



**MOTHER DAIRY  
( UNIT OF KMF )  
BANGALORE**

# **MOTHER DAIRY, A UNIT OF KMF.**

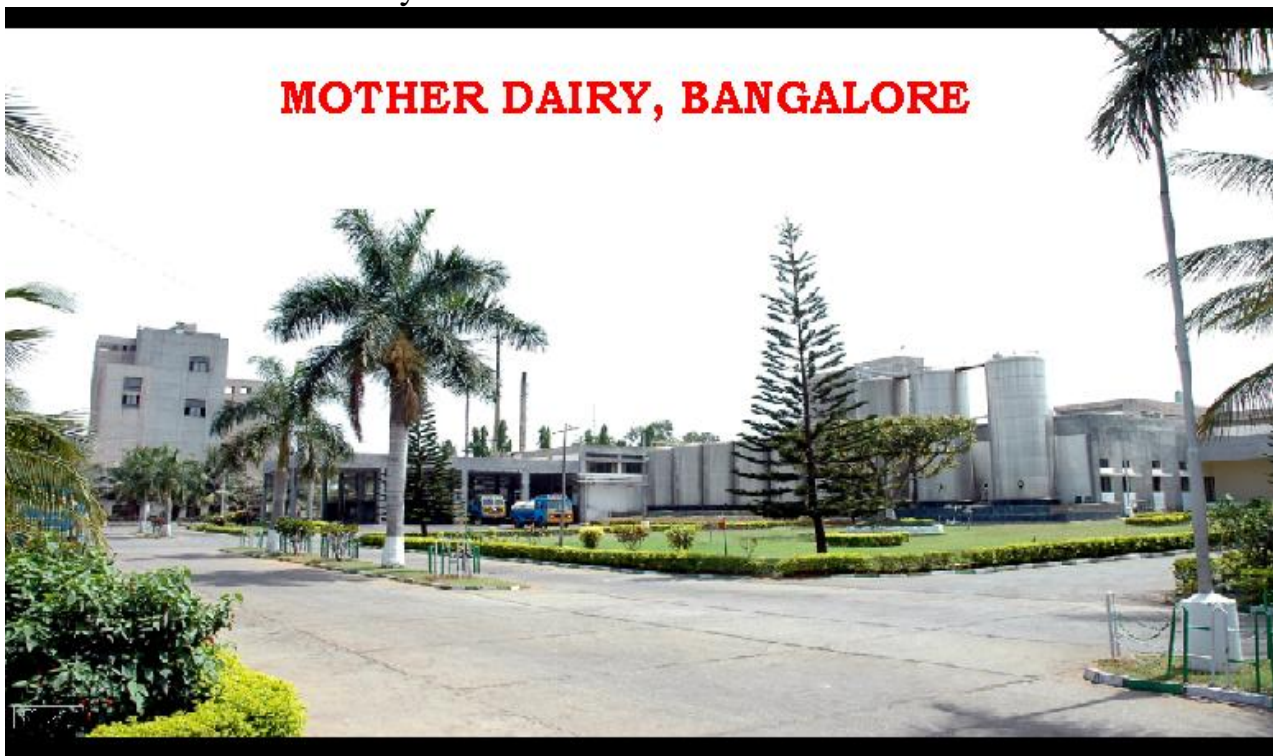
**G.K.V.K.POST, YELAHANKA, BANGALORE (KARNATAKA)**

