

Mother Dairy
(A unit of Karnataka Milk Federation)
Yelahanka, Bangalore (Karnataka)

Unit Profile

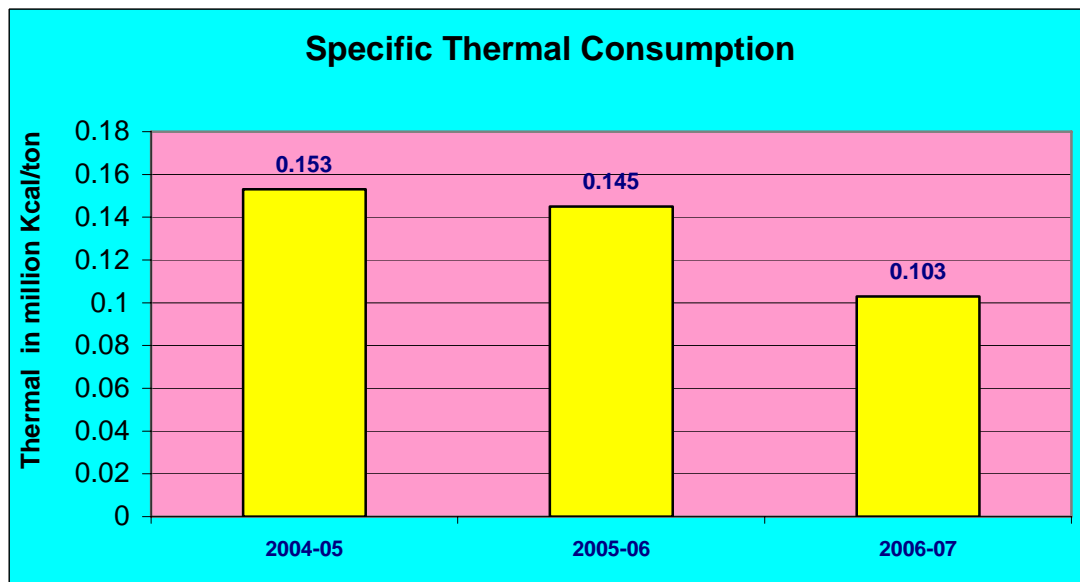
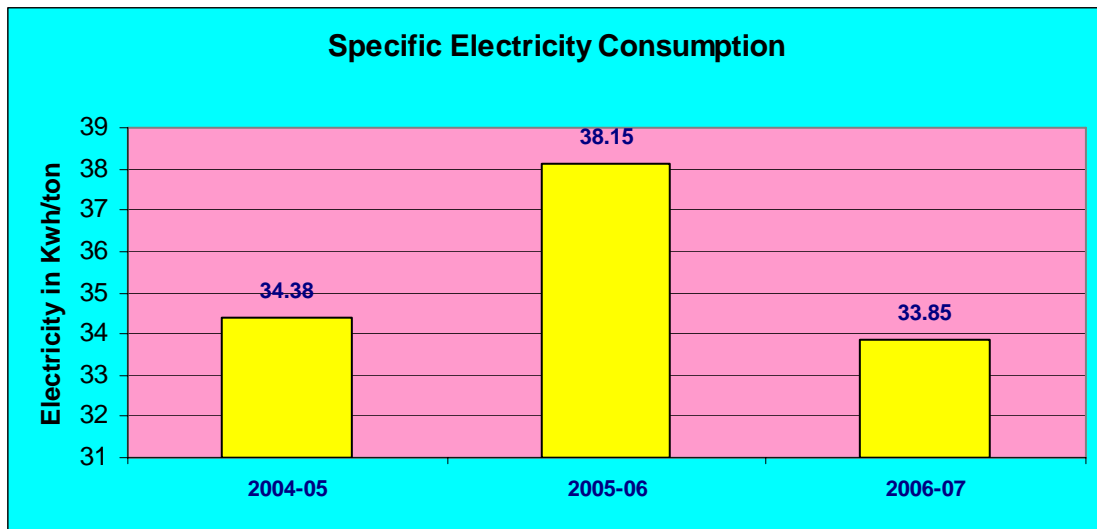
The Mother Dairy caters to Liquid Milk and its variants marketing to the consumers and has an installed capacity of 4LLPD milk processing and it is slated for expansion to handle 7LLPD in the immediate future.

