milma

Presentation on Energy Conservation and Management on 11 & 12 March 2010

M R C M P U Ltd

Kasaragod Dairy

MALABAR REGIONAL CO-OP. MILK PRODUCERS' UNION LTD.

Energy Policy

We, "Milma" shall strive for continuous energy economizing

through

- Monitoring closely & control consumption of various forms of energy through an effective EMS.
- Improved capacity utilization, bench marking
- Up gradation of process, technology & equipments
- Maximise the use of cheaper & easily available form of energy.
- Maximise the recovery of waste energy.
- Creating awareness among the employees of all levels.

27 July 2004 **Managing Director**

Kasaragod Dairy

General Informations:

- Started In 1987 as Milk Chilling Plant
- Expanded to Dairy of Capacity 30 KLPD in 2003
- Product – Toned Milk
- Capacity Utilization – 150%

Kasaragod Dairy

Handling Data (Avg. Per Day)

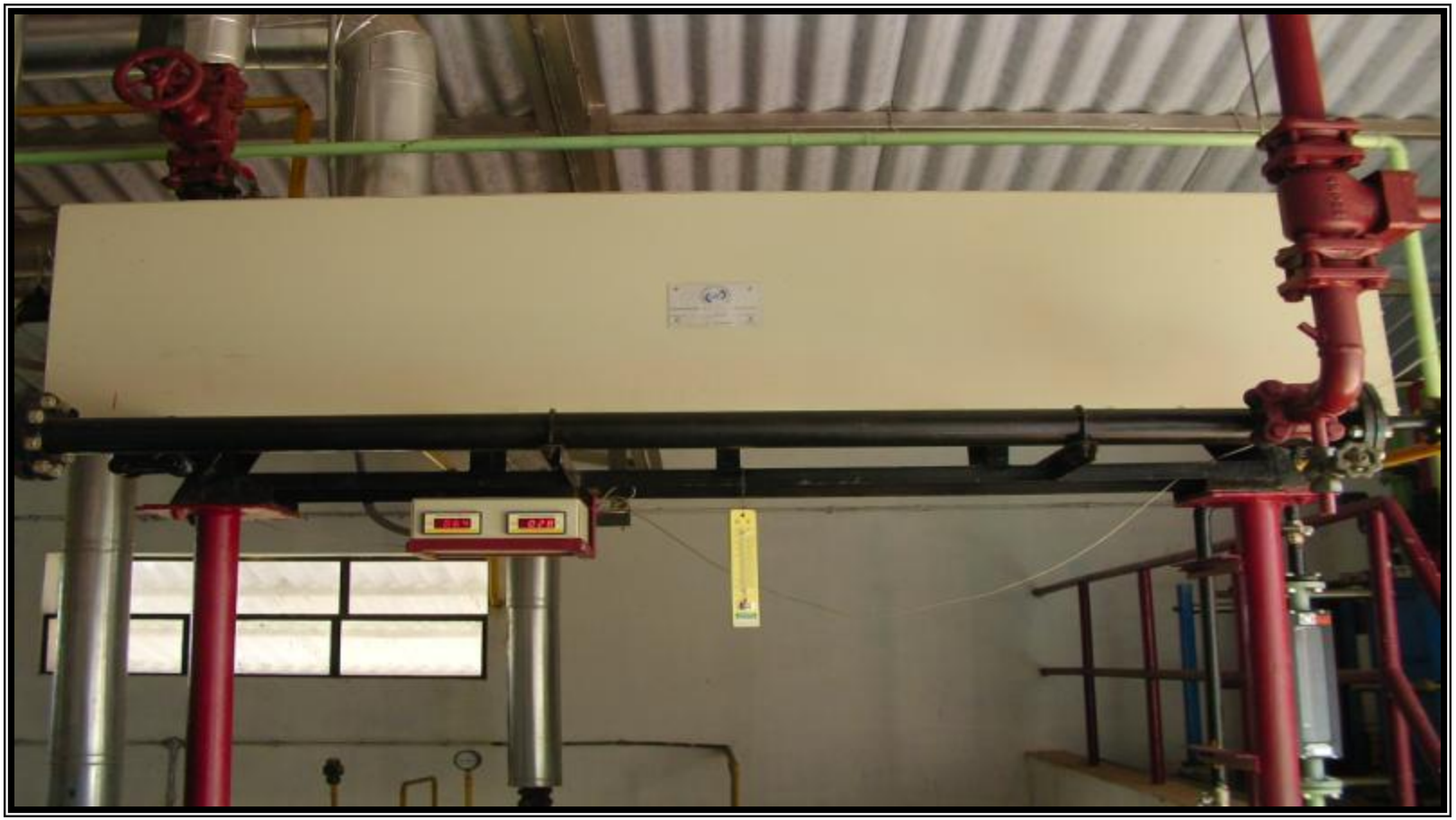
- Milk Procurement / day
  - Flush: 29250 Lts
  - Lean: 23800 Lts
  - SALES / day
  - Milk : 45,000 Lts
  - Curd: 2750 Lts
  - Sambharam 6250 Pkts
  - Ghee 9.8MT/month