## **UNIT PROFILE**

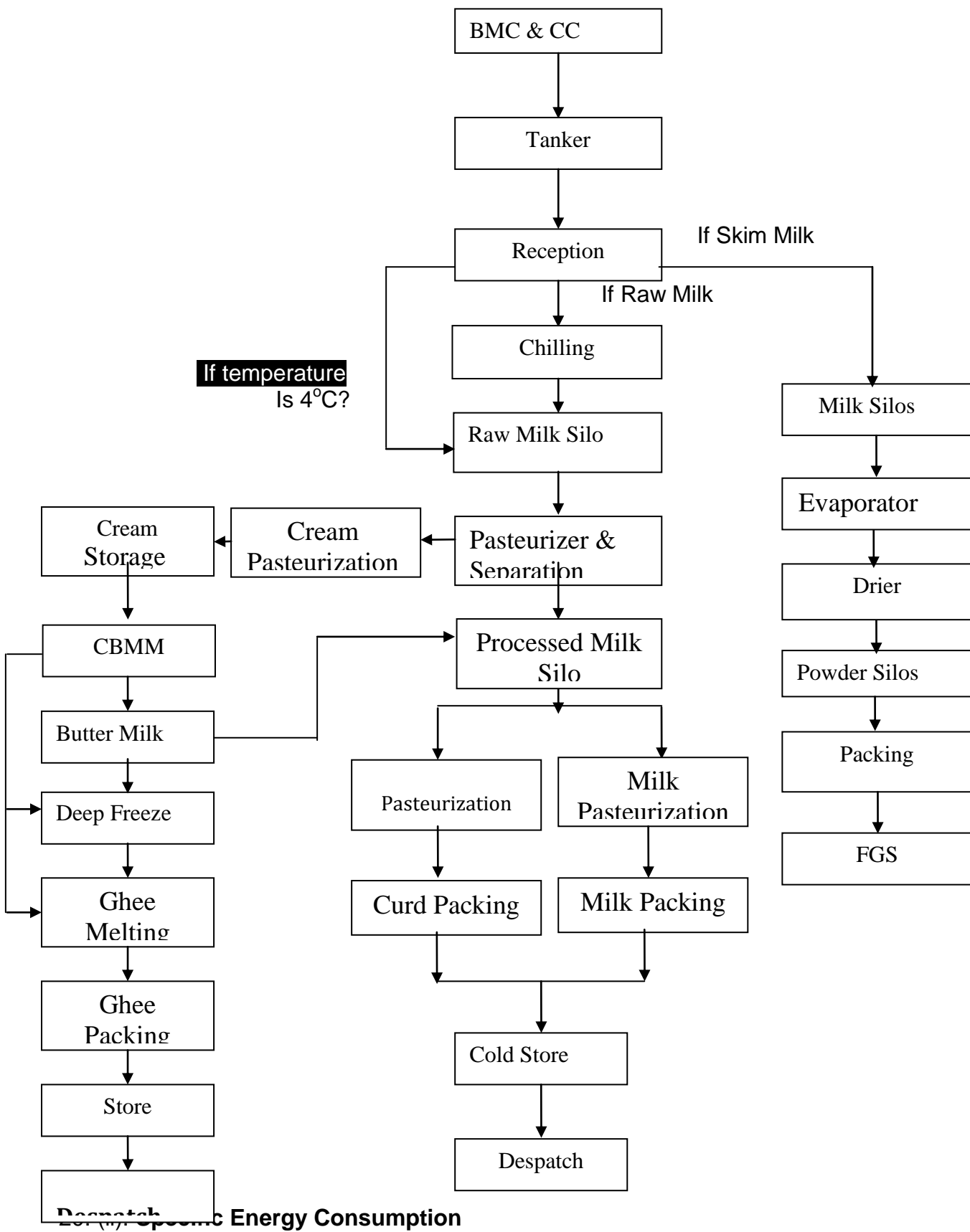
Mother Dairy primarily was established for dispensing of good quality of milk to the consumers at a very competitive cost and initially a capacity of 2 LLPD of plant was created to process and dispense milk. This is was followed by expansion to 4 LLPD, during which, dispensing of milk and milk variants to the consumers was introduced and presently the Dairy is getting expanded to process 7 LLPD and packing and dispensing of milk to the consumers for more than 3 LLPD, and dispensing Butter as well as Ghee to the consumers in retail packs as well as bulk.

A Plant to convert 3 LLPD milk into Skimmed Milk Powder, Whole Milk Powder and Dairy Whitener is also in operation and the products manufactured at Mother Dairy are of international quality.

Also Mother Dairy has an Ice Cream Plant which is producing more than 20 varieties of Ice Creams a day and having an installed capacity of 10,000 ltrs per day. In order to fulfill the ever increasing demand for milk products in excess of 50SKUs in new pack formats are introduced in Mother dairy.

