Vasavadatta Cement Sedam

A VIEW OF THE PLANT

UNIT PROFILE:

Vasavadatta Cement is the 2nd green field project of Kesoram Industries, Located in the district of Gulbarga, 3 Kms., away from Sedam town. The Line-I Cement Plant was conceived in the year 1983-84 and commercial production was started in the year 1986.and line –II went in to the stream in 1997 The both Line-I & Line-II plant are supplied by world known plant supplier M/S KRUPP POLYSIUS, GERMANY and their counterparts M/s KRUPP INDUSTRIES INDIA LTD. The present capacity of Line-I & Line-II is 2.45 MTPA of clinker. This is based on dry process Pre-Calciner technology and the major equipments of the plant include single stage Hazemag impact crusher for Limestone crushing, Stacker-Reclaimer for preblending/ homogenisation/ transport of crushed limestone, Polysius Vertical Roller Mills for Raw Meal & Coal grinding, Single Continuous Blending Silo for storing Raw meal, Rotary Kiln for Clinkerisation, Aumund's Deep Pan Conveyor for Clinker transport, closed circuit mill with Roller press for cement grinding and six electronic packers for despatching Cement, with 15.7 MW Captive Thermal Power Plant commissioned in 1997,& 9.5 MW Captive Thermal Plant commissioned in May 05.

The Unit manufactures 43Gr OPC,53Gr OPC & Fly ash based Blended Cement(PPC). During the period 2004 –2005, the plant has produced : 2014000 MT of Clinker & 2131050 MT of Cement with an Annual Sales turn over of Rs 47989 Lakhs.
Cement being highly Energy Intensive Industry, Conservation of Energy has been a Constant Endeavor at Vasavadatta Cement with Continuous monitoring of Energy Consumption, Periodic Energy Audits.

The trend of Specific Energy Consumption in past Three years of Line –1 & Line –2 (L-1&L-2) are given below :

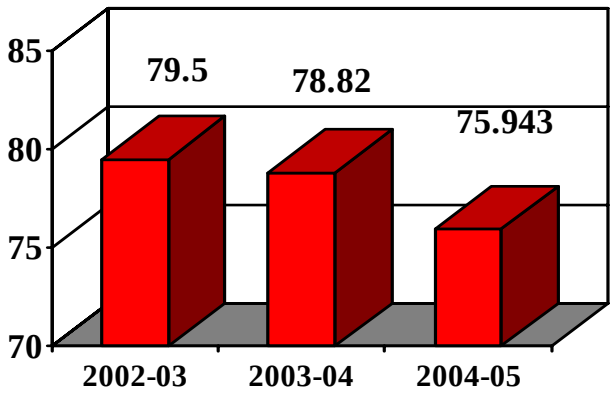
Description	**Unit**	**2002-03**	**2003-04**	**2004-05**
Annual Cement Production	MT	1762660	2042518	2131050
Electrical Energy Consumption	Lakhs Kwh	1449.43	1539	1580
Thermal Energy Consumption	M.Kcal x 10^3	1430.63	1508.25	1513.22
Total Energy cost / Annum.	Rs.Lakh	9527.52	9931.79	10247.9
Energy cost as % of Total Manufacturing cost.	%	29.95	33.63	32.19
Sp.Electrical Energy Consumption.	Kwh / Ton of Cement	L-1 L-2 79.51 77.23	L-1 L-2 78.82 76.41	L1 l2 75.94 74.72
Sp.Thermal Energy Consumption.	K.cal / Kg of Clinker		L-1 L-2	L-1 L-2
		726 724	715 715	708 709

Graphic Presentation follows :