(We are getting products from Our sister concerns Kannur/ Kozhikode Dairies)

Kasaragod Dairy

Energy Conservation activities Undertaken

1.Desuperheater for Waste Heat Recovery from Refrigeration System:



Desuperheater for Waste Heat Recovery from Refrigeration System:

Fuel Savings:

Flow rate	: 250 Ltr/Hr		
Total Hrs of operation	: 16Hrs/Day		
Hot water o/p per day	: 4000Ltr/day		
Inlet temp	: 28 deg C		
Out let temp	: 65 deg C		
Temp rise	: 37 deg C		
Heat recovered per day	: 4000 x 37	148000	kCal/Day
Density of HSD	:0.84		
Efficiency of HWG	:0.85		
Heat value of 1Ltr HSD	:11500kCal x 0.84 x 0.85	: 8211 kCal/Ltr	
Savings	:148000/8211	18.02	Ltr
Cost of fuel	:33.81 Rs		
Savings per year	:18.02 x 33.81 x 360	219.332.23	Rs.
Power savings :			
Sp. Consumption of ref.compressor	:1.07kW/Tr		
for 15Tr of two ref compressors	:32.1kW		
After installation we got 2 deg drop in condensing temperature&1.2kWh drop in consumption (3%)savinns.			
Condensing temperature drop obtained	: 2 deg (from 39 to 37 deg C)		
Power savings	: 2 x 1.2 x 16 x 360	13824	kWh
Energy cost @ Rs.4.1/kWh	13824*4.1	56678.40	Rs.
Total Annual Savings	:	276010.63	Rs.

2.Replacing of Over sized motor

Dairy having a tray washer of Capacity 600 Trays/Hr. Detergent Pump provided to the Tray washer was of 7.5HP rating. We have replaced the pump with a 5HP pump of low head and same discharge. Tray washer is in operation for 6 hrs a day.

Energy Saving /day by using reduced rating pump(2.5HP*0.746*80%loading*70%efficiency*6 Hr)	**6.27 Units**
Energy Saving /Year	**2289 Units**
Amount Saved/Year	**Rs 8469/-**

3.Waste cooling water recovery from filling machine:

Approximately 100ltr/hr for pneumatic machine and 120ltr/hr for mechanical machine are required as cooling water.

17 hours (total) of machines are operating. Hence waste cooling water amount is 17*100=1.7kLr/day ~ 1.2kL

Annual savings is 438kL of water

Taking Rs.10.60kL (KWA charge) net savings is Rs.4650/-

4. Introduction Of Transparent Roof Sheet For Natural Lighting Inside The Plant:

Provided transparent roof sheets to make Solar light utilization more effective. 7-8 tube lights were switched off when resulting in 100 units (approx) reduction in monthly consumption. This year we extended the same procedure to our processing hall also so we were able to switch off 5-6 tube lights resulting in 80units (approx) reduction in monthly consumption.