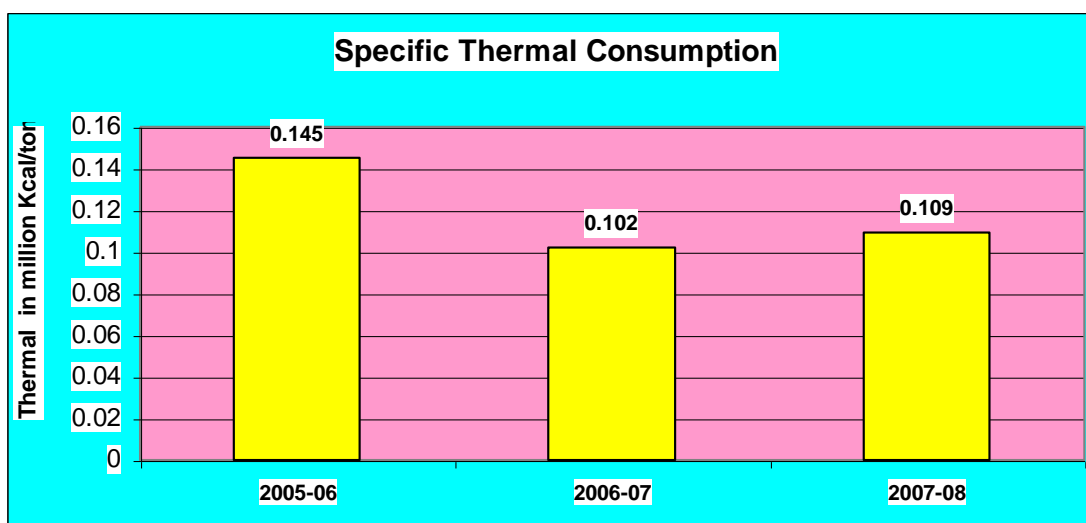
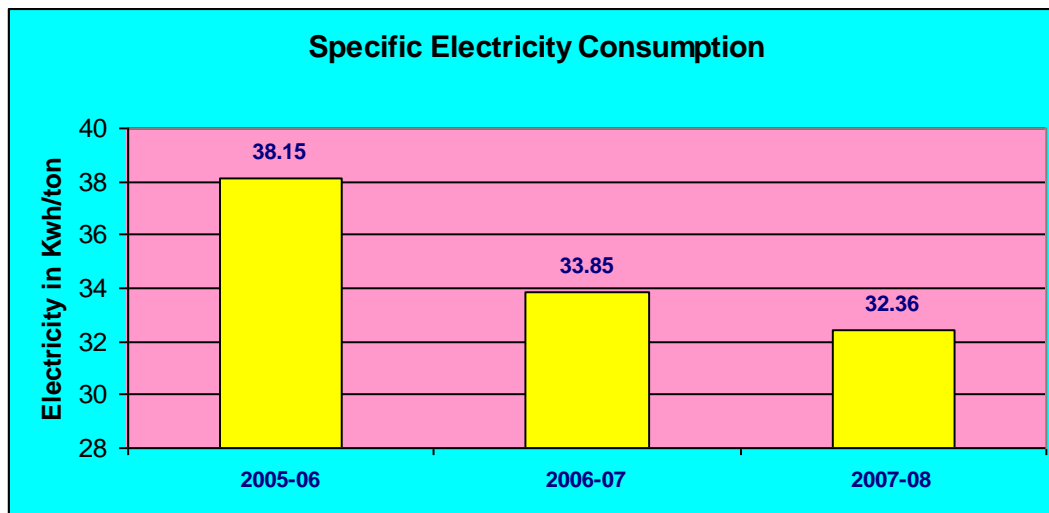


