- (ii) सभी आंकदा मॉनिटरी युतियां सही काम करने जी दशा में है और व्यासमापन किया जा चुका है या प्रियकृत अनुमोदित अनकरणों द्वारा प्रभाणित है और ऐसी युतियों में कोई छेड़छाड़ नहीं की गई है ।
- (iii) सभी युक्तियुक्त व्यतिसम काता, खरिखाङ और संचेतना पूर्वक ऊर्जा संप्रशिक्षा रिपोर्ट तैयार की गई है और उसकी अन्तंगत तथ्यों को सही प्रक्षिनिधित्व करती है ।
- (iv) सिफारिशों के क्रियान्वयन के पश्चात निम्न प्रण्लयों लगे कार्मिकों को उचित प्रशिक्षण दिया गया हो ।
- (v) ऊर्जा संपरीक्षा ऊर्जा दशता ब्यूरो (ऊर्जा संपरीक्षा करने के लिए रीति और समय अंतराल) विनियम 2010 के अनुसार में की गई है

हस्ताक्षर प्रत्यायित कर्जा संपरीक्षक का नाम प्रत्यायित ब्यौरे मुहर

> अजय माथुर, महानिदेशक [विज्ञापन 115/4/185/10–असा.]

#### BUREAU OF ENERGY EFFICIENCY NOTIFICATION

New Delhi, the 28th April, 2010

No. 02/11(6)/05-BEE.— Whereas certain draft regulations namely, the Bureau of Energy Efficiency (the manner and intervals of time for conduct of energy audit) Regulations, 2009,were published vide Bureau of Energy Efficiency notification number 02/11(6)/05, dated the 22<sup>nd</sup> December, 2009 in the Gazette of India, Extraordinary, Part III, Section 4, dated the 26th December, 2009 as required under sub-section (1) of Section 58 of the Energy Conservation Act, 2001 (52 of 2001) inviting objections and suggestions from all persons likely to be affected thereby within forty five days from the date of publication of the said notification in the Gazette.

And whereas the said draft regulations were published in the official Gazette on the 26<sup>th</sup> December, 2009.

And whereas no objection or suggestion has been received in respect of the said draft regulations within the specified period.

Now, therefore, in exercise of the powers conferred by clause (g) of sub-section (2) of section 58, read with clause (q) of sub-section (2) of section 13 of the said Act, the Bureau of Energy Efficiency with the previous approval of the Central Government, hereby makes the following regulations, namely:-

- 1. Short title and commencement.- (1) These regulations may be called the Bureau of Energy Efficiency (Manner and Intervals of Time for Conduct of Energy Audit) Regulations, 2010
- (2) They shall come into force on the date of their publication in the Official Gazette.

- 2 Definitions. (1) In these regulations, unless the context otherwise requires,-
  - (a) "Act" means the Energy Conservation Act, 2001; .
  - (b) "energy audit report" means the report of energy audit submitted under regulation 3 and signed by the accredited energy auditor;
  - (c) "Form" means a form appended to these regulations;.
  - (d) "specific energy consumption" means the average of energy consumed per unit of product or product—mix for the completed financial year.
- (2) Words and expressions used herein and not defined but defined in the Act shall have the meanings respectively assigned to them in the Act.
- 3. Intervals of time for conduct of energy audit.-(1) Every designated consumer shall have its first energy audit conducted, by an accredited energy auditor within 18 months of the notification issued by the Central Government under clause (i) of section 14 of the Act.
- (2) The interval of time for conduct and completion of subsequent energy audits shall be three years with effect from the date of submission of the previous energy audit report by the accredited energy auditor to the management of the designated consumer.
- 4. Manner of energy audit.- Every energy audit under the Act shall be conducted in the following manner:-
  - (1) Verification of data of energy use.- The accredited energy auditor shall
    - verify the information submitted to the designated agency under (a) the Energy Conservation (the form and manner for submission of report on the status of energy consumption by the designated consumers) Rules, 2007 for the previous two years through examination of energy bills, production data, inspection of energy-using equipment, production-processes, and systems, spot measurements, discussion or interview with the officers and plants, energy management operation of staff regarding procedures, equipment maintenance problems, reliability, projected equipment needs, improvements undertaken establish validated data on annual energy planned. consumption and prepare a report in Form 1 for the year preceding to the year for which energy audit report shall be prepared and submitted;
    - (b) establish specific energy consumption for the year referred to in clause (a);
    - (c) disaggregate the energy consumption data and identify major energy using equipment, processes and systems.
  - (2) Scope of energy audit.-The accredited energy auditor jointly with the energy manager of the designated consumer shall-

