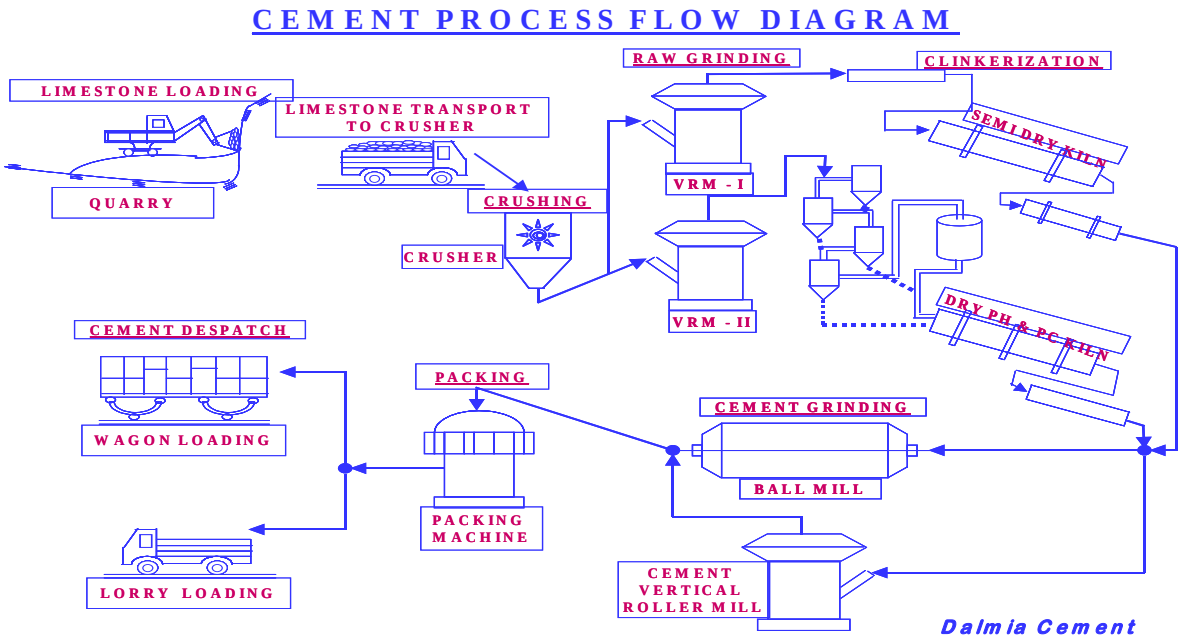
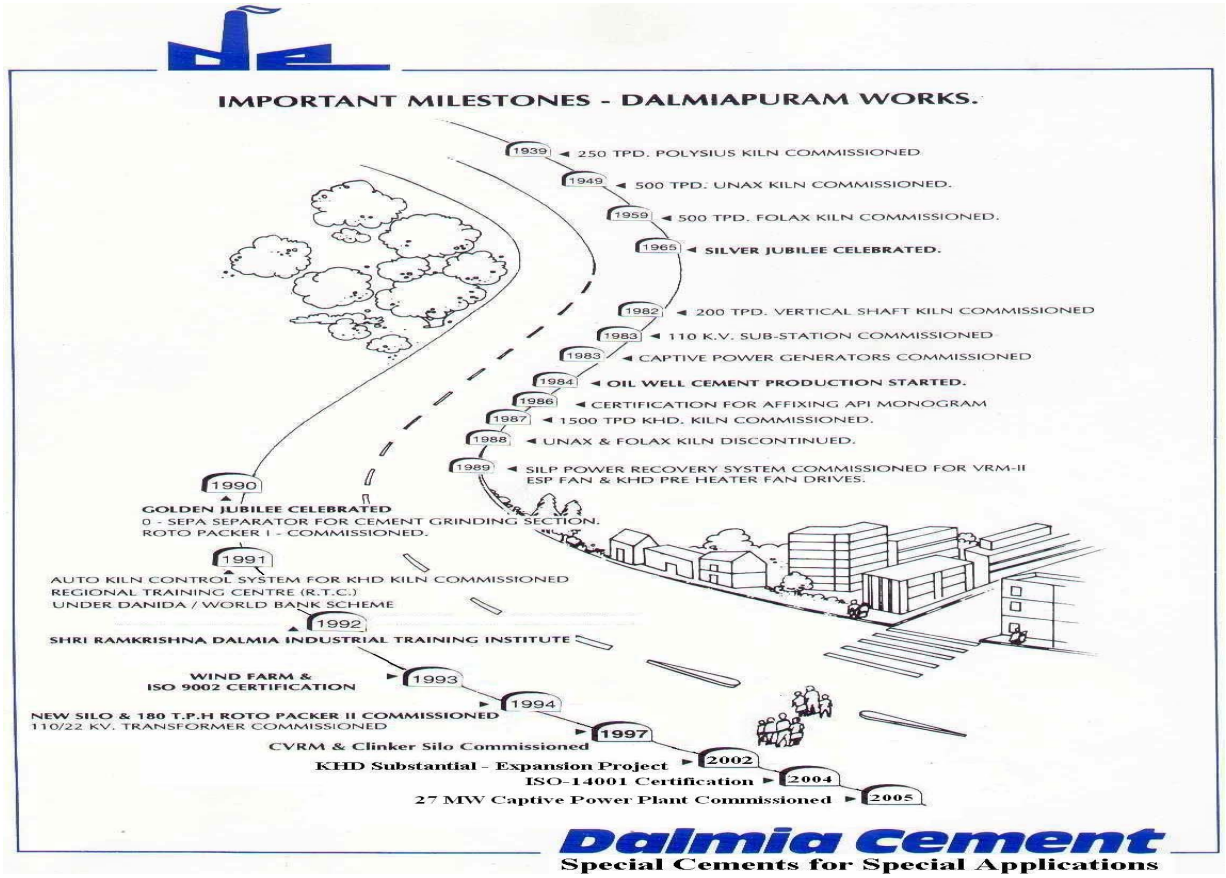
Dalmia Cement Limited

