

UNIT PROFILE

BANASKANTHA DISTRICT CO-OPERATIVE MILK PRODUCERS' UNION LTD. PALANPUR, DISTT.: BANASKANTHA, GUJARAT

Banas Dairy was registered under the co-operative act on 31st January 1969 as “ *Banaskantha District Cooperative Milk Producers' Union limited*. The foundation stone was laid on 14th January 1971 on 122 acres land acquired near Jagana village to set up a dairy plant under the Operation Flood Programme launched by National Dairy Development Board. On 5th February 1971, the dairy started functioning with a handling capacity of 1.5 Lac liters of milk. This dairy plant was later expanded on with processing capacity of 4 Lac liters of milk per day.



BANAS-I PLANT

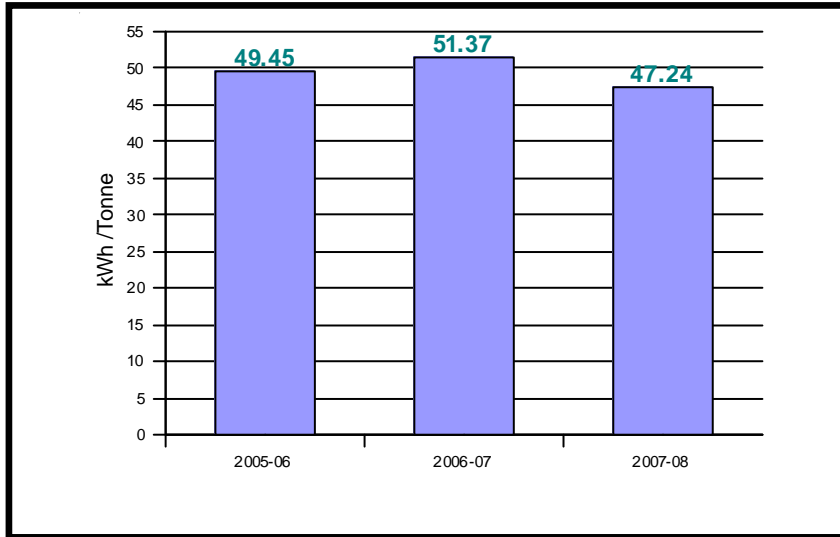
ENERGY CONSUMPTION.

Through Systematic approach various energy audits are being regularly conducted and energy saving measures are implemented. Substantial savings have been achieved in addition to the enhanced production. The summary of Energy consumption and specific Energy consumption for the last three years is as below:

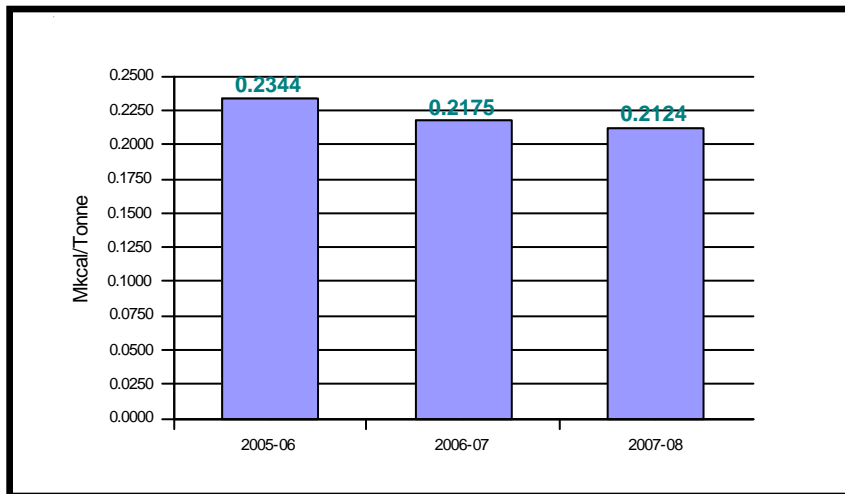
Particular		Units	2005-06	2006-07	2007-08
Milk Handled		Tonne	432120.05	441902.71	488106.88
Electrical Energy Consumption		Lakh-kWh	219.05	227.21	231.02
Thermal Energy Consumption		Mkcal	101273.58	96116.08	103693.15
		KL	10451.34	9919.10	10701.04
Specific Energy Consumption	Electrical	KWh/Tonne	49.45	51.37	47.24
	Thermal	Mkcal/Tonne	0.2344	0.2175	0.2124
		L/ Tonne	24.18	22.44	21.92
Reduction in Specific Energy Consumption	Electrical	%	12.45	-3.74	8.74
	Thermal	%	7.97	7.77	2.40
Total Energy Consumption As per above consumption details		(In Lakh Rs.)	2910.45	3116.76	3674.28
Total Energy Consumption As per Balance sheet Figures		(In lakh Rs.)	2951.53	3262.06	3705.80

Particular	Units	2005-06	2006-07	2007-08
Total Energy consumption as % of Manufacturing Cost (As per Annual report Data)	%	3.96	3.65	3.05

