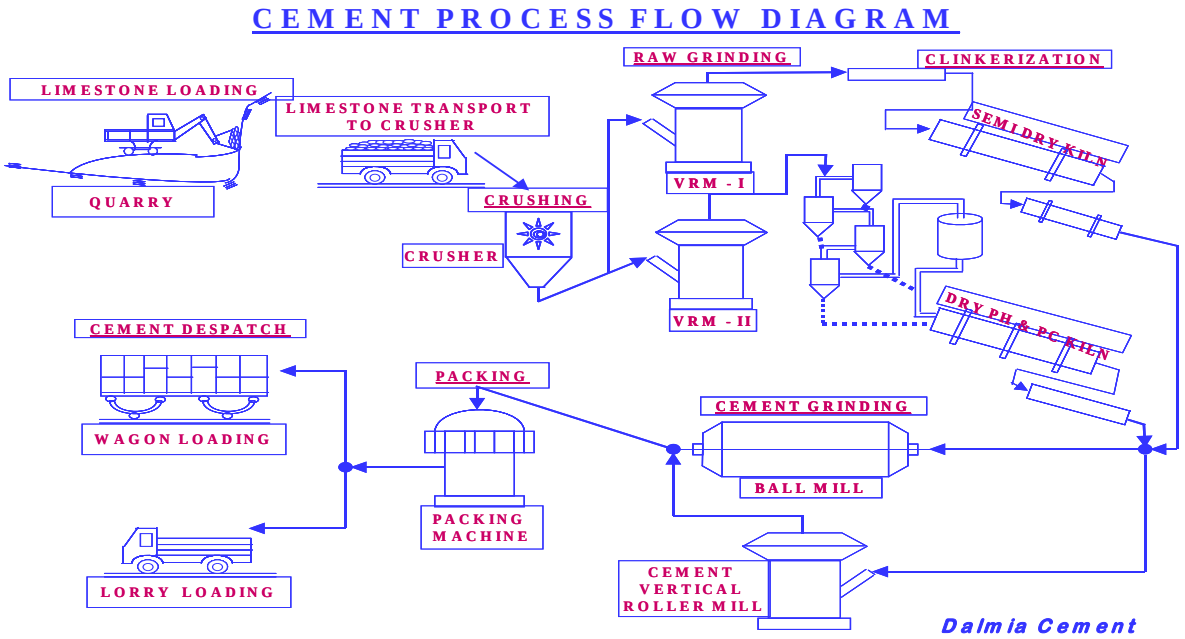
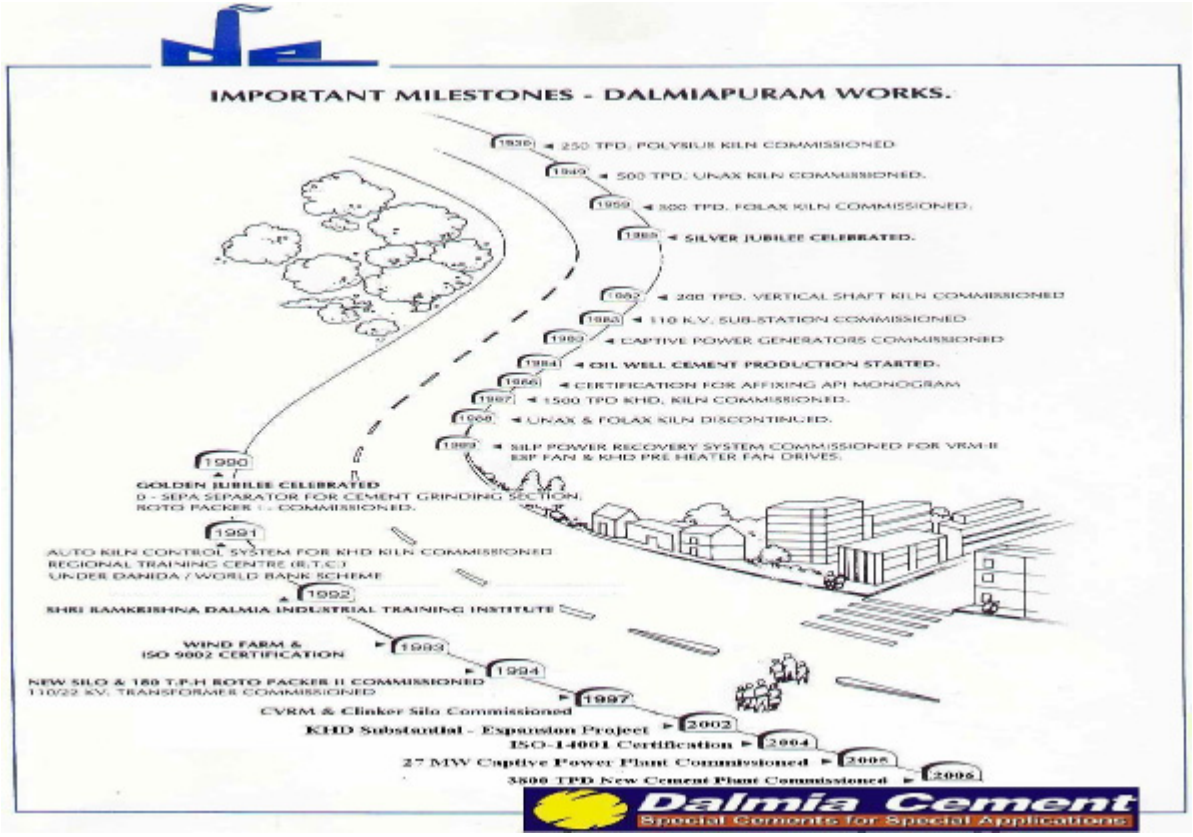
Dalmia Cement (Bharat) Limited Trichirappalli