Kasaragod Dairy

Energy Conservation activities Undertaken

5. Installed Rainwater - Harvesting System

Kasaragod Dairy

Energy Conservation activities Undertaken

Installed Rainwater - Harvesting System

Water requirement – 50,000 LPD
Source - Two Open wells and two Bore wells with 5HP submersible pump each
Operation – 1. Open well 3.3 hours with the flow rate 7500 lt / hr
2. Bore well 5.0 hours with the flow rate 5000 lt / hr

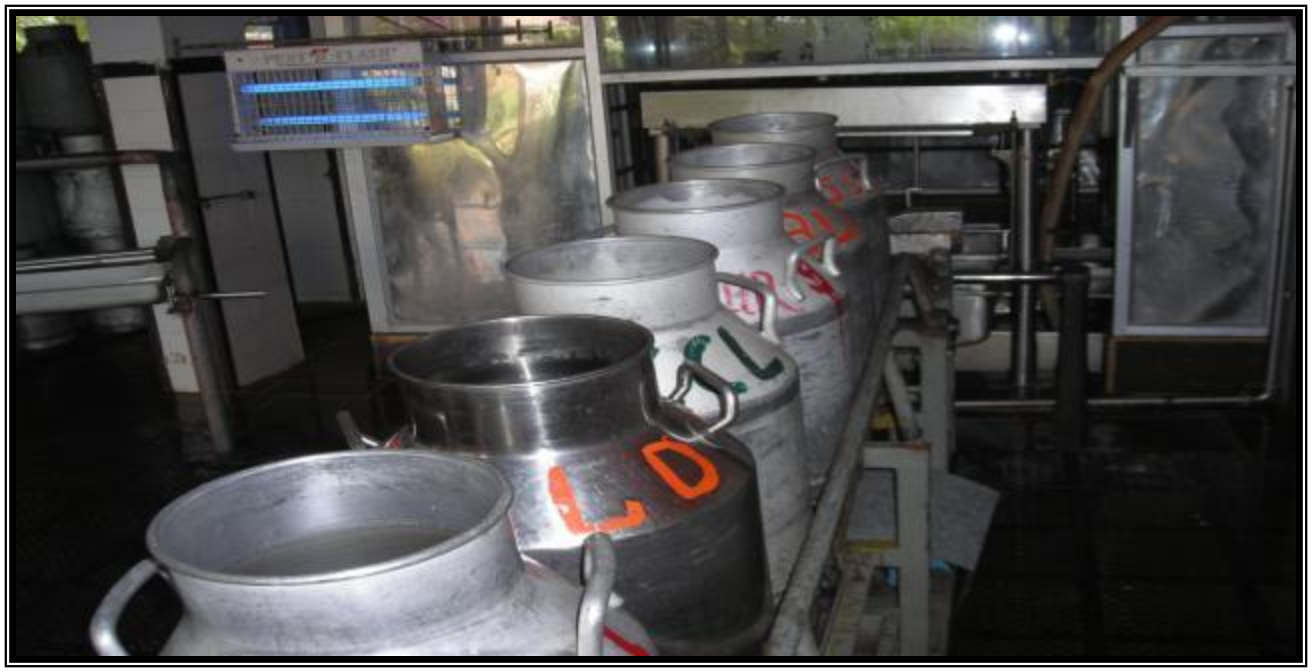
After providing the Rain water Harvesting system we were able to reduce the bore well pump to 2 Hr / day
Rain water available for 150 days per year

Electricity savings per day (5 HP* .746*3 Hr *80% loading * 70 % efficiency)	**6.27 units**
Electricity savings per year	**940.5 units**
Amount saved / year	**Rs. 3479.85**

