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Statistical Energy Consumption Data of Indian Firms : Would Share holders agree ?

Query : What would be the best way to report financial data for the firm in an energy audit report, taking into consideration standard reporting formats already in use where power and fuel consumption is occasionally mentioned ?

Hypothesis 1 : In times when profits erode, firms look at their bottom line and demand for cost reduction advice goes up.

Hypothesis 2 : In times when profit erode, firms have no money to invest in energy cost cutting measures and therefore demand for energy cost reduction advice goes down.

Hypothesis 3 : Firms that make lot of profit are not too interested in advice on energy cost reduction.

1 INTRODUCTION

How important energy cost reduction is for Indian Industry, particularly for designated consumers under the Energy Conservation Act. The latter are the most energy intensive industries and entities in India. Before BEE was created by the Energy Conservation Act 2001, many large firms, particularly those who were audited by law had to submit their financial results, reported on a quarterly basis financial details. At what percentage of energy cost, as a fraction of other costs or income, firms are willing to look into energy cost reduction is a matter of management style, and not always a matter of having high fractional energy costs. Some firms having fractional energy costs of 30% or more do not care much about energy cost reduction.

From marketing point of view, the issue of how to sell energy efficiency to a firm should be based on the principle " **X** percent of energy cost reduction implies **Y** percent increase in profit" . But this leads to the question of how do you define the *"fractional energy costs " and how should BEE report and classify firms with respect to fractional energy costs ?*

2 PROS AND CONS OF EXPRESSION OF ENERGY COSTS

2.1 General Observations

*2.1.1 Fractional Energy cost expressed as a percentage of **net sales***

*Expression of power and fuel bill as Percentage of **net sales** is **not desirable*** as it considers only the market fluctuations of the product price and cost of power and fuel. Demand for product may push the sales price per unit output of product considerably in a particular year compared to past years. In such a situation it may so happen that even considering the escalation of power and fuel, cost of power and fuel expressed as a percentage of net sales will be lower compared to previous years.

*In conclusion, reduction in power and fuel cost is primarily a market driven factor and fails to recognize the fact of **" increase in profit through energy conservation".***

*2.1.2 Fractional Energy cost expressed as a percentage of **profit before tax***

*Expression of power and fuel bill as Percentage of **profit before tax** is **desirable** as it takes into account ;*

- *Not only general fluctuation in the market driven interest rate but also capital cost of modernization and expansion.*
- Power and fuel cost
- Other input costs such as raw material, staff, operating expenses etc.
- Market fluctuations on the product prices.

*2.1.3 Fractional Energy cost expressed as a percentage of **Manufacturing***

Percentage of (manufacturing excluding expenses) truly represents the dependency of *increased / decreased power and fuel bill* as it is less prone to market fluctuations except for changes in raw material and power and fuel bill. It is ***essential*** *as it takes into account ;*

- Quality of raw material (i.e brine concentration and quality of salt in a chlor alkali plant ; type and quality of lime stone, coal and raw meal in cement plant etc).

- Interest Component directly related to (modernization and expansion). Higher interest component duly reflecting reduced energy consumption either due to more efficient equipment installed or increased capacity.
- Comparison of performance of two units operating with the same technology.
- Reflection of benefits of modernization and expansion.
- Gives the cost variation of each input and also the overall input costs.

3 Reporting of financial information data

An analysis of the of the power and fuel bill as a percentage of manufacturing (as defined in the Issue # 22 i.e excluding other costs), % of Profit before tax and % of net sales for the following designated industries have been shown for the period 2002 –03, 2003-04 & Quarter / half year for 2004-05. These figures have been extracted from the *published financial results.*

- *Fertilizer*
- *Aluminum*
- *Cement*
- *Pulp & Paper*
- *Chlor Alkali*
- *Power Plant*
- *Refineries*
- *Steel*
- *Textile*
- *Petrochemical*
- *Sugar*
- *Commercial building*

Due to the facts mentioned in 2.1.3, and the following reasons substantiated from the financial results observed for two industrial sectors (Cement & Chlor Alkali), would favor the expression of energy cost as a percentage of ***Manufacturing.***

- It is a proven way of assessing the performance of the unit over the years and also facilitates comparison with performance of other units.
- Observed power and fuel cost as percentage of manufacturing for different units are comparable.

