





ACADEMY OF MARITIME EDUCATION AND TRAINING DEEMED TO BE UNIVERSITY (Under Section 3 of UGC Act 1956)



Prepared by

WASMANPRO ENVIRONMENTAL SOLUTIONS LLP

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 ACADEMY OF MARTINE EDUCATION AND TRAINING

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 (Under Section 3 of UCC Act 1550)

 Energy Audit

 2015-2016

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EXECUTIVE SUMMARY

Energy Audit was performed on the Campus of AMET Deemed to be University to establish an energy conservation programs and implementation of energy conservation activities throughout the campus to act according to the global energy crisis and contribute to the preventive measures of global climate change.

Energy Audit is the due diligence report for energy management investments in buildings. The Managing Energy process includes a complete management system for ensuring that an Energy Audit Report is technically rigorous and financially reliable, and making effective use of available resources.

The energy audit has classified the energy consumption blocks and energy-consuming appliances throughout the campus to implement energy management policy and to reduce the annual cost of the energy consumption and in the management of bulk organic solid waste.

Wasmanpro Environmental Solution LLP furnishes the energy Audit report and Suggestions to implement the conservation of energy through various management practices.



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Energy Audit

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ABBREVIATION

А	Amps		
AC	Air Conditioner		
AC	Alternating Current		
AMET	Academy of Maritime Education and Training		
CFL	Compact fluorescent lamp		
CIP	Comprehensive Inspection Programme		
EMS	Energy Management System		
DC	Direct Current		
HSD	High Speed Diesel		
Hz	Hertz		
kg	Kilogram		
kVA	kilo-volt-ampere		
kW	kilo Watts		
kWh	kilowatt hour		
kWp	Kilowatt peak		
LED	Light Emitting Diode		
LPG	Liquefied Petroleum Gas		
MMS	Module mounting structure		
MPPT	Maximum Power Point Tracker		
NAAC	The National Assessment and Accreditation Council		
SEC	Specific Energy Consumption		
SPV	Solar Photovoltaic		
STC	Standard Test Condition		
TNEB	Tamil Nadu Electricity Board		
TV	Television		
V	Volts		
W	Watts		
W/m ²	watt per square Metre		

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1 CHAPTER

1.1 Introduction



India's first Maritime Deemed to be University for maritime-related education, training and research. Overlooking the deep blue sea cradled by the Bay of Bengal and tucked in the scenic drive way of east coast road is AMET. The one and only University from India to be a member of the International Association of Maritime Universities With quality, commitment, knowledge and excellence as its corner stones, AMET had a humble beginning in the year 1993 with just 14 cadets molded for a career in merchant navy through a Higher National Diploma programme in marine

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engineering.

AMET's

uncompromising strides of

excellence in the field of maritime education and

training laced with its capacity to feed the global shipping industry with an unrivalled maritime human resource secured it the status of becoming the first Deemed to be University in India for maritime education, training, research and development activities on the 21st August 2007.

AMET had the privilege and unprecedented status of getting unveiled as a Maritime Deemed to be University from the hands of the secretary general of the International Maritime Organization, Mr.Efithimios E Mitrapoulos.

AMET serves as an ocean of knowledge for over 3700 students pursuing Programmes ranging from diploma to Doctoral programs through 4 schools and 2 intensive research and training centers for marine and marine related activities. Equipped with an excellent infrastructure for research and development, co curricular and extracurricular activities AMET secured its compliance certificate for ISO 9001:2015 QMS standards from the prestigious and globally renowned DET NORSKE VERITAS, Norway.

The National Assessment and Accreditation Council (NAAC) an autonomous institution of the University Grants Commission has assessed AMET and accredited with B Grade during November 2015. The accreditation is an indication of standards of quality as set by the NAAC and valid for a period of five years from 16-11-2015.









Forged with a vision to secure a position of prominence among the world's maritime universities and with a mission to be the fountainhead for nurturing finest intellectual capital base for the maritime sector worldwide, education at AMET caters to the comprehensive development of all its students so as to make them better educated, more articulate and demanding. To that end is enabled and inculcated by modern teaching aids, well equipped workshops for practical training, marine workshop for hands on training on marine auxiliaries, Ship in Campus, well furnished hostel, canteen facilities, indoor and outdoor games, swimming pool, medical facilities backed by an overall conducive learning environment.

For over two decades AMET is remaining as the favourite destination for campus interviews by many shipping giants such as AP MOLLER MAERSK, GOODWOOD, NYK, SONANGOL, VSHIPS, WALLEMS, SHELL, CHEVRON, STENA and so goes a list of over 100 companies. Besides positions onboard, AMET Business school graduates have secured lucrative jobs in commercial shipping sectors such as chartering and ship broking. Never the less, Naval architecture, petroleum engineering, harbour engineering, marine electrical and electronics engineering graduates have successfully walked away from AMET with jobs offering sumptuous packages along with an opportunity to grow and glow in their career swiftly. Needless to say about the entrepreneurship







development activities

nurtured into AMET'ians has been found rewarding by students who are chief executive officers of their own organization.

AMET works closely and cohesively with the global shipping industry and aligns its objectives regularly to suit the demands of the evolution in technology. Such alignment keeps the students updated and industry-ready. With a consistent placement record AMET has been recognized as a premier institution for marine and marine related jobs and has earned a position as a trustworthy consultants for research and development projects wherein the investment are worth to the tune of several crores of rupees. Adducing to this achievements are the awards and accolades garnered by AMET for a range of activities in pursuit of excellence over the last two decades in maritime education, training, research and development.

AMET commitment to cater for the maritime capacity building has no bounds. AMET's strong hold as an institution for quality, discipline and rigor has drawn the attention of several growing maritime nations. To name a few are Republic of Nigeria, Angola and Djibouti that has signed a long term memorandum of understanding with AMET for developing their nation's maritime human resource in particular and maritime infrastructure in general. Nigerian Maritime safety authority (NIMASA) which is the supreme authority for maritime administration in Nigeria, has got over 500 cadets trained through AMET over the last five years. AMET is a host to over 400 international students hailing from more than 10 countries across the world, thus providing and proving itself as a culturally diverse destination with a pledge to "Respect Diversity" and to promote cross cultural understanding which is the most essential quality for working in global environment.

AMET has a very ambitious vision 2025 plan wherein it aims to be a one stop solution for all marine related activities happening around the world and has clearly charted out an action plan to gauge its growth towards its 2025 milestone. The dogged perseverance of AMET's unmatched faculty gears up the student to meet the challenges of their life and career with tenacity of mind, endeavour to face them and emerge victorious. With a synergistic attitude prevailing among management, staff and student, AMET is all set to achieve and sustain a status par excellence.

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1.2 Vision

To sustain our identity as a leader in maritime education through progressive innovation in training, research and development that will render a brilliant future for our students and a trans formative impact on the global society.

1.3 Mission

To deliver technical knowledge and ethical values with uncompromising strides of excellence that will make our students employable, our faculty advance their knowledge, our staffs achieves excellence and our alumni become global leaders.

1.4 Quality Policy

Academy of Maritime Education and Training (AMET) is committed to provide highest quality in education and be the most preferred institution for pursuing marine and marine related Programmes.

This will be achieved by consistent focus on:

- 1. Providing a conducive, vibrant, progressive and enriching learning environment.
- 2. Teaching Excellence and Research output
- 3. Global outlook and engaging with the world through learning, teaching and research
- 4. Attracting the best and the brightest students.
- 5. Providing competitive advantage in gaining employment or further academic opportunities.
- 6. Maintaining excellent links with commerce and industry both nationally and internationally.
- 7. Complying with all applicable requirements and continually improving the effectiveness of the Quality Management system.







1.5 Recognition and Accreditation

MUMBAI	AMET has been recognized by Directorate General of Shipping (DG Shipping) for conducting Marine Engineering and Nautical Science Courses. Det Norske Veritas-Germanischer Lloyds (DNV-GL) world renowned Classification society bestowed the highest Grade A1 (Outstanding) to AMET continuously four years i.e. 2014 - 15, 2015 - 16, 2016 - 17 and 2017-18 after intensive inspection for the Comprehensive Inspection Programme (CIP) conducted under the authority of Directorate General of Shipping, Government of India.
ज्ञान-विज्ञान विमुक्तये	AMET has been conferred with Deemed University Status under De Novo category on August 2007 by University Grants Commission as per Sec.3 of UGC Act, 1956.
DNV-GL	AMET is certified to ISO 9001:2015 QMS Standard by Det Norske Veritas for Design, Development and Conducting Maritime Training Courses, Programmes, Examinations and Assessments.









1.6 Acknowledgements

WasmanPro Environmental Solution gratefully acknowledges the co-operation received from the management of AMET Deemed to be University during the study. WasmanPro in particular would like to thank, Dr.T. Sasilatha and Dr. V. Karthikeyan for the excellent support and co-ordination provided for the electrical safety audit by providing all the manpower assistance and making available the required documents.

1.7 Disclaimer

The advice rendered by WasmanPro Environmental Solution is in the nature of guidelines based on good engineering practices and generally accepted safety procedures and WasmanPro Environmental Solutions does not accept any liability for the same. The priorities of suggestions shown in the report are advisory in nature and not binding on the parties involved viz. WasmanPro Environmental Solutions and AMET Deemed to be University.

1.8 About WasmanPro Environmental Solutions LLP

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Wasmanpro Environmental Solution LLP with its vast experience in the field as an environmental consultant has core competence for Environmental audit, Green Audit, Water Audit, Industrial Safety Audit, Environmental Policies, environmental Regulatory programs, and remediation strategies. Our team of environmental experts has a proven track record of environmental compliance, Audit, and remediation services. We offer comprehensive regulatory consent and compliance support that address a full spectrum of air, water, wastewater, and hazardous waste issues, regulations, and policies. With the experience of the higher management and energy of the young engineers, wasmanpro is blooming in the field as an Environmental consultant.

- Faster Consent Management Services
- Reducing waste streams
- Improving mechanisms to track consent conditions
- Executing effective monitoring programs
- Implementing phased compliance and cleanup strategies

1.9 Core Environmental Compliance & Remediation Services

WasmanPro helps our clients advance environmental sustainability, maintain environmental compliance, and reduce environmental risk and cleanup sites by providing a diverse set of core services including:

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- Environmental Audit
- Air Emission Inventories and Reporting
- Air Quality and Clean Air Act Compliance
- Environmental Due Diligence
- Environmental Impact Assessment
- Site Investigation and Feasibility Studies
- EHS Audits & Training
- Environmental Management System and
- **Compliance Auditing**
- Environmental Monitoring

- Energy Audit
- Green Audit
- Soil Management Plans
- Hazardous and Solid Waste Management

Plans

- Remedial Design and Monitoring
- Brownfield Cleanup
- Pollution Prevention Plans
- Environmental, Health and Safety Plans
- Hydro geological studies







2 CHAPTER

2.1 Pre-Audit Stage

The Preaudit stage finalise Energy Audit team and organising Time frame. A walk through into the campus of AMET Deemed to be University, Chennai to familiarise with the common practices followed with in the campus and Collected an existing energy and production records and major energy consuming facilities and departments. Wasmanpro team has been introduced to the college energy audit team to set out a clear and workable Energy Management system through planning of simple activities within the campus, implementation of the declared energy conservation policy.

2.2 Aims and Objectives of Energy Audit

2.3 Aims and Objectives of Energy Audit

Objectives of Energy Audit:

The energy audit provides a pivotal role in the conservation of energy utilization and optimization of the energy consumption, establishing and implementation of best energy management principles.

It aims at:

i. Familiarization with the energy inlets and outlets, of energy.

- ii. Data acquisition, measurements.
- iii. Analysis of energy consuming sub-processes..
- iv. Suggest energy conservation processes along with alternatives, and economic benefits.
- v. Suggest steps to be taken for reducing energy consumption without interfering the sophisticated usage.
- vi. To identify the cost of energy and where and how it is used.

