

(i) Unit Profile

**KAIRA DISTRICT CO-OPERATIVE MILK PRODUCERS' UNION LIMITED**

**Amul** was the first Milk Co-operative in India, established in the year 1946. The Co-operative began with 250 litres milk collection per day and is collecting and processing one million litres of milk per day (maximum) in peak season from nearly 1000 villages of Anand and Kaira Districts of Gujarat. The milk producers' owned and managed Co-operative has been provided to be the tool for empowering 500,000 milk producers to adopt modern science and technology, acquire professional expertise to produce, process and market milk and milk products and be the market leader in India

**“Amul Pattern”** - a successful model has been replicated not only in India but abroad by the NDDDB and FAO to bring about the Socio - Economics change in Rural India

(ii) **Energy Consumption**

Energy is an important resource and Amul has always laid emphasis on its optimal utilization. Even with the modern plant set up in the year 1996, efforts have been continuing to optimally utilize energy, which can be seen from the table below

Description	units	2005 - 06	2006 - 07	2007 - 08
Annual Milk Procurement	Lakhs kgs.	2706.59	2554.76	3179.07
Annual Electric Energy Consumed	Lakhs KWH	171.11	186.81	217.56
Annual FO Consumed	Kilo Litre	1550.31	2521.79	3772.12
Annual Gas Consumed	Lakh cu.M	98.99	81.47	88.39
Annual Ele. Energy cost	Rs. in Lakhs	774.14	886.48	1014.95
Annual Fuel Oil & Gas cost	Rs. in Lakhs	779.29	931.57	1735.94
Total Energy cost	Rs. in Lakhs	1553.43	1818.05	2750.89
Energy cost per 1000 lit of milk	Rs./1000Lit	573.94	711.63	865.31

Energy cost as % of milk purchase cost

Include information on total energy consumption (i.e. coal, oil, gas, electricity and money value). Information on energy consumption in terms of percentage of manufacturing cost should also be presented. Also, it should highlight the specific energy consumption for the period 2005-2006, 2006-2007 & 2007-2008. Good Computer Graphic Presentation related to Specific Energy Consumption may also be incorporated.

(iii) Energy Conservation Commitment, Policy and Organizational Set up  
(Please include a photo copy of unit's Energy Conservation Policy, if decided)

Presently, we do not have formal set-up.

(iv) Energy Conservation Achievements

Gas engine Installed

VAM machine installed on Gas Engine

Safe starter fixed in 60 hp motor

High speed bottle filling machine installed

At Amul Dairy Anand natural gas fired power generation unit has been installed. The capacity of this engine is 13645 Kwe. The exhaust gas generated by this engine is 6500 cu.M per hour at about 95 % average load.

The temperature of gas ranges from 525 deg.C. to 540 Deg.C.

Vapour absorption heat pump to utilise this waste heat for chilling water from 8 deg.C. to minimum 3.5 deg.C.

The chilled water utilise at the rate of 175 cu.M. About 255 MT refrigeration effect generate.

**VAM** Vapour absorption system use heat energy to produce a refrigerating effect. In these system the refrigerant i.e. water adsorbs, heat at the low temperature and pressure during evaporation and releases heat at a high temperature and pressure during condensation.

A solution known as absorbent, i.e. Lithium Bromide is used to absorb the vapourised refrigerant. This solution, containing the absorbed vapour, is heated at a higher pressure. The refrigeration vapour is released and the solution is returned to its original concentration for recirculation.

Include one paragraph write-up on each major energy conservation project implemented during the year 2007-2008 only.

(v) Energy Conservation Plans and Targets

Sr.No.	Area of Improvement	Schedule
1	Replacing High Efficiency Boiler	2008-09
2	Replacing constant Voltage Transformer	2008-09
3	Modification In ghee meling system	2008-09
4	Replacing High efficiency burner in old boiler	2008-09

(vi) Environment and Safety

**21 Whether any dispute pertaining to statutory requirements of safety and pollution control is pending with any Government Agency. If Yes, give details:**

## AMUL DAIRY, ANAND.

- MAKE : DEUTZ
- CAPACITY : 1365 KW
- PROJECT COST : 2.75 CRORE
- NET POWER : 25,000 KWH/DAY GENERATION
- POWER : 4.6 KWH/M3 GENERATION
- NATURAL GAS : 7.70 Rs./ M3 COST
- GAS COST : 1.25 Rs./KWH
- OPERATION & : 0.45 Rs./KWH MAINTENANCE
- ELECTRICITY : 0.40 Rs./KWH DUTY
- TOTAL UNIT : 2.10 Rs./KWH COST
- GEB RATE : 5.70 Rs./KWH
- SAVING : 3.60 Rs./KWH
- PAY BACK : 1 YEAR



## AMUL DAIRY, ANAND. VAPOUR ABSORPTION MACHINE

- MAKE : THERMAX
- CAPACITY : 255 TR
- PROJECT COST : 90 LACKS
- GENERATION : 4200 TR/DAY





- PROJECT COST : 90 LACKS
- GENERATION : 4200 TR/DAY
- IN KW : 4620 KW (1 TR = 1.1 KW)
- AUXILURY POWER CONSUMPTION : 70 KW X 24 HRS. = 1680 KW
- SAVING KW : 2940 KW
- SAVING IN Rs. : 16,758/- Rs./DAY
- WATER, CHEMICAL & MANPOWER COST : 1500 Rs./DAY
- NET SAVING : 15,258 Rs./DAY
- MONTHLY SAVING : 4,57,740 Rs./MONTH
- PAY BACK : 2 YEARS