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## OCL INDIA LIMITED

Annual Report

2001-2002





(Chairman)

### OCL INDIA LIMITED

Incorporated in India - Members' Liability Limited

DIRECTORS

Shri Pradip Kumar Khaitan Shri V.D. Jhunjhunwala Shri S.S. Bhartia Shri D.N. Davar Dr. S.R. Jain

Shri H.V. Lodha

Shri M.L. Chand (Whole time Director)

PRESIDENT Shri M.H. Dalmia

**BANKERS** State Bank of India

United Bank of India Punjab National Bank UCO Bank

REFRACTORY, CEMENT WORKS & REGD. OFFICE

Rajgangpur-770 017

(Orissa)

**DELHI OFFICE** 

B-47, Connaught Place

New Delhi-110 001

**AUDITORS** 

V. Sankar Aiyar & Co. Chartered Accountants



### **DIRECTORS' REPORT**

For the year ended 31.03.2002

The Directors present their Fifty second Annual Report of the Company for the year ended 31st March, 2002, together with the statement of accounts for that year.

### **WORKING RESULTS**

1.1	Working results for the year are as under:	2001-2002	2000-2001
		'000 Rs.	'000 Rs.
	Operating Profit	28,72,83	32,82,17
	Less : Interest	8,73,80	13,06,63
	Depreciation	13,21,35	13.00,89
	Profit before taxation	6,77,68	6,74,65
	Provision for current and deferred tax	(2,81,40)	(60,00)
	Provision for tax relating to earlier years no longer required	2,77,51	
	Profit after taxation	6,73,79	6,14,65
	Add : Brought forward from previous year.	21,65,02	18,94,55
		28,38,81	25,09,20
	General Reserve	9,39,63	85,00
	Transfer to Reserve for bad & doubtful debts	· ,	60,00
	Proposed Dividend	71,16	1,79,44
	Tax on dividend		19.74
	Surplus carried to Balance Sheet	18,28,02	21,65,02
		28,38,81	25,09,20

1.2 The Directors recommend payment of dividend for the year ended 31st March, 2002 at the rate of 10% on fully paid up shares and on pro rata basis on the shares where calls in arrear exist.

### **CEMENT DIVISION**

- 2.1 The cement production & sales have crossed the land mark of 1 million tonne which is an all time high record registering 8% growth in comparison to previous year. This achievement was possible due to optimum utilization of Vertical Roller Mill for Cement grinding.
- 2.2 Clinker production, cement production & cement sales during the year under report are given below along with comparative figures for previous year.

	2001-02	2000-01
	(Tons in '000s)	(Tons in '000s)
Clinker production	694	611
Cement production	1043	966
Cement sales (including self consumption)	1044	966

The value of cement and clinker sales for the year 2001-02 and 2000-01 (inclusive of excise duty) are Rs 217.06 crores and Rs 202.13 crores respectively.

2.3 The growth rate, during the year under review, in cement consumption in the Eastern Region was better as compared to the previous year. But the price realisation showed declining trend due to severe competition from cement manufacturers located in neighboring states.



- 2.4 During the year your Company exported cement and clinker to Bangladesh and Nepal of the value of Rs. 3.60 crores as against the previous year's export of Rs. 4.98 crores.
- 2.5 The outlook for future is indicated by the incentives given by the Government to housing and infrastructure industry which have stimulated the demand for cement. The cumulative average growth rate (CAGR) of market is more than the production growth rate of your Company. The latest budget proposals have a mixed impact on the Cement Industry. Marginal rise in the freight of coal negated the benefit of marginal reduction in the freight on cement.
- 2.6 Second Vertical Roller Mill for cement grinding is expected to be commissioned by January 2003.