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Objective

- Understanding how energy is used within the system or process, and where it is wasted
- Finding alternative measures to reduce energy losses and improve the overall performance
- Performing a cost-benefit analysis for highlighting which energy efficiency measures are best to implement

2.4 Target Auditing for Energy Management

Target Auditing for Energy Management

Energy is transferable from one form to another form and it can be neither created nor destroyed hence it is more important to conserve the available from of energy. This audit report addresses energy sources, energy monitoring, energy consumption, lighting, appliances, and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. An old incandescent bulb uses approximately 60W to 100W while an energy efficient light emitting diode (LED) uses only less than 10 W. It is therefore essential that any environmentally responsible institution examine its energy use practices. Energy Audit deals with the identification of methods to reduce the energy consumption.

2.5 Methodology

The centre theme of the audit was to convey that the practices followed in the campus with the criteria, methods and recommendations used in the audit were based on the determined risks. The methodology includes: arrangement and filling up of questionnaire, explored inspection of the campus, observation and evaluation of the document, interviewing responsible persons and modelling of data, measurements and recommendations. The methodology taken up for this audit was a three step process comprising of:







1. Data Collection – In precedent data compendium phase, exhaustive data collection was accomplished using different tools such as observation, survey communicating with responsible persons and measurements. Following steps were taken for data collection:

The team went to each segment, centers, Library, canteen etc.

Statistics about the general information was collected by observation and interview.

The power consumption of appliances was chronicled by taking an average value in some cases.

- 2. Data Analysis Specific analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus, understanding the tariff plan provided by the Tamil Nadu State Electricity Board (TNEB). Data related to water usages were also analyzed using appropriate methodology.
- 3. Prescription/Suggestions– On the basis of results of data analysis and observations, some steps for condensing power and water consumption were recommended. Proper treatments for waste were also suggested. Use of fossil fuels has to be reduced for the sake of social group health.
- The above intentional areas particular to the college was evaluated through questionnaire circulated among the students for data collection. Five categories of questionnaires were distributed. The formats of these are given below.







3 CHAPTER

Survey Forms

3.1 Auditing for Energy Management

- List the ways of energy usage in your college. (Electricity, electric stove, kettle, microwave, LPG, firewood, Petrol, diesel and others).
- 2) Electricity bill amount for the last year
- 3) Amount paid for LPG cylinders for last one year
- 4) Weight of firewood used per month and amount of money spent? Also mention the amount spent for petrol/diesel/ others for generators?
- 5) Are there any energy saving methods employed in your college? If yes, please specify. If no, suggest some.
- 6) How much money does your college spend on energy such as electricity, gas, firewood, etc. in a month? (Record monthly for the year2016).
- 7) How many CFL bulbs have your college installed? Mention use (Hours used/day for how many days in a month)
- Energy used by each bulb per month? (For example- 60 watt bulb x 4 hours x number of bulbs (kWh).
- 9) How many LED bulbs are used in your college? Mention the use (Hours used/day for how many days in a month)
- 10) Energy used by each bulb per month? (Kwh).
- 11) How many incandescent (tungsten) bulbs have your college installed? Mentions use (Hours used/day for how many days in a month)







12) Energy used by each

- 13) How many fans are installed in your college? Mention use (Hours used/day for how many days in a month)
- 14) Energy used by each fan per month?(kwh)
- 15) How many air conditioners are installed in your college? Mention use (Hours used/day, for how many days in a month)
- 16) Energy used by each air conditioner per month? (Kwh).
- 17) How much electrical equipment including weighing balance is installed your college? Mention the use (Hours used/day for how many days in a month)
- 18) Energy used by each electrical equipment per month? (Kwh).
- 19) How many computers are there in your college? Mention the use (Hours used/day for how many days in a month)
- 20) Energy used by each computer per month?(kwh)
- 21) How many photocopiers are installed by your college? Mention use
- 22) (Hours used/day for how many days in a month).
- 23) How many cooling apparatus are in installed in your college? Mention use(Hours used/day for how many days in a month)
- 24) Energy used by each cooling apparatus per month? (kwh) Mention use (Hours used/day for how many days in a month)
- 25) Energy used by each photocopier per month? (kwh) Mention the use (Hours used/day for how many days in a month) how many inverters your college installed? Mentions use (Hours used/day for how many days in a month)
- 26) Energy used by each inverter per month?(kwh)







- 27) How many electrical equipment are used in different labs of your college? Mention the use (Hours used/day for how many days in a month)
- 28) Energy used by each equipment per month?(kwh)
- 29) How many heaters are used in the canteen of your college? Mention the use (Hours used/day for how many days in a month)
- 30) Energy used by each heater per month?(kwh)
- 31) No of street lights in your college?
- 32) Energy used by each street light per month?(kwh)
- 33) No of TV in your college and hostels?
- 34) Energy used by each TV per month?(kwh)
- 35) Any other item that uses energy (Please write the energy used per month) Mention the use (Hours used/day for how many days in a month)
- 36) Are any alternative energy sources/nonconventional energy sources employed / installed in your college? (photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.,)Specify.
- 37) Do you run "switch off" drills at college?
- 38) Are your computers and other equipment put on power-saving mode?
- 39) Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby mode most of the time? If yes, how many hours?
- 40) What are the energy conservation methods adapted by your college?
- 41) How many boards displayed for saving energy awareness?
- 42) How much ash is collected after burning fire wood per day in the canteen?
- 43) Write a note on the methods/practices/adaptations by which you can reduce the energy use in your college campus in future.







for electrical appliances

4 CHAPTER

4.1 Audit Stage

In AMET Deemed to be University, Chennai Energy auditing was done with the help of Wasmanpro Environmental Solutions LLP involving divergent student groups, teaching and non-teaching staff. The Energy audit involves the following Activities

- Data collection
- Data analysis
- Reporting and presentation

Data collection:

In preliminary data collection phase, comprehensive data collection was made using different methods such as observation, interviewing key persons, and measurements. The following steps were taken for data collection: A visit to each of the workshops, laboratories, offices and other entities of the institution. Information about the general electrical appliances was collected by observation and interviewing. The Site graphics of available building lay-out and Electricity distribution were collected. Electricity bill was collected from the personnel in-charge. The power consumption of appliances was measured using power analyzer in some cases (such as fans) while in other cases, rated power was used (CFL for example). Information was also collected on unnecessary / non-operational energy systems. The details of usage of the appliances were collected by interviewing key persons e.g.Electrician, caretaker (in case of departments) etc. and approximations and generalizations were done at places with lack of information.

Data analysis:







collected was done. Energy

consumption per month in kWh is calculated. The analysis of data is done in following way: Power Flow diagram, evaluation of collected data and analysis, reasons for the Variance between connected load and actual consumption was evaluated. Furthermore, the database prepared was further studied and the results presented graphically, this helped to identify the areas with supreme energy saving potential.

Reporting and presentation:

Detailed analysis of data

All the data collected has been analyzed, energy saving measures can be identified. The information collected and analyzed enables the auditor to detect energy saving measures to reduce energy consumption. Finally Wasmanpro Submit Detail of the report.



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5 CHAPTER

5.1 Source of Energy

AMET Deemed to be University uses Energy in following forms:

- a. Electricity from TNEB
- b. High Speed Diesel(HSD)

HSD is used as a fuel for Diesel Generator as alternative energy source in the absence of power from TNEB.

The following are the major consumers of electricity in the facility

\triangleright	Computers
\blacktriangleright	Lighting
\blacktriangleright	Air-Conditioning
\blacktriangleright	Fans
\triangleright	Other Lab Equipment

5.2 Specific Energy Consumption (SEC)

Specific Energy Consumption (SEC) is defined as energy usage per Square meter of area. It is calculated total electrical kWh/total area of the campus. By calculating SEC, we can crudely target the factors of energy efficiency or inefficiency.

5.3 Benefits of Energy Audit

An energy audit is approved to determine the energy consumption associated with a facility and the potential savings associated with that energy consumption.

- 1. This will enable prioritization based on financial benefit and return on investment.
- 2. It helps reduce energy costs in your facility.
- 3. It helps you to lower energy bills.
- 4. It helps you to increase the life span of the equipment in your facility.

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5. It discovers any unaccounted consumption that may exist at the facility.

5.4 Energy observations

Positioning of rooms and electrical appliances has huge impact on monthly electricity Bill. Electronic Appliances were still on even though they are not in use, Appliance on Standby mode could drain more power even though they are not in full operations, Faulty lightings and fittings could act as a blood sucker loads.

S.NO	MONTH	POWER CONSUMPTION (kWh)/month	TOTAL ELECTRICITY COST (Rs)
1	Jan-16	1,03,680.00	6,58,368.00
2	Feb-16	1,13,382.00	7,19,975.00
3	Mar-16	1,44,822.00	9,19,619.00
4	Apr-16	1,43,292.00	9,09,904.00
5	May-16	1,61,592.00	10,26,109.00
6	June-16	1,40,826.00	8,94,245.00
7	July-16	95,094.00	6,03,846.00
8	Aug-16	1,31,808.00	8,36,980.00
9	Oct-16	1,80,036.00	11,43,228.00
10	Sep-16	1,64,994.00	10,47,711.00
11	Nov-16	1,62,936.00	10,36,643.00
12	Dec-16	1,63,638.00	10,39,101.00
	TOTAL	1,706,100.00	10,835,729.00
	AVERAGE	1,556,098.5	902,977.42

Table	1:	Monthly	Power	Consumption
-------	----	---------	-------	-------------

- Total electricity consumption of the university is on average of 4800 units per day
- Total cost of the power consumption averagely cost up to 31,000.00 Rs per day.
- ♦ Number of Gas cylinders used per month –330-350 (19 kg cylinder)
- Cost of Gas cylinders used Rs. 3,30,000/month
- Number of Generators -2 (600,500 kVA capacities)
- ✤ Number of LED lights –527
- ✤ Number of fans −1601







Number of Air

conditioners - 279

- ✤ Number of Tube lights 2280
- ✤ Number of Transformers 2 (450 &150 kVA)
- ✤ Number of Printers −122
- Number of Xerox Machines- 4
- Energy generation by solar panels 30 kW

5.5 Current saving methods adopted in the college

- \checkmark Turn off electrical equipments when not in use
- ✓ Use energy efficient light-emitting diode (LED) bulbs instead of incandescent and CFL bulbs
- ✓ Maintain appliances and replace old appliances.
- \checkmark Use computers and electronic equipments in power saving mode.

The average energy development of the college for different purposes is approximately **1,556,098.5 KWH/month (2015-2016).** Increased production of solar energy a type of non-conventional category of energy will be a good energy management system for the college. The average Electricity charges per month are **Rs.902,977.42** for the academic year of 2015-2016 by the observation. Energy saving through the replacement of incandescent bulbs, CFL lamps and tube lights to LED light could be a good option. Energy efficient electrical equipments especially fans and pump sets can be replaced against old ones. Awareness programs for the stakeholders to save energy may also increase sustainability in the utilization of various energy sources. Caution signage boards are present at the EB room, Genset area.

Conservation Slogans and signage board:

The institution has created the consciousness about energy conservation and wastages among is all of the teaching, non teaching and administrative staffs and also among the students through regular drills and installation of conservation signage boards throughout the campus.







Figure 1: Signage boards for power conservation



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Figure 2: Transformer inside the campus



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Figure 3: Gensets of capacity 500 and 600 Kva

Figure 4: Power consumption by lifts in standby mode



RABINDRANATH TAGORE

GANGA







HOSTEL



YAMUNA HOSTEL LIFT #1 YAMUNA HOSTEL LIFT #2

5.6 Carbon Footprint Analysis

Carbon footprint analysis can be done by syndicate data collected with respective emission factor of the selected emission inventories. Table represents emission factors of the selected inventories.

Table 2: Emission factors		
Sl. No	Emission Inventory	CO ₂ Emitted
1	Electricity	0.68956kg per kwh
2	Solar based Electricity	0.05kg per kwh

The total carbon footprint of campus is determined, zone-wise and on the whole. Values are tabulated below as shown in Table.

Table 3. Tota	al CO2Emission	n from a	college	Campus
<i>Tuble 5. 1010</i>	$u CO_2 Emission$	i jrom u	conege	Campus

SI. No	Emission Inventory	CO₂ Emitted (kg/kwh)	Electricity consumed/ day	Total CO₂ Emitted (kg/day)	
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1	Electricity	0.68956	41,869.95	28,871.8427
2	Solar based Electricity	0.05	30	1.5

Note: The entry of the values will be based on the emission inventories of various zones and the emission factor of each inventory.