## FLOW DIAGRAM



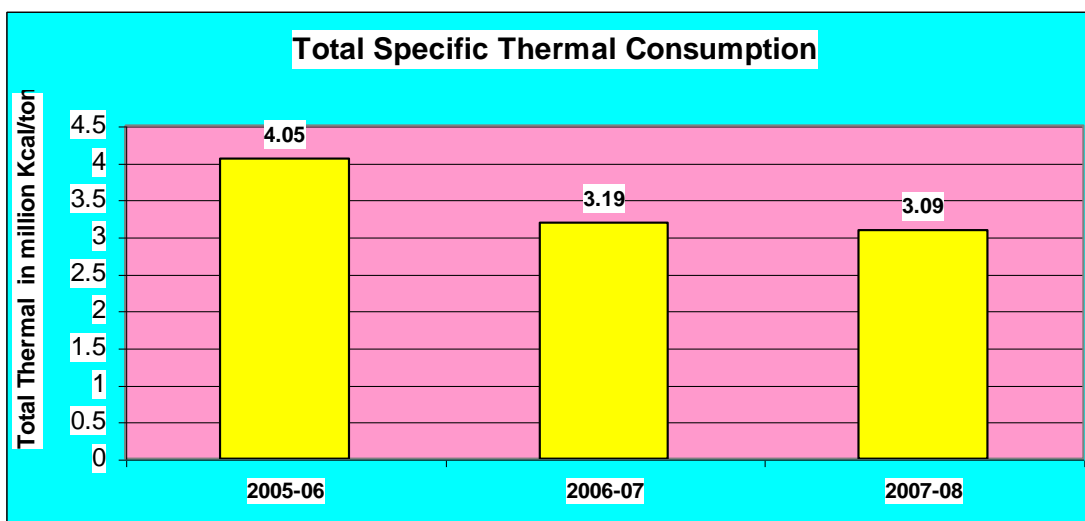
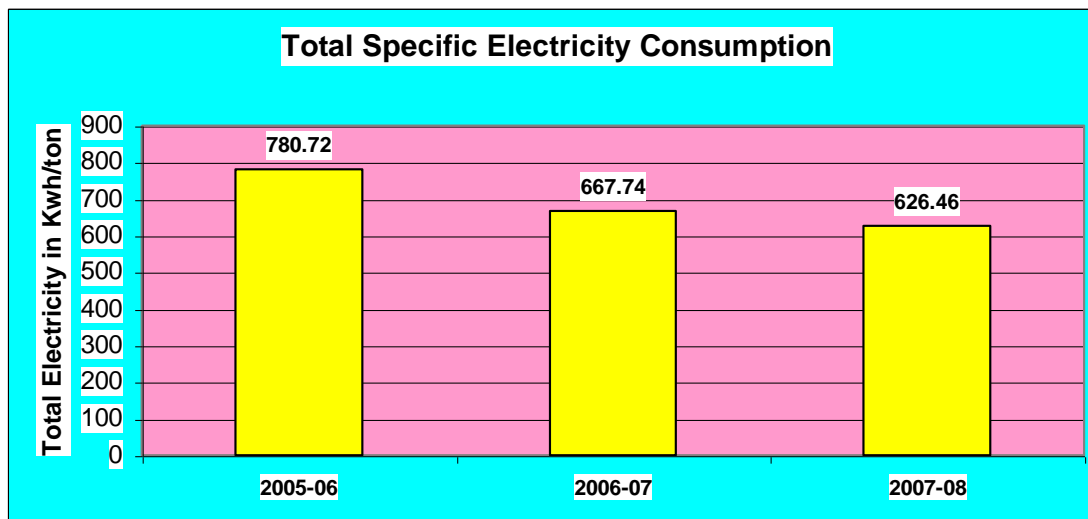
Despatch Specific Energy Consumption

Year	Electricity in kwh/ton	Thermal (Fuel) in million kcal/ton
2005-06	38.15	0.145
2006-07	33.85	0.102
2007-08	32.36	0.109