### REFRACTORY DIVISION

- 3.1. During the year 2001-2002, your Company could achieve total sales of Rs 92.38 crores only as against Rs.128.02 crores for the year 2000-2001. Due to intense competition and increasing imports, this year has witnessed a steep fall in the prices of refractories particularly of the products of bulk consumption which form a substantial part of the Company's business volume. In majority of the cases, the prices have become un-remunerative. In view of this, your Company has adopted the policy of being more selective in taking orders for products which provide reasonable realizations. This has been a major factor for the lower sales. Besides, the continuous improvements in the operating parameters / processes at the customer end and simultaneous progressive up-gradation of refractory products have also resulted in marked improvement of the refractory product performance. This has further reduced the consumption of refractories per unit of steel produced. As a result, there have been reduced off-takes by the SAIL plants and other major customers. Accordingly, several major orders on hand stand partially executed, necessitating carry-over of the remainder orders for execution during the next year. Further, due to the on-going acute funds crunch faced by the SAIL plants and other customers, the overdue projects for major furnace repairs and also for full replacement of refractories in coke oven batteries, requiring use of large quantities of refractories, have continued to be deferred. Thus the expected generation of sizable demand for silica bricks where your Company has strong competitive edge and some other categories of refractories has not materialized. All this has contributed to the lower sales of the Company during the year.
- 3.2 On export front, your Company has recorded total sales of Rs. 8.81 crores as compared to Rs. 3.7 crores in the previous year. The export could be achieved despite severe competition from China. Your Company is increasingly gaining customer confidence and product acceptance due to strength of its product quality in new markets like Japan from where repeat orders have also been received. This year, the Company has also achieved a breakthrough by successfully entering into the non-ferrous sector like copper, with the first supplies exported to Australia.
  - The good performance of the products has also brought in a repeat order from the same Australian customer. The efforts on exports remain focused and there is hope of improved performance in the future.
- 3.3 Your Company is making progress in increasing its market share for its high-tech products like concast refractories, etc. The Company has achieved the highest sales of concast refractories during the year.
- 3.4 Your Company holds ISO certification for its full range of refractories. After renewal of the ISO Certificate with validity up to July, 2003, one surveillance audit was successfully completed in the month of January, 2002.
- 3.5 The good image of your Company in the market for product quality, timely delivery, after-sales services etc. is continued to be maintained.

### **DIRECTORS RESPONSIBILITY STATEMENT**

- 4. Pursuant to section 217(2AA) of the Companies Act, 1956 the Directors confirm that:
  - a) in the preparation of the annual accounts, the applicable accounting standards have been followed;
  - b) such accounting policies have been selected and applied consistently and such judgments and estimates have been made which are reasonable and prudent so as to give a true and fair view of the state of affairs of the Company at the end of the financial year and of the profit of the Company for that period;

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- proper and sufficient care has been taken for maintenance of adequate accounting records in accordance with
  the provisions of the Companies Act,1956 for safeguarding the assets of the Company and for preventing and
  detecting fraud and other irregularities;
- d) the annual accounts have been prepared on a going concern basis.

### **BUY BACK OF SHARES**

5. During the year your Company has bought back 63,265 fully paid up Equity Shares at a total amount of Rs 36.06 lakhs through Mumbai and National Stock Exchanges pursuant to provisions of Companies Act, 1956 and SEBI [Buy Back of Securities] Regulations 1998.

#### **SUBSIDIARIES**

6. Copies of Accounts and the Directors' Reports, relating to the year ended 31.03.2002 of subsidiaries, Konark Minerals Limited, Kashmissa Industries Limited, and Hari Fertilizers Limited, are annexed to your Company's accounts. Telecom Services India Ltd has ceased to be the subsidiary due to its merger with Mayuka Investments Ital

### LABOUR MANAGEMENT RELATIONS

7. Relations between the Management and Employees were cordial during the year under review.

#### DEPOSITS

8. The Directors report that, as on 31st March, 2002, there were 59 deposits aggregating to Rs. 5.72 lakhs which remained unclaimed beyond due dates, out of which deposits aggregating to Rs.1.93 lakhs have since been renewed/repaid.

### **DIRECTORS**

9. There has been no change in the directorships of your Company during the year. None of the directors are disqualified under section 274(1) (g) of the Companies Act, 1956, as on 31-3-2002, from being appointed as director of the Company.

### PARTICULARS OF EMPLOYEES

10. The particulars of the employees as required u/s 217(2A) of the Companies Act, 1956 are set out in the Annexure-I, which forms part of this report.

### CONSERVATION OF ENERGY, ETC.

11. Information required under Section 217(1)(e) of the Companies Act, 1956 read with the relevant Rules, with regard to conservation of energy, technology absorption and foreign exchange earnings and outgo are given in Annexure-II which forms part of this report.

### **CORPORATE GOVERNANCE**

12. As per clause no.49 of the listing agreement, report on corporate governance is given in Annexure-III which forms part of this Report.

