODE

TORQUE

MFD BY RELIANCE

b) Pressure Fan

Typically a SEPOL classifier is equipped with one suction fan that generates the gas flow through the classifier / rotor / product separation equipment.

In this installation the distance Sepol exit to product baghouse is so long with a steep incline (see section c below) that a single fan would generate a suction above and beyond the typical baghouse design. To allow a sufficient gas flow without an excessive suction level a fan had been installed at the Sepol inlet – acting as booster fan to convey hot gas from the HGG into the Sepol and to support the final suction fan on top of the silos.

The installed fan is manufactured by “Robinson Fans, Inc” with the Type RB 1222, Serial no. 9996. The related motor is rated for 250 HP @ 460 Volt; 1185 rpm and has been manufactured by the company “Reliance”



TYPE RB1222
SERIAL NO. [REDACTED]

TYPE [REDACTED]
SERIAL NO. 9996
ZC 15050

RELIANCE
DUTY MASTER A.C. MOTORS
449T 2 11 (11450429) 30 5A
250 VOLTS 460 60
1185 AMPS 210 F 115
040 DUTY 1000 Hz 666
9080710X
9080710X XT-EXTRA TC
RELIANCE ELECTRIC COMPANY CLEVELAND

c) Baghouse and suction fan

The product baghouse is located on top of the product silos as shown in the following photos. It is equipped with a 2 way (reversible) screw conveyor. The attached suction fan is generating a gas flow that conveys the gas flow with the product from the SEPOL classifier outlet up a steep duct from the mill building over to the top of the silos.



Due to potential unsafe conditions (crossover walkway from mill building to silo top seemed corroded) no close-up inspection has been performed. The available documentation rates the equipment as following: Baghouse suction fan (also SEPOL suction Fan): 63,000 cfm; Motor: 350 HP
Baghouse: 40 t/h material at rated gas flow, 1 compartment, by eyeballing the square housing is unusually high which points towards long bags/cages

Even though the equipment has been outdoors it looks fair (from a distance) further inspection is recommended.



5. Auxiliary heaters from 0.5 to 1.0 MBTU utilizing natural gas to heat chutes, material transport equipment and nuisance dust collectors to prevent condensation



A total of 4 small burners are installed in the field, 1 burner was found in the warehouse. The photos document the condition of the units. As per the available documentation 2 installed units should have a capacity of 0.5 MBTU, the other 2 installed units should have a capacity of 1.0 MBTU.

The capacity of the unit in the warehouse is unknown. All units are manufactured by the company "Eclipse".