This apart, has a unit for milk drying to produce 30 MT of Skim Milk Powder and variants of international quality. Also, there is an Ice Cream Plant with an installed capacity of 10000 Litres per day of various varieties. Mother Dairy is also equipped to produce butter and ghee for the retail market.



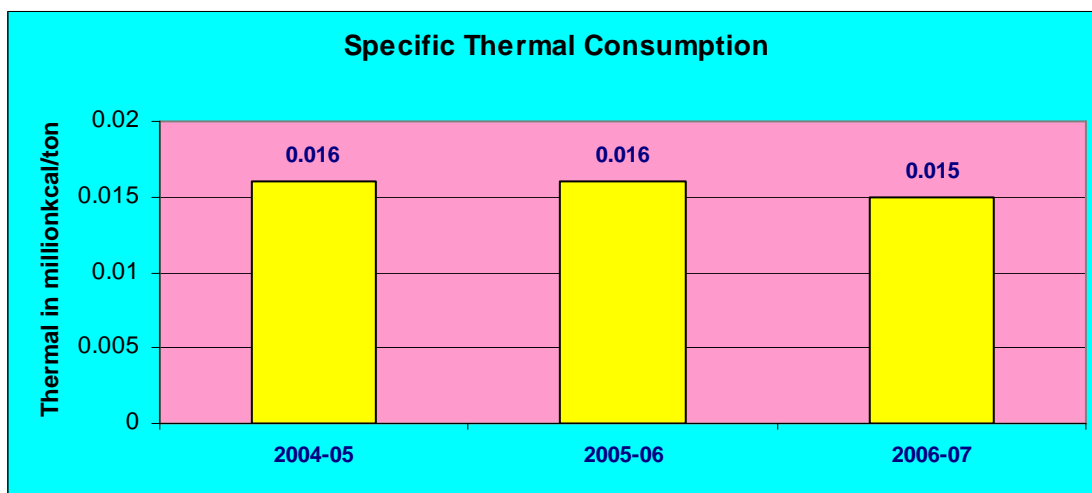
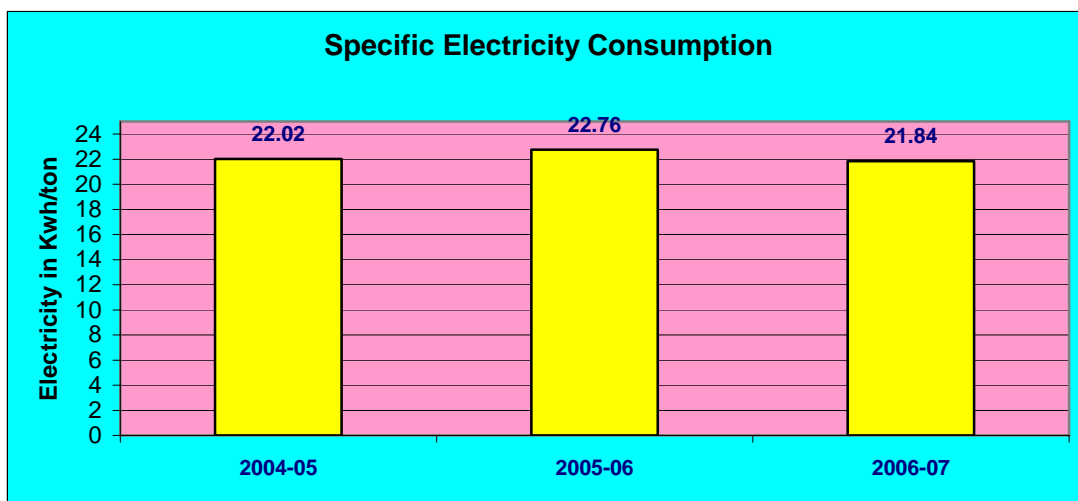
Specific Energy Consumption

Year	Electricity in kwh/ton	Thermal (Fuel) in million kcal/ton
2004-05	34.38	0.153
2005-06	38.15	0.145
2006-07	33.85	0.103