Kasaragod Dairy

Energy Conservation activities Undertaken

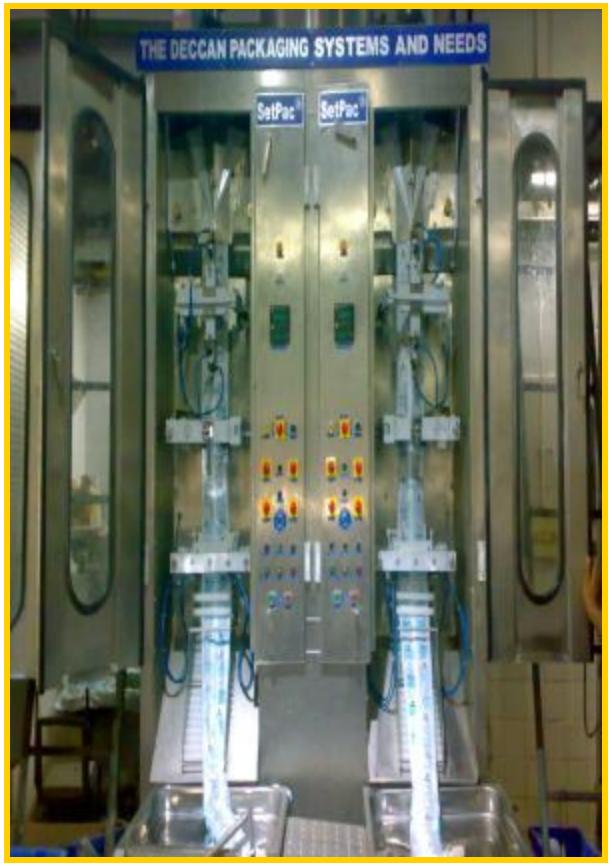
6. Installed a can conveyor at Raw Milk Reception Dock



After Installation of Can Conveyer in Raw Milk Reception Dock we are able to reduce 1 Man power which comes to Rs 75000/year.

7.Power saving through changing 4 pneumatic filling machine to mechanical filling machine

Operation of Aircompressor for 2Nos Penumatic Machines/year	3076Hrs
Operation of Aircompressor for 2Nos Mechanical Machines/year	Nil
Electric load to TC-1500 Air compressor motor	15HP
Actual measured KW of 15HP	10.8KW
Running hour reduced/year	3076Hrs
Electric charge (KSEB) under HT-4 thariff	Rs.5.48
Total KWH saved/year	33220KWH
Electric charge saved / hour = Rs5.48*10.8 Kwh	Rs.59.18
Total Electric charge saved/year=3076Hrs*Rs59.18	**Rs.182038/-**
Total coast of the project	**Rs.2198743/-**



Energy Conservation activities Undertaken

8. Savings by re-arranging the shift timings:

Re arrangement of shift timings in refrigeration section so as to avoid peak hour consumption penalty:

Average power consumption in a month : 35675 units

Peak Hour excess consumption (Units consumed

In peak hour than 10% of total consumption) : 3500 units (approx)