5.7 Electricity

Electricity is one emission inventory which contributes much to the Carbon footprint of the institution. Heating of the buildings with electricity generates a certain amount of CO_2 due to the generation of electric power. On an average, electricity sources emit 0.68956 Kg CO_2 per kWh. The emission factor given by GRID 2010 version 1.1 for hydro electricity is 6.8956 x10-4 metric tons CO_2 /kwh. 50 grams of CO_2 is emitted from 1 unit of solar power.

The details of the consumption of electricity and the use of generators in different zones are surveyed. If the number of classrooms and labs are more in a zone, consumption of electricity in that zone is more.

5.8 Solar PV Power

The solar PV Power generation system installed at Academy of Maritime Education and Training (AMET) is a high efficient, modular, extendable and cost-effective power generation solution. The system is designed as per the International Standards to ensure that the years of trouble-free operations. As a result of proven technology, the system is highly efficient and maintenance free. With one-time investment, the Solar Power Plant provides the practical way of managing the energy costs in an eco-friendly way. The savings made on energy costs will help the management to directly benefit and contributing to their growth. The details of major components used in this system are listed below.

Solar PV Modules: The sun light (solar radiation) falling on the modules is converted in to DC energy by photovoltaic principle. The generated by solar modules can either be used to supply the power to the connected load or to charge the battery bank.

PV Inverter(PCU): PCU is a common terminology used to the system consisting of Inverter and







AC synchronization

functionality. PCU does the

function of controlling grid power by leading PF and prefer the solar energy to the load. The system also contains the Charge Controller as part of the same system or as an independent unit.

Module mounting structure (MMS): MMS is the structure to mount the solar PV modules with specified angle depending on the location when the system to be mounted. The tilting will vary depending on the longitude and latitude of the location.

5.9 Salient Features and Benefits of System

- \checkmark A clean, silent and eco-friendly source of power
- ✓ Solar modules convert sunlight into electricity without pollution
- \checkmark Negligible maintenance as there are no moving parts and maximum reliability
- \checkmark Long life span of solar modules
- ✓ Modular design and easily expandable
- ✓ Simple installation: can be mounted on roof top or ground
- \checkmark Can be installed at point-of use to avoid transmission losses
- ✓ Energy Independence
- ✓ Protection against future escalation of energy costs
- \checkmark Available throughout the year

This system is designed to generate the energy in an eco-friendly manner with the source from solar radiation which is available in abundance. The system designed is for 10Kwp and 20KWp Solar Power Generation Grid Connecting Systems. These systems do not have any storage for standby power. The solar PV array will have 42numbers of 250Wp and 64numbers of 315Wp crystalline solar modules. These modules will be connected in series / parallel combination through Optimizers to the desired string configuration as per the design parameters of the PCU. The PCU are of 10KVA and 20KVA capacity with three phases AC Output. Grid power supply is provided to support the loads and to reduce the Grid power consumption when solar power is available.

The power generated from solar array is fed into the PCU through Optimizer and being inverted by the PCU (Vac). This voltage is being combined with standard grid supply to the phases (R/Y/B) and





of the inverter supply by



will lead the power factor

comparing the grid power factor. So the solar generated power will always be preferred by the leading power factor and rest of the power will be used from the grid as required by the load. If the load demand is lesser than the solar power generated, the balance power may be exported to grid and customer may get feed-in benefit as per the policies of the local electricity board. This system is working in the principal of power factor comparison and the system will feed the power to load through grid power supply. That means loads will be indirectly connected with the solar system. So, if the grid supply is not available at any moment the solar system will shut OFF immediately. We can only use sunlight directly to the load whenever the grid power is available. The system will shuts OFF at the time of low intensity or no sun light and restarts automatically when the sunlight is available. The proposed system does not required any dedicated loads or separate wiring to work on. At the time of power failure if the customer turns ON the DG supply again the solar system will run and pushes the energy back to the DG. To avoid this reverse current situation, the DG rating should be atleast be 4 to 5 times higher rating than the proposed solar power plant rating.

5.10 AMET Solar Power Plants

The Academy of Maritime Education and Training (AMET) installed its first solar power plant of capacity of 10kWp in 2014. It consists of 42 panels of each 250Wp capacity. The power generated from this plant is connected to the main power supply through the Schneider Electric make (Model: Conext TL10000E) 10kW grid connected inverter. The 10kWp Solar Photovoltaic (SPV) system at roof-top is estimated to afford an annual energy generation of 16,000 units (5units \times 10kWp \times 320days) for captive use under ideal conditions.

The generated power is feedback to the local distribution network whenever EB supply / DG supply is available to the grid tied inverter. This power is used to share the part of the loads in the campus. This inverter has inbuilt online data monitoring system.

Technical Specifications of Plant:

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Total Number of Panels:

Table 4: Solar PV Module Specifications

Manufacturer: Lubi Electronics, Gandhinagar – 382 325.

Model: LUBI MakeLE18P250

S. No	Parameters	Ratings
1	Maximum Power, P _{max}	250 W
2	Maximum Voltage, V _{max}	30 V
3	Maximum Current, I _{max}	8.34 A
4	Open Circuit Voltage, Voc	36 V
5	Short Circuit Current, Isc	9.26 A
6	Module Efficiency	15.44 %
7	Solar Irradiance (STC)	1000 W/m ²
8	No. of Cells	60 Cells

Table 5: Solar Inverter Specifications

Manufacturer: Schneider Electric	
Model No: Conext TL 10000 E	
Parameters	Ratings
Input (DC)	
MPPT voltage range, full power	350 – 850 V
Operating Voltage range	200 – 1000 V

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Max. input voltage, open circuit	1000 V
Number of MPPT	2
Output (AC)	
Normal output power	10 kVA
Nominal output voltage	230 / 400 V
Frequency	50 / 60 Hz







Figure 5: Solar power plant module array and light circuit



Figure 6: A view of AMET Solar Power Plant

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Figure 7: 20kW Solar Power Plant-2 Inverter Setup



Figure 8: 10kW Solar Power Plant-I Inverter Setup

5.11 Recommendation:

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• To establish an energy

management system to

- monitor and reduce the energy consumption.
- Install an automated energy management system that will control all spaces in accordance with usage.
- Install HVAC Control.
- Daylight should be used effectively
- Photo sensor to be installed to detect the day light and optimised the energy consumption for lights.
- Set timers appropriately for sprinklers, makeup/outside air units, air conditioning time clocks and programmable thermostats
- To achieve energy saving gradually change CFL bulbs to LED, fix energy efficient equipments, appliances, increase renewable energy installations like solar PV cells, etc.
- Periodic electrical maintenance is to be done to optimise the power usage.
- It is recommended to incorporate the details/utilisation of solar in your website to create an awareness to use renewable energy and check the adequacy of it.
- Install outdoor shading devices
- To install more LED instead of CFL and tubes to reduce the power consumption.
- Currently the university is saving Rs.1500 per day using 30 KW solar panel by increasing the capacity of the Solar panel in future to utilise the renewable energy to the maximum.
- It is recommended to install Biogas plant thereby electricity demand could be reduced by utilising renewable energy from it.
- It is recommended to check the date of filling and date of inspection periodically in the fire extinguisher.
- It is necessary to fix the inspection tag/card in the fire extinguisher.
- Stored empty barrels in the genset room should be stored separately earmarked area as per Hazardous Waste Management Rules 2016.







6 CHAPTER

6.1 Conclusion

The report indicates that the awareness about energy conservation in college students is low. There is opportunity for conservation in educational institutions and scientific approach towards energy management needs to be undertaken by the concerned stakeholders. This measure shall help in conserving energy, reduce the expendituretowards energy costs and contribute to environment saving measures. It also reduces the power consumption through installation of 30 kW solar power plants inside the campus, this helps the reduction of power consumption.

The Energy Audit would give a positive orientation to the energy cost reduction, preventive maintenance and quality control programmes which are vital for production and utility activities. Such an audit programme will help to keep focus on variations which occur in the energy costs, availability and reliability of supply of energy, decide on appropriate energy mix, identify energy conservation technologies, retrofit for energy conservation equipment etc.

The 10kWp Solar Photovoltaic (SPV) system at roof-top is estimated to afford an annual energy generation of 16,000 units (5units \times 10kWp \times 320days) for captive use under ideal conditions. Equipments like Computers are used with power saving mode. Also, campus administration runs switch –off drill on regular basis. I would like to appreciate the team effort and the commitment by the management for such a great campus activity.



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Table 6: Inventory of A/C

SL.NO	NAME	NO OF A/C	TON
1	Managing Trustee	2	2
2	Vice President	1	2
3	Vice Chancellor	1	2
4	V.C Office	1	1
5	C.E.O	1	1.5
6	Trustee	1	1.5
7	Register	1	2
8	Admin Director	1	2
9	Director Projects	1	1.5
10	Dean ME Dean PG	2	1.5
11	Cash Counter	1	1
12	P.R.O	1	1
13	Management Meeting Hall	1	1
14	PA to Pro Chancellor	1	1
15	Accounts	2	1.5
16	Administrator	2	1.5
17	Conference Hall	2	2
18	Management Dining Hall	1	1
19	Maintenance Dept	1	1
20	U.P.S	1	1.5
TOTAL		25	
MAHATM	IA GANDHI BLOCK FIRST FLOOR		
SL.NO	NAME	NO OF A/C	TON
		3	2,1.5,1
1	I.T Dept	1	1
		3	2
	Biotechnology Lab – I	2	2,1
2	Biotechnology Lab – II	1	1
2	Nanophotonics Lab	1	1.5
	Biotech HOD	1	1.5
	Chamistry HOD	1	1.5
3	Chemistry HOD		1.0





5	NAAC Office	1	1
6	IT Support	1	2
7	Marine Museum	1	1.5
ΓΟΤΑL		17	
MAHATM	IA GANDHI BLOCK SECOND FLOOR		
SL.NO	NAME	NO OF A/C	TON
l	EEE HOD	1	1.5
2	Mathematics – HOD	1	1.5
3	Maths Women Faculty	1	1.5
ŀ	EEE Staff	2	2,1
i	Alumini Office	1	1
		3	2
	CMDSS	3	1.5
)	G.M.D.S.S	1	1.5
		2	1.5
1	Dept of Physics	1	2
3	Petro Staff	1	1.5
)	Sound NS office	2	1.5
TOTAL	·	19	
MAHATM	IA GANDHI BLOCK THIRD FLOOR		
SL.NO	NAME	NO OF A/C	TON
	Naval Arch	1	1.5
		1	2
2	TRIBON	1 2	2 2
2	TRIBON	1 2 1	2 2 1
3	TRIBON Naval Director	1 2 1 1	2 2 1 1.5
3	TRIBON Naval Director Staff	1 2 1 1 2 2	2 2 1 1.5 1.5
2 3 4 FOTAL	TRIBON Naval Director Staff	1 2 1 1 2 8 8	2 2 1 1.5 1.5
2 3 4 FOTAL RABINDR	TRIBON Naval Director Staff CANATH TAGORE GROUND FLOOR	1 2 1 1 2 8	2 2 1 1.5 1.5
2 3 4 FOTAL RABINDR 5L.NO	TRIBON Naval Director Staff RANATH TAGORE GROUND FLOOR NAME	1 2 1 1 2 8 8	2 2 1 1.5 1.5 TON
2 3 4 FOTAL RABINDR SL.NO	TRIBON Naval Director Staff RANATH TAGORE GROUND FLOOR NAME E E E Marina Lab	1 2 1 1 2 8 8 NO OF A/C 2	2 2 1 1.5 1.5 TON 1

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2	DSP	2	2
2	Common Comm Loh	1	1.5
3	Common Comp Lab	1	2
4	UPS Room	1	1
5	Pre Sea Modular HOD	1	2
TOTAL	-	9	
RABINDF	RANATH TAGORE FIRST FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	Class Room	17	2
2	Staff Room	2	2
TOTAL		19	
RABINDF	RANATH TAGORE SECOND FLOOR		
SL.NO	NAME	NO OF A/C	TON
1		14	2
1	Simulators and Class Room	4	1
TOTAL		18	
RABINDF	RANATH TAGORE THIRD FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	Research – Dir	1	1.5
2	Dean Admission	1	1
3	B 20	1	1.5
4	B 21	1	1.5
5	B 22	1	1
6	B 23	1	1.5
7	B 24	1	1
8	Server Room	1	1
0	Admission Hall	Controlized AC	25 Ton
7	DNV 1&2		- 25 1011
10	Chancellor	6	1.5(2),2(3),1(1)
TOTAL		14	
RABINDF	RANATH TAGORE FOURTH FLOOR		

