

FORMAT FOR PRELIMINARY ASSESSMENT OF TOTAL ENERGY CONSUMPTION IN THE UNIT

Name of the Unit		
Complete address of the Unit along with Telephone No., Fax No. & Email		
Name and Telephone of contact person at the Unit		
A. Power and Fuel Consumption (Please provide Unit data)		
	Current Year	Previous Year
<u>1. Electricity</u> a) Purchased Units (lakh kWh) b) Own Generation i) Through diesel generator Units (lakh kWh) Units per litre of diesel oil ii) Through steam turbine / generator Units (lakh kWh) Units per litre of Fuel Oil/Gas/Solid Fuel iii) Through Gas turbine / generator Units (lakh kWh) Units per litre of Fuel Oil/Gas iv) Any other sources such as wind, renewable etc. Units (lakh kWh)		
❖ Coal/lignite/other solid fuels (specify quality and where used) Quantity (tones) Gross calorific value		
❖ Furnace Oil/LSHS/HSLS/HSD/LDO Quantity (kiloliters) Gross calorific value		
❖ Gaseous fuels (CNG/LPG) Quantity (SCM) / tons Gross calorific value		
❖ Others/internal generation (please give details) Quantity Gross calorific value		

❖ **Fuel Consumption may be given which is used for process not for power generation. In case, if fuel is used as a raw material, it will not be considered as an input energy.**

B. PRODUCTION DATA (Please provide unit data)		
Finished product	Current Year	Previous Year
Product 1 (with details) Installed capacity production		
Product 2 (with details) Installed capacity production		

NOTE: - For power generating plants, please give fuel input, gross calorific value, installed capacity of each unit, power generation in million units, plant heat in Kcal/kWh and plant load factor.

Signature of the
Chief Executive.....

Name & Designation of
the Chief Executive.....

Organization seal.....

Date.....

Place.....

ENERGY CONVERSION TABLE AND SAMPLE CALCULATION FOR ANNUAL ENERGY CONSUMPTION IN TERMS OF MTOE.

SI.NO		
1	1 Kwh	860 K cal
2	1 kg coal /coke	Gross calorific value as per suppliers (Coal company's) latest Certificate
3	1 Kg charcoal	6900 Kcal or as per supplier certificate
4	1 Kg Furnace oil/Residual Fuel oil/ Low sulphur Heavy stock –Naptha	10,050 Kcal (density=0.9337 kg/litre)or as per supplier certificate
5	High speed Diesel	11840 Kcal (density=0.8263 kg/litre)or as per supplier certificate
6	1kg petrol	11200 Kcal (density=0.8263 kg/litre)or as per supplier certificate
7	1kg Kerosene	11,110 Kcal (density of SKO=0.7782 kg/litre)or as per supplier certificate
8	1m ³ Natural gas	8,000 to 10,500 kCal or as per supplier certificate
9	Others fuels or waste material or by products used as a fuel	Gross calorific value as per the certificate from central /State Govt. approved laboratory.

- ❖ For the purpose of this table ,1kg of oil equivalent =10,000 k-cal
1 metric tonne of oil equivalent (MTOE) =10 X 10⁶ Kcal

Mandatory information to be submitted by Designated Consumers on the Appointment or Designation of Certified Energy Manager

Name of the sector	
Name of plant (state/UT)	
Complete postal address of the plant including;- a) Chief Executive name b) Mobile no. c) Telephone no. with STD code d) Fax no. with STD code e) Email address	
Annual Energy Consumption of the plant in terms of Metric Tonne of oil Equivalent(MOTE)	
Name of the certified Energy manager with a) BEE Exam Registration No. b) Complete postal address c) Mobile no. d) Telephone No. with STD code e) Fax no. with STD code & f) Email address	

Signature of the
Chief Executive.....

Name & Designation of
the Chief Executive.....

Organization seal.....

