



RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.

(A Govt. Of Rajasthan Undertaking)

Corporate identity Number (CIN)-U40102RJ2000SGC016484

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Note containing details of the plan for transportation of the minerals proposed to be raised from the mining lease of Parsa Opencast Coal Mine (5MTPA)

COAL HANDLING:

The capacity of Parsa Opencast Coal Mine is 5 MTPA and it is required to supply coal of size -50mm. Therefore, it is envisaged to establish a Coal Handling & Preparation Plant at pit head of Parsa Mine for receiving of coal, screening,

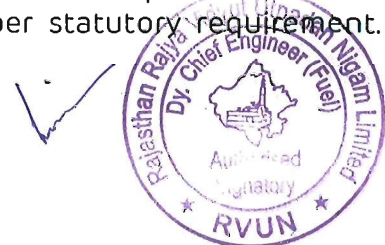
Crushing, stacking-reclaiming, loading and dispatching arrangements. Raw coal from Mine will be received at a fixed Hopper. This raw coal from hopper will be conveyed to Screen & Crusher Houses of Coal Handling Plant (CHP). The CHP will comprise of processes like Screening, Crushing,

Stacking-Reclaiming and Wagon loading Silos.

The process flow of the CHP will be as follows:

1. Receiving Raw Coal from Coal face to Raw Coal hopper through dumper and conveyor.
2. Feeding of raw coal to Crusher House & conveyed to screen house in CHP.
3. Screening of (-) 13 mm Raw Coal into undersize & oversize of 13-50mm.
4. Raw coal of size (-) 50 mm will be washed out and conveyed to Yard conveyor, which comprising bypass coal and washed coal.
5. Yard conveyor is envisaged with plough feeders arrangement for coal stacking or reclaiming facility for onward conveying.
6. Yard conveyor is followed by wagon loading system.
7. It is envisaged to extend the nearest rail link upto project site for loading product coal in to wagons.

The CHP will be designed with minimum equipments required and simple process for operation. However, the CHP will consist of all requisite measures for Dust Extraction/Suppression arrangements as per statutory requirement.



Also, there shall be suitable arrangements for noise reduction in plant. The Data-sheet of CHP is detailed herein.

Sr. No. Parameters Technical Details

- 1 Mine Capacity 5 MTPA
- 2 Coal size from Mine (-) 150mm
- 3 Coal Product size after CHP (-) 100mm
- 4 Conveyor rated/design capacity for ROM handling 1000/1250 TPH
- 5 ROM conveyor details 1250 TPH, 1400mm, 3.2 m/s, Steel cord belting
- 6 ROM storage capacity at CHP 2,00,000 T
- 7 Stacking & reclaiming capacity 1200 / 1200 TPH
- 8 Screen capacity 500 TPH
- 9 No. of Screens 2
10. Feed size/output coal size of Screen (+)50mm / (-)13mm
11. % of (+)13mm coal in ROM 20-30 % approx.
- 12 Crusher Capacity 1000 TPH
- 13 No. of Crushers 1
- 14 No. of working hours considered for Crushing 18 hrs/day
- 15 Dispatch of final product coal Through Rail
- 16 Size of product coal (-) 50mm

GENERAL DETAILS OF PLANT FACILITIES ENVISAGED:

1. Conveyor Details :

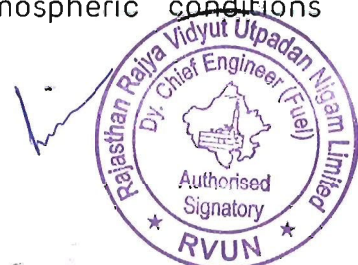
Design of conveyor will be generally as per CEMA-5/6 & IS:11592-2000. The components of conveyors proposed in the facility shall be standardized to the extent possible. Belt width as specified shall be adhered to. Components like pulleys and its shaft diameters, motor kW rating, belt rating, etc. shall be adopted to meet functional and design requirement. All drives of Conveyors shall be capable of starting the belt fully loaded. Belt for conveyors shall be Steel cord

with Fire Resistant Grade and suitable for heavy duty application of appropriate rating.

Galleries for conveyors shall be generally open type. The galleries along with supports shall be made of structural steel. The belt conveyors will be covered with hoods, wherever applicable.

2. Belt Weigher :

Belt Weighers shall be provided on conveyors wherever required. Belt Weighers shall be electronic type complete with sensing element, suspension system, tacho generator and integrating totalizer with rate indicator etc. It shall be suitable for outdoor installation and continuous duty. Belt Weighers shall perform satisfactorily under all operating and atmospheric conditions prevailing at the proposed site.