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SL.NO	NAME	NO OF A/C	TON
1	Class Room	8	15
L		1	15
2	Bridge Navigation Lab	2	2
FOTAL		11	
AWAHA	RLAL NEHRU GROUND FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	Harbour Engg	1	1.5
2	Doctor	1	1
3	Advisor- Sec & VIG	1	1.5
1	Lady in Patient	1	1
FOTAL		4	
AWAHA	RLAL NEHRU FIRST FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	Harbour Engg	1	2
L		1	1.5
TOTAL		2	
AWAHA	RLAL NEHRU FOURTH FLOOR		
SL.NO	NAME	NO OF A/C	TON
		1	1
l	Physical Dept	1	1
ΓΟΤΑL		2	
BHARATI	HIYAR GROUND FLOOR		
SL.NO	NAME	NO OF A/C	TON
		1	1
l	High Voltage Lab	1	1.5
ΓΟΤΑL		2	
BHARATI	HIYAR FIRST FLOOR		
SL.NO	NAME	NO OF A/C	TON
	NC Ctoff Dears (D. 7)	2	1 5







2	Marine Information Research	1	1.5
TOTAL	· · · · · · · · · · · · · · · · · · ·	3	
BHARATI	HIYAR SECOND FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	NS Dean	1	1.5
2	P A to Dean	1	1.5
3	Conference Hall	1	1.5
TOTAL		3	
BHARATI	HIYAR THIRD FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	Simulator Room(D16)	1	1
BHARATI	HIYAR FOURTH FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	Seaman Ship Lab	1	2
VIVEKAN	IANDHA - FIRST FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	English Lab	3	2 & 1.5
2	IELTS Lab	2	2
TOTAL		5	
VIVEKAN	IANDHA - SECOND FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	Centre for Non-Destr	1	1.5
2	EEE Lab	1	1.5
3	Centre of Excellence	2	1.5
4	Multimedia Centre	1	1.5
TOTAL		5	
V O C - Gl	ROUND FLOOR		
SL.NO	NAME	NO OF A/C	TON
1		6	2
1	Snri Janakiraman Auditorium	6	1.5

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3	Dept of Placement	2	1.5
4	MBA Class Room	8	1.5
TOTAL		23	
V O C - Fl	RST FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	Controller of Examine	3	1.5 & 1
-		2	1.5
2	Computer Lab (F14)	2	1
		1	2
3	F 15	2	1
4	F 16 Class Room	2	1.5
5	AMET Business School Dir	ector 4	1.5
TOTAL		16	
V O C - SI	ECOND FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	UND Marina Engineering (2	1
1	HND Marine Engineering (1	1.5
2	UCIR	1	1.5
3	Class Room (F27)	1	2
TOTAL		5	
V O C - T	HIRD FLOOR		
SL.NO	NAME	NO OF A/C	TON
1	Mech –HOD	1	1
2	Mech – Staff	1	1.5
3	F28	1	2
4	F28 (PE -Com Lab)	1	
TOTAL		4	
V O C - F0	OURTH FLOOR	ŀ	
SL.NO	NAME	NO OF A/C	TON
1	PE – HOD	1	1
2	PE – Staff	2	1 & 2
2	DE Class Dearr	12	1 (3) & 1.5
		15	(10)
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TOTAL		16	
CANTEEN	N MAIN		
SL.NO	NAME	NO OF A/C	TON
1	Vagetaklas Daam	1	1.5
1	vegetables Room	1	1.5
2		4	1
2	Dining Hall (Aksnya)	1	1
3	Main EB Panel Room	1	2
TOTAL		8	

SIC			
SL.NO	NAME	NO OF A/C	TON
1	Faculty Room	1	1.5
2	Fire Faculty	1	2
TOTAL		2	
GANGA H	IOSTEL		
SL.NO	NAME	NO OF A/C	TON
1	2F	31	1
2	4F, 5F	6	1
3	6F	3	1.5
TOTAL		40	
LIBRARY			
SL.NO	NAME	NO OF A/C	TON
1	HOD Dining Hall	1	2
2	Ladies Hostel DG	1	1.5
TOTAL		2	

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Table 7: Inventory of Electrical appliances Fan, Tube light, Cooler etc

Sl.No	BLOCK NAME	Number of Tube Lights	Number of Fans	Number of LED	Number of Wall Fans	Number of Standi ng Fans	Number of Exhaust Fans	Number of Heaters	Numb e r o f C o i e r s	Numbe r of Fr id ge
1	F – BLOCK	156	252	128	0	0	0	0	0	0
2	D – BLOCK	126	122	0	2	0	0	0	0	0
3	A – BLOCK	189	184	8	0	0	0	0	0	0
4	B – BLOCK	116	86	0	2	0	0	0	0	0
5	Ganga Hostel	418	144	0	0	0	40	13	14	0
6	Yamuna Hostel	625	260	0	0	0	10	1	1	0
7	F - BLOCK Aditorium	0	0	121	0	0	0	0	0	0
8	Work Shop I to IV	109	25	0	0	0	8	1	2	0
9	Canteen	160	212	70	13	0	10	9	7	4
10	Library	240	240	0	0	0	0	0	0	0
11	Ship in Campus	74	43	200	7	0	0	0	3	0
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12	Work Shop III	35	24	0	2	2	3	1	1	0
13	Thermal Lab	20	0	0	0	0	3	0	0	0
14	Fire Fighting Lab	12	9	0	0	0	0	0	0	0
TOTAL		2280	1601	527	26	2	74	25	28	4

Table 8: Inventory of UPS

ST NO	BLOCK	FLOOP	UNIT	NO. OF	RATING OF	POWER ELOW
5L.NO	BLOCK	FLOOK	RATING	BATTERIES	BATTERIES	TOWERFLOW
1		GROUND	20 KVA	30	42 AH	VC + REG + CONF + COSH + DEAN-ME + TRUSTEE + MNGTRUSTEE + VP + PREZ + DY.DIR + PRO + DEVARAJ + RECP + KUMAR + MAINT
2		GROUND	20 KVA	30	42 AH	ACCTS + ADMIN + Pro. Chancellor + CEO
3		GROUND	5 KVA	10	42 AH	IT Support server
4	1	FIRST	15 KVA	20	42 AH	IT Lab Inside Server
5	MAHATMA GANDI	II FIRST	10 KVA	15	26 AH	IT Lab + Bio Lab 2
6	BLOCK	FIRST	10 KVA	15	42 AH	IT Lab
7		FIRST & SECOND	10 KVA	15	42 AH	CHEM + BIO (ALL LAB) + CLASS + PET (ALL) + MATHS + PHYSICS + CLASS ROOMS
8		FIRST & SECOND	6 KVA	10	26 AH	GMDSS STAFF + CLASS 2
9		SECOND	20 KVA	30	42 AH	GMDSS CLASS 1,3,4
10		THIRD	10 KVA	15	26 AH	TRIBON LAB
11		THIRD	10 KVA	15	26 AH	ALL CLASS ROOM + STASS +HOD
12	RABINDRA NAT TAGORE	H MEZZANINE FLOOR	5 KVA	15	26 AH	DSP LAB CENTRE OF EXELLENCE INCUBATOR
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SL.NO	BLOCK	FLOOR	UNIT RATING	NO. OF BATTERIES	RATING OF BATTERIES	POWER FLOW
13		1,2 & 4	20 KVA	30	65 AH	ALL CLASS ROOM + STASS +HOD
14		SECOND	15 KVA	20	42 AH	SIMULATOR + STAFF + CLASS
15		SECOND	15 KVA	20	42 AH	ENGINE
16		THIRD - SERVER	10 KVA	16	42 AH	ADMISSION + RESEARCH + DNV - 1 & 2 + STAFF + B-AUDIT + CONF
17	IAWAHADI AI MEHDH	1,2,3 & 4	10 KVA	15	26 AH	CLASS + STAFF + PET
18	JAWAHARLAL NEHRU	FIRST	10 KVA	15	26 AH	LAB + HE-HOD + STORE
19	BHARATHIYAR	1,2,3 & 4	10 KVA	15	26 AH	CLASS + STAFF + HIGH VOLTAGE + SM LAB + SEAMAN SHIP + RESEARCH LAB - HOSTELS
20		FIRST	20 KVA	30	65 AH	IETLS
21	VIVEKANANDA	FIRST	20 KVA	30	42 AH	ENGLISH LAB
22		SECOND	10 KVA	15	42 AH	RESEARCH + STORE
23		GROUND & FIRST	20 KVA	30	65 AH	AUDIT + STAFF + E14 + COE + ABS + PLACEMENT
24	V.O.CHIDAMBARAM	SECOND & FOURTH	20 KVA	30	65 AH	STAFF ROOM + F15 LAB + MECH DEPT + CLASS ROOM + 4TH FLOOR, USIR
25		THIRD	10 KVA	16	26 AH	CLASS ROOM + STAFF
26	VDCDAIAN	EIDST EL OOD	10 KVA	15	42 AH	DIGITAL LIBRARY (SECOND FLOOR)
27		FIK51 FLOOK	10 KVA	15	42 AH	LIBRARY COMPLETE
28	SHIP - IN - CAMPUS	GROUND	5 KVA	4	42 AH	SHIP ALL AREA

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Table 9: Inventory of water pumps

Pump location	Type of Pump	Flow M ³ /hr	Motor rating (kW)	Hours of use /day
Swimming pool filtration pump - 1	Mono block	3	11.25	12
Swimming pool filtration pump - 2	Mono block	3	11.25	12
Main sump-1	Mono block	2	335	20
Hostels	Mono block	2	3.75	10
Academic	Mono block	1	3.75	06
Sewage pump (Raw)	Mono block	1	3.75	24
STP filtered water transfer pump	Mono block	1	335	06
STP reed bed	Mono block	Ι	3.75	06
STP aeration Pump -1	Mono block	Na	11.25	12
STP aeration Pump -2	Mono block	Na	11.25	12
Gat-den pump	Mono block	0.5	1.13	06

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Ref: 1) This Offic	e letter No. KPM.7	OO/CEIG/D3/2	2005, dt.	26.7.2005
2) Your Lette	er No. Nil dt.	8.8.2005		

certificates of following./HV equi are returned herewith duly attest	of Indian Electrici pments are hereby a led.	ty Rules 1956, accepted and the	the manufac original test c	cturer's test ertificates is/
SI. Equipment No.	Make	Manufacturer's SI.No.	Voltage	Capacity
1 Transformer M/s.Tan Electri	ilNadu cals	2857 11	KV/433V	630 KVA
a (a			<i>c</i>	1.5245
	10 GL	54 C		
	- KS			
212.		220		
ತ್ರಾ ಕೇಂಟ್				
		Sd/-)		
Chi	er Electrical Inspect	or to Government		
	//True Copy/For	warded//		
а С		62	Bern	HXIOS
Encl 1 Test Certificate Copy to the Senior Electrical Insp Copy to the Electrical Inspector	ASSISTANT EL	ECTRICAL INSP	ECTOR/TECH	INICAL
copy to the Electrical Inspector/	Aancheepuran			

Figure 9: Test Certificate for HV equipments

ACADEMY OF MARITIME EDUCATION AND TRAINING DEEMED TO BE UNIVERSITY (Under Section 3 of UGC Act 1956)	Energy Audit 2015-2016	P a g e 51
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5SLNo. 330104185 Date : 09.07.86

AMILNADU ELECTRICALS

Office : 28, Prithivipakkam, Ambattur, Chennal - 600 053. Tel : 2657 3479 Factory : SP-24, Ambattur industrial Estate, (Behind Ambattur Industrial Estate Fire Station) Chennal - 600 058. Tel : 2625 7421 E-mail : the@md3.vsnl.net.in