ELECTRICAL ENERGY CONSUMPTION

KWH/ TON OF CEMENT

LINE I

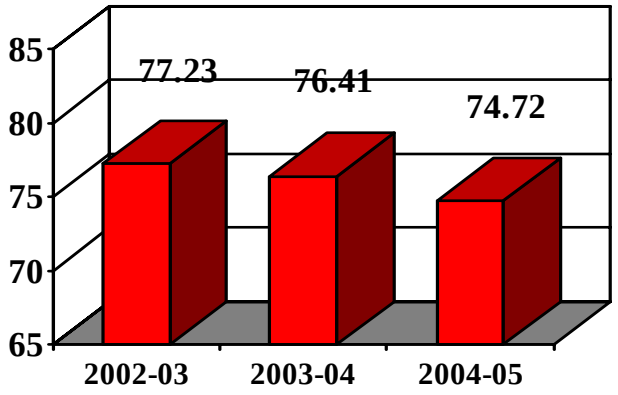


THERMAL ENERGY CONSUMPTION
K .CAL/Kg Clinker

ELECTRICAL ENERGY CONSUMPTION

KWH/ TON OF CEMENT

LINE II

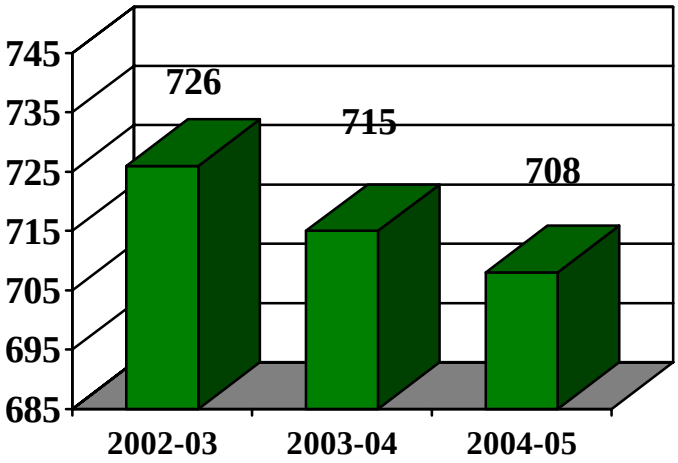


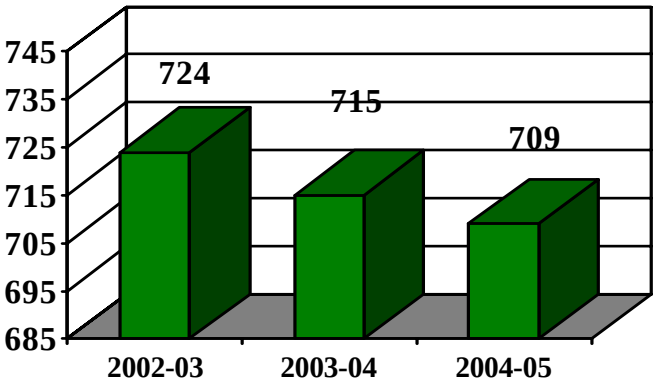
THERMAL ENERGY CONSUMPTION
K .CAL/Kg Clinker

ENERGY CONSERVATION COMMITMENT, POLICY & SET UP.

Vasavadatta Cement is committed to conserve energy in Cement Manufacturing & Power generation process has a basic objective of creating “Awareness & to impart training to the Employees” towards Energy Conservation with a Philosophy of “Energy saved is Energy Produced”.

The Electrical Energy Audit is being conducted by Electrical department on regular basis for power consumption & for Thermal Energy by G.M.(P& QC) for fuel consumption. Audits are also conducted at regular intervals through External agencies like CII & Energy services Group.





ENERGY POLICY

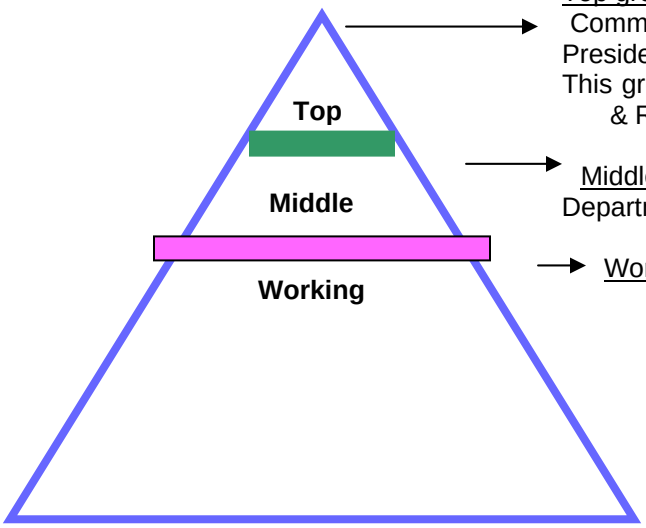
We are committed to Conserve Energy in Cement Manufactu Power generation process and related activities by Efficier to Preserve Environment and to save Natural Resources.

