

## **J. R. Singh**

### **Problems and Solutions / Suggestions for optimisation of Formats :-**

The Format no. 1 may be converted into the tabular form on which performing of calculations and computer operations shall be easy. We have developed an alternative format no. 1 in tabular form which is attached along with this write up for consideration for reporting purpose. The line for “Information regarding Total Energy Consumption and Energy Consumption per Unit of Production” is also added in the format which is not asked anywhere in the format directly.

The following points may also be considered as part of improvement :-

1. Website address may be asked in the company information. If website is given then the full address may not be necessary to be written which will save space for plant address. The space allotted in the Format for plant address is not sufficient which will require 3 to 4 lines to write address.
2. It will be a better phrase to write “Company name” or “Organisation” instead of “Name of the company” in the Format.
3. Full address of Registered Office / Head Office may be written to avoid confusion and ambiguity.
4. It is not clear that the information asked in – Contact person, email address, telephone no. and fax no. pertains to company Head Office or plant address. Some body may fill this information pertaining to the site / plant level also. Hence, it is suggested that it may be asked specifically. Further this information may not be required if website address is asked in the Format. Further, it is better and more useful if this information is asked pertaining to the plant. Therefore plant address should come immediate after the Head Office address followed by the Contact person, email address, telephone no. and fax no. details.
5. “Power and Fuel Consumption for the year” may be written in place of Power and Fuel Consumption heading.
6. Contract Demand is to be written in kVA in place of kW as written in the Format.
7. The heading 5 (ii) Liquefied Petroleum Gases should be written as Liquefied Petroleum Gas.
8. The (B) Product Mix Specification may be written before the “(A) Power and Fuel Consumption” information in the format which will be more appropriate and will give better understanding of plant activities. It is not clear whether the designed capacities or

the actual production quantities are to be written in the product mix for the referred year.

9. In plants we use **Natural Gas** which is not categorized as CNG/LPG/PNG. Hence additional line for **Natural Gas** needs to be added.
10. The Format – 1 heading is “Format for Information regarding Total Energy Consumption and Energy Consumption per Unit of Production” but the same is not asked anywhere in the format directly. Hence additional line for the same needs to be added as sl. no. C in the format.
11. The information about “**Certified Energy Auditor**” and “**Certified Energy Manager**” may be added in the Format no. 1 or 3 who has conducted the audit and submitted the recommendation.

**Form - 1**  
**Format for Information regarding Total Energy Consumption and Energy Consumption per Unit of Production**

Name of the company : M/s GAIL (India) Limited  
 Full Address : 16, Bhikaiji Cama Place,  
 R. K. Puram,  
 New Delhi – 110 066  
 Contact Person :J. R.Singh  
 Email address : www.gailonline.com  
 Telephone/ Fax numbers : 011-26182955 / 26172580  
 Plant Address : LPG Recovery Plant, Gandhar  
 Village- Rozatankaria,  
 Tahsil – Amod,  
 Distt- Bharuch – 392 140  
 Gujarat.

A. Power and Fuel Consumption 2004/ 2005

1. Electricity

(a) Purchased

Contract demand	3500 kVA
Connected load	3050 kW
Annual consumption	20,205,000 kWh
Total cost	1070 Rs. Lakhs

(b) Own Generation

(i) Through diesel generator	
Annual generation	4380 kWh
Annual diesel consumption	2 kilo liters
Total fuel costs	0.60 Rs. Lakhs

(ii) Through steam turbine/generator	
Annual generation	<b>Not applicable</b>
Fuel used <sup>1</sup>	_____

(iii) Through Gas Turbine	
Annual generation	<b>Not applicable</b>

2. Coal quality (Gross calorific value)	
Annual consumption	_____ Tonnes
Total coal costs	_____ Rs. Lakhs

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<sup>1</sup> State which type of fuel or energy was used (C = coal, B = biomass, O = oil, G = gas, E = electricity). If coal was saved state which grade i.e. C/I = imported, or C/F coal of grade F.

3. Oil	<b>Not applicable</b>
(i) Furnace oil	
Annual consumption	_____ kilo liters
Annual costs	_____ Rs. Lakhs
(ii) Low Sulphur Heavy Stock (LSHS)	
Annual consumption	_____ Tonnes
Annual costs	_____ Rs. Lakhs
(iii) Hot Heavy Stock (HHS)	
Annual consumption	_____ Tonnes
Annual costs	_____ Rs. Lakhs
4. Diesel Oil	
(i) High Speed Diesel (HSD)	
Annual consumption	60 kilo liters
Annual costs	18 Rs. Lakhs
(ii) Light Diesel Oil (LDO)	<b>Not applicable</b>
Annual consumption	_____ kilo liters
Annual costs	_____ Rs. Lakhs
5. Gas	
(i) Compressed Natural Gas (CNG)	
Gross calorific value	8500 kCal/NM <sup>3</sup>
Annual consumption	42.81 Mega NM <sup>3</sup>
Annual costs	1542 Rs. Lakhs
(ii) Liquefied Petroleum Gases (LPG)	
Gross calorific value	_____ kCal/kg
Annual consumption	_____ Tonnes
Annual costs	_____ Rs. Lakhs
(iii) Piped Natural Gas (PNG)	
Gross calorific value	_____ kCal/NM <sup>3</sup>
Annual consumption	_____ NM <sup>3</sup>
Annual costs	_____ Rs. Lakhs
6. Biomass	<b>Not applicable</b>
Average moisture content, as fired	_____ %
Average Gross calorific value, as fired	_____ kCal/kg
Annual consumption	_____ MT
Annual biomass costs	_____ Rs. Lakhs

**B. Product mix specifications<sup>2</sup>**

Product name 1: Liquefied Petroleum Gas	273,329 Tones
Product name 2: Pentane	17,406 Tones
Product name 3: SBP solvents	25,543 Tones

<sup>2</sup> For example if you are a cement manufacturing unit producing different grades of cement, you may like to say under product name 1: OPC grade – XXX Tonnes and under product name 2: Portland slag cement– XXX Tonnes and so on.