Place: New Delhi Date: 22.05.2002 BY ORDER OF THE BOARD (P K KHAITAN) CHAIRMAN

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### ANNEXURE-II TO THE DIRECTORS' REPORT

STATEMENT CONTAINING PARTICULARS PURSUANT TO COMPANIES (DISCLOSURE OF PARTICULARS IN THE REPORT OF BOARD OF DIRECTORS) RULES, 1988 AND FORMING PART OF DIRECTORS' REPORT DATED 22nd MAY 2002

#### I. CONSERVATION OF ENERGY

#### Cement

- a) Energy Conservation measures taken:
  - i) Regular Energy Audit by experienced Engineers and consultants.
  - ii) Monitoring of maximum demand regularly to control maximum KVA drawn from grid supply.
  - iii) Use of exhaust of P G Set for Waste-heat Boiler to produce steam for heating L S H S to be used for P.G. Set and production of producer gas in Refractories.
  - iv) Use of DC motors for variable speed application through thyristor control panel instead of dampers of cement mills, vent fan, booster fan for CVRM.
  - v) Use of Krammer for variable speed application of PH fan, ESP Fan and Bag filter fan.
  - vi) Use of Waste heat from clinker cooler for drying the slag.
  - vii) Second Vertical Roller Mill for grinding of Cement is under installation where specific power consumption is low.
  - viii) Reduction of idle running of equipments.
  - ix) Use of capacitor for improving the power factor.
  - x) Insulation of duct to stop loss of heat by radiation.
  - xi) Use of soft starters.
  - xii) Use of energy efficient lighting.
  - xiii) Replacement of oil based hot air generator by coal based hot air generator.
  - xiv) Implementation of CADE in mines planning reducing mine rejection.
- b) Additional investments and proposals, if any, being implemented for reduction of consumption of energy:
  - i) Fly ash feeding system for cement grinding.
  - ii) Installation of energy efficient Vertical roller mill for cement grinding.
  - iii) New high efficiency classifier of latest generation has been ordered for Vertical Roller Mill for cement which is expected to reduce specific power consumption.
  - iv) Installation of waste gas fan for using waste hot gases from kiln for drying of slag.
- E) Impact of the measures at (a) and (b) above for reduction of energy consumption and consequent impact on the cost of production of grades:

By measures taken at (a) We have been able to achieve average energy consumption of 82 KWH/T as against 84 KWH/T up to cement dispatch stage.

#### Refractory

(a) Energy Conservation measures taken:

## ELECTRICAL ENERGY

- i) Regular in house energy audit being carried out by experienced engineers with implementation of corrective steps.
- ii) Continuation of practice of installing capacitor to monitor the power factor between 0.98 unity.
- iii) Selection of energy saving equipment's and drives.
- iv) Reduction of wastage of electricity by stopping of equipment's and switching off lights during tea breaks, shift changes and non-productive period.
- v) Monitoring running of compressor and compressed air system including stopping of compressors during shift changes and tea breaks.
- vi) Optimizing capacity of Impact mill circuit in Basic plant and their by resulting reduction of running shift.
- vii) Replacement of 4 nos. oversize motors of Ring roller mill in Basic Plant and 2 nos. Bucket elevator motor of Silica Plant 3 Mill house.

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- viii) Use of low H.P axial flow man cooler fans instead of high H.P radial blowers in concast plant.
- Use of Welding machines Energy Saver.
- Use of Energy efficient lighting system and time controlled operation in selected areas.
- xi) Use of Dimmer transformer in street lighting after 11:30 P.M.

#### THERMAL ENERGY

- Firing of slide gate plates in basic boxes at BT Kilns by furnace oil is replaced by producer gas in SS box at Bell Kiln. Fuel per MT cost reduced by approx 50%. Furnace oil sludge used for BT Kilns up to 1600 °C firing temperature. Approx 10% fuel oil saving .
- Use of high ash coal (i.e. 'F' grade) replacing C, D & E grade coal for gas producers has been standardized. Approx 30% fuel cost saving.
- Use of fuel oil additive in furnace oil is continued which saves 5-6% fuel oil in Basic burnt quality, Concast and Precast product as well as in slide gate plate tar impregnation.
- (b) Additional Investment Proposal.
- Replacement of Oversize motors of ring rollers mills in F.B and Silica Plant.
- Use of A.C drives in high H.P fans with damper control. ii)
- iii) Use of welding machine Energy savers in other areas.
- iv) Efficient lighting arrangements in plant.
- (c) Impact of measures of the above for reduction of energy consumption and consequent impact on the cost of production of goods.