UNIT PROFILE :

It was in the year 1939, during the pre-independent era, the company started its cement unit as a venture towards Building up a self-reliant India with respect to one of the country's essential commodities. As far back as 1987, the old wet process technology has been replaced by modern precalcinator dry process technology and the first company to adopt this in Tamilnadu, mainly with a view to conserve energy. A major capacity expansion project is commissioned during the year 2006 to enhance the total cement capacity by putting up a most modern & energy efficient 3800 TPD

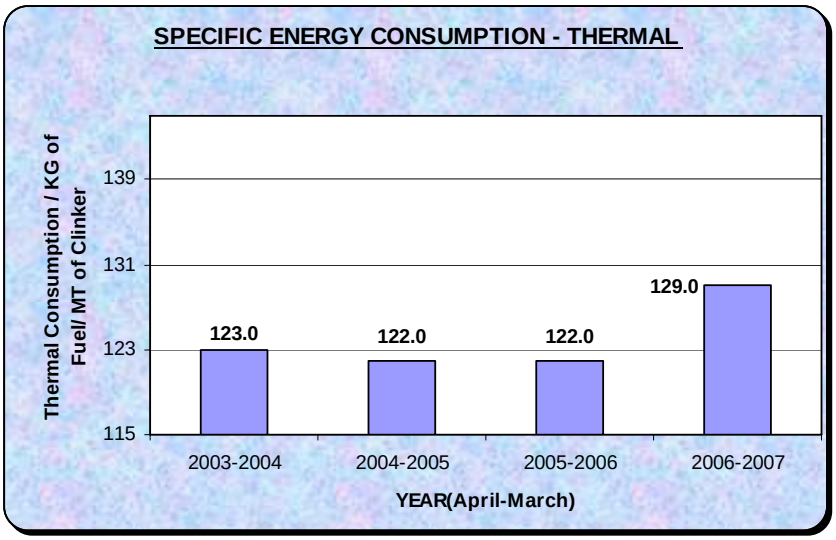


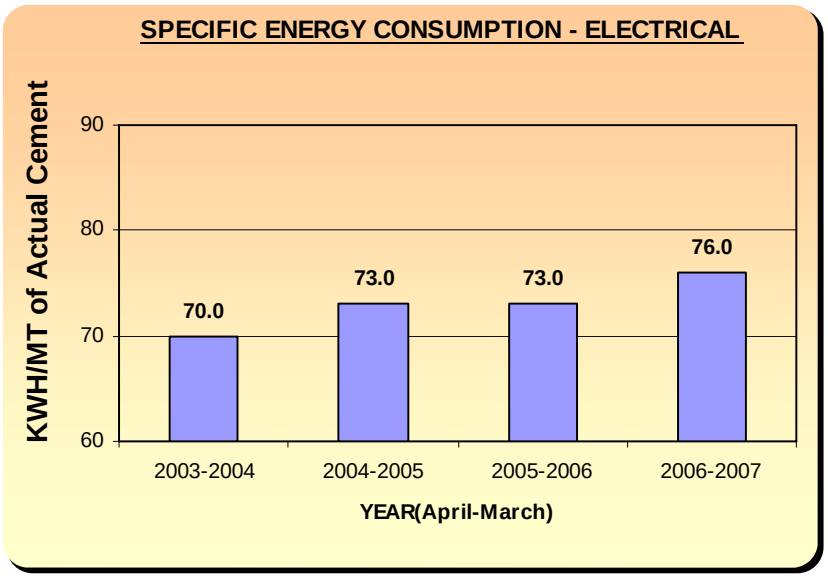
Plant.



ENERGY CONSUMPTION :

The consumption of both Electrical and Thermal energy shows a decreasing trend, which is achieved by means of various measures and commitment from employees.





ENERGY CONSERVATION COMMITMENT, POLICY AND SET UP :

ENERGY POLICY

Excellence in Energy Efficiency
Achieved by

- Identifying & Eliminating wastage of energy,
- Adopting Energy Efficient and Eco friendly Technologies,
- Using Alternate and Renewable Energy Sources,
- Energy Conscious Employees.

P.ACHARYA
Executive Director (Cement Works)

An Energy monitoring cell has been formed to monitor the electrical energy consumption of individual energy centers of the plant and decide on actions for improvements.
The activities of the cell are,
i) Proper recording of various Energy related data.
ii) Analysing the thus recorded data.
iii)Set right the deviation from norms/standard
The energy monitoring cell meets around Ist week of every month and discuss the trend of the power consumption. Whole time director chairs the meeting. Thus there is a top management commitment towards energy conservation.

ENERGY CONSERVATION ACHIEVEMENT (During the Year 2006-2007) :