UNIT PROFILE:

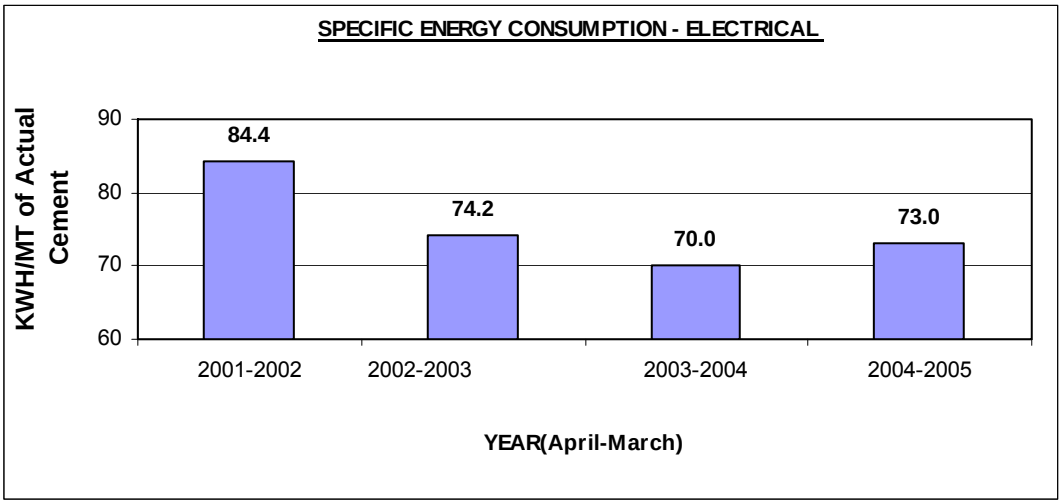
It was in the year 1939, during the pre-independent era, the company started its cement unit as a venture towards Building up a self-reliant India with respect to one of the country's essential commodities. As far back as 1987, the old wet process technology has been replaced by modern precalcinator dry process technology and the first company to adopt this in Tamilnadu, mainly with a view to conserve energy.