Time of use charges @ Rs.2.40 per no of excess

units during peak hours : Rs. 8400/-

Net savings in a month : Rs.8400/-

Annual Savings : Rs.1,00,800/-

Energy Conservation activities Undertaken

9. Replacing Oversized motors:

The existing ETP treated water pump capacity : 5 HP

Output required < 3 HP

Replace the over sized motor with 3 HP

Annual Savings : 2Hr*(2*0.746)*360*Rs.4.2/- :4511/-

10.ENERGY SAVING THROUGH MILK CHILLER

ENERGY SAVING THROUGH MILK CHILLER

Power saving through Milk Chiller capacity increasing 4500Ltrs/Hr to 6000Ltrs/Hr By adding aditional heat exchanging plates		
	Cost for the work	Nil
	Chiller feed pump 3.5HP	
1	Existing Chiller Capacity	4500Ltrs/Hr
2	Capacity after plate increased	6000Ltrs/Hr
3	Capacity increased	1500Ltrs/Hr
4	Per day Chilling	35000Ltrs/Hr
5	Time before plate adding=35000/4500	7.78 (8Hrs)
6	Time after plate adding=35000/6000	5.83 (6Hrs)
7	Running time reduced/day	2Hrs
8	Running time reduced/year=365*2	730Hrs
9	3.5HP Pump to chiller running current/Hr=3.5*.746*.75*.75	1.47Kwh
10	Current charge for 1Kwh	Rs.6.36
11	Current charge for 1.47Kwh	Rs.9.35
12	Total current charge earning/year=Rs.9.35*730Hrs	**Rs.6825.5**

ENERGY SAVING THROUGH MILK CHILLER

	Chilled water pump 7.5HP	
1	Quantity only for chilling/day without Pasturiser running	6000Ltrs/day
2	Previous Chiller running time	1.5Hrs
3	Running time reduced/day	.5Hr
4	Running tiem reduced/year	182.5Hrs
5	7.5HP C.W. Pump current/Hr=7.5*.746*.75*.75	3.15Kwh
6	Current charge for 3.15Kwh	Rs.20.03
7	Total current charge earning /year=Rs20.03*182.5Hrs	Rs3655.48
	Total current charge earning/year	Rs10480.98

11.POWER SAVING THROUGH HOUR METER FIXING IN VARIOUS MACHINERY

	Pastueriser running time reduced 1/2hr/day	
1	Motors-3.5HP+3HP+5HP+7.5HP	19HP
2	19HP Current/Hr=19*.746*.75*.75	7.97Kwh
3	Running hour reduced/day	1/2Hrs
4	Actual running hour reduced	61Hrs
5	Current charge 7.97Kwh=Rs6.36*7.97Kwh	Rs50.69
6	Cost of energy saved=61Hrs*Rs50.69	**Rs3092.09**

POWER SAVING THROUGH HOUR METER FIXING IN VARIOUS MACHINERY

	Ammonia Compressor running time reduced 1hr/day	
1	Motor	25HP
2	25HP Current/Hr=25*.746*.75*.75	10.49Kwh
3	Running hour reduced/day	1Hr
4	Actual running hour reduced	122Hrs
5	Current charge 10.49Kwh=Rs6.36*10.49Kwh	Rs66.72
6	Cost of energy saved=122Hrs*Rs66.72	**Rs8139.84**

POWER SAVING THROUGH HOUR METER FIXING IN VARIOUS MACHINERY

	Tray washer running time reduced 1hr/day	
1	Motors-5HP+2HP+1HP	8HP
2	8HP Current/Hr=8*.746*.75*.75	3.36Kwh
3	Running hour reduced/day	1Hr
4	Actual running hour reduced	122Hrs
5	Current charge 3.36Kwh=Rs6.36*10.49Kwh	Rs21.37
6	Cost of energy saved=122Hrs*Rs21.37	Rs2607.14

POWER SAVING THROUGH HOUR METER FIXING IN VARIOUS MACHINERY

	HWG running time reduced 1/2hr/day	
1	1hr Diesel consumption	12.51ltrs
2	1/2hr Diesel consumption	6.26Ltrs
3	122hrs Diesel consumption=6.26ltrs*122hrs	763.72Ltrs
4	1ltr Diesel cost	Rs35.02
5	Cost of energy saved=763.72Hrs*Rs35.02	Rs26745.47

12.Power saving through changing 5 HP Submersible pump to 1.5 HP submersible pump at new bore well