TRANSFORMER TEST CERTIFICATE MANUFACTURED TO SPECIFICATION No.IS.2026

O	M/s Academy of Maritime Education & Training, Chennal,				
Customer	NUL	Vector Group Ref.	Dvn11		
Order No.	1911	Eroguoney	50 Hz		
Capacity KVA	630 -	Frequency	+ 5% to - 10%		
Volts at No Load (HV/LV)	11000/433 ~	Tappings	+ 5% (0 - 10%		
Full Load Current (HV/LV)	33.06 /840 A	Job SI No.	285/		

MEASURED VALUES GUARANTEED VALUES TESTS Watts at 433 Voits & 50 Hz 840 No Load Test at 433 Volts & 50 Hz 2% 0.450% Mag. Current 8570 Watts at 26.25 A & 75 Deg C Load Loss 5.0% 5.40% Volts at 26.25 A & 75 Deg C Impedance At Tap No. 3 HV Windings 3.83 Ohms Resistance per phase LV Windings 1.54 milliohms 2 X Rated Volts at 100 flz for 1 minute - OK induced Over Voltage with stand Test at 35° C HV to LV & Earth 28 KV for 1 minute - OK Separate Source voltage with Stand test at 3 KV for 1 minute - OK V to HV & Earth 35° C Insulation Resistance At 25° From C.C. WV to LV √2500 M. Ohms ÿV to Earth 2500 M. Ohms Cery [03 / 2005 BIG (6(8)0X-V to Earth M.Ohms 2500 Oil Test Applied 30 KV across a gap of 2.5mm - OK 2478 masu 5 Load 1 அரசுத் தலை பை 125% அப்பான இல்துக் Efficiency at UPF ---- 98.22 () 98.53 75% 50%25% 98.82 \$9.06 99.02 Efficiency at 0.8 PF 97.79 98.17 \$8.52 98.83 98.80 RATIO TAP-1 TAP-2 TAP-3 TAP-4 TAP-5 TAP-6 TAP-7 TAP-8 | TAP-9 46.22 42.92 43.99 U PHASE 42.92 41.84 40.7339.63 46.22 45.10 43.99 42.92 V PHASE 41.85 40,73 39.63 ----46.22 W PHASE 42.92 43.99 42.92 41.84 40.73 39.63 ---... HV VOLTS | 11550 11275 11000 10725 10450 10175 9900 ---LV VOLTS 433 Temp Rise in Oil 50 ° C | HV Windings 55 °C LV Windings 55°C % Regulation at Full load 1.428% 0.8 PF UPP 3.963% --ECTR TAMIL NADU ELECTRICALS for

Figure 10: Transformer Test Certification

Date: 16/7/2005

ACADEMY OF MARITIME EDUCATION AND TRAINING DEEMED TO BE UNIVERSITY (Under Section 3 of UGC Act 1956)	Energy Audit 2015-2016	Page 52
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Test Engineer



DIESEL GENERATOR SETS: STACK HEIGHT

The minimum height of stack to be provided with each generator set can be worked out using the

following formula:

- $H = h+0.2x \ OKVA$
- H = Total height of stack in meter
- h = Height of the building in meters where the generator set is installed
- KVA = Total generator capacity of the set in KVA

For Generator Sets Total Height of stack in meter

- > 50 KVA Ht. of the building + 1.5 meter
- > 50-100 KVA Ht. of the building + 2.0 meter
- > 100-150 KVA Ht. of the building + 2.5 meter
- > 150-200 KVA Ht. of the building + 3.0 meter
- > 200-250 KVA Ht. of the building + 3.5 meter
- > 250-300 KVA Ht. of the building + 3.5 meter

Similarly for higher KVA ratings a stack height can be worked out using the above formula.

Source: Evolved By CPCB

[Emission Regulations Part IV: COINDS/26/1986-87]



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Noise Standard Classification by CPCB

SCHEDULE

see rule 3(1) and 4(1)

Ambient Air Quality Standards in respect of Noise

Day Time	Night Time
75	70
65 55	45
	65 55 50

Note:- 1. Day time shall mean from 6.00 a.m. to 10.00 p.m.

- 2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
- ¹[3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority].
 - Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

*dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq. denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is an energy mean of the noise level over a specific period.

Note: The principal rules were published in the Gazette of India vide number, 5.0.123(E), dated 14th February, 2000 and subsequently amended vide S.O.1046(E), dated 22th November, 2000, 5.0. 1088(E), dated 11th October, 2002, S.O. 1569(E), dated the 19th September, 2006 and S.O.50(E), dated 11th January, 2010.

Substituted by Rules 4 of the Noise Pollution (Regulation and Control) (Amendment) Rules. 2000 notified side S.O. 1048 (E). dated 22.11.2000



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Revised National Ambient Air Quality Standards

The Ministry of Environment and Forest (MoEF), Govt of India, vide gazette notification, G.S.R826 (E), dated 16.11.2009 have notified the National Ambient Air Quality Standards by amending the Environment (Protection) Rules 1986.

The following are the major changes have been effected.

- As against three [(i) Industrial Area (ii) Residential, Rural & other areas (iii) Sensitive Area] areas, the new standards is applicable for only two areas viz. (i) Industrial, Residential, Rural, and other areas (ii) Ecologically Sensitive Area (Notified by Central Government)
- 2. The Industrial area, Residential, Rural, and other areas have been clubbed, Ecologically Sensitive area to be notified by Central Government.
- 3. The new parameters included are particulate matter size less than 2.5 μ m OR PM2.5 μ g/M3 , Ozone,ammonia (NH3), Benzene , Benzo(a)pyrene(BaP) , Arsenic (As) and Nickel (Ni)
- Ambient air quality data generated under National Ambient Air Quality Monitoring Programme (NAMP) has been compared with revised national ambient air quality standards for the year 2010-11.

Revised National Ambient Air Quality Standards (MoEF notification G.S.R 826(E), dated 16.11.2009)

SI. No	Pollutant	Time Weighted	New Standard Rule 3 (3B) Concentration in Industrial Area	ls (Schedule VII, 16 th Nov 2009 n ambient air Ecologically	Methods of measurement
		Average	Rural & other Areas	(Notified by Central Govt)	
1	Sulphur Dioxide(SO2)	Annual Avg* 24 hours**	50.0 μg/m3 80.0 μg/m3	20.0 μg/m3 80.0 μg/m3	-Improved West and Gaeke method -Ultraviolet fluorescence
2	Oxides of Nitrogen as NO2	Annual Avg* 24 hours**	40.0 μg/m3 80.0 μg/m3	30.0 µg/m3 80.0 µg/m3	-Modified Jocob and Hochheise (Sodium Arsenite) -Chemiluminescence
3	Particulate matter (size less than 10µm)	Annual Avg* 24 hours**	60.0 μg/m3 100.0 μg/m3	60.0 μg/m3 100.0 μg/m3	-Gravimetric -TOEM -Beta attenuation
4	Particulate matter (size less than 2.5 µm	Annual Avg* 24 hours**	40.0 μg/m3 60.0 μg/m3	40.0 μg/m3 60.0 μg/m3	-Gravimetric -TOEM -Beta attenuation
5	Lead (Pb)	Annual Avg* 24 hours**	0.50 μg/m3 1.0 μg/m3	0.50 μg/m3 1.0 μg/m3	-AAS/ICP method for sampling on EPM2000 or Equivalent Filter paper -ED-XRF using Teflon filter paper
6	Carbon	8 hours**	2.0 mg/m3	2.0 mg/m3	-Non Dispersive Infra Red (NDIR)

ACADEMY OF MARITIME EDUCATION AND TRAINING DEEMED TO BE UNIVERSITY (Under Section 3 of UGC Act 1956)	Energy Audit 2015-2016	P a g e 55
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	Monoxide	1 hour	4.0 mg/m3	4.0 mg/m3	spectroscopy
	(CO)				
7	Ozone	8 hours**	100.0 µg/m3	100.0 µg/m3	-Photometric
		1 hour	180.0 µg/m3	180.0 µg/m3	-Chemiluminescence
		24 hours**	60.0 µg/m3	60.0 µg/m3	-Chemical method
8	Ammonia	Annual Avg*	100.0 µg/m3	100.0 µg/m3	-Chemiluminescence
	(NH3)	24 hours**	400.0µg/m3	400.0 µg/m3	-Indo-Phenol Blue method
9	Benzene	Annual Avg*	5.0 µg/m3	5.0 µg/m3	-GC based continuous analyzer
					-Adsorption/desorption followed by
					GC analysis
10	Benzo(a)	Annual Avg*	1.0 ng/m3	1.0 ng/m3	-Solvent extraction followed by
	pyrene	_	_	_	GC/HPLC extraction
11	Arsenic	Annual Avg*	6.0 ng/m3	6.0 ng/m3	AAS/ICP method for sampling on
		_	_		EPM2000 OR Equivalent Filter
					paper
12	Nickel		20.0 ng/m3	20.0 ng/m3	-AAS/ICP method for sampling on
					EPM2000 OR Equivalent Filter
					paper

*Annual Arithmetic mean of minimum 104 measurements in a year taken twice a

Week 24 hourly at uniform interval,

** 24 hourly / 8 hourly or 1 hourly monitored values as applicable shall be complied with 98 % of the time in a year. However, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.