## Form - 2

### Format for reporting status of implementation of energy conservation measures based on business plan of the company

Sl. No.	Description of measure	Category <sup>1</sup>	Investment (Rupees)	Verified savings <sup>2</sup> (Rupees)	Verified energy savings	Units <sup>3</sup>	Fuel <sup>4</sup>
1	Interconnection of plant air and GT filter cleaning system for energy saving	2	5,000	30,40,000	6,08,000	kWh	E
2	Reducing voltage in lighting circuits	3	4,000	2,10,000	42,000	kWh	E
3	Delamping exercise	4	Nil	1,85,000	37,000	kWh	E
4	Reduction in Transformer losses	5	Nil	4,83,000	9,500	kWh	E
5	Energy Saving by joining of discharge headers of Service Water, CW make up and drinking water pumps	1	5,500	7,80,000	1,40,000	kWh	E
6	Energy Conservation by Utilization of Raw Water Pump for horticulture water requirement by joining water lines	6	2,000	1,82,000	36,400	kWh	E
	Total			48,80,000	872,900		

<sup>1</sup> Use "C" number of form 3 as reference

<sup>2</sup> First year

<sup>3</sup> Use conventional energy, volume or mass units with proper prefix k = 10<sup>3</sup>, M = 10<sup>6</sup>, G = 10<sup>9</sup>

<sup>4</sup> State which type of fuel or energy was saved (C = coal, B = biomass, O = oil, G = gas, E = electricity). If coal was saved state which grade i.e. C/l = imported, or C/F coal of grade F.

## Form - 3

## Executive Summary of appraised Energy Conservation potential as identified in energy auditor report

C. No.	Area of improvement and modification	Investment Lakh Rs.	First year energy <sup>1</sup> savings					First year cost reduction <sup>2</sup> , Lakh Rs.					Life cycle years <sup>3</sup>
			oil	gas	coal	Electricity kWh	other	oil	gas	coal	electricity	other	
1.	Energy Saving by joining of discharge headers of Service Water, CW make up and drinking water	0.05				140,000					7,80,000		20
2.	Interconnection of plant air and GT filter cleaning system for energy saving	0.05				608,000					3040,000		20
3.	Reducing voltage in lighting circuits	0.04				42,000					210,000		10
4.	Delamping exercise	Nil				37,000					185,000		20
5.	Reduction in Transformer losses	Nil				9,500					47,500		5
6.	Energy Conservation by Utilization of Raw Water Pump for horticulture water requirement by joining water lines	0.02				36,400					1,82,000		10
7.	Installation of variable speed drive in AHU fans and jockey pumps	1.20				60,000					3,00,000		10

<sup>1</sup> Use commercial units of litre, kg, tons, normal cubic meter, kWh or MWh and indicate the unit. Indicate the anticipated potential in energy savings.

<sup>2</sup> Anticipated cost savings in the first year based on anticipated fuel savings.

<sup>3</sup> Estimate the predicted life of the measure, meaning the number of years the level of first year energy savings or even larger amounts will materialise.

C. No.	Area of improvement and modification	Investment Lakh Rs.	First year energy savings					First year cost reduction, Lakh Rs.					Life cycle years
			oil	gas	coal	electricity	other	oil	gas	coal	electricity	other	

Name of the company : Gail (India) Limited, Gandhar

Full Address : 16, Bhikaiji Cama Place,  
R. K. Puram,  
New Delhi – 110 066

Contact Person : J. R. Singh

Email address : jrsingh@gail.co.in

Telephone/ Fax numbers :02641-231008

Plant Address : LPG Recovery Plant, Gandhar  
Village- Rozatankaria,  
Tahsil – Amod,  
Distt- Bharuch – 392 140  
Gujarat.

**Form - 1**  
**Format for Information regarding Total Energy Consumption and Energy Consumption per Unit of Production**

Sl. No.	Type of energy	Source	Contract demand/ installed	Connected load	Annual Consumption	Rate	Total Cost
			kVA	kW	kWh	Rs.	Rs. Lakhs
1	Electricity	Purchased					
		Own gen.					
		i. DG set					
		ii. STG					
		ii. GT					
		Any Other					
Sl. No.	Type of energy	Source	Annual estimate	GCV	Annual Consumption	Rate	Total Cost
			Tones	kcal/kg or kcal/scm	Tones / mmscm	Rs.	Rs. Lakhs
2	Coal	Grade					
3	Oil	HFO					
		LSHS					
		HHS					
		Any Other					
4	Diesel Oil	HSD					
		LDO					
		Any Other					
5	Gas	NG					
		CNG					
		LPG					
		PNG					
		Any Other					
6	Biomass						
7	Any other						
B	Product Mix		Annual Production Tones	Annual Energy Consumption electricity kWh	Annual Heat Energy Consumption Equiv. kWh	Total Energy Consumption kWh	Specific energy consumption kWh/ton
		Product - 1					
		Product - 2					
		Product - 3					
		Total					