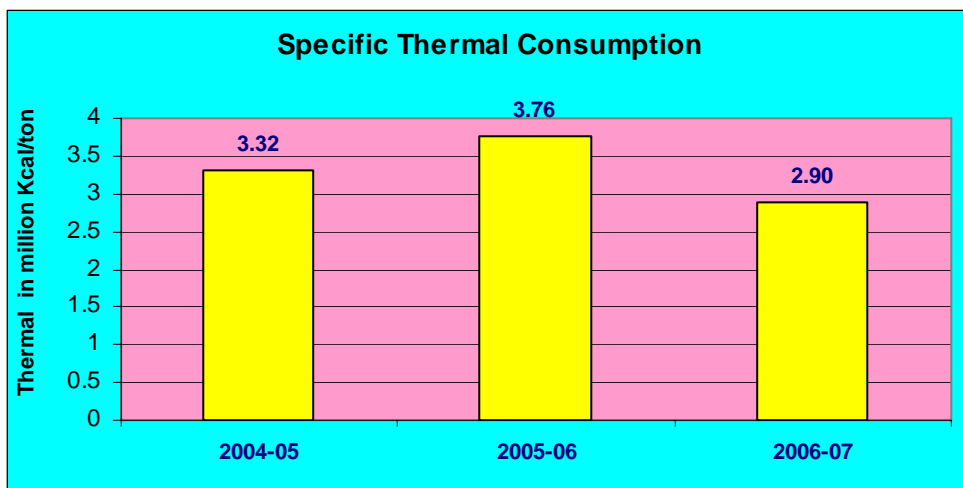
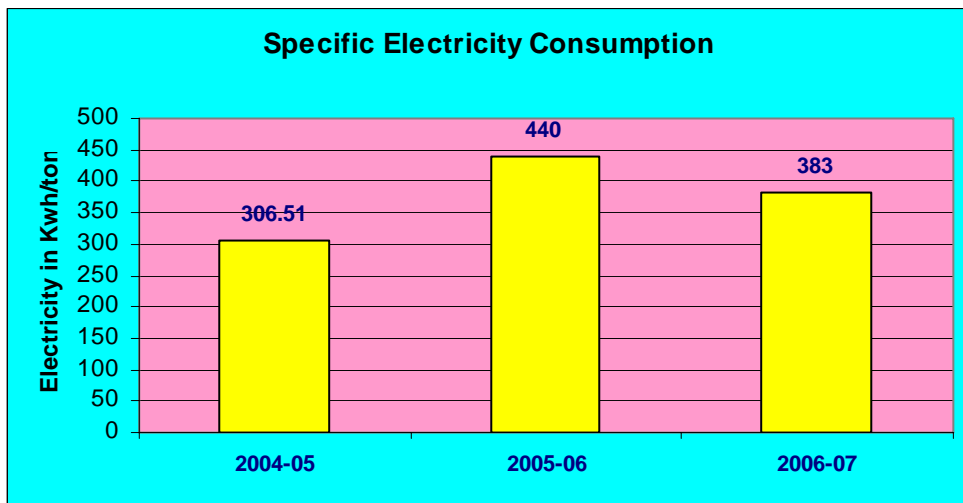
Specific Energy Consumption for Milk

Year	Electricity in kwh/ton	Thermal (Fuel) in million kcal/ton
2004-05	22.02	0.016
2005-06	22.76	0.016
2006-07	21.84	0.015