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COAST ROAD. KANATHUR Deresting	TamilNadu Generation Chem High Tension Bill MARITIME EDUCATION *AND **	n and Distributio alpattu Circle l for the Month o RAINING	f January Service No Bill No	2015 451 451
Persited HD: 450 KVA Trensformer Loss: 0 /0 Tr. CAF. 0 KVA DETAILS MODULT (Fs.) Industrial Consumption Units BYS 6.250rr Unit ADDUCT (Fs.) Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2" Industrial Consumption Units BYS 6.250rr Unit Consumption Units BYS 6.250rr Unit Consumption Units BYS 6.250rr Unit Consumption	COAST ROAD, KANATHUR		Date of Bi Due Date Tariff App	11 : 30-JAN-15 : 05-FEB-15 ./Bld : IIB/IIB
DETAILS APOUNT (Rs.) 1 Industrial Consumption Units @Rs. 6.35per Unit 0.758.368.00 6.758.368.00 2 Peak Mr. Consumption Units @Rs. 6.35per Unit 0.758.368.00 6.758.368.00 3 Maint Mr. Consumption Units @Rs. 6.35per Unit 0.758.268.00 6.758.368.00 4 Consumption Units @Rs. 6.35per Unit 0.758.268.00 6.758.268.00 5 Consumption Units @Rs. 6.35per Unit 0.758.268.00 6.58.268.00 6 Total Demand And Energy Charges 415.50 1.45.425.00 9 For Mon-Availing the supply at the Required Voltage 11.404 at 100 Rs per Unit 12.406 Erta Levy for greeding limits. 2.000.00 0.00 12.405 Erta Levy for greeding limits. 3000tb Consumption Units at Rs. 12.00.00 per KVA 0.000 0.000 12.405 Erta Levy for greeding limits. 3000tb Consumption Units at Rs. 200.00 per KVA 0.000 0.000 12.405 Erta Levy for greeding limits. 3000tb Consumption Units at Rs. 200.00 per KVA 0.000 0.000 13.405 Erta Levy for greeding limits. 3000tb Consumption Units at Rs. 200.00 per KVA 0.000 0.000 13.405 Erta Levy for greeding limits. 3000tb Consumption Units at Rs. 200.00 per KVA 0.000 0.000 13.411 Bervice Charge 0.000 14.407/Less Adjustment Charge 0.00 15. Reliability Charge 0.00 <th>Permitted MD : 450 KVA Transf</th> <th>ormer Loss : 0</th> <th>/0 Tr. CAP.</th> <th>0 KVA</th>	Permitted MD : 450 KVA Transf	ormer Loss : 0	/0 Tr. CAP.	0 KVA
DETAILS DETAILS Industrial Consumption Units ERS 6.35pr Unit 1.03.600 2. Peak Hr. Consumption SX Results 2.35pr Unit 0.00 3. Our of the Consumption SX Results 2.35pr Unit 0.00 3. Commercial Consumption SX Results 2.35pr Unit 0.00 5. Commercial Consumption SX Results 2.35pr Unit 0.00 6. SS, 348.00 5. Commercial Consumption SX Results 2.35pr Unit 0.00 6. SS, 348.00 5. Commercial Consumption SX Results 2.35pr Unit 0.00 6. SS, 348.00 5. Commercial Consumption SX Results 2.35pr Unit 0.00 6. SS, 348.00 5. Commercial Consumption SX Results 2.35pr Unit 0.00 6. SS, 348.00 5. Commercial Consumption SX Results 2.00 5. Commercial Consumption Units 4.78, 70 10. Add Meter Rept 1.2.70 Ber Whit 0.000 6. Commercial Surchards 1.2.70 11. Add Etria Levy for exceeding Jimits 1.2.70 12. Add Etria Levy for exceeding Jimits 1.2.70 13. Add Etria Levy for exceeding Jimits 1.2.70 14. Add/Less Adjustment Comperence With 0.000 15. Reliability Charge 0.000 15. Reliability Charge 0.000 15. Reliability Charge 0.000 16. Other Adjustment 2.000 21. Nett Total 0.000 22. Self Generation Tax 0.000 23. Nett Total 0.000 24. Add/Less Adjustment Charge 1.2.70 25. Self Generation Tax 0.000 26. Self Generation Tax 0.000 27. Rounding Off 1.2.84 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 17. the last day of the due date happens to be a holiday, the due date shall be availed ***** For DEFUTY FINANCLE 2.50 25. Comperence State of CC Charges through RTOS facility shall be availed ***** 25. 0.2 25. Commercial Construction Tax 0.000 25. Comperence State of CC Charges through RTOS facility shall be availed ******	/			AMOUNT (Rs.)
7 Demand Charges at Rs 350 GOTPER KUA 415 50 1.45,422.00 8. Total Demand and Energy Charges 8.03,793.00 8.03,793.00 9. For Non-Availing the supply at the Required Valtage 0.00 0.00 11. Add Belated Payment Surchange 0.00 0.00 12. Add Extra Levy .for exceeding limits 0.00 0.00 aloute Consumption Units at XPM.12.200 per KMA 0.000 0.00 0.00 cloontracted Mar. Not State.12.200 per KMA 0.000 0.00 0.00 cloontracted Mar. Not State.12.200 per KMA 0.000 0.00 0.00 cloontracted Mar. Not State.12.200 per KMA 0.000 0.00 0.00 cloontracted Mar. Not State.12.200 per KMA 0.000 0.00 13. Wind Mill Service Charge 0.00 0.00 14. Add/Less Adjustment Charge 0.00 0.00 15. Reliability Charge 0.00 0.00 19. Other Adjustment 0.00 0.00 19. Other Adjustment 0.00 0.00 20. Self Generation Tax 0.00 0.00 21. Nett Fotal 0.00 0.00 Ruppess Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 14 the stat al of	DETAILS 1. IndustrialConsumption Units @Rs 2. Peak Hr. Consumption Units @Rs 3. Night Hr. Consumption 5% Rebate @F 4. Quarters Consumption 5. Commercial Consumption 6. Total Energy Charges	6.35per Unit 1.27per Unit 5.6.35per Unit	1, 03, 680 0 0 0	6, 58, 368, 00 0, 00 0, 00 0, 00 6, 58, 368, 00 0, 00 6, 58, 368, 00
8. Total Demand and Energy Charges 0. For Non-Availing the supply at the Required Voltage 0.00 9. For Non-Availing the supply at the Required Voltage 0.00 10. Add Meter Rept 0.00 11. Adg Belated Payment Surchange 0.00 12. Add Extra Levy for exceeding Limits 0.00 13. Add Belated Payment Surchange 0.00 14. Add Jease Payment Surchange 0.00 15. Reliability Charges For Low FF 0.000 16. Add/Less Adjustment Charge 0.00 16. Electricity Tax (incl rel.chg) 0.00 17. Rounding Off 0.00 19. Other Adjustment 0.00 20. Self Generation Tax 0.00 21. Nett Total 0.00 19. Other Adjustment 0.00 20. Self Generation Tax 0.00 21. Nett Total 0.00 Ruppes Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 14. He last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ******* Payment of CC charges through RTOS facility shall be availed presses * 0. E For DEPUT FINANCLES CONTROLL	7 Demand Charges at Rs 350.00 pt	T KVA	415. 50	1,45,425.00
9. For Non-Availing the supply at the Regulated Voltage II Kv at 100 Rs. per Unit 0.00 10. Add Meter Rept 0.00 11. Add Belated Payment Surchange 0.00 12. Add Extra Levy for exceeding limits. alouts Consumption Units at Profile Oper WAA blouts Consumption Units at Profile Oper WAA Octompreted on Charges for Low PF elcomp Charges For Low PF elcomp Charges For Low PF elcomp Charges For MM PF RWAHR f) Evening Peak Energy & Demand 0.00 13. Mind Mill Service Charge 0.00 14. Add/Less Adjustment Charge 0.00 15. Reliability Charge 0.00 16. Deer ation Tax 0.00 17. Rounding Off 0.00 18. Assessment Amount 0.00 19. Other Adjustment 20. Self Generation Tax 0.00 21. Nett Total 0.00 Rupes Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Dnly 17 He last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ****** Payment of CC charges through RTGS facility shall be ADE Autional pressure For DEPUT FINANC2*5 control * 0. E For DEPUT FINANC2*5 control	8. Total Demand and Energy Charges	×	C. S. A.	8, 03, 793, 00
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12. Add Extra Levy for exceeding limits a) Guota Consumption Units at RE, 12. 70 per Unit b) Guota Demand at Rs. 700.00 per KVA c) Contracted Max. Dmd Rt Ref Rs. 700.00 per KVA c) Contracted Max. Dmd Rt Rt Rt Rs. 700.00 per KVA c) Contracted Max. Provide Max. 700.00 per KVA c) Contracted Max. 700.00 per KVA c) Contracted Max. 700.00 per KVA c) Contracted Karles c) Contracted Kar	11. Add Belated Payment Surchange	SED (1		0.00
13. Wind Mill Service Charge 0.00 14. Add/Less Adjustment Charge 0.00 15. Reliability Charge 0.00 16. Electricity Tax (incl rel.chg) 40, 189, 70 17. Rounding Off 0.30 18. Assessment Amount 0.00 19. Other Adjustment 0.00 20. Self Generation Tax 0.00 21. Nett Total 0.00 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 0.00 Reference Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 0.00 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 0.00 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 0.00 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 0.00 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 0.00 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 0.00 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only 0.00 Rupees Eight Lakhs Forty Five Thousand Three Only 0.00 Rupeer Construction Five Three Only 0.00 Rupeer Construction Five Three Only 0.00	 12. Add Extra Levy for exceeding, Linal Quota Consumption Units at Rs. b) Quota Demand at Rs. c) Contracted Max. Dmd at Rs. d) Compensation Charges for Low PF RKVAHR f) Evening Peak Energy & Demand 	nits 12.70 per Unit 30.00 per KVA 30.00 per KVA	, 0. 000 0, 000	0.00 0.00 0.00 0.00 0.00 0.00 0.00
14. Add/Less Adjustment Charge 0.00 15. Reliability Charge 0.00 46. Electricity Tax (incl rel.chg) 40.189.70 7. Rounding OFf 0.30 18. Assessment Amount 0.00 19. Other Adjustment 0.00 20. Self Generation Tax 0.00 21. Nett Total 0.00 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only If the last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ******* Payment of CC charges through RTOS facility shall be availed ***** & 0.E	13. Wind Mill Service Charge			0.00
15. Reliability Charge 6. Electricity Tax (incl rel.chg) 7. Rounding Off 18. Assessment Amount 19. Other Adjustment 20. Self Generation Tax 21. Nett Total Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only If the last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ****** Payment of CC charges through RTGS facility shall be availed ***** & O.E For DEPUTY FINANCIAL CONTROLL	14.Add/Less Adjustment Charge			0.00
6. Electricity Tax (incl rel.chg) 40.189.70 17. Rounding Dff 0.30 18. Assessment Amount 0.00 19. Other Adjustment 0.00 20. Self Generation Tax 0.00 21. Nett Total 0.00 Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only If the last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ******* Payment of CC charges through RTOS facility shall be availed ****** & 0.E	15. Reliability Charge	من م الارتيان المقطعة مقت 2 هـ - 10 م	Section and Alle	0.00
19. Other Adjustment 20. Self Generation Tax 21. Nett Total Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only If the last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ******* Payment of CC charges through RTOS facility shall be availed & 0. E For DEPUTY FINANCIAL CONTROLL	6. Electricity Tax (incl rel.chg) 17. Rounding Off 18. Assessment Amount			40, 189, 70 0, 30 8, 45, 983, 00
Rupees Eight Lakhs Forty Five Thousand Nine Hundred And Eighty Three Only If the last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ****** Payment of CC charges through RTOS facility shall be availed ****** & D.E For DEPUTY FINANCIAL FORTROLL	19. Other Adjustment 20. Self Generation Tax 21. Nett Total			0.00 0.00 8,45,983.00
If the last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ****** Payment of CC charges through RTGS facility shall be availed ****** UN-UN-Y E & O. E For DEPUTY FINANCIAL CONTROLL	Rupees Eight Lakhs Forty Five Thous	and Nine Hundr	ed And Eig	hty Three Only
****** Payment of CC charges through RTGS facility shall be availed ****** & D.E For DEPUTY FINANCIAL CONTROLL	If the last day of the due date hap extended till the next working day.	pens to be a h	oliday, the	due date shall be
E & D. E For DEPUTY FINANCIAS, CONTROLL	***** Payment of CC charges thro	ugh RTGS facil	itu shall k	e availed *****
E & D. E	- 2011년 - 1911년 - 1911년 1918년 19 1918년 - 1918년 - 1918년 1918년 1918년 - 1918년 - 1918년	지역 영영을 망		(lerinia)
	Е & О. Е		For DEP	UTY FINANCIAL CONTROLL
	승규는 전에서 비가 가지 않는 것을 가지?			-11.
	물리지 집에 있는 것 같은 것 같은 것을 통하는 것			
	 A Second International Accession and Accessio		energy energy and the first sector of the firs	es researches processon a construction of the second s



Energy Audit 2015-2016





	LOTBOTATION 1 TO	in a statistica de la companya de la
Construct and Disertinution	Cornoration Ltd	
milNadu Generation and Distribution Chengalpattu Circle On Bill (Provisional) for the Month of	January - 201	6
MARITIME EDUCATION AND TRAINING MAST ROAD, KANATHUR.	Service No Bill No Date of Bill	451 451 01-FEB-16
4-603112	Due Date Tariff App./Bld	IIB/IIB
ermitted MD : 450 KVA Transformer Loss : 0 //) TT. CAP. O KVA	
DETAILS	A	10UNT (Rs.)
1. IndustrialConsumption Units @Rs 6.35per Unit 2. Peak Hr. Consumption Units @Rs 1.27per Unit	1, 13, 382	7, 19, 975. 70 0. 00 0. 00
3. Night Hr Consumption 5% Rebate @Rs 6.35per Unit	ŏ	0.00
4. Quarters Consumption 5. Commercial Consumption	o	0.00 7,19,975.70
5. Total Energy Charges	신 같은 것 같아요?	1 40 040 00
7. Demand Charges at Rs 350.00 per KVA	428.40	1,47,740.00
S. Total Demand and Energy Charges		8, 69, 915, 70
9. For Non-Availing the supply at the Required Voltage 11 KV at .100 Rs. per Unit) 1917 - 1917	0.00
10. Add Meter Rent		2,000.00
11. Add Belated Payment Surcharge		0.00
12. Add Extra Levy for exceeding limits a)Guota Consumption Units at Rs. 12.70 per Unit b)Guota Demand at Rs. 700.00 per KVA c)Contracted Max.Dmd at Rs. 700.00 per KVA d)Compensation Charges for Low PF e)Comp.Charges for WM PF RKVAHR f) Evening Peak Energy % Demand	0.00 0.000 0.000	0.00 0.00 0.00 0.00 0.00
13.Wind Mill Service Charge		0.00
14.Add/Less Adjustment Charge		0.00
15. Harmonics Compensation Charge	가는 방법은 가슴이에게 있다. 이 것은 것이 가슴을 것이다.	0, 00
6. Cross Subsidy Surcharge		0.00
7. Reliability Charge		0, 00
8.Electricity Tax (incl rel.chg) 9.Rounding Off		43, 495. 80 0, 50
0. Assessment Amount		9, 15, 412.00
1.Other Adjustment 2.Self Generation Tax		0.00
3.Nett Total		9, 15, 412.00
spees Nine Lakhs Fifteen Thousand Four Hundred And	Twelve Onlu	a train main and a sea and past and the same term in a sea and the
the last day of the due date happens to be a holic tended till the next working day.	lay, the due de	te shall be
***** Payment of CC charges through RTGS facility	shall be avail	后门 计设计分计
8 0 F	mcozo	i more a
열 한 비금, 많은 것 같은 것을 망망했는 것 같은 것이 없는 것이 같이 가지?	OF DEPUTY FINA	NCIAL CONTRO
5 - Maria Maria 2007년 - 이가 27명 및 유럽화장 등 전 2007년 - 2017년 - 2017		



