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## CEMENT PLANT - 500,000 TONNES/YEAR

### 1. General Information

This 500,000 tonnes per year plant was installed new in 1989. The plant worked continuously until 2000 when it was replaced by a larger plant. Later the plant was reactivated in 2004 in and worked continuously until January 2009. Therefore the plant is in good working order and has been well maintained by the owners on a scheduled basis from new.

### 2. Layout & Design

The plant layout is as per the attached Layout Plan which was initially designed by an experienced engineer in cement production. The layout and various components of the plant have been deliberately designed to maximise production flexibility.

### 3. Main Components

The plant is comprised of the following main components;

#### (a) Infeed Section

This consists of four Infeed Hoppers suitable for filling by articulated dump truck with pre-sized materials, 0 – 40mm, from the Crushing and Screening Plant. Each Hopper is complete with a variable speed belt feeder which in turn feed a Conveying System incorporating a Transfer Tower which takes the material to the Pre-Blending Store.

As each of the belt feeders are controlled by variable speed drives this provides the flexibility to vary the volume of each feed size or type as required for the production run.



#### General View

### 3. Main Components - Cont'd.

#### (b) Pre-Blending Store

This purpose designed and built store is fed through the apex of the building from the Infeed Section. Material is distributed within the building by a rotating conveyor mounted on a central column. This column also supports a horizontal plough type structure with scraper which rotates, taking with it the material which is discharged centrally to a recovery conveyor underneath for onward transfer to the Raw Feed Mill. The purpose of the Pre-Blending Store is to reduce the moisture content of the material thus reducing the heat requirement in the kiln stage and also provide the necessary buffer storage for the production plant.



**Pre-Blending Store**

Pre-blending store



**Pre-Blending Feed Conveyor**

Pre-blending feed conveyor

**(c) Additive Section**

This three bin system with variable speed belt feeders and transfer conveyors allows the producer to add a range of suitable material before the Raw Feed Mill. This provides the option to vary the type of cement produced or to add imported material to improve or adjust the quality of the final product.



3. **Main Components - Cont'd.**

(d) **Coal Feed System**

The kiln is coal fired and suitably prepared coal is fed by a Feed Hopper, Feed Conveyor, Buffer Storage Silo and Discharge Conveyor to a FCB Vertical Mill complete with 300Kw electric motor and drive. The Mill reduces the coal to a size suitable for feeding the kiln.



(e) **Raw Mill**

The various blended materials from (b) and (c) are fed by transfer conveyors at a controlled rate into the 4.0M dia x 12Mlong x 2000 kw FCB Ball Mill. .



**Feed System to Raw Mill**



**Raw Mill**

3. **Main Components - Cont'd.**

(f) **Homogenizer & Silo**

The powdered material produced by the Raw Mill is blown by 3 main blowers via pipework to the top of the tower housing the Homogenizing Silo and downward to four cyclone/heat exchangers. The air produced by the blowers transfers the material vertically to the top of the tower and it then passes downwards through the cyclones to the kiln.

**Homogenizer Tower**



**Air Pipework Manifold to Homogenizer**



**Air Blowers**



3. **Main Components - Cont'd.**

(g) **FCB Rotary Kiln**

The FCB Kiln is 4M dia x 87M Long and is equipped with ten planetary coolers and burner. The Kiln has been refurbished every 12 months to ensure that it is kept in optimum working condition.



**Kiln with Homogenizer Tower**



**Kiln with Planetary Coolers**

(h) **Clinker Handling System & Store**

The clinker produced from the kiln is transferred by drag slat/pan conveyors to the Clinker Store. Material is fed into the store at the central apex of the conical pyramid -shaped storage building. The building provides buffer storage for final grinding and is discharged via an underground drag slat conveyor for onward transfer to the Finish Mill.



**Clinker Discharge Conveyor to Clinker Store**



**General View of Clinker Store**

3. **Main Components - Cont'd.**

(i) **Gypsum/PFA Feed System**

Prior to the Finish Mill this system provides for the introduction of gypsum, PFA and other suitable materials. It comprises of four hoppers, each with a controlled discharge feeder which feeds material to the final mix via transfer conveyors.



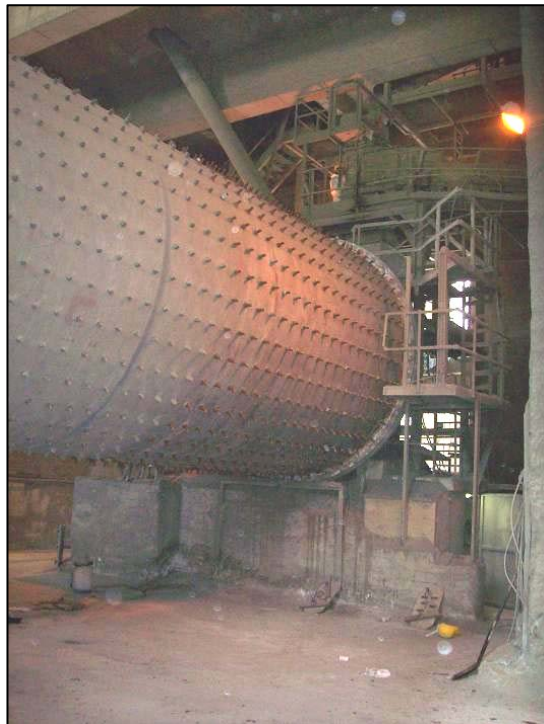
**Gypsum & PFA Feed System**



**Final Mill - FCB**

(j) **Finishing Mill - FCB**

The finishing mill, 4.0M dia x 14.0M Long ball mill with 3000 kw drive (2 x 1500 kw with gearboxes ) reduces the clinker to the desired size. The final product is discharged via a dry type classifier which separates the mill output into fine and coarse lines for onward transfer to the concrete storage silos. The grinding media are hardened steel balls.



**FCB 3000kw finishing mill**

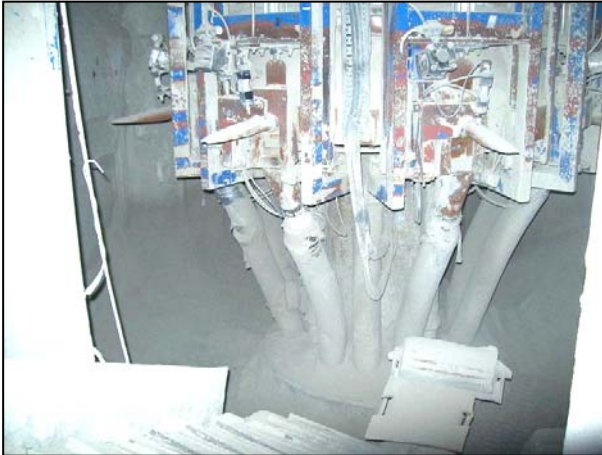
3. **Main Components - Cont'd.**

(k) **Bagging & Palletizing Plant**

A 6-spout FL Schmidt Bagging Plant receives material via a recovery screw conveyor system and vertical elevator from the concrete storage silos. Empty bags are manually placed on the rotating elevator and are automatically filled and sealed - self sealing type bags and the throughput is approximately 2000 bags per hour.

The bagged product is transferred to the Moeller Palletizer which is complete with Shrink Wrapper and Stacking Bay. The throughput is matched to the Bagging Plant and the whole system can be operated by one or two persons.

**6 Spout Bagging Head**



**Bag Receptacles on Elevator**



**Palletizer - Infeed**



**Palletizer - Discharge**

Price on demand !