The estimated saving through implementation of the various measures taken during the year has been 1,25,000 KWH. It is difficult to express its impact in cost of production /Ton due to variety of product mix, running of shaft kilns for raw material processing and low key production through out the year.

FORM-A (PARTICULARS OF TOTAL ENERGY CONSUMPTION AND ENERGY CONSUMPTION PER UNIT OF PRODUCTION)

	CURRENT PERIOD 2001-2002			PREVIOUS YEAR 2000-2001	
	CEMENT	REFRACTORY	CEMENT	REFRACTORY	
A) POWER AND FUEL CONSUMPTION					
1. Electricity					
a) Purchased Units (in lacs)	585.25	71.09	759.78	111.89	
Total Amount (Rs.in lacs)	1712.52	209.03	2087.20	308.86	
Rate/ Unit (Rs.)	2.93	2.94	2.75	2.76	
b) Own generation					
i) Through Power Generators					
Unit (in lacs)	355.76	38.50	82.11	11.31	
Units per Ltr. Of fuel	3.61	3.61	3.43	3.48	
Cost/Unit (Rs.)	3.05	3.05	4.24	4.24	
ii) Through Steam Turbine/Genera	tor				
Units		Annuly	***************************************	_	
Units per Ltr. of fuel oil/gas			_		
Cost/Unit		_	Wilde	******	
<ol> <li>Coal (grade C to F and Coke breeze used in Kiln &amp; Precalciner. calcination of raw materials, Gas producer for firing of refractory bricks)</li> </ol>					
(Tonnes - lacs)	1.51	0.14	1.45	0.11	
Total Cost (Rs. in lacs)	1333.26	109.83	1092.97	86.51	
Average rate (Rs./MT)	884.14	770.34	754.67	773.27	