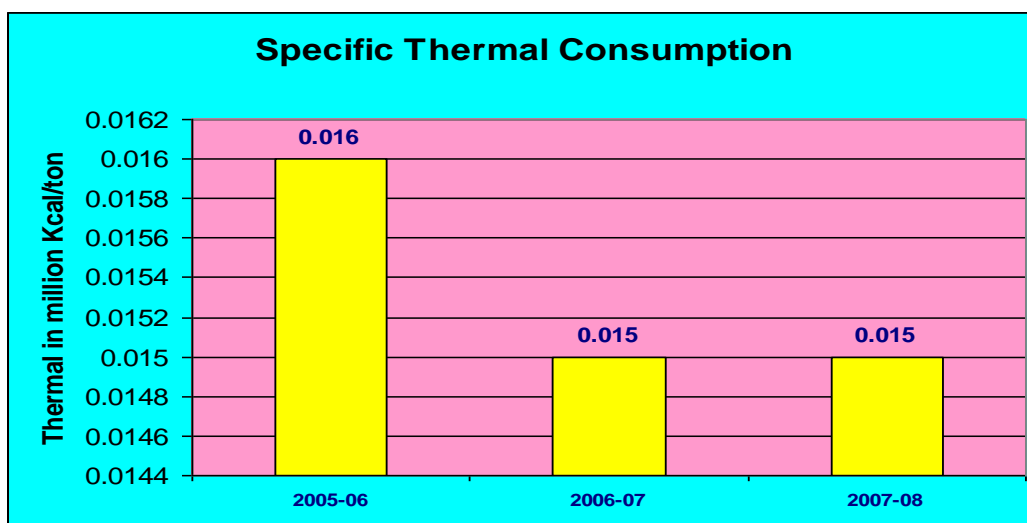
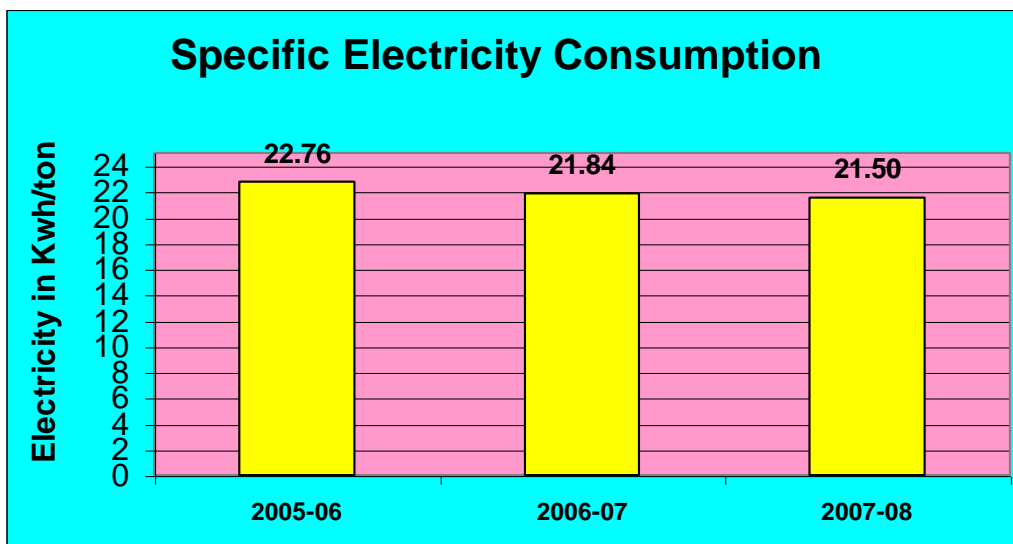
20. (ii). Total specific energy consumption

Year	Electricity in kwh/ton	Thermal (Fuel) in million kcal/ton
2005-06	780.72	4.05
2006-07	667.74	3.19
2007-08	626.46	3.09