Stopping the oil firing in CVRM I HAG by modifying the burner nozzle, burner head

Hot air generator used for producing hot air to remove moisture in wet fly ash used in PPC cement grinding uses coal as main fuel and Diesel as start up fuel. Because of the problem in the venturi portion near the burner tip, we were forced use oil even during coal firing ,resulting in high operating cost and extra oil consumption. With the help of the supplier, we have increased the throat portion of the venturi and stabilized the flame. With this modification we are able to operate the HAG with out oil when coal is fired resulting in oil saving.

Amount of oil saved (High Speed Diesel) : 1018 MT

Reducing the water over flow in CVRM II tank by trimming the pump impeller

Heat exchanger & cooling systems in CVRM II get cooling water from the Over head tank located at the 40^{th} meter floor. The over flow of the tank is returned to the cooling tower sump.

As there was extra margin in the pump capacity, we used to get continuous over flow of around 40 cubic meter per hour of water. Since the plant has got stabilized and we know the actual demand / consumption of cooling water, it is decided to reduce the excess capacity available in the pump by trimming the same. **This has resulted in a saving of 11700 units per annum.**

Reducing the water over flow in FLS Coal Mill tank by trimming the pump impeller

As there was extra margin in the pump capacity we used to get continuous over flow of around 60 cubic meter per hour of water. Since the plant has got stabilized and we know the actual demand / consumption of cooling water we have decided to reduce the excess capacity available in the coal mill tank also, controlled by trimming the coal mill tank pump impeller resulting in power **saving of 58500 units per annum.**