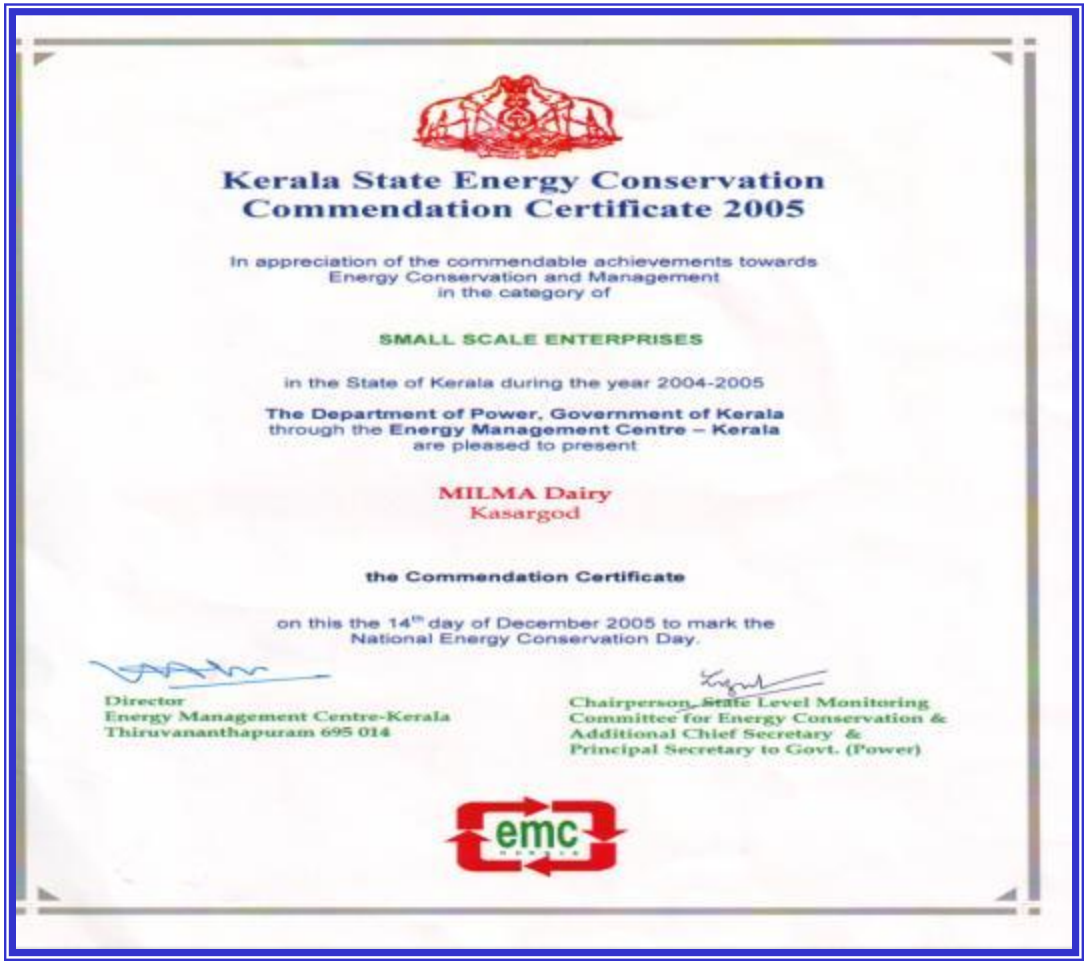
1	Operation of Bore well Submersible Pump/day	10Hrs
2	Operation of Bore well Submersible Pump/Year	3650Hrs
3	Electric load to old Submersible Pump	5HP
4	Actual measured KW of 5HP Submersible Pump	4.1KW
5	Electric load to new Submersible Pump	1.5HP
6	Actual measured KW of 1.5HP	1.3KW
7	Actual KW reduced (4.1-1.3)	2.8KW
8	Total KWH saved/year	10220KWH
9	Electric charge (KSEB) under HT-4 thariff	Rs.5.48
10	Electric charge saved / hour = Rs5.48*2.8 Kwh	Rs.15.34
11	Total Electric charge saved/year=3650Hrs*Rs15.34	**Rs.55991/-**
12	Total cost of the project	**Rs.26714/-**

Energy cost saving & Fosil fuel avoiding through changing Diesel fired Hot Water Generator to Agro waste fired Boiler