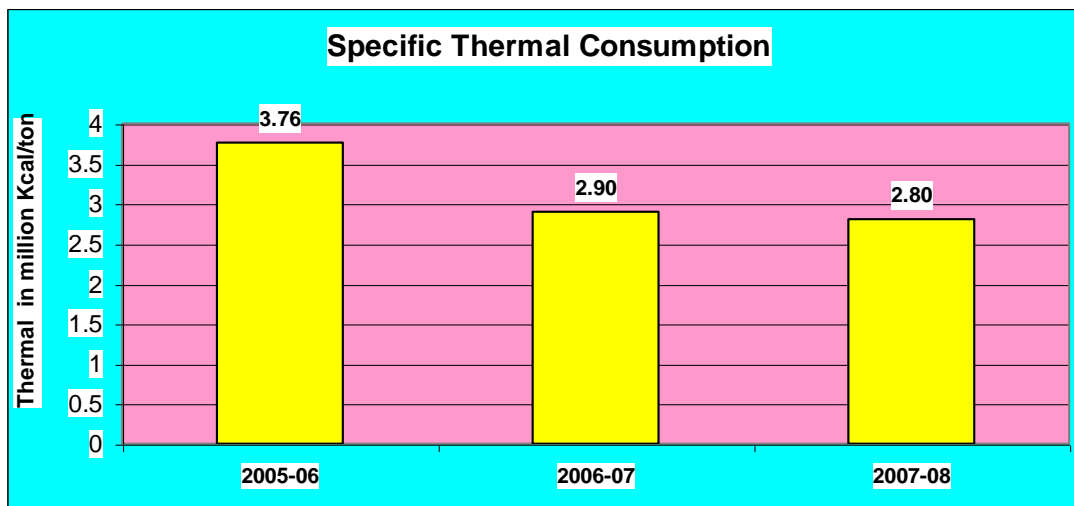
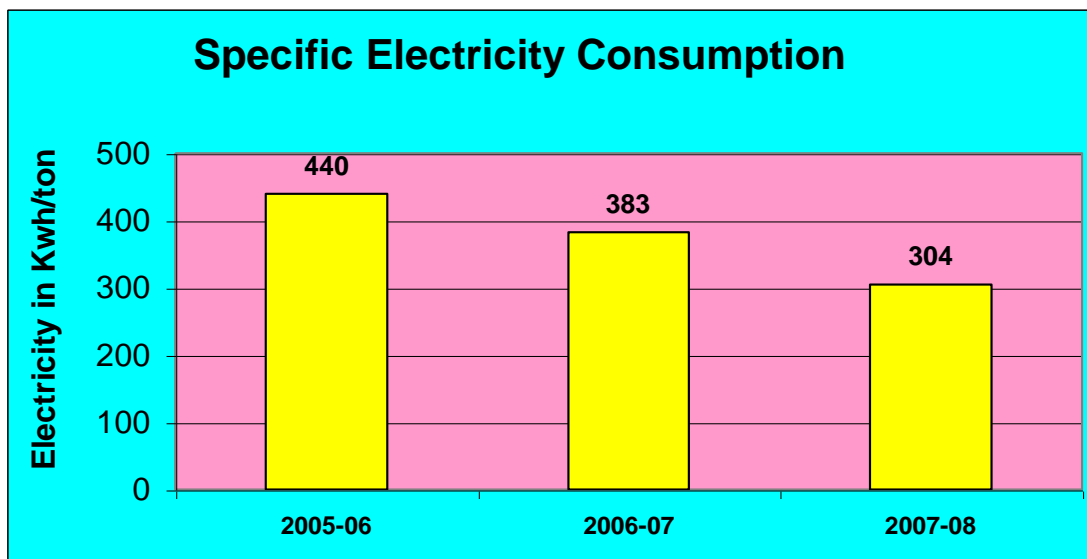
20. (ii). **Specific Energy Consumption for Milk**

Year	Electricity in kwh/ton	Thermal (Fuel) in million kcal/ton
2005-06	22.76	0.016
2006-07	21.84	0.015
2007-08	21.50	0.015



## 20. (II). Specific Energy Consumption for Skim Milk powder

Year	Electricity in kwh/ton	Thermal (Fuel) in million kcal/ton
2005-06	440.00	3.76
2006-07	383.00	2.90
2007-08	304.71	2.80



## Energy Policy

WE, AT MOTHER DAIRY ARE COMMITTED TO CONSERVATION OF ENERGY AND ITS EFFECTIVE MANAGEMENT BY ADOPTING LATEST ECO FRIENDLY, COST EFFECTIVE TECHNOLOGIES AND INNOVATION FOR IMPROVING PRODUCTIVITY AND ACHIEVING MAXIMUM RETURNS ON INVESTMENTS.

