

## Bangalore Milk Union Ltd. : Bangalore

### **Unit Profile**

Bangalore Milk Union (Bamul) is the biggest Milk Cooperative Union in South India. At present, the Union is procuring, processing and marketing up to 8.90 lakh liters of milk per day. The Union is offering most remunerative prices to the producers and marketing milk and milk products at most competitive prices. The difference between procurement price and marketing price is regarded to be one of the lowest in the country due to better operational efficiency. In recognition to these efforts, the Union has been awarded continuously for four times the “Best Productivity Award” by the National Productivity Council of GOI, during the last several years.



### **Energy Management Policy**

**“Utilization of Energy effectively & judiciously aiming to conserve the energy continuously by adopting eco-friendly methods & thereby increasing the productivity of the Union”**

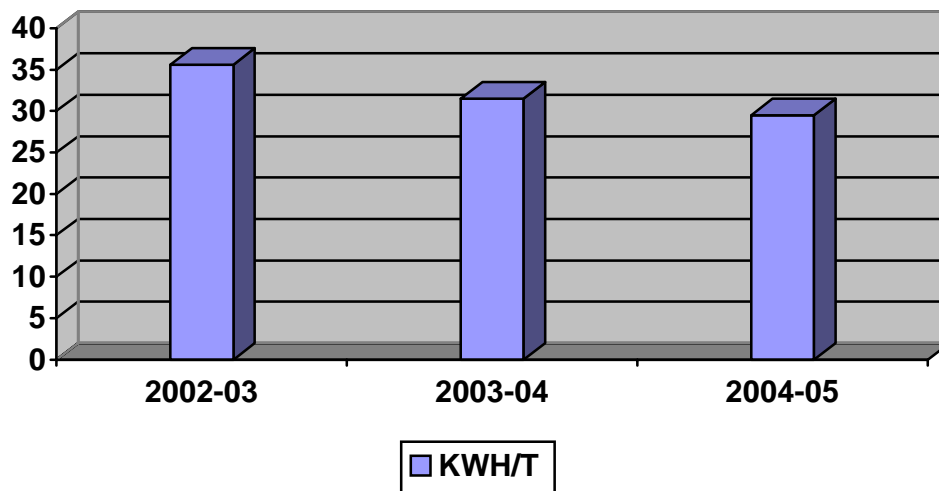
### **Energy Goal**

**“To Provide Fresh - Quality Milk & Milk Products at competitive prices to the consumers & thereby uplifting the financial position of the rural milk producers”**

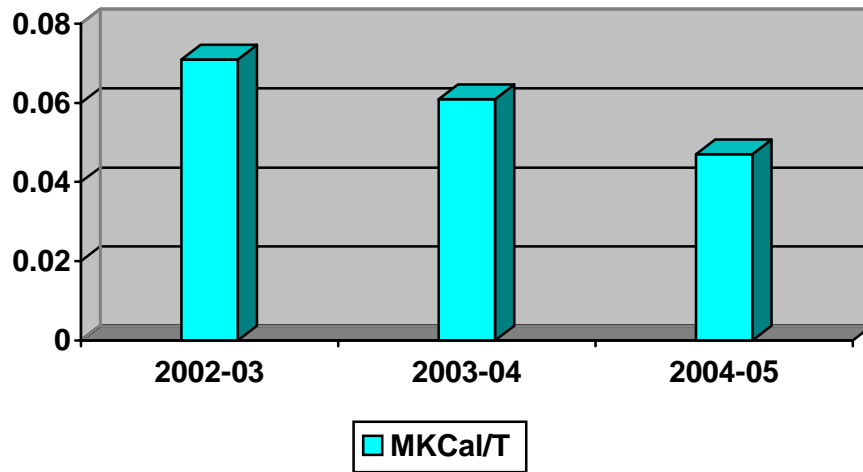
### Energy Consumption

Specific Power consumption Details	Unit	2002-03	2003-04	2004-05
Annual Production (Milk)	TONNE	202598.94	238287.41	279231.45
Total Energy Consumption/Anum	KWH (Lakhs)	72.16737	75.14085	82.40136
Total Thermal Energy Consumption	MKCal	14423.03	14605.8	13359.59
Total Energy Cost	Lakhs Rs.	516.61	542.19	595.27
Energy Cost as % of Manufacturing Cost	%	11.82	12.1	17.96
Electrical Specific Energy Consumption	KWH/T	35.62	31.53	29.51
Thermal Specific Energy Consumption	MKCal/T	0.07119	0.06129	0.04784