- (a) develop a scope of work for the conduct of energy audit required under the Act with a view to ensuring adequate coverage in terms of the cleare of total energy use that is covered in the energy audit:
- (b) select energy intensive equipment or processes for energy auditing;
- (c) agree on best practice procedures on measuring the energy efficiency performance of selected equipment and on algorithm to estimate energy performance and energy savings;
- (d) collect energy consumption, and production data for the equipment and processes covered within the scope of energy attdit, operating data, and schedule of operation, non proprietary process flow charts, production level disaggregated by product, if applitable, and such other historical data as may be considered essential by the accredited energy auditor for achieving the purpose of energy audit.
- (3) Monitoring and analysis of use of energy data for energy audit. The accredited energy auditor shall-
  - (a) verify the accuracy of the data collected in consultation with the energy manager; appointed to designated by the designated consumer in terms of the notification number S.O.318(E), dated the 2<sup>nd</sup> Merch 2007, as per standard practice to assess the validity of the data collected;
  - (b) adalyse and process the data with respect to
    - compared to the collected data;
    - (ii) recommendations to reduce energy consumption and improve energy efficiency;
    - (iii) summary overview of energy consumption in plant or establishment by fuel type and by section;
  - (c) conduct equipment energy performance measurements with due diligence and caution.
- (4) Preparation of recommendations on energy saving measures, their cost benefit analysis. The accredited energy auditor having regard to the overall efficiency of the production process, techno-economic viability of energy saving measures, site conditions and capacity of the designated consumer to invest for their implementation, shall prepare a list of recommendations to save energy and the list shall include.
  - (a) a brief description of each recommended measure;
  - (b) the estimated energy saving as well as energy cost reduction potential over a reasonable technical or economic life of the measure;

- (c) any known or expected technical risk associated with each
  - (d) a preliminary assessment of financial attractiveness of each measure or assessment of maximum investment feasible based on the estimated energy cost saving potential over the life of the measure:
- (e) tabulated summary of recommendations listed as per their implementation schedule (short medium and long term);
- (f) where different alternatives for implementation of an energy efficiency measure are available, the accredited energy auditor shall examine and discuss such options and recommend the techno-financially better option.
  - (g) where the installation or implementation of any recommended energy saving measure affects procedures for operation and maintenance, staff deployment and the budget, the recommendation shall include discussion of such impacts including their solutions.
- 5. Prioritiestion and preparation of action plan.- (1) The accredited energy auditor jointly with the energy manager shall select from the energy audit report such recommended measures as are included in sub-regulation (4) of regulation 4 which in the opinion of the designated consumer are technically viable, financially attractive and within its financial means, prioritize them and prepare plan of action for their implementation and this action plan shall include-
  - (a) preparation of detailed techno-economic analysis of selected measures;
     (b) a monitoring and verification protocol to quantify on annual basis
    - (b) a monitoring and verification protocol to quantify on annual basis the impact of each measure with respect to energy conservation and cost reduction for reporting to Bureau and the concerned State designated agency;
    - (c) a time schedule agreed upon by the designated consumer of selected measures taking into consideration constraints such as availability of finance and availability of proposed equipment.
- (2) The accredited energy auditor based on the activities undertaken under sub-regulation (4) of regulation 4 and regulation 5 shall submit a report in Form 2 to the management of the designated consumer.
- (3) The accredited energy auditor shall evaluate the implementation of each recommended energy saving measure in the previous audit report and submit a report in Form 3 to the management of the designated consumer.
- Structure of the energy audit report.-(1) The energy audit report structure shall be jointly decided by the accredited energy auditor and designated consumer.