3. Metal Detector and Magnets :

Suspended Electro-Magnet (s) shall be provided on conveyors as per requirement to remove tramp metals being carried along with the material on the belt. The suspension arrangement shall provide for adjustment in height of magnet above the conveyor and move the magnet in transverse direction. The magnet shall be capable of lifting tramp iron pieces from anywhere throughout the width of the

belt (From below the material burden) and not only from the centre of the belt conveyor. The magnet gauss strength shall be uniform all across the width of the magnet/ conveyor belt.

4. Vibrating Screens

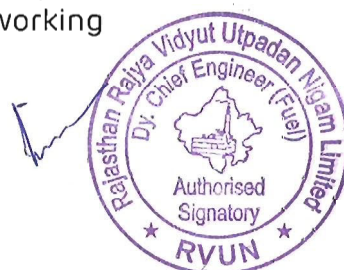
Vibrating screens of heavy duty type for feed sizes (-) 50mm shall be provided in CHPs to ensure proper segregation of material in different sizes. The screen shall be capable to segregate the (-) 13 mm size of coal with coal dust, any muck & muddy coal (which is likely to be encountered during rainy season) etc. The size of vibrating screen shall be so selected as to feed the material uniformly over the entire length of crusher. Suitable sealing arrangement shall be provided between the vibrating structure and chute work to avoid dust nuisance in the surrounding area.

Technical Data

1. Capacity : 500 TPH
2. Quantity required : Two
3. Moisture in feed : 10% (approx.)
4. HGI : 50 - 55
5. Feed size : 50mm
6. Product size : (-)13mm

5. Toothed Double Roll Crushers

The CHP is envisaged with 2 nos. of toothed double roll crusher which shall be capable of crushing coal from feed size to final product size as given in the data sheet. Toothed double roll crusher shall employ a slow positive action over the material with a concentrated pressure, shattering and cracking the coal and shall produce granular products with minimum generation of fines. The crusher shall be designed to crush wettest possible coal without clogging or building up of material on the crushing element. It shall have minimum noise and vibration. The Crusher capacity shall be selected considering maximum hard grove index of coal as specified elsewhere and worst feeding conditions. But the normal working capacity shall be as per data sheet enclosed.



Technical Data

- a. Capacity : 500 TPH
- b. Required numbers : Two (2)
- c. Material to be crushed : Coal
- d. Feed size to crushers : (-) 150 mm
- e. Product size : (-) 50mm
- f. Crushing rolls/shaft : Heavy cast Mn-Steel or alloy Steel castings of BHN 450 (toothed preferable) / forged alloy steel

6. Coal Washery

In order to ramp-up the mine production schedule, a Coal Washery with a Raw Coal throughput capacity of 5 MTPA has been proposed at the mines pit head of the Parsa Coal block to wash coal in order to meet the coal requirement of thermal power projects of RRVUNL.

5 MTPA modular washery plant is proposed to be established with specific commitment of quality.

The summarized data of Washery is as given below:

- Plant capacity : 5 MTPA
- Daily throughput capacity : 17000 Tonnes
- Hourly capacity : 950 TPH Design
- Quality of Raw Coal : 39.75% (Approx.)
- Moisture of Raw Coal : 6.3% (at 60% RH & 40°C)

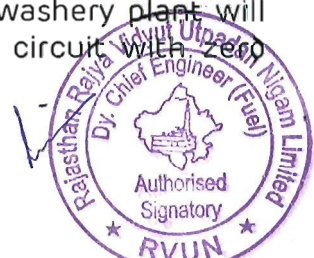
Approx.

Quality & quantity of Washery product

- Clean Coal : 32% Ash (3.8 MTPA) Approx.
- Rejects : 60% Ash (1.2 MTPA) Approx.
- Yield of Washery : 77.5%
- No. of working Days/Annum : 330 Days
- No. of working Shifts / Day : 3 Shifts
- No. of effective Hours / Day : 18 Hours (6000 hrs / Annum)

The washery will produce approximate 3.8 MTPA of clean coal with an ash content of 30% and 1.2 MTPA of rejects with an ash content of about 60% approx. The clean coal will be transported by rail to RVUNL's power plants where as the rejects are envisaged to generate Power by setting up a FBC Power Plant. The yield of washery shall be around 77.5%.

The washery is planned with the state of the art technology with due consideration to environment in and around washery. The washery plant will be operating with a carefully designed closed loop water circuit with zero



discharge outside and also deploys suitable required measures to keep noise and air under control as per statutory norms. Also afforestation surrounding the plant has been considered to work as barrier for dust and noise.