**Sd.**  
**DIRECTOR**

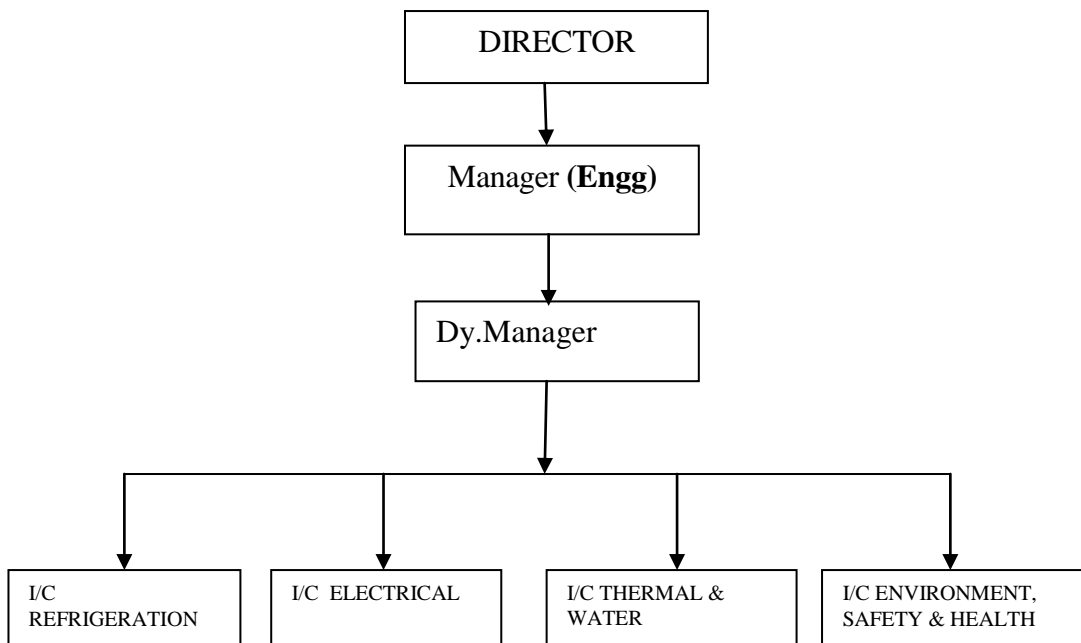
20. (iii). Energy Conservation Team, Consulting and their function

The responsibility of the utility department primarily is vested with Engineering department for generating and providing utilities like, Power, Steam Refrigeration, Air & Water to the manufacturing centres. This is done to have effective control over both generation and distribution of the utility mentioned above. The Manager (Engg) is primarily vested with the responsibilities of administrating the Engineering section & additionally, he is also vested with implementation of Energy Conservation Programme in totality. The executive head of all the utilities are also vested with the responsibility of not only providing the utilities but also plan and coordinate related Energy Conservation Measures.

The entire staff in the utility section are involved in the Energy Conservation Programme by way of operation and distribution controls, maintaining of schedules, monitoring of metering devices, preventive follow-ups etc., and the details generated are thoroughly examined and discussed every month for necessary improvements.

The structure of the cell is here under.

### ENERGY CONSERVATION CELL STRUCTURE



## 20. (IV). Energy Conservation Achievements 2007-08

Sl · No	Particular	Achievement of energy saving /year basis					Total saving in Lakhs	Investment Rs. In Lakhs
		Fuels						
		Electr icity Lkwh	Coal In tone	F.O. in KL	Gas in Lm <sup>3</sup>	Total fuel in MKcal		
1	Recovering the condensate water from process equipment at 80 <sup>o</sup> c and reuse it for boiler feed water.			36.00		367.20	10.00	2.50
2	Installation of energy efficient lights at Packing & refrigeration sections.	0.9					0.44	0.36
3	Installing new pressure reducing valves at different plant in processing section.			17.85		182.07	5.00	0.50
4	Thawing of every batch of butter before melting			1.71		17.52	0.48	0.0
	<b>TOTAL</b>	<b>0.9</b>		<b>55.56</b>		<b>566.79</b>	<b>16.02</b>	<b>3.36</b>

**1. Recovering the condensate water from process equipment at 80°C and reuse it for boiler feed water:**



Temperature of condensate being drained	= 80 deg C
Temperature of feed water	= 30 deg C
Heat gain	= 80-50=50kcal/kg
Average condensate load	= 1000kg/hr
Total heat gain	= 1000*50 = 50000kcal/hr
Calorific value of fuel	= 10200kcal/kg
Fuel saving	= 5.00kg/hr
No. Of working hours/year	= 360days*20hr/day = 7200hrs
Fuel savings /year	= 7200hr*5.00kg/hr = 36000kg
Total Amount savings/year	= 36000kg*Rs.28.00/kg = Rs.10.00 Lakh
Investment	= Rs. 2.5lakh
Payback period	= 3 Months