Objectives:

- Awareness & Training to Employees for Encon with Philosophy "Energy Saved is Energy Produced.
- Periodic Energy Audit, Continuous Monitoring, Review of Targets A Bench marks for Energy consumption.
- Identify the Potential areas & Equipments for Energy Conservation.
- Implement Innovative Ideas/Modifications, Improvements & Up gradat of the Equipments.
- Process Optimisation & Diagnostic Studies to maintain High productivi Capacity Utilisation To minimize the Sp.Energy Consumption.
- Utilisation of Cheaper And other Renewable Energy sources.
- Explore utilization of waste & Hazardous material as alternate source o Thermal Energy.

ENERGY MANAGEMENT SET UP:

The Energy management set up involves three groups i.e. Top level, Middle level & Bottom level.



Top group: indicates the involvement & Commitment of Top Management. This includes: President, JP (Technical), JP (Engg.) & G.M (P& QC). This group provides Encouragement, support, Guidance & Resources.

Middle Group: includes "Energy Manager" and all Departmental Heads .

Working Group: includes the Persons from Operation, Maintenance (Mech) & Electrical

Elect The main functions are:

To Monitor the Process & Power Consumption. To identify the Problems & Saving potentials. To Carry out Process Diagnostic Studies for Optimisation of the plant Operation.

The Process Parameters are closely monitored for various systems this includes : Gas flow measurements, Circuit sampling for Particle size distribution, Heat Balance for Kiln system & Circuit Velocity & Pressure profiles.

This Exercise on regular basis helps us to identify the Saving Potentials / Problems.

Any abnormalities found are brought to the Notice of G.M. (P& QC). Points are discussed in the daily HOD's meeting & same are rectified on top priority with help of Section In charge.

The Energy Conservation Proposals / Modifications duly authenticated by: Data, Drawings, Values & Expected savings are submitted to President for approval. Once the proposal is approved, the equipments / Instruments are purchased and the same is being implemented.

Energy conservation measures planned	Anticipated savings in energy		Approx Investment (Rs. Lakhs)	Project commencement and completion of year
	Value(Lakhs kwh)	Rs. Lakhs /Annum		
Unit –I raw mill ESP shall be replace with Bag house	-	-	700.0	2006-2007
Installation of secondary crusher & vibrating screen	-	38.50	75.0	2005-2006

LV Classifier for VRM-II/Dynamic separator for Ball mill	-	36.04	95.0	2005-2006
Energy saving device SPRS for raw mill ESP fan in line -II	-	25.0	2.68	2005-2006

1. MAKING TWO INDEPENDENT BELTS FOR BAUXITE & LIME STONE IN BC 7A

Background study:

BC 7A belt conveyor is a reversible belt & it is being used for feeding limestone & bauxite.

Observation made:

When bauxite feeding is running the full-length belt i.e. 42 mtr has to run, where as to transport the material from feed point to discharge 3.3 mtr long belt is required.

Tech. & Financial Analysis:

BC 7A modified, & made two independent belts for bauxite & limestone.

Impact of Implementation:

Power consumed (before modification) = 5 KW
Belt running = 5 hrs/day
Power drawn in Rs = 5*4.60*330*5
= 37950 Rs

Power consumed (after modification) = 1.5 Kw
Power drawn = 1.5*4.60*330*5
=11385 Rs

Net saving = 26565 Rs

2. INCREASING THREE CHAMBERS OF AYDC BAG FILTER

Background study:

In the system twin cyclones have been provided before coal mill bag filter.

Observation made:

Resulting in high-pressure drop i.e. from Twin cyclone inlet to Bag house inlet & circulating fan consuming more power.

Tech. & Financial Analysis:

Dismantled the twin cyclones, modified the inlet duct to AYDC inlet **&** three more chambers with 108 bags added to AYDC bag filter.

Impact of Implementation:

1.Reduced AYDC bag filter DP by 20 –30 mmWG
2.Increased mill out put.
3. Reduced power consumption by reducing bag filter DP.