Average Fuel cost (Diesel Cost) for Pasturising 1Ltr milk thro	10Paise
Average cost for coconut shell for pasturising 1Ltr milk	3Paise
Difference in cost	7Paise
Average daily Processing	45,000Ltrs
Daily Fuel cost for processing through HSD	Rs.4,500/-
Daily Fuel cost for processing through Coconut shell	Rs.1,350/-
Daily Fuel cost saving through Fosil fuel to Agro waste fuel	Rs.3,150/-
Yearly Fuel cost saving through Fosil fuel to Agro waste fuel	Rs.11,49,750/-
Installation and Commissioning cost of Boiler	Rs.15,00,000/-
Months it take to regain the investment amount	16Months (appro

Our Achievements

KERALA STATE ENERGY CONSERVATION COMMENDATION CERTIFICATE 2005



Kerala State Energy Conservation Commendation Certificate 2005

In appreciation of the commendable achievements towards Energy Conservation and Management in the category of

SMALL SCALE ENTERPRISES

in the State of Kerala during the year 2004-2005

The Department of Power, Government of Kerala through the **Energy Management Centre – Kerala** are pleased to present

MILMA Dairy
Kasargod

the Commendation Certificate

on this the 14th day of December 2005 to mark the National Energy Conservation Day.

Director
Energy Management Centre-Kerala
Thiruvananthapuram 695 014

Chairperson, State Level Monitoring Committee for Energy Conservation & Additional Chief Secretary & Principal Secretary to Govt. (Power)

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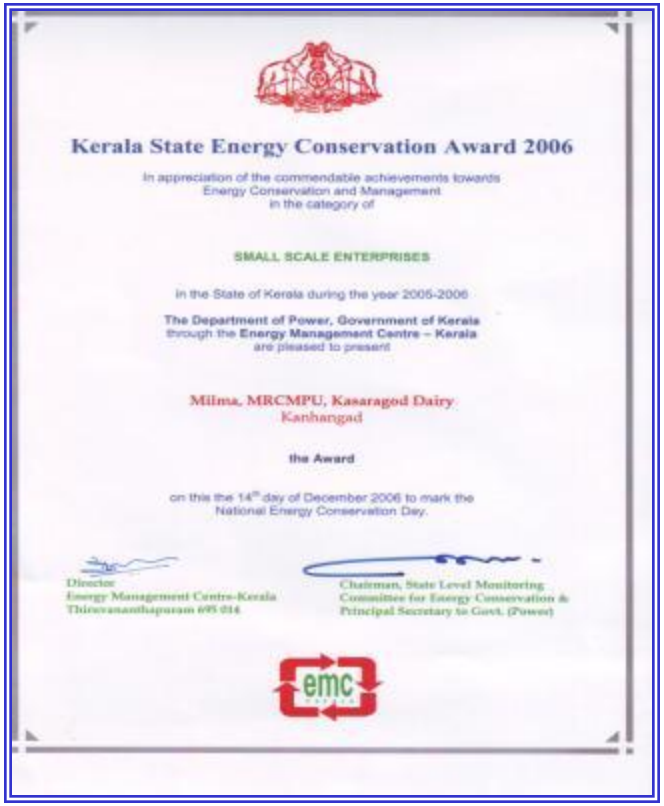
Our Achievements

KERALA STATE ENERGY CONSERVATION AWARD - 2006



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Milma, MRCMPU, Kasaragod Dairy
Kanhangad

the Award

on this the 14th day of December 2006 to mark the National Energy Conservation Day.