- (2) The energy audit report shall highlight, details of specific energy consumption, list of recommendations to reduce energy consumption and costs, monitoring and evaluation of impact of selected measures and conclude with certification by accredited energy auditor stating that -
  - (a) the data collection has been carried out diligently and truthfully;
  - (b) all data monitoring devices are in good working condition and have been calibrated or certified by approved or authorised agencies and no tempering of such devices have occurred;
  - (c) all reasonable professional skill, care and diligence have been taken in preparing the energy audit report and the contents thereof are a true representation of the facts;
  - (d) adequate training provided to personnel involved in daily operations after implementation of recommendations; and
  - (e) the energy audit has been carried out in accordance with these regulations,

and the format for the preparation of energy audit report is given in Form 4 for guidance.

- (3) The accredited energy auditor shall highlight the strengths and weaknesses of the designated consumer in the management of energy and energy resources in the energy audit report and recommend necessary action to improve upon method of reporting data, energy management system in detail along with their underlying rationale, and improving energy efficiency and reducing energy consumption in the designated consumer.
- (4) The accredited energy auditor shall sign the energy audit report under the seal of its firm giving all the accreditation details along with details of manpower employed in conducting the energy audit.
- (5) The energy audit report shall include a work schedule sheet duly signed by accredited energy auditor and energy manager of the designated consumer.

#### Form 1

### Details of validated data on energy consumed and specific energy consumption per unit of production [See regulation 4(1)(a)and (b)]

1	Name of the Unit	<u> </u>				<del></del>
2	The *sector in which unit	falls (Refer An	nexure-()	<del>-</del>		
3 (a)	Complete address of I Chief Executive's name mobile telephone, fax num	Unit's location	(including		<del></del>	
(b)	Year of establishment			<del></del>	· · · · · · · · · · · · · · · · · · ·	
4	Registered office addre	ss with tele	phone, fax			
5	Name, designation, addre fax numbers and e-mail of	ephone, ger		<del></del>	<u> </u>	
6	Production and capacity		· ··			
Year	Main products	Units (Please specify)	installed capacity (a)	Actual production (b)	% Capacity utilisation (b/a) x 100	Specific energy consumption
	Product 1 Product 2 Other products			<del>- 12!</del>		
20- 20						

		Year 20 - 20
7.0	Energy consumption and cost	<del></del>
7.1	Electricity consumption and cost	
(A)	Purchased electricity	
(1)	Units (Millions kWh/year)	
(N)	Total cost (Rs. Millions/year)	
(iii)	Plant connected load (kW)	<del></del>
(iv)	Contract demand (kVA) with utility	<u> </u>
(v)	Connected load (kW)	
(B)	Own generation	· · · · · · · · · · · · · · · · · · ·
(a)	Through diesel generating sets	· · · · · · · · · · · · · · · · · · ·
(1)	Annual generation (Millions kWh/ year)	
(ii)	Total cost (Rs. Million/ year)	<u> </u>
(lii)	Fuel used (HSD/LDO/LSHS/LSFO ( Refer Annexure-2)	·
(iv)	Gross calorific value (kCal/kg)	
(v)	Annual fuel consumption (tonne)	· · · · · · · · · · · · · · · · · · ·
(vi)	Total annual fuel cost (Rs. Million)	· - · · · · · · · · · · · · · · · · · ·