Utilisation of Waste water for Cement Mill Spray

In our plant, cement grinding is done in vertical roller mills which require a certain quantity of material i.e,. material bed to be maintained in the mill table. To maintain this bed we spray water whenever OPC grinding is taking place in the mill. Water sprayed gets evaporated and goes as water vapor along with the mill gas. We were using Raw water for this purpose costing Rs 15 per kilolitre which we are getting from10 KM distant river. Per day water consumption is about 250 cubic meters. We have an Effluent Treatment Plant available at the factory with RO technology which generates reject water containing more dissolved solids (TDS) higher than prescribed limits. We have started using this high TDS water for cement mill spray thus solving two issues – Firstly we need not consume raw water – raw water consumption goes down and it is preserved, Pumping of extra raw water from 10 KM is reduced. Secondly, we need not employ boiling or other costlier methods to handle to RO reject which contain the high concentration of solids (2000-3000 ppm). Since this concentration of salts become less than 1 % of the mill capacity (300 TPH) we don't face any quality problem in the product.

Reducing idle power of Cement Mill Fan during small stops in Mill

During long stoppages more than 30 minutes, the mill auxiliaries like fan and other belt conveyors and equipments will be stopped to avoid idle run /power. However, if the stoppage time is less, this interlock will not work. It is also not advisable to completely stop all the equipments for small intervals, since it involves time delay and frequent start / stop. However, we decided to reduce the speed of the fan as Variable speed drive facility is available so that the fan need not be stopped, whereas its speed has been reduced to bare minimum so that the idle power is reduced to the maximum extent possible.

We have **saved 31000 units per annum** by doing this interlock modification.

Reducing the heat requirement of CVRM II HAG by changing the cooler water spary temp setting

The hot air coming from cooler outlet is utilized in the CVRM II , for removing the moisture in the materials like Fly ash, Gypsum etc during cement grinding. As the heat supplied by this air alone is not sufficient to meet the requirement, we were firing coal in the Hot Air Generator additionally. We are spraying water in the cooler outlet to save ESP from very high temperature gas to protect the same against mechanical failure. Water gets evaporated reducing the gas temperature and heat content. The original setting for water spray was 260 deg C which we have raised to 300 deg. C. This has raised the gas temperature by 40 deg C, heat content. This extra heat has resulted in reduction in coal consumption in the HAG. As the ESP design temperature is 350 deg.C , it has no problem in handling the gas at 300 deg. C.

Removal of one air slide fan below dry fly ash silo by interconnecting existing blower line

Past arrangement:

Dry Fly Ash silo having eight extraction gates. There are eight aeration Lines are given for each gates. One or two gates are being opened for extraction at a Time. One Dedicated blower is Available for aeration. Blower number K2NBL3, Capacity is 7.5 KW/Hr and air volume is 660 m3/Hr.

Air slide boxes are connected from each gate to Bin (at silo bottom) to transfer Dry fly ash. One dedicated Fan is available to supply air for these air slide boxes. Fan number K2NFN8, Capacity is 7.5 KW /Hr and air volume is 1200 m3/Hr. one standby fan also available for this fan, number K2NFN H.

One dedicated blower is available for bin (at silo bottom) aeration. Blower number is K2NBL4, Capacity is 7.5 KW /Hr and air volume is 225 m3 / Hr
Air slide boxes are connected From Bin (at silo bottom) to Elevator to transfer Dry fly ash. One dedicated Fan is available to supply air for these air slide boxes. Fan number K2NFNA, Capacity is 7.5 KW /Hr and air volume is 1200 m3/Hr.
Arrangement is shown in the enclosed drawing

Present system

One airline is connected from silo aeration/extraction blower (number K2NBL3) to air slide boxes, which are connected between silo extraction gates to silo bottom bin. It is implemented on 20.4.2007. Past three days it is working well, more than 500 tones are extracted from the silo.
As per this suggestion both fans (K2NFN8 & K2NFNH, one for operation and another for standby) are not required to operate for dry fly ash extraction from the silo.

