



**MYSORE DAIRY, A UNIT OF MYSORE – CHAMARAJANAGARA DISTRICT CO-OPERATIVE MILK PRODUCERS' SOCIETIES' UNION LTD., T.NARASIPURA ROAD, SIDDHARTHANAGAR, MYSORE – 570 011. KARNATKA**

**UNIT PROFILE:**

MYSORE DAIRY, A UNIT OF Mysore – Chamarajanagara District Co-Operative Milk producers. Union Limited registered under the Karnataka co-operative act has been commissioned in the year 1980. The rated when commissioned was 60 TKPD (Thousand Kgs per day) and was subsequently expanded to 180 TKPD by NDDDB under the turn key project in the year 1996.

The dairy receives milk in cans with temperature of 27<sup>0</sup> C to 32<sup>0</sup> C from village co-operatives located in the districts of Mysore and Chamarajanagara and in tankers with temperature of 5<sup>0</sup>C to 6<sup>0</sup>C from the three chilling centers located at Hunsur, Kollegala and Chamarajanagara towns. Also the dairy receives milk with temperature of 5<sup>0</sup>C to 6<sup>0</sup>C in tankers from 32 Bulk Milk Coolers. These bulk milk coolers have been installed to maintain the initial quality of raw milk and also to reduce the intake of energy intensive raw materials. As on date the per day quantity of milk received through cans directly from dairy co-operatives, tankers from chilling centers and tankers from bulk milk coolers is as follows:

❖ In cans from village dairy co-operatives	65000 Kgs
❖ In tankers from chilling centers	131000 Kgs
❖ In tankers from bulk milk coolers	71500 Kgs

The dairy processes the milk and packs the following qualities of milk:

1. **Toned milk** with 3.1% Fat & 8.5% Solids not fat
2. **Standardised milk** with 4.6% Fat & 8.5% Solids not fat
3. **Double toned milk** with 1.6% Fat & 9% Solids not fat
4. **Full cream milk** with 6.1% Fat & 9% Solids not fat

In addition, the following milk products are manufactured in smaller quantities during 2007-08:

- Ghee 1070.19 Metric Tonnes
- Butter 1206.465 Metric Tonnes in bulk packings of 25 Kgs
- Curd 7420.94 Metric Tonnes
- Peda 55.25 Metric Tonnes
- Mysore pak 15.90 Metric Tonnes
- Sweet Lassi 236.915 Metric Tonnes
- Butter milk 243.463 Metric Tonnes
- Badam Burfi 214 Kgs
- Cashew Burfi 238 Kgs

**Summary of Classified Energy Saving Measures implemented during 2007-2008**

**Retrofitting/Minor Modifications of existing equipment – Low investment options**

- ✓ Replacement of damaged/leaking compressed air pipe lines
- ✓ Replacement of damaged/leaking chilled water pipe lines
- ✓ Replacement of damaged insulation of steam pipes/equipment/chilled water tanks

**Replacement/Installation/Modernisation of old and inefficient existing equipment and systems – High investment options**

- ✓ Upgrading insulation of steam distribution pipelines, equipment, chilled water pipe lines, and replacement of old Milk pasteuriser, automation of Steam controlling system etc.

**Process Monitoring and Controls**

- ✓ Compressed air pressure monitoring

**Reduction in usage of energy intensive raw materials**

- ✓ Establishment of Bulk Milk Coolers to receive chilled milk from Dairy Co-operative Societies.

### Reduction of water consumption in the plant

- ✓ Maintenance of Rain Water Harvesting system

### Recycling of material

- ✓ Utilisation of treated effluent for gardening & Methene gas Utilisation for cooking purpose.

## ENERGY CONSERVATION ACHIEVEMENTS:

During 2003-2008, Mysore dairy has implemented 24 energy saving projects through engineers initiatives, sub section team suggestions and innovative ideas by officers and have achieved savings of Rs. 63.10 Lakhs with an investment of Rs. 158.45 Lakhs resulting in 21.55% reduction in specific electrical energy consumption and 14.48% in specific thermal energy consumption.