Specific Energy Consumption for Skim Milk powder

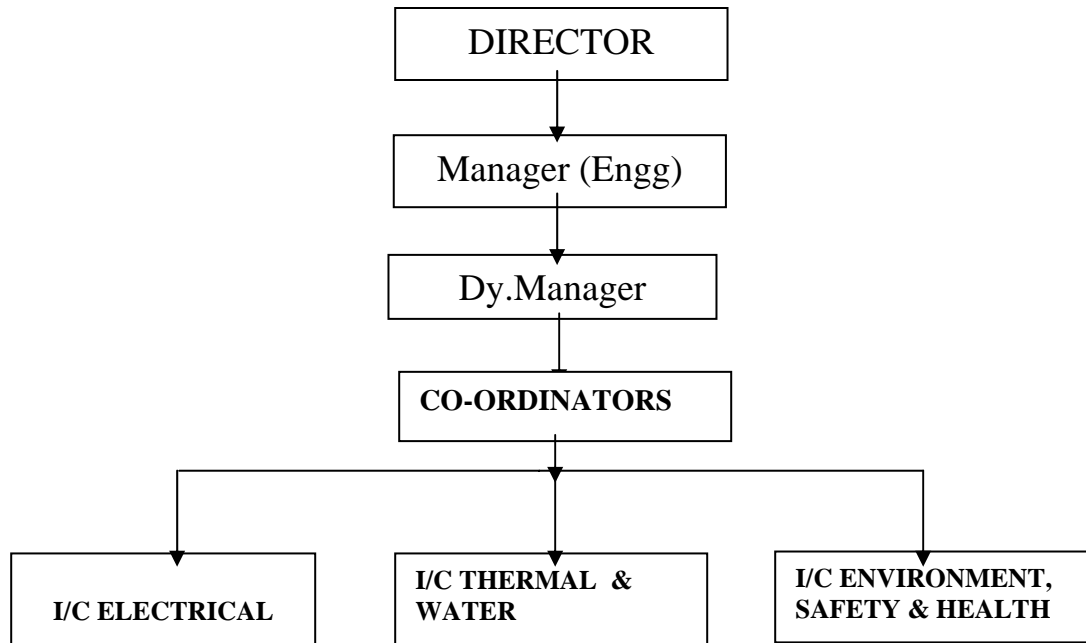
Year	Electricity in kwh/ton	Thermal (Fuel) in million kcal/ton
2004-05	306.51	3.32
2005-06	440.00	3.76
2006-07	383.00	2.90



Energy Conservation Commitment and Set up

The plant has an engineering department primarily meant for providing services comprising of power, refrigeration, steam, air, water and also is vested with the responsibility of preventive and breakdown maintenance of plant and machinery including effluent treatment and recycling. The engineering department is also responsible for execution of energy conservation policy and the structure of the cell is here under .

ENERGY CONSERVATION CELL STRUCTURE



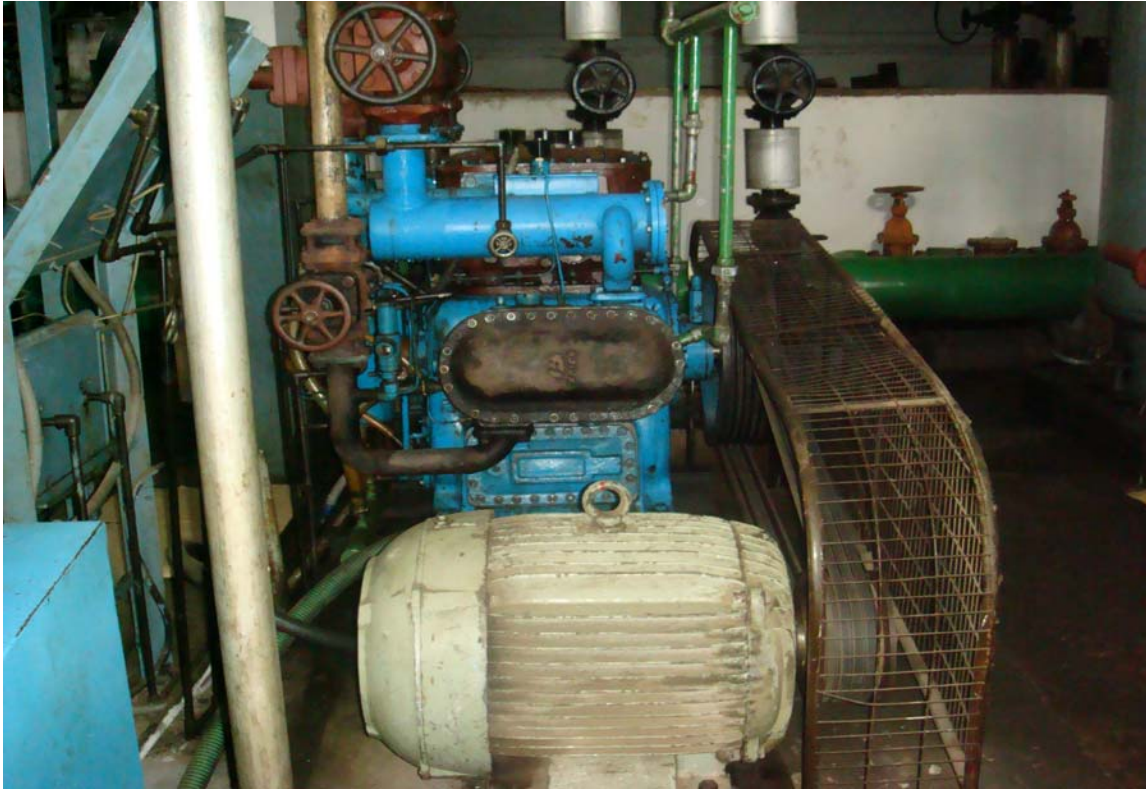
In Mother Dairy, Dy. Manager and co-ordinator coordinates in implementing energy conservation policy of Mother Dairy enlisting the support of management and shop level engineers. Energy policy is being displayed in all the sections for creating the energy conservation awareness. The dairy has formed functional teams for cost reduction through energy savings. Environmental, safety & health departments are also closely attached with energy conservation cell. The members of the EC cell and the other functional members are subjected to periodical energy conservation training programmes from time to time to create a better awareness and learn techniques and methodologies for implementation of energy conservation programme.

