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Problem Statement: Explain the Table under Section 5 “Pop up explanations for change in consumption and costs”

Sl. No.#	Reason for Increased Energy consumption kWh/Unit Output	Sl. No.*	Reason for Increased Energy Cost Rs./Unit Output
1	Increase in Forced Outages	1	Fuel Cost increased
2	Increase in Scheduled Outages	2	Specific Consumption increased
3	Labor Unrest	3	Revenue from diverted energy flow decreased
4	Reduction in Output due to lack of fuel	4	Output mix changed to more energy intensive products
5	Reduction in Output due to lack of Resource Material	5	Poor quality of power leading to self generation through DG sets
6	Reduction in Output due to High Inventory	6	Cogeneration failed
7	Air Conditioning power increases due to hard weather	7	TOD Metering imposed

- Under clause number #7, air conditioning load increases during summer. This leads to higher specific energy consumption in industries, which are often dominated, by such type of load (for example milk plants).
- Under clause *5, DG set power is normally costlier to grid power.
- Under clause *6, cogeneration power cost is much cheaper than grid power in Paper, Sugar or Textile Mills etc.
- *7 states, under TOD metering, cost of power is higher during peak hour period. Since many industries operate during daytime, the energy cost for the same energy consumption may increase.

Sl. No.##	Reason for Decreased Energy consumption kWh/Unit Output	Sl. No.**	Reason for Decreased Energy Cost Rs./Unit Output
1	Energy Saving equipment installed	1	Fuel substitution through low cost fuel
2	Maintenance management improved	2	Utilisation of biomass fuel recovered from high BOD waste
3	Better planning for load management	3	Cogeneration adopted
4	Technology innovation/ Re-engineering of system	4	Vapor absorption system adopted
5	Optimum capacity utilization of plant	5	Lesser Energy Cost due to less specific energy consumption
		6	TOD metering adopted

- ##4 indicates, by applying state of the art technologies and improving the present system, net energy consumption in the plant can be reduced. Some examples are like application of Membrane cell in place of Mercury cell, cascade heating in Milk Plants and Oil / Vanaspati plants etc.
- **2 indicates bio gas can be produced from high BOD content waste (over 100000 mg/l) and utilizing it in Boiler or DG set as fuel. This is absolutely a free fuel, which also helps the company in reducing its effluent.
- **6 explain energy cost saving for those companies, which operate in three shifts thus producing maximum during the off-peak time.

Problem Statement: Submit a real case with appropriate graph for the year 2003-04 with explanations

**Milk Plant
ENERGY CONSUMPTION DURING MARCH 2003-FEB2004**

Sl. No.	Energy Source	Unit	Cons. Qty.	Kcal/unit	Gross Kcal	Av. Cost/unit	Total cost (Rs.)
1	FO	Lit	1,763,100	9,500	16749450000	12	4491447
2	HSD	Lit	7076	9,500	67222000	12	84912
3	Electricity	KWH	3294450	861	2836521450	3.271548	10777952

Figure – 1

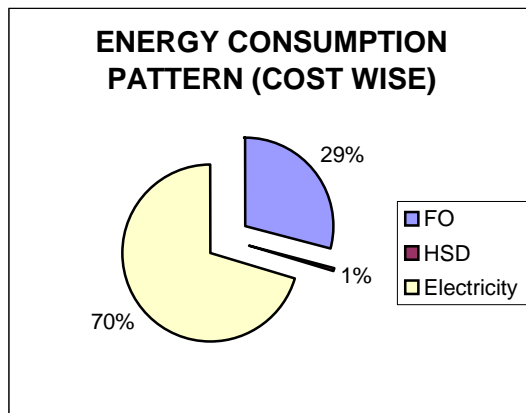
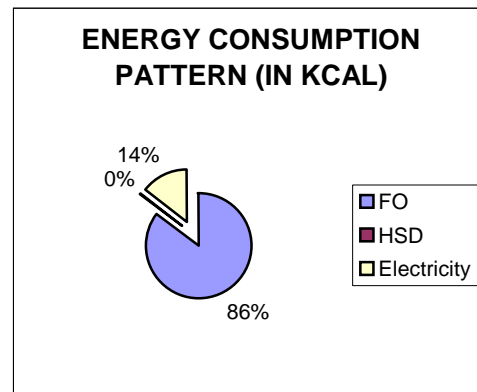
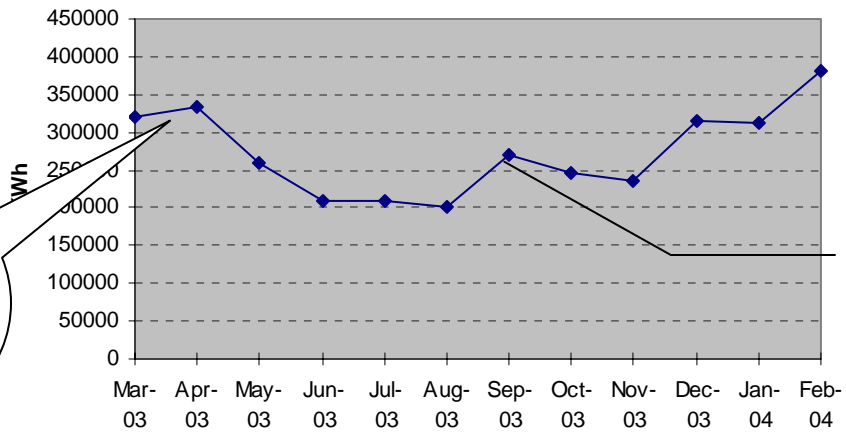


Figure – 2



The above two pie charts clearly indicates electricity consumption is much less in terms of kcal in comparison to FO where as the case is reverse in terms of cost.

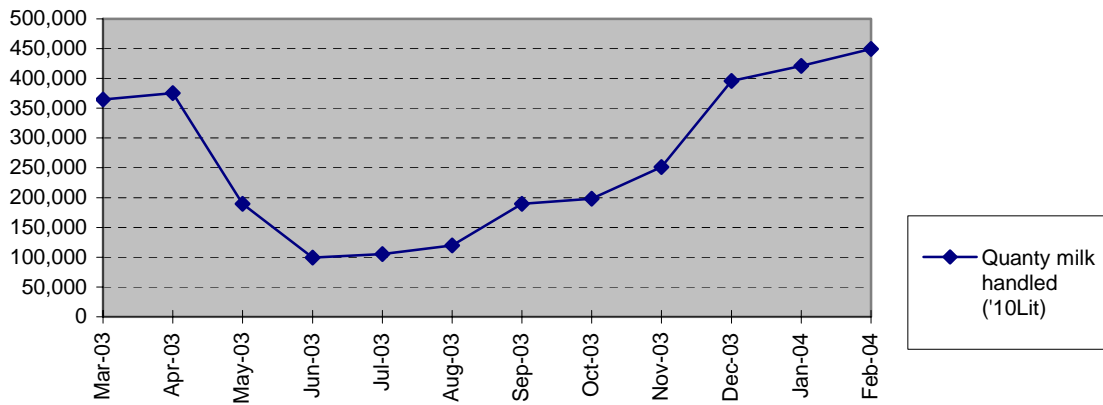
MONTHWISE ELECTRICITY CONSUMPTION



High elect. Consn. Due to Refr load

Higher Elect cons due to more milk powder prodn

MILK HANDLED~ FUEL CONSUMPTION



Quanty milk handled ('10Lit)