(b)	Through steam turbine/ generator	Year 20 - 20
(i)	<del></del>	······································
	Annual generation (Millions kWh/ year)	
(ii) 	Fuel used state which type of fuel was used (C=coal, B=biomass, E=electricity). If coal was used, state which grade i.e., C/I=imported or C/F=Coal of grade F	
(ć)	Through gas turbine	
(1)	Annual generation (Millions kWh/ year)	
(11)	Fuel used (state which type of fuel was used Natural Gas (NG), Piped Natural Gas (PNG), Compressed Natural Gas (CNG), Naphtha)	
(iii)	Gross calorific value (kCal/SCM)	
(iv)	Annual fuel consumption (SCM)	
(v)	Total annual fuel cost (Rs. Million)	
(C)	Total generation of electricity (Millions kWh/ year) 7.1 (8) [a(i)+b(i)+c(i)]	1
(D)	Electricity supplied to the grid/ others (specify (Militons kWh/ year)	
E)	Total Electricity consumed (Millions kWh/year) 7.1 [A(I) +C-D]	
7.2	Fuel consumption and % cost for process heating	
(A)	Coal	
(1)	Gross calorific value (kCal/kg)	
(A)	Quantity purchased (tonne/ year)	
(iii)	Quantity used for power generation (tonne/year)	
(iv)	Quantity used as raw material, if any (tonne/year)	2.1 3.5 5.5 1.8 1.0 QC 28 1.0 H
(v)	Quantity used for process heating (tonne/year)	
(vi)	Total coal cost for process (Rs. Million/year)	
<b>B</b> }	Lignite	
· (f) ·	Gross calorific value (kCal/kg)	<u> </u>
(ii)	Quantity purchased (tonne/year)	
(fil)	Quantity used for power generation (tonnes/year)	
(iv)	Quantity used as raw material, if any (tonne/year)	t Tarris o
(v)	· · · · · ·	Series of the se
·	Quantity used for process heating (tonne/year)	The second of th
(vi)	Total lignite cost for process (Rs. Million/year)	

	54 1 3 3 2 Y	Year 20 - 20
(C)	Bio mass Other purchased solid fuels (please specify) bagasse, rice husk, etc.	*· ···· · · · · · · · · · · · · · ·
(1)	Average moisture content as fired (%)	(S) (S) (S) (S) (S)
(fi)····	Average gross calorific value as fired (kcal/kg)	# 148 may 128 3 10 mg 15 1 10
(fil)···	Quantity purchased (tonne/year)	Editor - History - Constant - Con
. (iv)	Quantity used as raw material, if any (tonne/year)	B <mark>ifning the telepope service of the company to the company of the</mark>
(v)-	Quantity used for process heating (tonne/ year)	e a servicio de la servicio del servicio de la servicio della serv
(vi)	Total bagasse cost for process (Rs. Million/year)	<u> </u>
7.3	Liquid	
(A)	Furnace Oil(F.O.)	
(i)	Gross calorific value (kCal/kg)	
(ii)	Quantity purchased (kL/ year)	
(iii)		
(iv)	Quantity used as raw material, if any (kL/ year)	
(v)	Quantity used for process heating (kL/ year)	<u> </u>
(vi)	Total F.O. cost for process heating (Rs.	en de la companya de La companya de la companya de
****	Million/year)	HER CONTROL OF THE STATE OF THE
(8)	Low Sulphur Heavy Stock (LSHS)	14
(i)	Gross calorific value (kCal/kg)	4
(ii)	Quantity purchased (tonne/year)	meter Marine Williams of February
(iii)	Quantity used for power generation (tonne/year)	
(iv) .	Quantity used as raw material, if any (tonnelyear)	
(v)	Quantity used for process heating (tonne/year)	
(vi)	Total LSHS Cost for process heating (Rs. Million/year)	
C)	High Sulphur Hezvy Stock (HSHS)	William Design the second of t
(1)	Gross calorific value (kCaVkg)	
(ii)	Quantity purchased (tonnes/year)	
(iii)	Quantity used for power generation (tonne/year)	
(iv)	Quantity used as raw material, if any (tonne/year)	
(v)	Quantity used for process heating (tonne/year)	A CONTRACTOR OF THE CONTRACTOR
(vi)	Total HSHS cost for process heating (Rs. Million/year)	<u> </u>