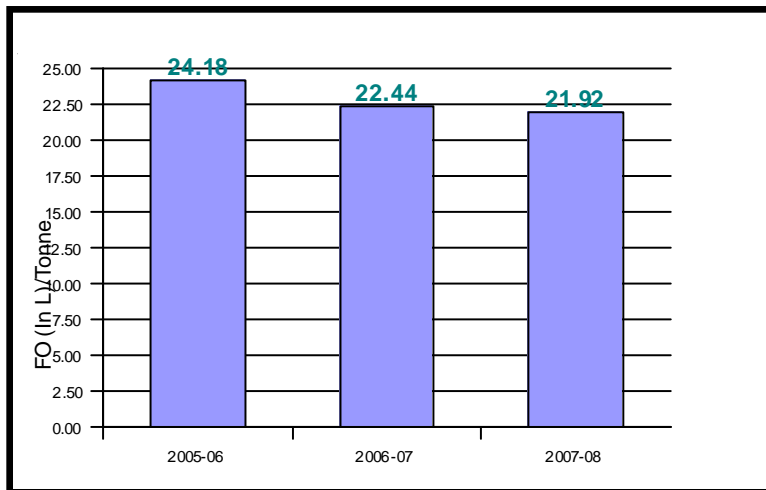
Specific Electrical Energy Consumption in (kWh/Tonne of Milk Processed)



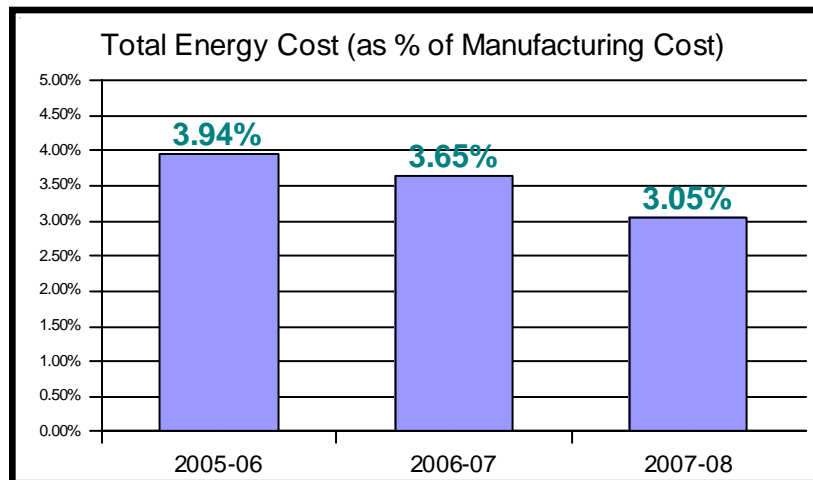
Specific Thermal Energy Consumption (in Mkcal/Tonne of Milk Processed)



Specific Thermal Energy Consumption (FO (In L)/Tonne of Milk Processed)



Energy Cost (as % of Manufacturing Cost)



ENERGY CONSERVATION ACHIEVEMENTS

Following Energy conservation measures has been implemented during year 2007-08 (Details of Calculation is mentioned in Annexure-A)

1. Up gradation and Modification of 20 TPD plant for better Energy Efficiency

Powder plant has been upgraded for better energy efficiency and to increase plant throughput.. Replacement of tubular type indirect air heating system (02) nos by single three pass indirect type air heating system. Conversion of air pressure atomization to nozzle atomization system by installaing high pressure pump

Particulars	Power	Fuel
Saving per annum annum	297600 KWH/Annum	91200 Kgs/
Saving per annum	1562400 Rs/annum	2104896Rs/ annum
Total Saving	36,67,296.00 Rs/ annum	

2. Upgradation of 30 TPD powder plant

Powder plant has been upgraded to increase plant throughput and to achieve better specific energy consumption. Increase in heat transfer area of Evaporation with addition of 01 nos calndria in evaporation plant. Incorporation of DSI system with flash vessel. Installation of concentrate preheating system to reduce fuel consumption

Saving achieved with above Modification is as below:

Particulars	Power	Fuel
Saving per annum	24642 KWH/Annum	401220 Kgs/annum
Saving per annum	129370 Rs/annum	9260157 Rs/annum
Total Saving	93,89,527.00 Rs/ annum	
Investment	1.30 00 000.00 Rs	

3. Installation of VFD in Supply fan (200 kW) of 60 TPD

VFD has been installed in 200 kW motor of Supply Fan of 200 kW. Initially air quantity is controlled by throttling of damper . Now the same is controlled with use of VFD. Saving Details is as below:

Particulars	UOM	
Total Power Saving	Kwh/annum	: 231773
Monetary Saving	Rs./ annum	: 12,16,808
Investment	Rs.	: 7,50,000

4. Installation of VFD in Air compressor Motor (37 Kw) in 60 TPD

VFD has been installed in Air compressor motor (37kW). Due to nature of process load of compressor is fluctuating and there is more frequency of loading/Unloading of compressor. Saving Details is as below:

Particulars	UOM	
Total Power Saving	Kwh/annum	: 49640
Unit Rate	Rs.	: 5.25
Monetary Saving	Rs./ annum	: 2,60,610
Investment	Rs.	: 2,20,000
Payback Period	Months	: 6.0