Date:

Place:

Note: Attach self attested copy of certificate of certified Energy Manger

Assumption: - Annual Energy Consumption figure

A. ELECTRICITY

i. **Purchased** – 2200 Lakh kWh/Yr

$$\text{MTOE Equivalent} = 2200 \times 10^5 \times 860 = 1892 \times 10^2 \text{ Million K Cal.}$$

$$= \frac{1892 \times 10^8}{10 \times 10^6} = 18920 \text{ MTOE}$$

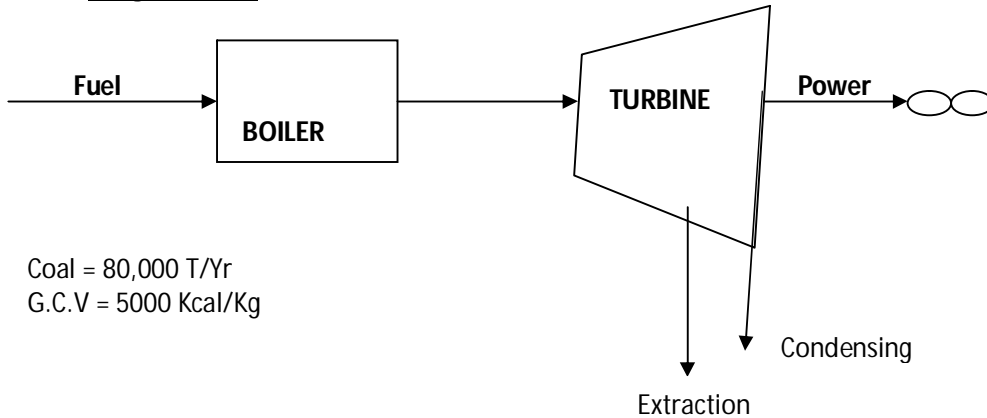
ii. **Own Generation**

- Through D.G. Set
- Power Generation = 288 Lakh kwh/yr
- Diesel Consumption = 7565 K.L

Note: MOTE will be calculated for Diesel input to generator, not for the power generation from generator.

$$\begin{aligned} \text{MOTE Equivalent} &= 7565 \text{ KL (Density} = 0.8263 \text{ Kg. /Lit)} \\ &= 7565 \times 10^3 \times 0.8263 = 6251 \times 10^3 \text{ Kg} \\ &= 6251 \times 10^3 \times 11840 = 74011 \text{ million Kcal} \\ &= \frac{74011 \times 10^6}{10 \times 10^6} = 7401 \text{ MTOE} \end{aligned}$$

iii. **Co-generation**



Note: MOTE will be calculated for fuel input to the boiler, not for the power generation from turbine, similar approach may be deployed for calculation MTOT in Gas turbine.

$$\begin{aligned}
 \text{MOTE Equivalent} &= 80,000 \times 10^3 \times 5000 \\
 &= 40 \times 10^{10} \text{ K-Cal} \\
 &= \frac{40 \times 10^{10}}{10 \times 10^6} = 40,000 \text{ MTOE}
 \end{aligned}$$

B. Direct fuel fired Equipment such as Boilers, ovens, dryers, furnaces and other equipments

Annual furnace oil consumption in furnace

$$\begin{aligned}
 &= 5000 \text{ K.L (Density = 0.9337 Kg/Lit)} \\
 &= 5000 \times 10^3 \times .9337 = 4668 \times 10^3 \text{ Kg} \\
 &= \frac{4668 \times 10^3 \times 10,050}{10 \times 10^6} \\
 &= 4691 \text{ MTOE}
 \end{aligned}$$

Note:

- I. If fuel is used as raw material, it should not be considered for calculating MTOE. For example, natural gas is being used as raw material as well as fuel in fertilizer plant. The quantity of Natural Gas used as a raw material may be deducted.
- II. For chlor alkali manufacturing process, Hydrogen is generated as a by product and is being used as a fuel, may be considered as a fuel input.
- III. In some process liquid and solid waste is being generated having a substantial heating value for example in wood based paper industry black liquor and saw dust is generated as bye products and used for process steam generation, may be considered as a fuel input.