		Year 20 - 20
(D)	Diesel Oil	*
(a)	High Speed Diesel (HSD)	
(1)	Gross calorific value (kCal/kg)	
(ii)	Quantity purchased (kL/year)	
(iii)	Quantity used for power generation (torme/year)	·
(iv)	Quantity used as raw material, if any (kUyear)	· · · · · · · · · · · · · · · · · · ·
(v)	Quantity used for process heating (kL/year)	
(vi)	Total HSD cost for process heating (Rs. Million/year)	
(b)	Light Diesei Oil (LDO)	
(i)	Gross calorific value (kCal/kg)	
(ii)	Quantity purchased (kL/year)	
(Hi)	Quantity used for power generation (kt/year)	
(iv)	Quantity used as raw material, if any (kt/year)	
(v)	Quantity used for process heating (kL/year)	
(vi)	Total LDO cost for process heating (Rs. Million/year)	
7.4	Gas	
(A)	Compressed Natural Gas (CNG)	
(i)	Gross calorific value (kCal/SCM) ( Refer Annexure 2)	
(ii)	Quantity purchased (million SCM/year)	
(ÑÎ)	Quantity used for power generation (million SCM/year)	
(iv)	Quantity used as raw material, if any (million SCM/year)	
(v)	Quantity used for process heating (million SCM/year)	
(M)	Total cost of natural gas for process heating (Rs. Million/year)	
(B)	Liquefied Petroleum Gas (LPG)	
(i)	Gross calorific value (kCal/SCM)	<u> </u>
(ii)	Quantity purchased (million SCM/year)	<u> </u>
(iii)	Quantity used for power generation (million SCM/year)	· <u></u>
(iv)	Quantity used as raw material, if any (million SCM/year)	· · · · · · · · · · · · · · · · · · ·
(v).	Quantity used for process heating million SCM/year	
(vi)	Total cost of LPG for process heating (Rs. Million/year)	

		Year 20 - 20
(C)	Gas generated as by product/ waste in the plant and used as fuel	
(i) .	Name	
(li)	Gross calorific value (kCal/SCM)	
(iii)	Quantity used for process heating (million SCM/year)	
(N)	Total cost of byproduct gas for process heating (Rs. Million/year)	· · · · · · · · · · · · · · · · · · ·
7.5	Solid waste	
	Solid waste generated in the plant and used as fuel	· · · · · · · · · · · · · · · · · · ·
(i)	Name	
(ii)	Gross calorific value (kCal/kg)	
(iii)	Quantity used for process heating (tonne/year)	
(iv)	Total cost of solid waste for process heating (Rs. Million/year)	· · · · · · · · · · · · · · · · · ·
7.6	Liquid waste	<u> </u>
(A)	Liquid effluent/ waste generated in the plant and used as fuel	
(i)	Name	
(ii)	Gross calorific value (kCal/kg)	· · · · · · · · · · · · · · · · · · ·
(iii)	Quantity used for process heating (tonne/year)	<u> </u>
(iv)	Total cost of liquid effluent for process heating (Rs. Million/year)	
7.7	Others	
(i)	Name	
(ii)	Average gross calorific value (kCal/kg)	
(iii)	Quantity used for power generation (tonnes/year)	
(iv)	Quantity used for process heat (tonnes/year)	
(v)	Annual cost of the others source	

Signature
Name of the energy manager,
Name of the company
Full address
Seal

 $\mathbb{C}^{\prime}$ 

Signature
Name of the accredited energy auditor
Accreditation details
Seal

#### \* Annexure1 - Name of sectors

Aluminum, cement, chemicais, chlor-alkali, fertilizers, gas crackers, iron and steel, naphtha crackers, pulp and paper, petrochemicals, petroleum refineries, sugar, textile.