Cement Industry

Description	**Madras Cement**		**Dalmia Cement**	
	2004	**2004 (Q)**	**2004**	**2005(Q)**
Power & Fuel bill as % of Manufacturing (without O/E)	34	34	30	26
Power & Fuel bill as % of Profit before tax	327	196	252	143
Power & Fuel bill as % of net sales	25	26	17	15

Chlor Alkali Industry

Description	**Kanoria**		**Chemfab Alkalis**	
	2004	**2004 (Q)**	**2004**	**2005(Q)**
Power & Fuel bill as % of Manufacturing (without O/E)	37	37	68	72
Power & Fuel bill as % of Profit before tax	394	428	477	337
Power & Fuel bill as % of net sales	30	28	50	49

- The observed trend of power and fuel bill as percentage of ***manufacturing*** within 4 % to 5 % is a reflection of overall performance of managing the various input sources including expansion and modernization.
- Expression of power and fuel as a percentage of ***Profit Before Tax*** does not indicate whether the improvement is brought about by energy conservation / reduction in other input costs or increased product cost due to higher demand.
- Expression of power and fuel as percentage of ***net sales,*** is misleading as it shows very low percentage, when per unit sales income is high.

The trend observed is common to all the designated industries except for ***commercial buildings and establishments.*** The details have been given in the attached file ***Issue # 22 – company data final.xls***

Hypothesis 1 : In times when profits erode, firms look at their bottom line and demand for cost reduction advice goes up.
Generally it is true where the energy cost is a significant percentage of manufacturing cost such as Cement, Chlor Alkali, Steel, Pulp & Paper, Aluminum, Fertilizer, Textile etc.

Hypothesis 2 : In times when profit erode, firms have no money to invest in energy cost cutting measures and therefore demand for energy cost reduction advice goes down.
Generally true where energy cost is insignificant percentage of manufacturing cost such as engineering, commercial buildings etc.
Hypothesis 3 : Firms that make lot of profit are not too interested in advice on energy cost reduction.
Generally true with exceptions.

Impact on Profit Before Tax by decreasing power and fuel by 5 % of select industrial units of designated consumers is tabulated as below.

Designated Consumer / Industrial unit	**Percentage increase in profit before tax**	
	2003 –04	**2004 –05 (Qua / half)**
Cement		
India Cement	16	28
Madras Cement	16	10
Dalmia Cement	13	7
Chettinad Cement	21	7
Petro Chemical		
Tamilnadu Petro Product	15	24
SPIC	134	6
Textile		
Precot Mills	13	14
Indo Rama Synthetics	1.5	-
Fertilizer		
Madras Fertilizers	9	21
Mangalore Chemicals & Fertilizers	22	20
KHRIBCO	8	-
IFFCO	4	-
Steel		
Jindal Vijayanagar	7.8	4.7
Monnet Ispat	3.5	3.2
Mahindra Ugine steel	11.7	36
Chlor Alkali		
Kanoria	20	21
Pulp & Paper		
Seshasayee	11	65
Andhra Paper	9.7	8.1
Ballarpur Ind	17.3	18.2
Aluminum		
National Aluminum Co Ltd	3.1	2.4

Hindusthan Aluminum Co ltd	3.1	3.1
Chemical		
CIPLA	0.3	0.4
Refinery		
Indian Oil Corporation		
1 Excluding own fuel conspn	0.3	0.3
2 Including own fuel conspn	1.6	1.6
Commercial Building		
WIPRO	0.2	0.2

Ballarpur ind ; 2001 & 2002 figures
HINDALCO ; 2003 & 2004 figures

Though it cannot be concluded from a select sample of units, potential for improvement in profit before tax is in most cases vary in the range ***10 %- 25%*** for every 5 % reduction in power and fuel bill, in industrial units whose power and fuel bill ***as percentage of profit before tax is*** in the range 100 % - 400%.

The industrial units that have ***power and fuel bill as percentage of profit before tax*** in the range of 50 % - 100%. i.e ***Aluminum, Chemical, Refinery & commercial building*** have potential for improvement in profit before tax in the range ***0.2 % - 3.5 %.***
The financial reporting format preferably should be as follows

Financial Statement

Description	**2003**	**2004**	**2005**
Net Income			
Raw Material Consumption			
Power & Fuel Bill			
Staff			
Interest			
Depreciation			
Total			
Profit Before Tax			

All values in Rs millions
It would be preferable to collect data at least for three years for meaningful analysis.