### SPECIFIC ELECTRICAL ENERGY CONSUMPTION

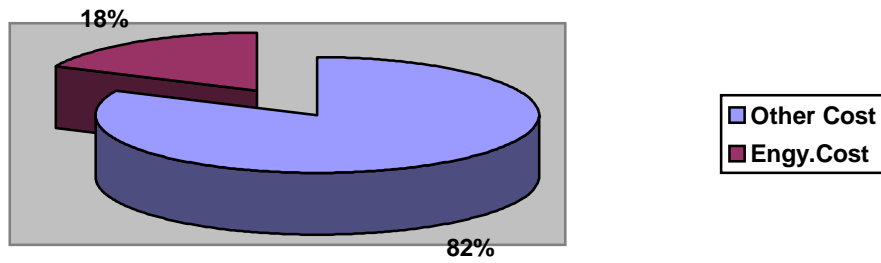


### SPECIFIC THERMAL ENERGY CONSUMPTION



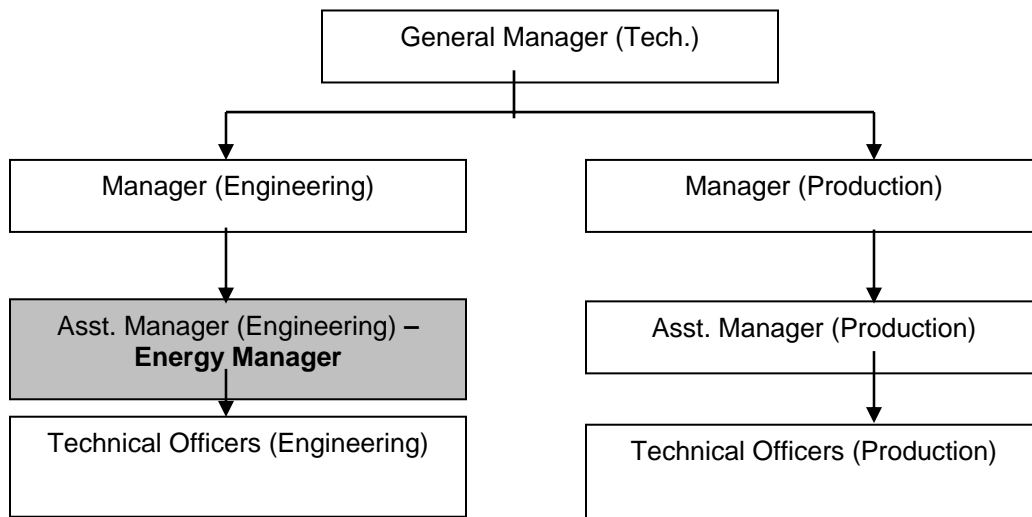
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### FACTURING COST VS ENERGY COST FOR THE YEAR 2004-2005



### Salient Features of Energy Conservation Cell

The General Manager (Technical) is the head of the Energy Conservation Cell. Other Members in this Cell are Manager (Engineering), Manager (Production), Assistant Manager (Engineering) – nominated as the Energy Manager and Assistant Manager (Production).



### Salient Features & Functions of Energy Conservation Cell

1. Formal meetings are conducted once in every month under the chairmanship of General Manager (Technical).
2. The consumption of electricity, furnace oil and water are regularly reviewed.
3. Planned Energy Saving programs are monitored for effectiveness
4. Energy Savings opportunities are being identified and action plans are being drawn for implementation
5. Identification of training requirements on TEM for technical personnel

### Achievements

Best Total Energy Management award for the year 2002-03 by NDDDB, IRMA and Karnataka Milk Federation.