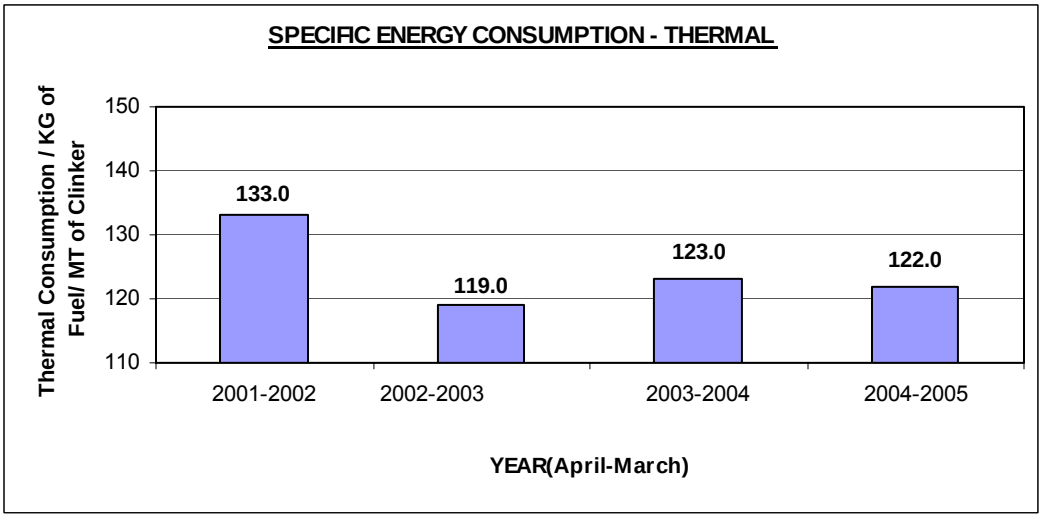




ii) ENERGY CONSUMPTION :

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





iii)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.

N.GOPALASWAMY
Whole Time Director

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.

iv) **ENERGY CONSERVATION ACHIEVEMENT :**

Dry Fly ash Storage

Dry Fly Ash Pumping

Dry fly ash storage and Handling system

Demerits of the existing system :

- Dry fly ash handling & feeding capacity : 15% of total fly ash only
- Moisture in wet fly ash as high as 25 %
- Total Heat requirement for drying of wet fly ash is 14 Mkcal / hr whereas Cooler heat available is only 11 Mkcal /hr and thus requiring a paid heat of 3 Mkcal /hr
- Reduction in mill output due high moisture in fly ash (with out paid heat).

System Description :

- Existing old raw meal silo of 1000 MT used as storage.
- Pneumatic conveying from silo to intermediate hopper.
- Controlled feed from hopper to mill feed chute.
- Increase in dry fly ash addition from 15 to 40 % on total fly ash

Description on the Benefits achieved by installing dry fly ash storage and handling system.

Introduction and bottlenecks of the old system :

In order to meet the customer demand PPC production was increased to as high as 50 % of the total product volume. However achieving this level was difficult because of the following bottlenecks:

- Higher moisture content of the wet fly ash (as much as 25 %) requiring hot gas source for drying.
- Limited availability of heat from cooler vent.
- Necessity of paid heat from HAG using coal.
- Jamming of conveyor chutes, mill feed chute because of high moisture content of wet fly ash.
- Reduction in mill output due to the above reasons.

In order to avoid the above problem, trials were conducted by installing a small bin arrangement to feed 10 Tons of dry flyash per hour to study the performance of the system with dry fly ash and to establish the benefits.

With the trials found to be successful and attractive, it was decided to go for an dedicated system for utilizing dry flyash for the production of PPC.

Dry fly ash storage and handling system :

One of the old raw meal silos was used for receipt and primary storage of the dry fly ash. Suitable unloading and pumping systems were installed to transport the dry flyash from the tanker to the silo and from the silo to the intermediate pumping arrangement available at the mill house.

One intermediate storage cum feeding control bin of 60 Tons capacity was installed with solid flow meter and load cell arrangement to feed the dry fly ash as per the requirement in a controlled manner.

Suitable dust control systems were installed in the unloading , transportation circuit so that any associated dust nuisance is eliminated.

Benefits achived :

The entire arrangement was made with an investment of Rs 15 Lakhs. The power saving is around 1.5 units / Mt of dry fly ash used and the requirement of Hot air Generator for the production of PPC has been eliminated resulting in a saving of 4128 MT of coal per annum.