We have **saved 24911 units per annum** by doing this modification.

Stop the Cummins cooling tower fan and connect the A/C Compressor water line in to the near by KHD Cooling Tower

In our KHD CCR, 2 cooling towers are in operation and one is for cooling the water from Air Conditioning plant and Cummins Generator and the other is cooling the water from KHD Kiln supporting rollers, Coal mill area, VRM2 3KS, etc,. As per the suggestion, the water line to Cummins generator and Air condition plant was connected with KHD cooling tower itself, since capacity was available.With this arrangement, the fan for the Cummins cooling tower has been stopped. Now one cooling tower (KHD cooling tower) is in operation. It handles water from both A/C Plant as well as from the KHD plant.

However, the Cummins cooling tower is kept in operating condition for usage as standby. This will be utilized during KHD stoppage period.

We have **saved 38,544 units per annum** by doing this modification

ENERGY CONSERVATION PLANS AND TARGETS :

In the next one year, the company is committed to further reduce the electrical and thermal energy consumptions. Some of the major projects planned for the next year are given below.

Sl No.	Energy Conservation Measures (Planned)	Anticipated savings in			Approx. investment (Rs.lakhs)	Project Commencement & Completion year
		Power Saved in Lakh units per annum	Tons of coal / oil saved	Expected annual savings (Rs.lakhs)		
1	CFD Analysis for FLS Plant Pre-heater down comer duct and VRM - I Raw mill inlet Duct	3.86	-	13.5	10.0	commencement April 2007 completion Jan 2008
2	High Efficiency cyclones for Pre Coal cyclones in FLS Kiln	Achieve Extra Production		49.0	50.0	commencement Oct'07 completion Dec'08
3	Verabar for flow measurement - VRM 3 FLS Coal mill and CVRM 2	6.11	-	21.4	20.0	commencement Jun'07 completion Dec'07
4	Retrofitting Cooler vent fan impeller with high efficiency impeller in KHD Plant	6.91	-	24.2	48.7	commencement Jun'07 completion Jan'08
5	Retrofitting Cooler vent fan impeller with high efficiency impeller in FLS Plant	7.08	-	24.8	65.3	commencement Jun'07 completion Jan'08
6	Separate LP Compressor for fly ash pumping in Dry Fly ash silo in FLS Plant	2.30	-	8.1	15.0	commencement May'07 completion Dec'07
7	By pass duct for FLS Coal mill booster fan for low volume	0.71	-	2.5	6.0	commencement Sep'07 completion Mar'08
8	New High Capacity GRP tank for GCT	1.97	-	6.9	6.0	commencement Apr'07 completion Dec'07
9	High Efficiency fan for Polysius Kiln	2.00	-	7.0	7.0	commencement Feb'07 completion Aug'07
10	VFD (Variable Frequency Drive) for Compressors	1.00	-	3.5	10.0	commencement Apr'07 completion Dec'07
11	Modification of Sewage Treatment Plant to feed water to plant cooling tower(250m^3/ Day)	3.91	-	13.7	40.0	commencement Nov'07 completion Mar'08

ENVIRONMENT AND SAFETY :

Our organization has initiated no. of measures for Pollution Prevention, Waste Management, Conservation of Key resources and creation of environmental awareness among all concerned. With the above effort our company has obtained the **IS/ISO 14001 Certificate** in February 2004, from BIS.

IS/ISO14001:2004 Environmental Management System Certification for Manufacture and Supply of Various Kinds of Cements including activities of Captive Mines.

A structured system is in place for safety also with a Safety Committee headed by Chairman – Safety and Safety Officer.

We have also registered a **CDM**-Clean Development Mechanism Project **" Optimal Utilisation of Clinker",**which is under progress. Thus contributing to the Environmental Sustainability.

Whether any dispute pertaining to statutory requirements of safety and pollution control is pending with any Government Agency. If Yes, give details:

-- NO --