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231 BAUXITE CRUSHING **TECHNICAL SPECIFICATION** **SECONDARY CRUSHING UNIT**

PREPARED BY

RTAIL

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1. OBJECT

Rio Tinto Alcan International (RTAIL) has a contract with National Aluminium Company Limited (NALCO) to deliver a Basic Engineering Package (BEP) for the construction of a 5th Line of the DAMANJODI alumina refinery whose capacity is 1,000,000 tons of alumina per year.

Gardanne Technology Group, which is part of the RTAIL commercial group, is in charge of this BEP study.

The Project scope includes a Bauxite Crushing Unit for which a secondary crusher will be provided.

The objective is to crush the Primary Crush sized bauxite and to send it to the Bauxite Grinding area.

2. PROCESS DESCRIPTION

The bauxite will first be crushed down to a 100% less than 200 mm product at the mine (Primary Crushing).

Primary crushed bauxite will be transferred to the refinery homogenising stock pile where it will be further crushed from 200 mm to 38 mm by means of a Secondary Crushing Unit.

The secondary crushed bauxite will then be ground to the required specification using a Rod / Ball Mill.

In the Secondary Crushing Unit, the primary crushed bauxite will be dumped onto a vibrating screen to separate the material less than 38 mm in size.

The oversize material will be transferred from the vibrating screen to the crusher.

The crusher will crush 100% of the oversize material to less than 38 mm in one pass.

The crusher discharge and the vibrating screen undersize will be combined and transferred to the bauxite silos of the Grinding Unit.

This flowsheet concept is illustrated in Figure 1.

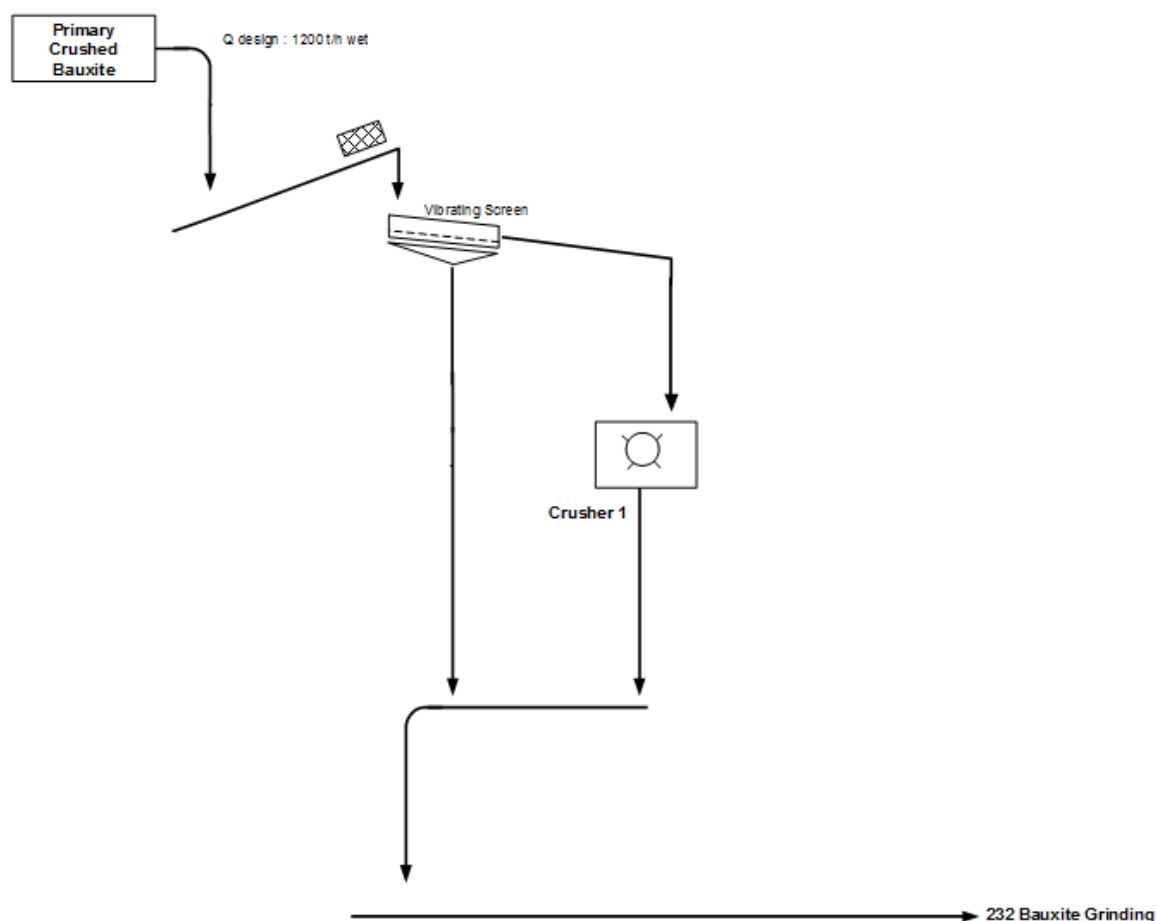


Figure 1: Bauxite Crushing flowsheet with maximum flowrate indicated

3. SPECIFICATIONS

3.1. CAPACITY OF CRUSHING PLANT

Maximum Feed Flowrate = 1200 t/h (with 9% moisture)

Normal moisture content = 9%.

Maximum moisture content during the monsoon season = 13%.

Minimum moisture content during the dry season = 7%.

Operation: 8 to 16 hours per day.

3.2. CHEMICAL COMPOSITION OF BAUXITE

- %Al₂O₃ tot 43.6
- %Gibbsite as Al₂O₃ 36.7
- %SiO₂ total 4.4
- SiO₂ reactive 4.2

3.3. PHYSICAL PROPERTIES OF BAUXITE

- Apparent density 1.4 t/m³
- Accepted Bond work index 9.5 kWh/short t
- Abrasiveness ABR index : 40 to 62 g/tonne
- Primary Crushed Bauxite 100% < 200 mm
- Temperature, °C: ambient

3.4. CRUSHED BAUXITE SPECIFICATION

- P₁₀₀ 38 mm
- P₈₀ 12 mm (+0, -2 mm)

4. DESCRIPTION OF THE SUPPLY

4.1. TECHNICAL DATA

The Supplier is requested to provide the following information:

- Scope of supply,
- Typical equipment drawing,
- Main characteristics of equipment,
- List of references.

The Supplier must also provide information on crusher availability and maintenance downtime.

4.2. SCOPE OF SUPPLY

The Supplier will quote a Secondary Crushing Unit comprising the following equipment:

- Secondary Crusher, completely equipped,
- Vibrating Screen,
- Special tools,
- Spare parts for start-up,
- Spare parts for 2 years' maintenance.

5. GUARANTEE

The supplier is required to guarantee the Particle size at the outlet of the crusher:
 $P_{100} = 38 \text{ mm}$ (100 Wt% < 38 mm) considering the input data of chapter 3, and to guarantee the mechanical parts of the equipment.