The overall cost saving due to thermal energy and electrical energy will correspond to about Rs 164 Lakhs per annum.

v) **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	Modification of existing cooler to improve thermal efficiency		5900	236.0	450.0	commencement April 2006 completion Dec 2006
2	Low efficiency CVRM booster fan retrofit with new high efficiency impeller	1.9		6.7	10.0	commencement Jun 2005 completion Mar 2006
3	Low efficiency Cooler vent fan retrofit with new high efficiency impeller	4.8		16.7	10.0	commencement Jun 2005 completion Mar 2006
4	Power saving in coal mill hot gas fan by providing by pass duct.	0.7		2.3	3.0	commencement Oct 2005 completion Mar 2006
5	Providing flow smootheners to reduce pressure drop in preheater down comer duct	3.4		12.0	2.0	commencement Sep 2005 completion May 2006
6	Utilisation of Excess gas from GCT in VAM to produce chilled water for air conditioning	18.1		47.0	100.0	commencement Oct 2005 completion Mar 2007
7	Tertiary crusher for coal	3.3		8.3	11.0	commencement May 2005 completion Dec 2005
8	Speed reduction in Auxillary bag filters	0.9		3.08	0.8	commencement Oct 2005 completion Jan 2006

Write up for the projects completed in the year 2004-05.

Sl No 1 : Dry Fly ash feeding.

Description on the Benefits achieved by installing dry fly ash storage and handling system.

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Suitable dust control systems were installed in the unloading , transportation circuit so that any associated dust nuisance is eliminated.

Benefits achived :

The entire arrangement was made with an investment of Rs 15 Lakhs. The power saving is around 1.5 units / Mt of dry fly ash used and the requirement of Hot air Generator for the production of PPC has been eliminated resulting in a saving of 4128 MT of coal per annum.

The overall cost saving due to thermal energy and electrical energy will correspond to about Rs. 164 Lakhs per annum.

Sl No 2 : Avoiding idle running of belt conveyors

During the energy audit and routine observation it was noticed that three of the belt conveyors in the Cement Vertical Roller mill dump hopper area were running idly resulting in loss of power.

By providing material starvation switches and suitable interlocks the idle running of the above conveyors were avoided resulting in a cost saving of Rs 0.3 Lakhs per annum.

Sl No 3 : New Energy efficient compressors

In the KHD kiln circuit three of old compressors installed in 1987 were found to be operating with low volumetric efficiency during the audit conducted. The compressors were feeding air to silo extraction, kiln and preheater service air. The operations of the above compressors were essential for the running of the plant hence they were operated continuously resuting in higher power loss and money loss.

By comparing the volumetric efficiency and specific power requirement to that of an new energy efficient compressor it was decided to change the old compressors immediately as the saving potential was about Rs 0.4 Lakhs per annum.

Sl No 4 : New Energy efficient pumps for mines dewatering

In our local mines dewatering pumps were used for pumping the rain / surface water collected into the afforestation area. The operation of the pumps is critical during the rainy season as we go deeper and deeper. As the mining depth varies with time the operating point of the pump changes and the pump becomes less efficient.

During the audit two of such pumps were identified with efficiency less than 40 % and were replaced with new energy efficient pumps resulting in a cost saving of Rs 0.2 Lakhs per annum.

Sl No 5 : Installation of car washer pump

In our mechanical equipment section we used a higher head and higher flow pump for water washing of various equipments like dozer, excavator etc. For water washing it is required to have higher pressure but not the volume. However as the pump discharge was higher more quantity of water was wasted resulting in waster loss.

It was decided to go for an dedicated water wash pump and system which not only will save power but also water which is obtained from a distance of 10 KM from the plant site.

Sl No 6 : In Roto - I the Rotary Feeder was replaced by Pneumatic Gate

In Cement Packing Section, Vertical Rotary Feeder is installed for Packing Cement from a storage bin to the rotary semi-automatic Packing Machine. This Vertical rotary feeder is driven by a 3.7 KW Motor.

Cement being a highly abrasive nature Product, the rotary feeder gets frequent wear, which results in more maintenance. It was replaced with a simple Pneumatic Operated valve (No mechanical drive), there by recurring saving of Rs.30,000/- per annum. The cost of Pneumatic valve is Rs.25,000/-