•		CURRENT PERIOD		PREVIOUS YEAR 2000-2001	
		REFRACTORY	CEMENT	REFRACTORY	
3. Furnace Oil					
Quantity (K.ltr)	9990.782	3490.249	2676.194	4045.136	
Total amount (Rs. i	in lacs) 845.51		222.37	344.35	
Average rate (Rs./I			8309.19	8512.80	
4. Others/Internal Ger					
a) Light Diesel Oi					
Quantity (K.Ltı			25.551	3.518	
Total Cost (Rs.			2.86	0.39	
Rate/Unit (Rs./			11207.39	11207.75	
b) Light Diesel Oi					
Quantity (MT)	46.225		51.300	19.959	
Total cost (Rs.i	n lacs) 6.06		5.90	2.17	
Rate/Unit (Rs./		·	11493.25	10851.86	
c) HSD Oil for C					
Quantity (K.Lt			609.310		
Total Cost(Rs.	/		93.66		
Rate per Unit (			15370.96	_	
d) Furnance Oil Si					
Quantity (K.Ltı		145.03		20.000	
Total Cost(Rs.		5.46		0.99	
Rate per Unit (		3764.64		4947.19	
e) High Speed Die					
	Sppers at Factory				
Quantity (K.Ltı			99.378	_	
Total Cost(Rs.			14.71	_	
Rate per Unit (	/		14802.03		
f) HSD Oil for Di			11002.00		
Quantity (Tonn		. <del></del>			
Total cost (Rs.ii	,				
Rate/Unit (Rs./			_		
Rate Offic (RS.)	,	RRENT PERIOD	p	REVIOUS YEAR	
		2001-2002	•	2000-2001	
CONOTRADEON DE	R UNIT OF PRODUCTION (PE			2000-2001	
a) Cement	R UNIT OF FRODUCTION (FI	en wii j			
- Electricity (KW	/H)	82		84	
- Furnace Oil (Li		0.098		0.300	
- Furnace Oil (Li	itres)	0.098 115.000	· ;		
<ul><li>Furnace Oil (Li</li><li>Coal (grades C</li></ul>	itres) to F & Coke breeze)(Kgs.)		· .	140.000	
- Furnace Oil (Li	itres) to F & Coke breeze)(Kgs.) Dil (Litres.)	115.000	· <b>V</b>	140.000	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.)	115.000		140.000 0.050	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> <li>HSD Oil</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.)	115.000	n.con	140.000 0.050 — 0.103	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.)	115.000 0.035	n.con	140.000 0.050 — 0.103	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> <li>HSD Oil</li> <li>for Payloaders</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.)	115.000 0.035  0.041	n.con	140.000 0.050 — 0.103	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> <li>HSD Oil for Payloaders for CVRM</li> <li>Refractory</li> </ul>	itres) to F & Coke breeze)(Kgs.) Oil (Litres.) res.)	115.000 0.035  0.041	n.con	0.103 0.631	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> <li>HSD Oil for Payloaders for CVRM</li> <li>Refractory</li> <li>Electricity (KW</li> </ul>	itres) to F & Coke breeze)(Kgs.) Oil (Litres.) res.)	0.041 0.310	n.con	0.103 0.631	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> <li>HSD Oil for Payloaders for CVRM</li> <li>Refractory</li> </ul>	itres) to F & Coke breeze)(Kgs.) Oil (Litres.) res.)  /H) . Ltr)	0.041 0.310	n.con	0.103 0.631 274.00	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> <li>HSD Oil for Payloaders for CVRM</li> <li>Refractory</li> <li>Electricity (KW</li> <li>Furnace Oil (K</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.) res.)  /H) Ltr) Bricks	0.041 0.310 384.00	n.con	140.000 0.050 0.103 0.631 274.00	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> <li>HSD Oil for Payloaders for CVRM</li> <li>B) Refractory</li> <li>Electricity (KW</li> <li>Furnace Oil (K</li> <li>For Oil Fired B</li> <li>For Mixed Fire</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.) res.)  /H) Ltr) Bricks Bricks	115.000 0.035 	n.con	0.103 0.631 274.00	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> <li>HSD Oil for Payloaders for CVRM</li> <li>B) Refractory</li> <li>Electricity (KW</li> <li>Furnace Oil (K</li> <li>For Oil Fired B</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.) res.)  /H) Ltr) Bricks Bricks creened coke (MT)	115.000 0.035 	n.con	0.103 0.631 274.00 0.167 0.146	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. C</li> <li>LSHS Oil (Lit</li> <li>HSD Oil for Payloaders for CVRM</li> <li>Befractory</li> <li>Electricity (KW</li> <li>Furnace Oil (K</li> <li>For Oil Fired B</li> <li>For Mixed Fire</li> <li>Steam coal &amp; s</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.) res.)  /H) Ltr) Bricks Bricks creened coke (MT) ricks	115.000 0.035 	n.con	140.000 0.050 	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. O</li> <li>LSHS Oil (Lit</li> <li>HSD Oil for Payloaders for CVRM</li> <li>Befractory</li> <li>Electricity (KW</li> <li>Furnace Oil (K</li> <li>For Oil Fired B</li> <li>For Mixed Fire</li> <li>Steam coal &amp; s</li> <li>For Gas fired b</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.) res.)  /H) Ltr) Bricks Bricks creened coke (MT) ricks bricks	115.000 0.035 	n.con	0.300 140.000 0.050 - 0.103 0.631 274.00 0.167 0.146 0.897 0.623 0.001	
<ul> <li>Furnace Oil (Li</li> <li>Coal (grades C</li> <li>Others - L.D. O</li> <li>LSHS Oil (Lit</li> <li>HSD Oil for Payloaders for CVRM</li> <li>Befractory</li> <li>Electricity (KW</li> <li>Furnace Oil (K</li> <li>For Oil Fired B</li> <li>For Mixed Fire</li> <li>Steam coal &amp; s</li> <li>For Gas fired b</li> <li>For Mixed fire</li> </ul>	itres) to F & Coke breeze)(Kgs.) Dil (Litres.) res.)  /H) Ltr) Bricks Bricks creened coke (MT) ricks bricks bricks il (K. Ltr)	115.000 0.035 	n.con	140.000 0.050 	



### REASONS FOR VARIATION IN THE CONSUMPTION OF POWER & FUEL FROM STANDARDS OR PREVIOUS YEAR.

#### CEMENT

- 1. The fuel consumption is less as compared to previous year due to use of higher calorific value fuel.
- 2. Optimum utilization of grinding capacity by maximizing running of the power efficient Vertical Roller Mill for cement grinding and limiting use of old ball mills for grinding to the minimum required.
- 3. Higher utilization of slag and fly ash.
- 4. Reduction of idle running of auxiliaries.
- 5. Use of capacitors for improving the power factor.
- Low Nox modification in DG set no. 4. 6.