Energy Conservation Achievements

Sl. No	Particular	Achievement of energy saving /year basis				Total saving in Lakhs	Investment Rs. In Lakhs
		Fuels					
		Electri-city Lakh kWh	Coal In tone	F.O. in KL	Gas in Lm ³		
1	Downsizing of 60hp motor of A-49 ammonia compressor	0.27				1.32	0.50
2	Savings in power consumption at powder plant resulting from adoption of measures such as proper planning and scheduling of production, increasing product throughput, arresting vacuum leakages and operating only one vacuum pump in place of two, and running only one air compressor.	2.65				12.96	NILL
3	Recovery of the remaining 1 lakh liters condensate water with 60degree routing to CIP at powder plant.			67.69		15.56	6.00
4	By installing the pneumatic control valve the consumption towards the evaporation side			381.56		87.75	0.75
	TOTAL	2.92		449.25		117.59	7.25

1. Downsizing of ammonia compressor motor:

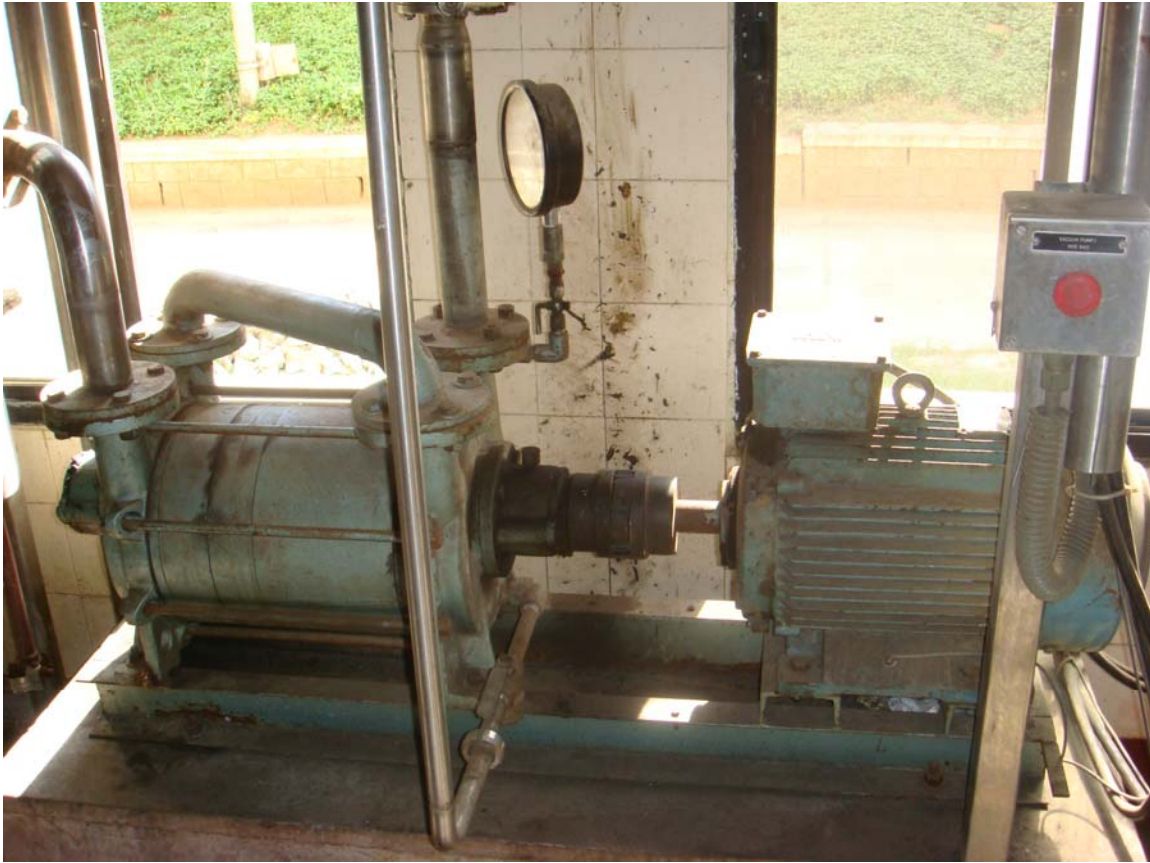
This is done by replacement of 60HP motor to 50HP motor of Ammonia compound compressor.