The energy saving projects implemented during 2007-08:

### 1. Replacement of Auto Control system of Milk Pasteuriser :

One of the 10 KL Milk pasteurizers was running without auto controls. New Auto control system is installed to this pasteurizer with the help of IDMC, Bangalore. On running these pasteurizer we observed lesser consumption of steam since the heating temperature was maintained between 73<sup>o</sup> C to 75<sup>o</sup> C



#### AUTO CONTROL OF MILK PASTEURISER

- |  |                |
|--|----------------|
| ➤ Furnace oil required to generate 1000 Kgs steam  | 76.92 Litres   |
| ➤ Steam consumed by 10 TKPD pasteuriser if the<br>Pasteurization temperature is 78-85 <sup>o</sup> C   | 200.00 Kgs     |
| ➤ Furnace oil requirement to run the<br>pasteurizer for 1 hour   | 15.38 Kgs      |
| ➤ Steam consumed by 10 TKPD pasteuriser when the<br>Pasteurization temperature is 73-75 <sup>o</sup> C | 150.00 Kgs     |
| ➤ Running hour of each pasteurizer per day   | 12 Hrs.        |
| ➤ Furnace oil saved by one pasteurizer/day   | 46.2 Lts.      |
| ➤ Furnace oil saved by /year   | 16863 Lts.     |
| ➤ Savings per annum  | Rs. 4.89 Lakhs |

### 2. Replacement of Control system of Curd Milk Pasteuriser :

The auto control system of Curd milk pasteurizer was out of order & attempts to repair it was failed. Hence new auto control system was installed for the curd milk pasteurizer with the help of IDMC, Bangalore. & we could able to save energy in the form of furnace oil as below.



#### Control system for Curd Milk Pasteuriser

- Furnace oil required to generate 1000 Kgs steam 76.92 Litres
  - Steam consumed by 3 TKPD Curd Milk pasteuriser if the Pasteurization temperature is 90-92<sup>0</sup> C with out auto control 200.00 k
  - Furnace oil requirement to run the pasteurizer for 1 hour 15.38 Kgs
  - Steam consumed by 3 TKPD pasteuriser when the Pasteurization temperature is 90-92<sup>0</sup> C with auto control 150.00 Kgs
  - Running hour of each pasteurizer per day 9 Hrs.
  - Furnace oil saved by one pasteurizer/day 34.68 Lts.
  - Furnace oil saved by /year 12647.25 Lts.
- Savings per annum Rs. 3.67 Lakhs**

### 3. Replacement of old Milk Pasteuriser :

The Dairy had three 10 KI Milk Pasteurisers. Out of this one of the pasteurizer was very old & Energy consumption was very much high in this Equipment. Hence this pastueriser was replaced with New IDMC 10 KI Pasteuriser with full auto control Units.

So that we could able to reduce the energy consumption when compared to Old Milk Pasteuriser & hence we could able to save Rs.8.14 Lakh per year.



#### New Milk Pasteuriser

- Furnace oil required to generate 1000 Kgs steam 76.92 Litres
- Steam consumed by 10 TKPD pasteuriser if the Pasteurization temperature is 78-85<sup>0</sup> C 250.00 Kgs
- Furnace oil requirement to run the pasteurizer for 1 hour 19.23 Kgs

- Steam consumed by 10 TKPD New pasteuriser when the Pasteurization temperature is 73-75<sup>0</sup> C 150.00 Kgs
- Running hour of each pasteurizer per day 10 Hrs.
- Furnace oil saved by one pasteurizer/day 77 Lts.
- Furnace oil saved by /year 28105 Lts.
- Savings per annum Rs. 8.15 Lakhs

#### 4.Replacement of Old Khoa Vat :

Mysore Dairy is manufacturing good Quantity of Peda to fulfill the demand of the market. Dairy is having Two Khoa Vats of Capacity 18 Kgs /Batch. Out of this One of the vat is very old & heavy leakage of Steam is observed & hence the steam consumption per hour is 18.20 % more than the standard requirement of 80 kgs of Steam. Hence this Khoa vat is replaced with New energy efficient equipment.



Old Khoa Vat



New Energy Efficient Khoa Vats



- Standard requirement of Steam per Hour : 80 Kgs
- Actual consumption of Steam per Hour : 90 Kgs
- Time required per Batch : 90 mts
- Steam consumption per Batch : 135 k
- By replacing old Khoa vat : 120 Kgs
- Saving of steam per batch by replacing Vat : 15 kgs
- No of Batches /Day : 05
- No of Batches /year : 18
- Saving of steam /year : 27375 kgs
- Saving of Furnace oil : 2027 ltrs
- Amount saved per year : Rs. 58793/-