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Introduction

The causes for increase/decrease in energy consumption per unit output could be many. They have been provided under A & C.

The cause for increase/decrease in energy cost could be increase/decrease in energy consumption per unit output itself or could be increase/decrease in unit cost of energy or as mentioned under B & D. Reasons like high energy cost due to low production is already reflected in higher specific energy consumption and hence there is no need to add the same reason again.

There may be a number of reasons for increase/decrease in specific energy consumption. The best option is to give three most significant reasons.

Again it is felt that certain reasons are repetitive. If an energy saving project is implemented in a particular month, the savings is achieved for subsequent months.

Similarly if there is an increase in price of energy it continues for subsequent months and till further revision.

The Graph has been plotted based on actual data. The unit uses three sources of energy v.i.z Electricity, Furnace oil and Coal gas. During the year 2003-04 there has been many reasons for reduction in specific energy consumption and total energy cost.

Changes in price of energy :

Electricity from Rs. 4.69 to Rs. 4.96 per unit (5.8% increase)

Furnace oil from Rs 10840 to Rs 11529 per kL (6.4.% increase)

Coal Gas price from Rs 24 to Rs 23.50/Therm due to increased consumption (2.1% decrease)

While there are month wise variation in prices of energy, for the sake of simplicity, they have been assumed constant over the year.

Major reasons :

- 1) Implementation of large number of energy saving projects
- 2) Increase in production volume
- 3) Implementation of fuel switching project whereby an electrically heated furnace was converted into coal gas heating furnace.
- 4) Improvement in Productivity of new efficient remelting furnace thereby eliminating the requirement for operating old and inefficient remelting furnace.

Electricity consumption reduced from 1146 kWh/Ton to 897 kWh/Ton (21.7% reduction)
 Total energy in terms of kWh/Ton improved from 2305 kWh/Ton to 1993 kWh/Ton
 Overall energy cost reduced from Rs 6383 to Rs 5433 per ton (14.9% reduction)

Reasons

A	Reason for increased <u>energy consumption</u> kWh/unit output	B	Reason for increased <u>energy cost</u> Rs /unit output
1	Fall in Thermal energy efficiency	1	Increase in unit electricity cost
2	Fall in Electrical energy efficiency	2	Increase in thermal energy cost
3	Increase in forced outages	3	Specific consumption increase- Electrical
4	Increase in scheduled outages	4	Specific consumption increase- Thermal
5	Labour unrest	5	Use of more costly mix of fuel
6	Reduction in output due to lack of fuel		
7	Reduction in output due to lack of raw material		
8	Reduction in output due to high finished good stock		
9	Reduction in output due to market situation		
10	Reduction in output due to Major Breakdown		
11	Reduction in output due to Major Planned Overhauling		
12	Increase in WIP (Work in progress)		
13	Reduction in Recovery/Yield		
14	Increase in scrap volume		
15	Output mix changed to more energy intensive mix		
16	Increase in use of poor efficiency furnace		
17	Increased consumption due to Seasonal effect		
18	Increased consumption due to Process change		
19	Poor use of Waste Heat		
20	Fall in Equipment efficiency		
C	Reason for decreased <u>energy consumption</u> kWh/unit output	D	Reason for decreased <u>energy cost</u> Rs /unit output
1	Improvement in Thermal energy efficiency	1	Decrease in unit electricity cost
2	Improvement in Electrical energy efficiency	2	Decrease in thermal energy cost
3	Significant Energy saving project implemented	3	Specific consumption decreased - Electrical
4	Increase in volume output	4	Specific consumption decreased- Thermal
5	Improved Recovery/Yield	5	Use of less costly mix of fuel
6	Less scrap	6	Fuel switching project to less costly fuel
7	Significant Improvement in Equipment utilisation		
8	Depletion of WIP (Work in progress)		
9	Output mix changed to less energy intensive mix		
10	Non/less usage of poor efficiency furnace		
11	Reduced consumption due to Seasonal effect		
12	Process Optimisation done		
13	Enhanced use of waste Heat		
14	Improvement in Equipment efficiency		

Mar-04

4683

72.35

88.97

41653

669

3132912

252.36

7306

41653

4.99

11645.0

23.50

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