Total Amount savings/year	= Rs. 1.32Lakh
Investment	= Rs. 0.5lakh
Payback period	= 4 Months

2. Reduction of power at powder plant:

Savings in specific power consumption has been reduced at powder plant resulting from adoption of measures such as proper planning and scheduling of production, increasing product throughput, arresting vacuum leakages and operating only one vacuum pump in place of two, and running only one air compressor.



Power consumption difference after operating one vacuum pump
= $0.440 - 0.383 = 0.57 \text{ kWh/kg}$

Total Amount savings/year = Rs. 12.96 lakh
Investment = NIL

3. Condensate recovery from powder plant

Recovering remaining 1 lakh liters condensate water at 60 Deg C using CIP at powder plant.



Heat value for heating 1.0-lakh litres of water from 30^oc to 60^oc

= 3000000Kcal/day

Total annual savings

= Rs. 30.56 Lakhs

Investment

= Rs. 6 lakhs

Payback period

= 2¹/₂ months

4.Installation of pneumatic control valve at powder plant

Savings in specific fuel consumption has been reduced at powder plant resulting from installation of pneumatic control valve towards evaporation side.



F. oil consumption difference after installation of pneumatic control valve	= $0.372 - 0.29 = 0.082$ kg/kg of smp
F, oil savings in kg/year	= $0.082 * 4653218 = 381560$ Kg
Total Amount savings/year	= Rs. 87.75 lakhs
Investment	= 0.75 lakh
Payback period	= 5 days

Energy Conservation Plans and Targets

Sl. No	Energy conservation measures	Power saving in Lakh kWh	F.O. in Tons	Investment in Lakhs	Savings in Lakhs	To be Implemented
1	Recovering the condensate water from process equipment at 90°C and reuse it for boiler feed water.		26.35	2.5	6.06	2007-08
2	Installation of energy efficient lights at Packing & refrigeration sections.	0.9		0.36	0.44	2007-08
3	Installation of energy efficient burner for 5T boiler.		44.00	20.00	12.94	2007-08
4	Increase in out put by modifying existing barometric condenser at evaporator of powder plant	0.27	32.20	0.50	10.04	2007-08
	TOTAL	1.17	102.55	23.36	29.48	

Environment and Safety

Basically the unit being a food processing industry, considerable thrust has been given to implementation of HACCP, which is currently in place and is being upgraded for the purpose of obtaining, ISO 22000: 2005. Since the internal operations are being covered by HACCP, the waste residues are considerably brought down and the leftover waste discharges are sufficiently treated as per the requirements of water-air pollution control Act. There is a plan to use the effluent for industrial cleaning purpose after secondary treatment.