Due to significant savings in the Total Energy Management, Union could able to reduce its operational costs substantially. The difference between the Milk Procurement price and Milk Selling price is one of the lowest in the Country. The Milk Procurement Price to the farmers is regarded to be one among the best in the country. In spite of higher procurement price to the producers, the Union could able to sell milk at prices, which are regarded to be the lowest in the Country. These demonstrate the achievement of Cost Competitiveness by the Union, mainly due to savings accrued through energy savings and other managerial efforts to improve efficiency.

### Future Plans

- Gasifier System at all the chilling centers
- Utilization of Methane gas generated from ETP.
- Rain Water Harvesting
- Installation of continuous evaporator of condensing Milk

### Major Energy projects implemented during the year 2004-05

1. **Energy Saved by running 100 CFM instead of 1000 CFM air Compressor by modifying airline suitably.**

We have provided a butter fly valve at packing section to isolate the air consumption of packing machines during night shift. The 100 CFM Compressor will take load of other sections.

Power Consumed before Modification	:	3240 Kwh/Day
Power Consumed after Modification	:	2646 Kwh/Day
Power Saved	:	594 Kwh/Day
Cost Saved	:	9.07 Lakhs per annum

**2. Modifying the PLC program to prevent the agitators of milk storage tanks running continuously.**

All the milk Silos (1,00,000 liters capacity X 8 no.s) are provided with agitators (each fitted with 5 KWh motors) for agitating milk. These agitators used to run continuously when in milk is stored in these Silos. Now the PLC programs have been modified to run the agitators for 5 minutes, followed by 5 minutes of stoppage, while the milk is stored in these Silos.

Power Consumed before Modification	:	880 Kwh/Day
Power Consumed after Modification	:	440 Kwh/Day
Power Saved	:	440 Kwh/Day
Cost Saved	:	6.75 Lakhs per annum

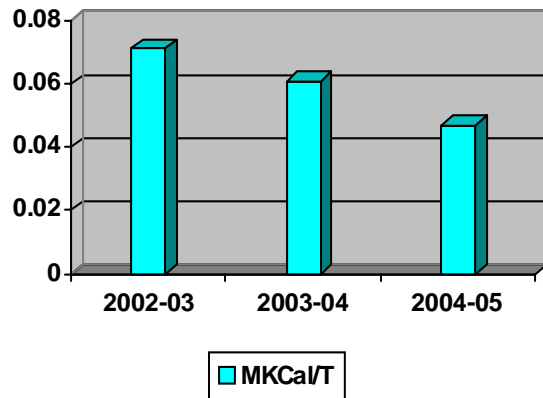
**3. Energy Saving by improving Power Factor from 0.94 to 0.99.**

Power factor was improved by adding the Capacitor Banks at the load points and few required settings changes at Auto-power Factor Correction Unit at distribution point.

Power Consumed when PF was 0.94	:	1133 Kwh
Power Consumed when PF is 0.99	:	1123 Kwh
Power Saved	:	10 Kwh
Cost Saved	:	3.67 Lakhs per annum

**4. Improving Combustion Efficiency of Furnace Oil and avoiding Steam leakages.**

The furnace oil is used in boilers. The combustion efficiency of furnace oil was improved by adding additives. These additives dissolve the sludge in the furnace oil and also improve the flowability of furnace oil. These results in improvement of combustion efficiency of furnace oil. Further, steam leakages at 18 points were arrested and now it is ensured that no leakage occur at any point. These efforts have resulted in substantial reduction in the consumption of furnace oil, inspite of increase in milk handled at the dairy. The savings resulted due to these efforts amount to Rs. 55.75 Lakhs per annum.



**Specific Thermal Energy Consumption**

**5. Usage of Treated Water from ETP.**

The Effluent Treatment Plant of water is being treated and the treated water obtained is being used for gardening and floor washings. For these purposes, about 60,000 liters of treated water is being used and hence, the consumption of fresh water has been saved to this extent. The savings due to this is Rs. 13.14 lakh per annum in the water bill.

**6. Timer for Streetlights.**

Timers have been installed for the street lighting system. This has resulted in savings of power, hitherto being wasted for not switching off the streetlights in time. The savings due to this amounts to approximately Rs. 36,000 per annum.