Director
Energy Management Centre-Kerala
Thiruvananthapuram 695 014

Chairman, State Level Monitoring Committee for Energy Conservation & Principal Secretary to Govt. (Power)

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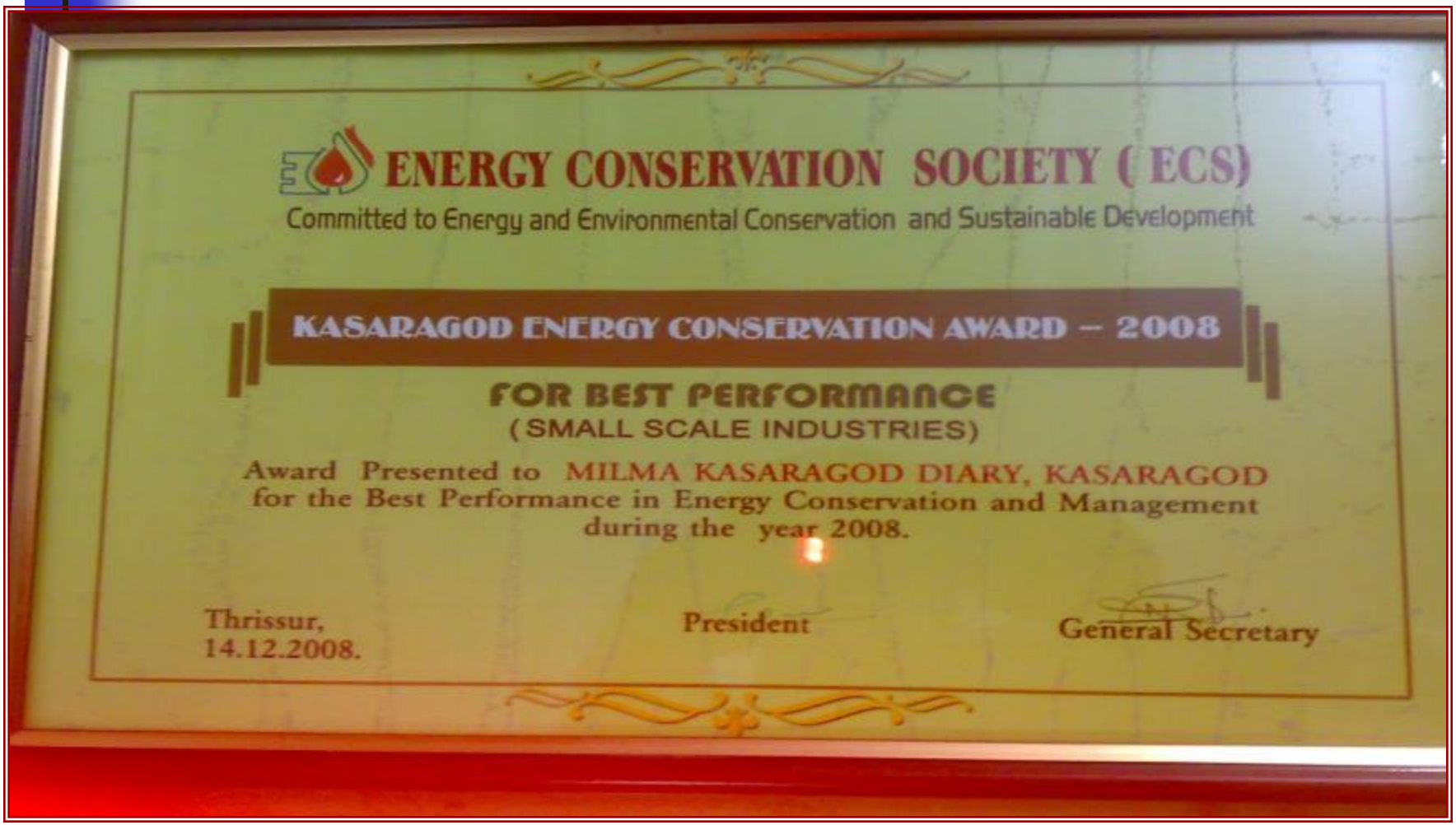
Our Achievements

KASARAGOD ENERGY CONSERVATION AWARD - 2008



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Kasaragod Dairy

THANK YOU !!!