5. Replacement of 20 KLPH milk pasteurizer with 90% regeneration efficiency

Installation of new milk pasteurizer with 93 % regeneration efficiency in place of old milk pasteurizer. This results in to reduction of steam consumption and chilled water load. Saving Details is as below:

Particulars	Fuel	Power
Saving	64224 Kg/ annum	129600 Kwh/annum
Monetary Saving	1482289 Rs./annum	680400 Rs./annum
Total saving	2162689 Rs./annum	
Investment	1000000 Rs	
Payback Period	6 Months	

6. Installation of New High speed Mechanical type Pouch packing M/c

Installation of 02 nos of High speed Mechanical type pouch packing m/c instead of Pneumatic type pouch packing machine. Each machine consuming 35 CFM air. This results in complete elimination of compressed air requirement of 02 nos of machine. Saving details for 02 nos of machine is as below:

Particulars	UOM
Total Power Saving	Kwh/annum : 48384
Unit Rate	Rs. : 5.25
Monetary Saving	Rs./ annum : 2,54,016
Investment	Rs. : 12,00,000

7. Retrofitting present T-12 fittings by T-5 fittings having electronic ballast

Energy efficient 60 nos of T-5 type tube lights are replaced with old T-12 Type tube light. T-12 tube light fitting was consuming 52 watt power per hour while new T-5 tube light is consuming 28 watt power per hour

Particulars	UOM
Total Power Saving	Kwh/annum : 6220
Monetary Saving	Rs./ annum : 32659.00
Investment	Rs. : 20000.00
Payback Period	Months : 7.5 months

8. Installation of Lightning transformer for Banas-I plant and

A voltage stabilizer has been installed to supply the power to the lighting load. The savings are as under:

<u>Particulars</u>	<u>UOM</u>	
Units saving by voltage reducing device @20%	KWH/Annum	: 26280
Total Saving per annum	Rs/annum	: 137970
Investment	Rs.	: 20000
Payback Period	Months	: 6.0

9. Installation of close loop ring main system for compressed air piping

The screw type air compressor is generating compressed air at 6.9 kg/cm² and the requirement is at 6 kg/cm². Due to pressure drop in the pipeline and non availability of compressed air at far end user has forced the compressed air generation at higher pressure. Close loop ring main system is fabricated to allow for more uniform air distribution to consumption points and to equalize pressure in the piping. The saving is as under:

<u>Particulars</u>	<u>UOM</u>	
Power saving per annum	Kwh/annum	: 26105
Total monetary saving	Rs./annum	: 136789
Cost of carrying out modification	Rs	: 30000
Simple payback period	Months	: 3

10. Installation of 375 CFM new Energy Efficient air compressor with inbuilt air dryer

Installation of New 375 CFM Energy efficient Screw compressor with inbuilt refrigerant type air dryer in place of (01 nos of 200 CFM Screw Compressor and 02 Nos of 100 CFM reciprocating and Descant type air dryer) reciprocating compressor). The saving is as under:

<u>Particulars</u>	<u>UOM</u>	
Units saving per annum	KWH/Annum	: 140160
Total Saving per annum	Rs/annum	: 735840
Investment	Rs.	: 11,80000
Payback Period	Months	: 19.24

11. Installation of Energy efficient compressor (KC3 In place of FRICK-7X7) at DANTA & RADHENPUR Chilling center (02 Nos)

Frick make 7X7 model ammonia compressor is replaced by energy efficient new kirlosker make KC-3 compressor. For Frick 7X7 compressor specific energy consumption is 1.5 kW/TR and for KC-3 compressor the same is 1.07 kW/TR. The saving is as under:

Particulars	UOM	
Power saving per annum	KWH/Annum	: 77760
Total Saving per annum	Rs/annum	: 4,08,240
Investment	Rs.	: 3,50,000
Payback Period	Months	: 10.5

12. Stopping of old Frick 7X7 compressor with modification of pipelines to run with new energy efficient refrigeration compressor

Frick make 7X7 ammonia compressor was operating as high stage compressor for Ice-cream deep fridge. With a modification of ammonia piping we can able to take load with modified refrigeration system operating on more efficient Kirlosker make ammonia compressor.

Particulars	UOM	
Power saving per annum	KWH/Annum	: 115632
Total Saving per annum	Rs/annum	: 607068
Investment	Rs.	: NIL

13. Installation of Bio-Gas Plant at DAMA Breeding station

Bio Gas plant of 45 Cu Feet capacity has been installed at DAMA breeding station to generate Bio Gas from cow dung. Plant has been installed with financial assistant from GEDA (Gujarat Energy Development Agency). This plant can generate domestic gas for use of 22 families. Presently domestic gas has been supplies to 06 nos of family. For complete utilization of generated Biogas We have also invited offers to install 22 KVA dual fuel DG set which consume 20% diesel and 80% Biogas.

Particulars	UOM	
Present Domestic gas consumption	Kgs/Month	: 84
Saving	Rs/Month	: 2100
Total Saving per annum	Rs/annum	: 25,200 (Investment Rs. : 1,35,000)