#### Annexure 2 - Nomenclature

HSD	High Speed Diesel	<del></del>
LDO	Light Diesel Off	
LSHS	Low Sulphur Heavy Stock	:
LSFO	Low Sulphur Furnace Oil	`
С	Coal	
В	Biomass	{
Ę	Electricity	
C/I	Coal Imported	₽
C/F	Indian Coal grade F	_
NG	Natural Gas	-¦
PNG	Piped Natural Gas	
CNG	Compressed Natural Gas	
FO	Furnace Oil	3i .
LPG	Liquefied Petroleum Gas	
SCM	Standard Cubic Metre (15°C and 1.01325 bar)	-
KL	Kilo Litre	- 1 - 57 - 1 - 1 - 57
Willion	Tea (10) lakh	-

Details of energy saving measures recommended in the energy audit report (year) Form 2

[See regulation 5(2)]

	<u> </u>									
	Other									
Annual energy <sup>2</sup> savings	Electricity									
ene lene	Coal							Ī	Ī	T
¥	Gas	· _			L					
	ð				Ĺ.					
Life cycle years'										
Date of completion of measure/ likely completion		- :								
Restons for not mplementing the measure										
Investment Millions Rs.										
Energy saving measures – (Suggested categories of areas of improvement and modifications for obtaining details of energy savings –See Annexure 3)										
		-	7	3	4	5.	.6	7.	9.	10

Signature
Name of the accredited energy auditor
Accreditation details
Seal

Signature
Name of the energy manager
Name of the company
Full address
Contact person
Email address
Telephone/ Fax numbers
Plant address

Estimate the predicted life of the measure, meaning the number of years the level of first year energy savings or even larger amounts will méterialise.

Life commercial units of litte, kg. tonnes, normal cubic meter, kWn or MWh and indicate the unit. Indicate the anticipated potential in <u>energy</u> savings.

# Suggested categories of areas of improvement and modifications for obtaining details of energy savings

Better house keeping measures

2 Installation of Improved process monitoring and control instrumentation, or software

3 Fuel Handling System

Steam Generation System

Steam Distribution System

6. Electricity Generation System

. Hot Water System

Compressed Air System

Raw/ Process Water System

Cooling Water System

Process Cooling/ Refrigeration System

Heating, Ventilation and Air Conditioning System

Electrical System

Lighting System

felting/ Heating/ Drying Equipment (e.g. Furnaces, Heaters, Kiins, Ovens, Dryers, Evaporators

16. Heat Exchangers

Pumps, Compringsors, Fans, Blowers, Pipting, Ducting

Material, Handling Equipmen Equipment rocess Equipment (e.g., Reactors, Separa

19. Transformers

20% Electric Motors tight Drives

21. Process Technolog

22. Process Integration

23. Process Control and Automation

\*Operation/ Scheduling, Tariff Schedule, etc. Other Non-equipment Measures (e.g., Ph

25. Recovery of waste heat for process heat or power generation

26 Retrofitting, modification of sizing of fans, tititive is, pumps, including duct systems

**€** 

# (See regulation 5(3)) Form 3

Details of energy conservation measures implemented, investment made and savings in energy schleved and progress made in the implementation of other recommendations.

# Implemented:

is No	Description of energy efficiency improvement measure	Category³	Category <sup>3</sup> (investment (Rupees)	Verified savinge	Verified	Unite	Fuel	Remarks	
				(Rupees)	savings				
-							T'		
2									
60						1	1		
<b></b>	Under Implementation:		]						

		_		
Fuel Status of implementation		-		
# Fue		Ĭ		
Units				
Verified energy savings	estimated			
Verified savings	(Rupees) estimated			
Investment (Rupees) estimated				
 Category				
Description of energy efficiency improvement measure				
æ 8		-	2	6

Name of the energy manager Name of the company Contact person Email address Full address Signature

Telephone/ Fax numbers

Plant address

Name of the accredited energy auditor Accreditation details Signature Sea

> Use "C. No" column of form 2 as reference - See Annexure "3" for adoption First year

Use conventional energy, volume or mass units with proper prefix  $k=10^3$ , M =  $10^6$ , G =  $10^9$ 

# Form 4 FORMAT [See regulation 6 (2)]

#### Guidelines for preparation of Energy Audit Report

Each energy audit report shall include --

- (1) Title page
  - Report title
  - Client name
  - Location of the plant/establishment
  - Date of report
  - Name of the accredited energy auditors
- (2) Table of contents
- (3) Acknowledgement
- (4) Executive summary
  - Company's profile
  - Goals and objectives of the energy management programme
    - Major challenge and goals for the upcoming year.
    - Major activities to meet challenges and goal
  - Summary and classification of energy
  - Conservation measures should be in Form 2.