Investment made : 30.0 lack

3. INSTALLATION OF POLDOS SYSTEM FOR MAIN FIRING

Background study:

Earlier we were using weigh feeder , FK pump for conveying the coal to Main firing system & this has more numbers of drives .

Observation made:

Due to more numbers of drives power consumption was more.

Tech. & Financial Analysis:

Replaced the weigh feeder & FK pump by Poldos –SC system .

Impact of Implementation:

Maintenance of more drives was eliminated .

Power consumption before modification	= 58 Kw/hr
Power consumption after modification	= 39 Kw/hr
Power saved	= 19 Kw/hr
Net saving	= 24*4.6*19*330
	= 692208

Investment made : 93.77 LACK

4. CLINKER INTEGRATION BELT CONVEYOR FROM CEMENT MILL –I CLINKER HOPPER TO POLYCOM & CONVEYOR BELT FEEDING V–SEPARATOR REJECT TO CEMENT MILL – I CLINKER HOPPER.

Background study:

Sp. Power consumption in cement mill –I was more because of non-availability of pre-grinder (Polycom).

Observation made:

As compared to cement mill–II, cement mill–I is not with pregrinder so it has decided to take pre grinded material from cement mill- II.

Tech. & Financial Analysis:

Use of pre grinder of cement mill – II as a pre grinder for cement mill –I by integration through belt conveyor.

Impact of Implementation:

Cement mill –I out put increased by 16 %.
Power saved / MT of cement by 3.4 KWH.

Investment made :

5. RAW MILL –II OUT LET DUCT MODIFICATION

Background study:

Higher-pressure drop in mill out let duct between two expansion joints.

Observation made:

On regular monitoring of pressure profile it was observed that there was high-pressure drop in mill out let duct & velocity was very high.

Tech. & Financial Analysis:

Mill out let duct diameter between expansion joints increased from 2884 mm to 3200 mm.

Impact of Implementation:

Mill out let duct velocity reduced by 6 m/sec.
Pressure drop is also reduced by 35-40 mmWG.
Raw mill ESP fan GRR reduced to 97 % from 100 %.
Power saved in ESP fan is 75 Kw.

Investment made : 8.74 lack

6. LINE – II KILN INLET RISER DUCT MODIFICATION

Background study & Observation made:

Higher pressure drop across riser duct because of venturi resulting in higher power consumption in pre heater fan.

Tech. & Financial Analysis:

Increase the area about 1.12 m2 by removing the venturi.

Impact of Implementation:

Pressure drop reduced by 30 mmWG.
Pre heater fan power saved by 30 kw

Investment made : 1.28 lack

7. RETROFITTING OF UNIT – II COLLER FANS

Background study & Observation made:

The efficiency of number 4, 5, & 6 cooler fans was very low , as designed parameters were not matching with operating parameter.

Tech. & Financial Analysis:

Fans are replaced with high efficiency fans having designed specification closer to operating condition .

Impact of Implementation:

Power consumption of cooler fans is reduced by 85 kw

Investment made : 10.5 lack

8. INCREASING THE AREA OF V – SEPARATOR FAN INLET DUCT

Background study & Observation made:

Pressure drop at fan inlet was more as fan inlet duct area was not matching with the fan design .

Tech. & Financial Analysis:

V- separator fan inlet duct area increased to avoide pressure drop.

Impact of Implementation:

Pressure drop is reduced by 10-15mmWG.
Power saving in V- sep. fan is 10 Kwh.

Investment made : 1.5 lack

9. REMOVAL OF BRICK RETAINER RING FOR BURNER PIPE

Background study & Observation made:

Premature failure of burner tip bricks as SS retainer ring was getting Oxidized & failed.

Tech. & Financial Analysis:

Instead of brick lining we have carried out castable lining , which has got high strength , more volume stability & high spalling resistance.