Washery Process Details:

The technology adapted for achieving the committed quality requirement of customer, for 5 MTPA production stage, no of wasing circuits have been proposed for washing the (-)50 mm coal. The raw coal produced from Mines being conveyed to CHP through feeding conveyor and after crushing stage of CHP,

(-)50 mm raw coal being conveyed to Washery Building through feeding conveyor. At first instance from the raw coal 0-13mm shall be screened out and separated and the oversizes of (+)13 to (-)50mm coal shall be fed to these washing circuit which shall deliver two products i.e. washed coal with average 30% ash and the rejects. The washed product from the washing plant shall be mixed with already screened out 0-13mm coal and it shall be fed to the despatch system of the coal

handling plant. The quality of the despatch coal shall meet the requirement of the RVUNL i.e. 30% ash, 10% moisture and overall GCV shall not be less than 4500 Kcal./kg. (ADB)

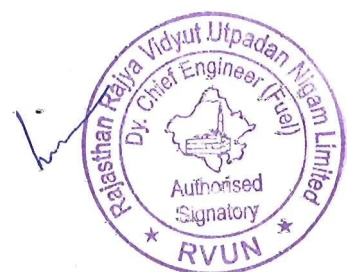
7. Dust Suppression System

Dust control and abatement systems shall be provided to contain escape of dust into atmosphere while the facilities at the coal processing and handling units are in operation. The systems shall be designed to conform to the permissible limit of dust emission by the concerned statutory pollution control authorities of the Chhattisgarh State and MOEF.

8. Standardization of the CHP :

The system assemblies / components shall be standardized to the maximum extent possible to reduce the spare parts inventory to the minimum. Special emphasis shall be laid to standardize the various components, to the possible extent, thereby ensuring that minimum number of different types is used in the machine(s). The components shall be standardized from the point of view of size / rating and / or source of supply of such components but not be limited to the following:

- Motors
- Beltings [Belt Rating]
- Gear Reducers
- Couplings
- Pulleys
- Shafts
- Idlers
- Brakes
- Plummer Blocks
- Bearings
- Wire Ropes



- Wheels and Axles (or Wheel Assembly)
- Lubrication System and their parts
- Dust Suppression/ Fire Fighting System, Nozzles, Pipes, etc.
- Cables
- Switchgear components, lighting fixtures, electrical power and control hardware, etc.

USE OF MINERALS

The project has been planned for producing 5 million tonnes of coal per annum. The weighted average ROM coal quality is likely to be of grade F i.e power grade coal. The block has been allotted to M/s RRVUNL for coal requirement of their power plant.

MODE OF DISPATCH

Surface transport consists of transport of over burden and coal.

OVERBURDEN TRANSPORTATION

Over burden will be transported by dumpers to respective OB dumps as explained in previous chapter 5. Haul road has been provided for movement of dumpers.

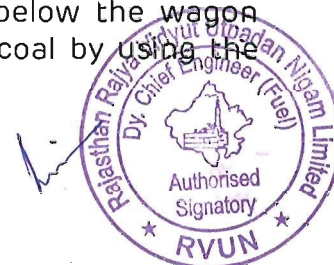
COAL TRANSPORTATION

It has been planned to bring coal from coal face to surface by belt conveyor. Conveyors are provided to transport coal into Coal Handling plant. Belt conveyor has been envisaged for less fleet of dumper, negligible air pollution and negligible noise pollution. It is envisaged to transport coal from CHP to 4000 tones capacity RCC Silo by belt conveyor. Wagon loading station will be used for loading coal into a rake of open type Wagons while in motion hauled by loco. Normally the rake shall consist of identical type of wagons. Prior to commencement of rake loading operation, the 4000 tones capacity RCC Silo will be filled with coal by belt conveyor.

Exchange yard will be the handing over point of the rakes between the railway and the Colliery. After clearance of the rakes in the exchange yard, Colliery's shunting loco will haul the empty rakes of wagons to the wagon loading station via in-motion Weigh Bridge. Rake will leave exchange yard to the loading station/waiting line on the advice from the Central Control room. Details of rake to be loaded will be available with the operator at the in motion weigh bridge prior to its arrival and the same will be entered by the operator and transmitted electronically to the rake loading operator/control cabin of Wagon Loading Station.

The in motion wagon loading system shall be weigh batch type [having preweigh

bin] system. The rake will be hauled at a uniform speed below the wagon loading point and will be loaded with required quantity of coal by using the



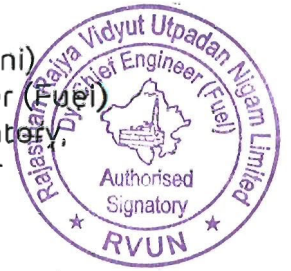
pre-weigh bin system. It is proposed to established rail link of about 75 Km between mine and

Surajpur Railway Station which is situated on Anuppur – Ambikapur branch line on Bilaspur Division of South East Central Railway.

Loaded Coal wagon will move to Surajpur Railway Station which is situated on Anuppur – Ambikapur branch line on Bilaspur Division of South East Central Railway. From Surajpur Railway Station, coal wagon will move to power plant by rail.

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(Prakash Israni)
Dy. Chief Engineer (Fuel)
Authorized Signatory,
RVUN, Jaipur



Date: 28.03.2017

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