#### 1.0 Introduction about the plant/establishment

- 1.1 General plant/establishment details and descriptions.
- 1.2 Energy audit team
- 1.3 Component of production cost (raw materials, energy, chemicals, manpower, overhead, others)
- 1.4 Major energy use areas

#### 2.0 Production process description

- 2.1 Brief description of manufacturing process
- 2.2 Process flow diagram and major unit operations
- 2.3 Major raw material Inputs, quantity and costs

#### 3.0 Energy and utility system description

- 3.1 List of utilities
- 3.2 Brief description of each utility
  - 3.2.1 Electricity
  - 3.2.2 Steam
  - 3.2.3 Water
  - 3.2.4 Compressed air
  - 3.2.5 Chilled water
  - 3.2.6 Cooling water
  - 3.2.7 Others

#### 4.0 Detailed process flow diagram and energy and material balance

- 4.1 Flow chart showing flow rate, temperature, pressures of all inputoutput streams
- 4.2 Water balance for entire industry
- 4.3 Energy balance of the designated consumer in the tabular form

#### 5.0 Performance evaluation of major utilities and process equipments/ systems

- 5.1 List of equipments and process where performance testing was done
- 5.2 Results of performance testing

#### 6.0 Energy efficiency in utility and process system

- 6.1 Specific energy consumption
- 6.2 Boiler efficiency assessment

- 6.3 Thermic fluid heater performance assessment
- 6.4 Furnace efficiency analysis
- 6.5 Cooling water system performance assessment
- 6.6 Diesel Generator set performance assessment
- 6.7 Refrigerator system performance
- 6.8 Compressed air system performance
- 6.9 Electric motor load analysis
- 6.10 Lighting system
- 6.11 Others.

#### 7.0 Evaluation of energy management system

- 7.1 Energy management policy
- 7.2 Energy management monitoring system
- 7.3 Bench marking
- 7.4 Development and establishment of procedures include energy efficiency possibilities
- 7.5 Training to staff responsible for operational and associated processes
- 7.6 General audit review
- 7.7 Conform to Act, rules and regulations framed there under
- 7.8 Strength and weaknesses of the designated consumer.

#### 8.0 Energy conservation measures and recommendations

- 8.1 The report shall provide existing energy profile of the designated consumer with percentage share of major equipment / processes, utilities etc., so that it becomes a basic documents for future monitoring.
- 8.2 Details of energy saving measures recommended in Form 2
- 8.3 Cost benefit analysis of each recommended energy saving measures as per standard practice.
- 8.4. The investment proposals shall be backed with technical and economic viability and prioritization of energy conservation measures based on financial analysis of various options taking into account the capacity of the designated consumer to make investment in such measures.

- 8.5. The energy auditor may also consider the substitution of existing energy use by any other form of techno-commercially viable form of energy.
- 8.6. Details of energy saving measures implemented, investment made and saving in energy achieved together with progress made in the implementation of the remaining energy saving measures in Form 3.

#### 9.0 Certification

This part shall indicate certification by accredited energy auditor stating that-

- the data collection has been carried out diligently and truthfully;
- all data monitoring devices are in good working condition and have been calibrated or certified by approved agencies authorised and no tempering of such devices has occurred;
- (iii) all reasonable professional skill, care and diligence had been taken in preparing the energy audit report and the contents thereof are a true representation of the facts;
- (iv) adequate training provided to personnel involved in daily operations after implementation of recommendations; and
- (v) the energy audit has been carried out in accordance with the Bureau of Energy Efficiency (Manner and Intervals of Time for the Conduct of Energy Audit) Regulations, 2010.

Signature
Name of the accredited energy auditor
Accreditation details
Seal

AJAY MATHUR, Director-General [ADVT III/4/185/10-Exty.]