Impact of Implementation:

Total no. of retainer ring saved / annum in both unit – 4
Cost of each retainer ring – 29702 Rs

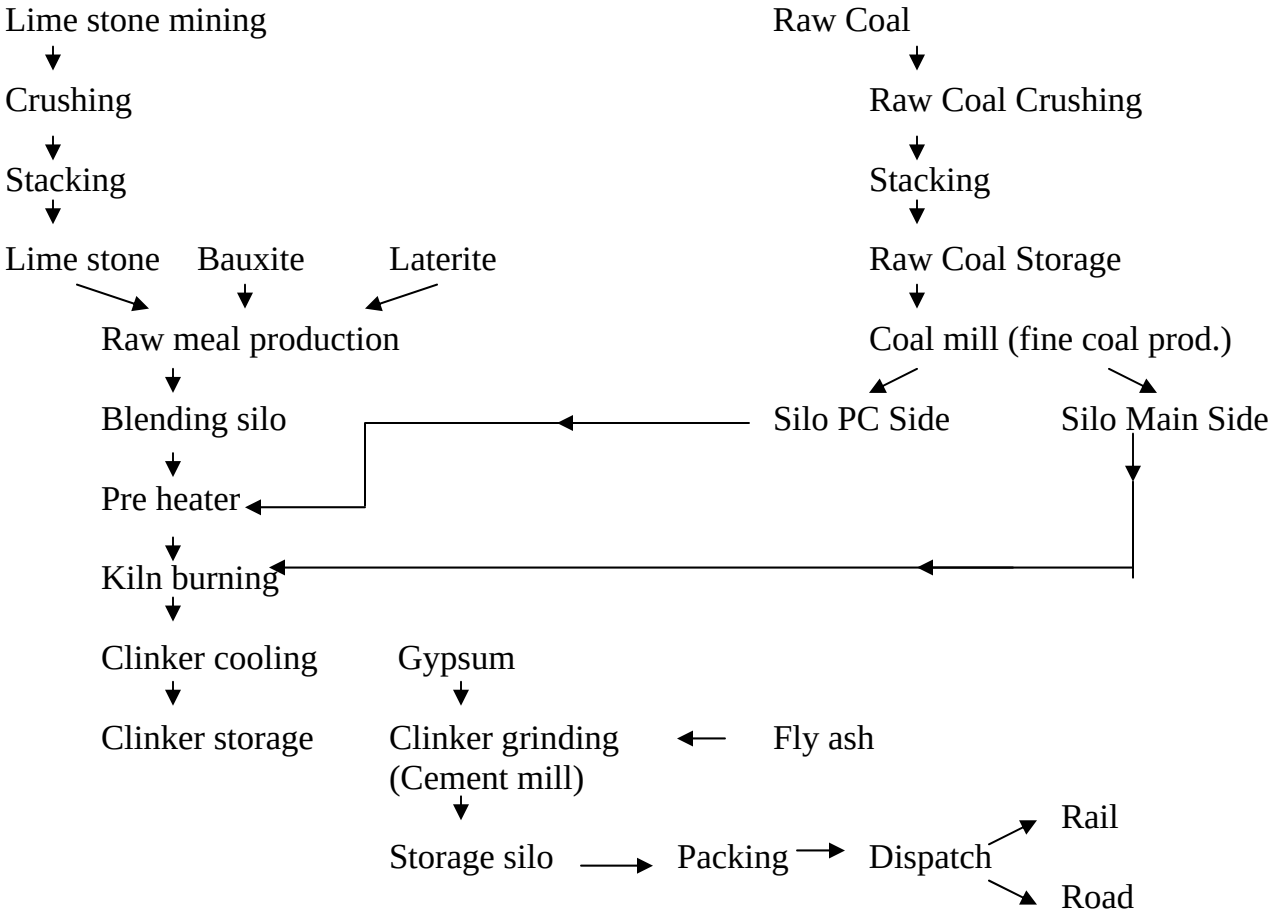
Investment made : Nil

CEMENT PROCESS FLOW SHEET

L.S. Mining	→	Crushing	→	Stacking
Laterite		Bauxite		Lime Stone
Coal Grinding ↓		Raw Mill (Raw Meal)	→	Blending Silo ↓
Fine Coal Bin-1	→	Pre-Heater Calcinator	←	Kiln Feed System
Fine Coal Bin-2	→	Rotary Kiln (Burning)	→	Cooler → Clinker Silo
Gypsum		Clinker		Fly Ash
Cement Mill	→	Cement Silo	→	Pac.& Dispatch