## 2. Installation of energy efficient lights at Packing & refrigeration sections:



Power savings in units/year = 8800kwh

Total Amount savings/year = 8800units\*Rs.5/unit  
= Rs. 0.44lakh

Investment = 0.36lakh

Payback period = 10 Months

**3. Installing new pressure reducing valves at different plant in processing section:**



Amount of steam to milk processing plant = 900kg/hr

At high pressure distribution, ideal loss will be 3% = 27kg/hr

Amount of steam loss = 14kg/hr

F, oil savings in kg/year =  $(27/11) * 20 * 360$   
= 17800Kg

Total Amount savings/year = 17800\*28  
= Rs. 5.0 lakh

Investment = 0.5 lakh

Payback period = 1 1/2 months

#### 4. Thawing of every batch of butter before melting:



Quantity of butter thawing per batch = 4000kg

Time taken for thawing of butter  
from 4 to 16 degree C = 48hrs

No of batches per day = 2 no

Heat value in kcal/kg =  $4000 * 0.5 * (16 - 4) * 2 * 365$   
= 17520000kcal

F, oil saving per year =  $17520000 / 10200$   
= 1717kg

Total amount saving per year =  $1717 * Rs28kg$   
= 0.48lakh

## Replacement of old and inefficient VST condenser by new evaporator condenser:

This is done by replacement of 55HP motor to 38HP motor of condenser.



No of working hours/year =  $365\text{days} \times 24\text{Hr}/\text{day} = 8760$

Power savings in units/year =  $8760\text{Hr} \times 12.75\text{KW} = 11690$

Total amount savings/year =  $11690\text{units} \times \text{Rs}5/\text{unit} = 5.58\text{lakh}$

Investment = 16.00 Lakhs

Pay back period = 2 years 10 Months

## Replacement of old and inefficient compressor by new vilter compressor:

Before installing vilter compressor, we were using 02 no air handling unit each having 03 motor with fan having capacity of 2HP motor.



AHU running hrs/day = 8

Power savings in units/year =  $8 \times 2 \times 4.5 \times 365 = 26280$

Total amount savings/year =  $26280 \times \text{Rs}5/\text{unit} = 1.31 \text{ lakh}$

Investment = 6.00 Lakhs

Pay back period = 4 Years 6 Months

## Reuse of defrost water at ice cream plant deep freeze



Savings of Rs 0.50lakh/year, resulting from the reuse of 2000LPD of defrost water of ice cream deep freeze @ Rs0.07/ltr of water cost

## Installation of Scrap Film Cleaning Machine



Before Cleaning



After Cleaning

Earlier the decaped milk pouches were being disposed off to the intending buyers on the anology as is where is basis. Milks being an organic substance, there use to be purification of the same leading to environment hazardous as well as other related handling constraints. However, when a simple technique was adopted, with a small investment of Rs.25,000/-, every day we have been cleaning the decaped pouches which helps in removal of all milk traces and ink of the printing is also removed in the process of cleaning, the film also gets ultimately dried and the same has been put into sacks for disposal, this has ultimately helped us in avoiding health hazard and better realization for the scrap film.

20(v). Energy Conservation plans and targets:

Sl. No	Energy conservation measures	Power saving in LKwh	F.O. in Tons	Investment in Lakhs	Savings in Lakhs	Target
1	Installation of energy efficient burner for 5T boiler.		44.00	20.00	12.94	<b>2008-09</b>
2	Down sizing of air compressor motor at powder packing	1.00		5.60	5.28	<b>2008-09</b>
3	Installation of new glandless piston valves		8.07	0.60	2.26	<b>2008-09</b>
4	Furnace oil treatment chemicals		60.00	3.00	13.00	<b>2008-09</b>
5	Temperature control and monitoring system for the milk pasteurizers		37.50	4.00	10.50	<b>2008-09</b>
	<b>TOTAL</b>	<b>1.00</b>	<b>149.57</b>	<b>33.20</b>	<b>43.98</b>	

**20. (Vi). Environment & Safety.**

Basically ours being a food processing industry, considerable thrust has been given to implementation of HACCP, which is currently in place and is being upgraded and obtained, ISO 22000: 2005 certification. 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. We have an integral effluent treatment plant of 1000 m<sup>3</sup>/day capacity. The treated effluent quality parameters like BOD and COD are well within the limits prescribed and apparently the treated Effluent after secondary treatment is being used for internal purposes etc.

Health:

Doctor service is available at dairy during working hours. Apart from this workers are covered under ESI act, officers are covered under Health insurance policy.