Energy Audit 2015-2016



		Generation and Distribution	February - 2016	461
		Chengalps the Month of 11 (Provisional) for the Month of TNING	Service No	451 451 1AR-16
		TIME EDUCATION AND TRAINING	Date of Bill 07-M Due Date Due Date IIB/	MAR-16 /IIB
	-6031	12	Tariff MPR.	
	Permitted	MD : 450 KVA Transformer Loss : 0 ,	AMOUNT (Rs.)
	and the second s	DETAILS	44.822 9,19,6	19.70
2	1. Industrial	Consumption Units @Rs 6.35per Unit 1.27per Unit	1, 44, 5 0 0(-)	0.00
	2. Peak Hr. C 3. Night Hr C	onsumption 5% Rebate @Rs 6.35per Univ	0 0 9,19,6	0.00
	4. Quarters 5 5. Commercial 5. Total Eper	Consumption Consumption ou Charges	1,63,	149.00
	Demand Cha	rges at Rs 350.00 per KVA	466. 17 10, 82,	768.70
	8. Total Dema	nd and Energy Charges	에서 상황을 가지 않는다. 그는 것 같은 것 같은 것 같은 것 같이 있는다. 그는 것 같은 것 같은 것 같은 것 같은 것 같이 있는다.	0.00
7	9. For Non-Av	ailing the supply at the Required voice	ge 2,	0.00
	Add Meter	Rent		0.00
-	·12 11. Add Belat	ed Payment Surcharge		
	12. Add Extra	Levy for exceeding limits	0.00	0.00
	a)Quota Lo b)Quota De	mand at Rs. 700.00 per KVA	16. 140 11.	, 298.00
	d)Compensa e)Comp.Cha f) Evening	rion Charges for Low PF rges for WM PF RKVAHR Peak Energy & Demand		0.00
	13. Wind Mill	Service Charge		0.00
	14. Add/Less /	Adjustment Charge		2.00
7	15. Harmonics	Compensation Charge		0.00
	16. Cross Subs	sidy Surcharge		0.00
	17. Reliabilit	ty Charge	5	4 4 70 40
	18. Electricit 19. Rounding C 20. Assessment	ty Tax (incl rel.chg) Dff ; Amount	11,5	-0. 10 50, 205. 00
1	21. Other Adju 22. Self Gener	stment ation Tax	11,5	0,00 0,00
	23. Nett Total		4,47 -	
	Rupees Eleven	Lakhs Fifty Thousand Two Hundred An	nd Five Only	and and the last and the set of the set of the set
	If the last d extended till	ay of the due date happens to be a no the next working day.	liday, the due cave :	shall be
	**** Payme	ent of CC charges through RTGS facili	ity shall be availed	******
	E & O. E		For DEPUTY FINANCI	AL CONTROLA
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A cruck	91			
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I.	2011년 3년 4월 3월		States and the second	ter and the second s
λλάΓ	T			
ACADEMY OF MARITIME EDUCA DEEMED TO BE UNI	TION AND TRAINING VERSITY	Energy Auau		
(Under Section 3 of UGC	Act 1956)	2015-2016		





	IlNadu Generation and Distributi Chengalpattu Circle	on Corporation Ltd.	
MARITIM COAST ROA	E EDUCATION AND TRAINING D, KANATHUR	Service No Bill No	451 451 01-APR-16
nd nc od 6-603112	*&	Due Date Tariff App./Bld	07-APR-16 IIB/IIB
Permitted MD :	450 KVA Transformer Loss : 0	10 Tr. CAP. C KVA	
DET	AILS	AMOUI	NT (Rs.)
1. IndustrialConsum 2. Peak Hr. Consump 3. Night Hr Consump 4. Quarters Consump 5. Commercial Consu	ption Units @Rs ^{(*} 6.35per Unit tion Units @Rs 1.27per Unit tion 5% Rebate @Rs 6.35per Uni tion mption	1,43,272 7,1 0 t 0() 0 0	09, 904, 20 0, 00 0, 00 0, 00 0, 00 0, 00
⇒. Total Energy Cha ⁷ Demand Character	rges	492.44 1.	72, 431, 00
 Bemand Charges a E. Total Demand and 	t Rs 350.00 per KVA	472.00 10,	82, 335. 20
7. For Non-Availing	the supply at the Required Vol	tage	2 3) 1
🔍) 11 KV at .	100 Rs. per Unit		0.00
10. Add Meter Rent			2,000.00
12 Add Evens 1	ment Surcharge		0.00
4) Aduota Consump b)Quota Demand c)Contracted Mar d)Compensation e)Comp.Charges f) Evening Peak	for exceeding limits for Units at Rs. 12.70 per Unit t. Rs. 700.00 per KVA . Dmd at Rs. 700.00 per KVA . Darges for Low PF For WM PF RKVAHR Energy & Demand	0.00 0.000 42.660	0.00 29,862.00 0.00 0.00 0.00
13. Wind Mill Servi	ice Charge		0.00
/ 14.Add/Less Adjust	ment Charge		0.00
15. Harmonics Compe	ensation Charge		0.00
16. Cross Subsidy S	Surcharge	•	0.00
17. Reliability Cha 18. Electricity Tay 17. Rounding Off 20. Assessment Amou	(incl rel. chg)	10/2015.	0.00 54,116.80 0.00
21.Other Adjustmer 22.Self Generation 23.Nett Total	t OW/		0.00
Rupees Eleven Lakk	s Sixty Eight Thousand Three +	Undred And Fourtee	1,00,514.00
if the last day of extended till the	the due date hap: ens to be a next working day.	holiday, the due dat	e shall be
****** Payment	f CC charges through fac	Uty shall be availe	5 d
E& O. E Jun	all all a	FOT DEPUTY FINAL	NCIAL CONVERSE
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λλίετ			
	E	Audit	
ACADEMIT OF MARTINE EDUCATION AND TRAINING DEEMED TO BE UNIVERSITY (Indee Station 2 of 1920 Aut 1922)	Energy	nuuu	
(under Section 3 of UGC Act 1956)	2015-2	016	Page 60





	ANAGU Conception and Distributio	an Gomennet on tai	
and a second	Chengalrattu Cirle Divisional) for the Month of	of April - 2016	
	CAST POAD AND TRAINING	Service No Bill No	- 1 5. i A 5. 1
	KANATHUR	Date of Bill 02-F Due Date 08-F	147-15 147-15 1175
, ade-403	3112 · · · · · · · · · · · · · · · · · ·	Tariff App. /Bld 110	K 5.11
e faitte	d MD : 450 KVA Transformer Loss 0	70 TP. CAP. O AVH	No and an an a first sec
and the second se	DETAILS	AMOUNI (R	5.) · · ·
1. Industria) _ 11 ≥ Peak Hr. (Consumption Units @Rs 6.35per Unit	1, 41, 592 10, 24, 10 0	9,20 9,20
4. Guarters C	onsumption 5% Rebate @Rs 6.35per Unit onsumption	• 0(-) 0	0,00 0,00
6. Total Ener	Consumption gy Charges	0 10.25,10	9.20
7. Demand Cha	rges at Rs 350.00 per KVA	490.02 1.71.50	7. 00
G Total Deman	nd and Energy Charges	11,97,61	6, 20
S For Non-Ava 11 KV a	t . 100 Rs. per Unit	e	
10. Add Meter	Rent). 0. Gez
li Add Belate	d Payment Surcharge	C	
c)Quota Dema c)Contracted	nd at Rs. 700.00 per WVA	0.000 C	00
d)Compensati e)Comp.Charo	on Charges for Low PF	40.020 28.014 0	- 6 <u>0</u> 97
F) Evening P	eak Erergy & Demand	한 명이는 것은 것을 위한 것을 수. 이 것은 것은 것을 수요.	. 00° . 00° - 1. 1
13 Wind Mill Se	rvice Charge		
14. Add/Less Adj	ustment Charge	이는 사람이 같이요.	OΩ
15. Harmonics Co	mpensation Charge		
16. Cross Subsidy) Surcharge	a,	00 [*]
17 Reliability C	harge	· · · · · · · · · · · · · · · · · · ·	00
18. Electricity T 19. Rounding Off	ax (incl rel.chg)	59 880	ga - A
20. Assessment Ame	Pol 1 Frid to the	0. 12, 27, 511	00 (1) 00 (1)
22. Self Generatio 23. Nett Total	n Tax	2015-162.02,275	oo () Ge
Rupees Ten Lakhs	Five Thousand Two Hundred And Thirty	NO VO Kist, i Riv - Dala	
if the last day of	the due date happens to be a boliday	- the due into a large	
States Prince	next working day.	, fue que date phail et	
Laguest O	f CC charges through RTOS facility sh	all be gysiloo kekska	
E & O, E	For	andiguitan	4
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Α ΛΛΕΤ			
ACADEMY OF MARITIME EDUCATION AND TRAIN	ING Energy Aug	lit	
DEEMED TO BE UNIVERSITY (Under Section 3 of UGC Act 1956)	2015 2014	 {	
(onder occupity of ode Act 1990)	2015-2016)	Page 61





MARITIME EDUCATION AND TRAINING COAST ROAD, KANATHUR.	Service No Bill No Date of Bill Due Date Tariff App./Bld	451 451 02-JUN-16 08-JUN-16 IIB/IIB
Permitted MD 450 KVA Transformer Loss : 0 /	TT. CAP. O KVA	•
4:12	AMO	JNT (Rs.)
DETAILS	1 40 826 8	94, 245, 10
1. IndustrialConsumption Units @Rs 6.35per Unit 2. Peak Hr. Consumption Units @Rs 1.27per Unit 3. Night Hr Consumption 5% Rebate @Rs 6.35per Unit 4. Quarters Consumption 5. Commercial Consumption 6. Total Energy Charges	0 0 0 0 0 8	0.00 0.00 0.00 0.00 94,245.10
7. Demand Charges at Rs 350.00 per KVA	494.22 1,	72,977.00
8. Total Demand and Energy Charges	10,	67,222.10
9. For Non-Availing the supply at the Required Voltage 11 KV at .100 Rs. per Unit		0.00
10. Add Meter Rent		2,000.00
11. Add Belated Payment Surcharge		0.00
12. Add Extra Levy for exceeding limits a)Guota Consumption Units at Rs. 12.70 per Unit b)Guota Demand at, Rs. 700.00 per KVA c)Contracted Max.Dmd at Rs. 700.00 per KVA d)Compensation Charges for Low PF e)Comp.Charges for WM PF.RKVAHR, f) Evening Peak Energy & Demand 13. Wind Mill Service Charge	0. 00 0. 000 44. 220	0.00 30,754.00 0.00 0.00 0.00
4. Add/Less Adjustment Charge		0.00
5. Harmonics Compensation Charge		0.00
6. Cross Subsid y Sur charge		0.00
7. Reliability Charge		0.00
3. Electricity Tax (incl rel.chg) . 7. Rounding Off	5	3,361.10 -0,20
). Assessment Amount	11,5	3, 537. 00
. Other Adjustment . Self Generation Tax . Nett Total	11, 5	0.00 0.00 3,537.00
pees Eleven Lakhs Fifty Three Thousand Five Hundred	And Thirty Seven	Only
the last day of the due date happens to be a holiday tended till the pert working day.	, the due date sh	all be
***** Payment of CC charges through RTGS facility sh	all be availed *	CONTRELLER
	•	` •