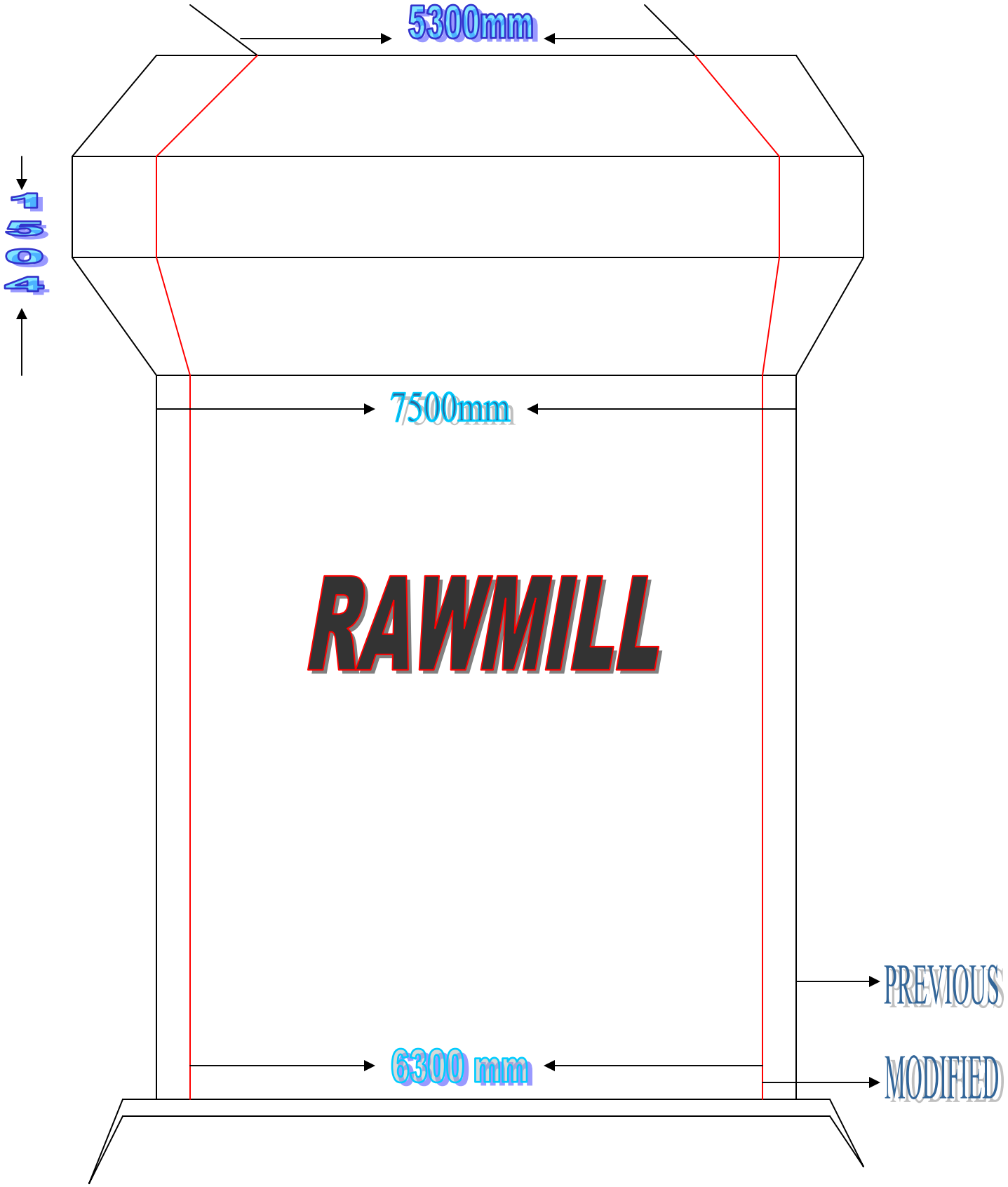
CEMENT MANUFACTERING PROCESS FLOW SHEET

ANNEXURE FOR 8



V- SEP. FAN INLET MODIFICATION

CLINKER & POLYCOM PRODUCT INTEGREATION FOR CM-I&II


5300mm
1504
7500mm
RAWMILL
PREVIOUS
6300 mm
MODIFIED

COAL MILL BAGHOUSE INLET Y-PIECE

MAIN FIRING POLDOS FOR LINE - I KILN