#### REFRACTORY

Although various energy conservation measures are adopted and actual savings recorded, there is an increase in energy consumption per absolute ton of bricks mainly due to change in product mix and higher production of mortars and castables, higher quantity of hand moulded shapes in FB & Silica products with low recovery, in-house raw material processing, technology up gradation in concast refractories, low key production due to scarcity of order and high compressed air consumption. However the Company has achieved a reduction of approx. 1,15,000 KWH in sp3 mill house consumption by optimizing the out put in jaw crusher circuit and reducing the elevator motor H.P from 25 to 20. The Company has also saved around 45,000 units by reducing the H.P of 3-nos. Ring roller mill from 60 H.P to 40 H.P in Basic plant. The following have contributed to higher energy consumption.

1.	Higher hand moulding shapes in FB & Silica quality using compressed air, requiring additional grinding and low yield	1.22 lakhs KWH
2.	Provision of air conditioning facility for processing of finished mixer and chilled water facility for pressing shrouds. (Required for technology up gradation in concast refractories.)	2.25 lakhs KWH
3.	Production of Clot and Calcined Clay for use as raw material.	6.90 lakhs KWH
4.	Lower yield in Basic and FB products.	4.99 lakhs KWH
5.	Due to low key production higher amount of KWH per ton fixed consumption distribution in all areas like illumination, offices, compressors, workshops, laboratory etc.	16.06 lakhs
	Total:	31.42 lakhs KWH

Without these, there would have been a slight reduction in energy consumption per absolute ton of product.

#### II. TECHNOLOGY ABSORPTION

- Research & Development (R&D) 1.
  - a) Specific areas in which R&D carried out by the Company:

### CEMENT

- i) ii) Optimisation of dose of slag in Portland Slag Cement with optimum Blaine value.
- Development of Sulphate Resistant Cement.
- iii) Development of Oil Well Cement.
- iv) Optimization of Flyash dose in PPC in lab scale production.

### REFRACTORY

Development of

Mag Carbon Refractories:

- (i) Mag Carbon bricks for large capacity EBT furnace of ESSAR
- (ii) Mag Carbon bricks for EOF of Mukand (Hospet)
- (iii) Mag Carbon bricks for OTBC of Mukand (THANE)



### Alumina Mag Carbon refractories:

(i) Low cost Alumina Mag carbon bricks for ladle

### Al2O3 - SiC - C refractories:

(i) Low cost Al2O3 - SiC - C refractories.

#### Basic refractories:

- (i) Refractories for copper industries
- (ii) Burnt quality magnesite porous plug
- (iii) Mag-Zir quality for glass industries

### Fireclay refractories:

(i) High creep resistance bricks for BFS

### Continuous Casting refractories:

(i) Subentry nozzle for long casting time (7-9 Hrs)

### Precast & Castable refractories:

- (i) Insulating castables
- (ii) Low cost Argon rinsing lance for BSP.

### Slide plate refractories

- (i) Flocon 3150 model slide plate
- (ii) Alumina zirconia carbon slide plates for higher life
- (iii) Fired quality nozzles for mini steel plants for higher life
- (iv) Precast nozzles & well blocks for higher life in integrated steel plants

### b) Benefits derived as a result of the above R&D:

### CEMENT

- i) Use of alternative cheaper additive has become possible.
- ii) Use of higher percentage of slag in Portland slag cement has become feasible.
- iii) Production cost reduced.
- iv) Portland Cement having Sulphate Resistance quality has successfully been developed and marketed.

#### REFRACTORY

### Mag Carbon refractories:

- (i) Regular order for EAF Mag Carbon bricks
- (ii) Regular order for EOF Mag carbon bricks
- (iii) Order received & supplied for OTBC Mag carbon bricks

### Alumina Mag Carbon refractories:

(i) Order received & supplied to BSP & VSP

### Al2O3 - SiC - C refractories:

(i) Order received & exported to Japan

### Basic refractories:

- (i) Order received from copper industries
- (ii) Trial order received for burnt quality magnesite porous plug
- (iii) Regular order received for Mag-Zir quality for glass industries

### Fireclay refractories:

(i) Around 25 % cost reduced in manufacturing of high creep resistance bricks for BFS

### Continuous Casting Refractories:

(i) Repeat orders from BSL, RSP

### Precast & Castable refractories:

- (i) Order from UMIL, TR chemicals, Hindustan Zinc for insulating castables
- (ii) Low cost argon rinsing lance supplied to BSP & VSP & received bonus

### Slide plate refractories

- (i) Expecting trial order from MSF for Flocon 3150 SG plates
- (ii) Anticipating trial order from Marmagoa steel for alumina zirconia carbon plates
- (iii) Expecting order from AARTI steel for improved fired quality SG nozzles