Energy Audit 2015-2016





U Generation and Distribution Corporation Ltd. Chengalpattu Circle II (Provisional) for the Month of June - 2016 Service No 451 Service No 451 Bill No 451 Date of Bill : 02-JUL-16 Due Date : 08-JUL-16 Tariff App./Bld : IIB/IIB TIME EDUCATION AND TRAINING T ROAD, KANATHUR. -603112 Permitted MD : 450 KVA Transformer Loss : 0 /0 Tr.CAP. 0 KVA AMOUNT (Rs.) DETAILS r 6,03,846.90 1. IndustrialConsumption Units @Rs 6.35per Unit 2. Peak Hr. Consumption Units @Rs 1.27per Unit 3. Night Hr Consumption 5% Rebate @Rs 6.35per Unit 4. Guarters Consumption 5. Commercial Consumption .16 95,094 0 0(-) 0.00 0.00 ø 0 õ 0.00 6,03,846.90 6. Total Energy Charges 1,46,853.00 419.58 7. Demand Charges at Rs 350.00 per KVA STO. 7, 50, 699. 90 8. Total Demand and Energy Charges For Non-Availing the supply at the Required Voltage 11 KV at .100 Rs. per Unit -0.00 10. Add Meter Rent 2,000.00 0.00 11. Add Belated Payment Surcharge 12. Add Extra Levy for exceeding limits a)Quota Consumption Units at Rs. 12.70 per Unit b)Quota Demand at Rs. 700.00 per KVA c)Contracted Max.Dmd at Rs. 700-00 per KVA d)Compensation Charges for Low PF e)Comp.Charges for WM PF RKVAHR f) Evening Peak Energy & Demand 0.00 0.000 0.00 _ 0.000 0.00 15,014.00 0.00 11 0.00 13. Wind Mill Service Charge 0.00 0 14. Add/Less Adjustment Charge 0.00 15. Harmonics Compensation Charge 0.00 15. Cross Subsidy Surcharge 0.00) 17. Reliability Charge 0.00 M 18. Electricity Tax (incl rel.chg) 19. Rounding Off 20. Assessment Amount 38, 285. 70 0.40 8,06,000.00 21. Other Adjustment MCD-Autorist - 2015-16 1 22. Self Generation Tax 23. Nett Total -3,200.00 0.00 8, 02, 800, 00 Rupees Eight Lakhs Two Thousand Eight Hundred Only If the last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ****** Payment of CC charges through RTGS facility shall be availed ******* FOT DEPUTY FINANCIAL CONTREPAS E. & O. E



Energy Audit 2015-2016





Generation and Distribution Chengalpattu Circle (Provisional) for the Month of	July -	Ltd. 2016
POE EDUCATION AND TRAINING ROAD, KANATHUR.	Service No Bill No Date of Bill	45 29-JUL-1
03112	Due Date Tariff App./1	: O4-AUG-1 Bld : IIB/IIB
mitted MD : 450 kVA Transformer Loss : 0 /	O Tr. CAP. O	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
DETAILS		AMOUNT (Rs.)
1. IndustrialConsumption Units @Rs 6.35per Unit 2. Peak Hr. Consumption Units @Rs 1.27per Unit 3. Might Hr Consumption 5% Rebate @Rs 6.35per Unit	1,31,608 0 0(-)	B, 36, 980, 80 0. 00 0. 00
4 duarters Consumption 5 Commercial Consumption A Total Energy Charges	0	0, 00 0, 00 8, 36, 980, 80
7. Demand Charges at Rs 350.00 per KVA	503. 64	1,76,274.00
8. Total Demand and Energy Charges		10, 13, 254, 20
9.For Non-Availing the supply at the Required Voltag	9	0.00
10 Add Meter Rent		2,000.00
11. Add Belated Payment Surcharge		0.00
C)Contracted May Dmd at Rs. 700.00 per KVA d)Compensation Charges for Low PF c)Comp.Charges for WM PF RKVAHR f) Evening Peak Energy & Demand	53. 640	37, 548. 00 0. 00 0. 00 0. 00
13. Wind Mill Service Charge		0.00
14. Add/Less Adjustment Charge		0.00
15 Marmanics Compensation Charge		0.00
 16 Cross Subsidy Surcharge 		0.00
 17. Beliability Charge 19. Electricity Tax (incl rel.chg) 		0.00
19. Hounding Off 20. Assessment Amount		0.50 11,03,466.00
21.Other Adjustment 22.Sslf Generation Tax 23.Nett Tatal		0.00 0.00 11,03,465.00
Rupees Eleven Lakhs Three Thousand Four Hundred And	Sixty Six Onl	ly
If the last day of the due date happens to be a holid extended till the next working day.	ay, the due da	te shall be
SAMAGE Payment of CC charges through RTGS facility	shall be avail	化戊 劳劳劳劳劳劳
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F	or DEPUTY FIND	NCIAL CONTRO
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ACADEMY OF MARITIME EDUCATION AND TRAINING DEEMED TO BE UNIVERSITY (Under Section 3 of UGC Act 1956)

Energy Audit 2015-2016





TamilNadu Generation and Distribution Corporation Ltd. Chengalpattu Circle ension Bill (Provisional) for the Month of August - 2016 OF MARITIME EDUCATION AND TRAINING AST COAST ROAD, KANATHUR. Service No 451 451 Bill No Date of Bill Due Date 31-AUG-16 06-SEP-16 ncode-603112 Tariff App./Bld : IIB/IIB Permitted MD : 450 KVA Transformer Loss : 0 /0 Tr. CAP. 0 KVA AMOUNT (Rs.) DETAILS

 1. IndustrialConsumption Units @Rs
 6.35per Unit
 1,80,036
 11,43,228.60

 2. Peak Hr. Consumption Units @Rs
 1.27per Unit
 0
 0.00

 3. Night Hr Consumption 5% Rebate @Rs
 6.35per Unit
 0(-)
 0.00

 4. Quarters Consumption 5. Commercial Consumption 0.00 0 õ 0.00 6. Total Energy Charges 11, 43, 228. 60 7. Demand Charges at Rs 350,00 per KVA 524.46 1,83,561.00 8. Total Demand and Energy Charges 13, 26, 789 60 9. For Non-Availing the supply at the Required Voltage 11 KV at . 100 Rs. per Unit 0.00 10. Add Meter Rent 2,000.00 11. Add Belated Payment Surcharge 0.00 12. Add Extra Levy for exceeding limits a)Guota Consumption Units at Rs. 12. 70 per Unit b)Guota Demand at Rs. 700.00 per KVA c)Contracted MaxLDmd at Rs. 700-00 per KVA 0.00 0.00 0.000 74.460 52, 122, 00 d)Compensation Charges for Low PF e)Comp.Charges for WM PF RKVAHR f) Evening Peak Energy & Demand 0.00 0.00 0.00 13. Wind Mill Service Charge 0. 00 14. Add/Less Adjustment Charge 0.00 13 15. Harmonics Compensation Charge 0.00 s i 16. Cross Subsidy Surcharge 0.00 17. Reliability Charge 0.00 18. Electricity Tax (incl rel. chg) 19. Rounding Off 66, 339, 50 -0.10 20. Assessment Amount 14, 47, 251, 00 21. Other Adjustment 0.00 22. Self Generation Tax 23. Nett Total 0.00 14, 47, 251, 00 Rupees Fourteen Lakhs Forty Seven Thousand Two Hundred And Fifty One Only If the last day of the due date happens to be a holiday, the due date shall be extended till the next working day. ***** Payment of CC charges through RTGS facility shall be availed ****** FOT DEPUTY FINANCIAL CONTROLLIN E & D. E



Energy Audit 2015-2016





~	Generation and Lincip Chengalpattu Circ Chengalpattu Circ (Provisional) for the Mon	ite of September 2010 Service No Bill No Bill 07-0C	451 451 16 16 18
	TIME EDUCATION AND TRAINANT ROAD, KANATHUR.	Date Date Due Date Tariff App. /Bld : IIB/I Tariff App. /Bld :	
	403112	0 /0 Tr. CAP.	.)
	Permitted MD : 450 KVA Transformer	AMU011	90
	DETAILS	Init 1,64,994	5,00 5,00
	DEIMICO Units @Rs 1.27per Un	unit O	0.00
	1. Industrial Consumption Units end @Rs 6. 35per 2. Peak Hr. Consumption 5% Rebate @Rs 6. 35per	0 10,47,71	0.00
• ***	3. Night Hr Consumption 4. Quarters Consumption	547.80	1,90
	5. Commercial Scharges 6. Total Energy Charges	12, 39, 4	
	7. Demand Charges at Rs	15308	0.00
	S. Total Demand and Energy	2,0	00.00
	9. For Non-Availing the per Unit 11 KV at 100 Rs. per Unit		0.00
	10. Add Meter Rent		
•	11. Add Belated Payment Surcharys	0.00 Unit 0.000	0.00
	12. Add Extra Levy for exceeding 12. Add Extra Levy for Units at Rs. 12. 70 per K	VA 97. 800	0.00
	a)Quota Demand at RS. 700.00 per r b)Quota Demand at RS. Low PF		0.20
	d)Compensation Charges for WM PF RKVAHR		0.00
	e)Comp. Chur Peak Energy & Doming f) Evening Peak Energy		0.00
	13. Wind Mill Service Charge		0.00
5	14. Add/Less Adjustment Charge		0.00
e.	15. Harmonics Compensation Compensation		0.00
	16. Cross Subsidy Surchers-	61	,972.10
	17. Reliability Charge	13, 71	, 874.00
ć.	18. Electricity Tax (inc.		0.00
	20. Assessment Amount	13,7	1,874.00
	21. Other Adjustment co Salf Generation Tax	And Saventy F	our Onl
	23. Nett Total	Eight Hundred And Service date s	hall be
	Rupees Thirteen Lakhs Sevendy	be a holiday, the que cost	
	If the last day of the use and day.	eacility shall be availed	****
	****** Payment of CC charges through RTGS		L CONT
		FOR DEPUTY FINANCE	
	E & D. E		









Generation and Distribution Corporation Ltd Chengalpattu Circle (Provisional) for the Month of November - 2016 IME EDUCATION AND TRAINING Service No Bill No Date of Bill : 01-DEC-16 The Date : 07-DEC-16 RDAD, KANATHUR. 603112 Tariff App. /Bld : ITE/TTE ermitted MD : 450 KVA Transformer Loss : 0 /0 Tr.CAP. 0 KVA DETAILS AMOUNT (Rs.)

 1. IndustrialConsumption Units @R\$
 6.35per Unit
 1.63,633

 2. Peak Hr. Constriction Units @R\$
 1.27per Unit
 0

 3. Night Hr Constriction 5% Rebate @R\$
 6.35per Unit
 0

 4. Quarters Constriction
 0
 0

 5. Commercial Contraction
 0
 0

 6. Total Energy Unit jes
 0

 10, 39, 101. 30 0,00 0,00 0,00 0.00 2 10, 39, 101. 30 7. Demand Charges at Rs 461.88 1,61,658.00 350.00 per KVA 6 12,00,759.30 8. Total Demand and Energy Charges 1.1 9. For Non-Availing the supply at the Required Voltage 11 KV at . 100 Rs. per Unit 2,000.00 10. Add Meter Rent 0.00 11. Add Belated Payment Surcharge 12. Add Extra Levy for exceeding limits a)Quota Consumption Units at Rs. 12.70 per Unit b)Quota Demand at Rs. 700.00 per KVA c)Contracted Max. Dmd at Rs. 700.00 per KVA d)Compensation Charges for Low PF e)Comp. Charges for WM PF RKVAHR b)Comp. Charges for WM PF RKVAHR 0.00 0.000 8,316.00 . 0.00 11.880 f) Evening Peak Energy & Demand 13. Wind Mill Service Charge ' Ì 14 Add/Less Adjustiont Charge 15. Harmonics Concertation Charge 0.00 0.00 16. Cross Subsid. 5 charge 0.00 17. Reliability Charge 18. Electricity Tax (incl rel.chg) 19. Rounding Off 60:038.00 -0.30 12,71,113.00 20. Assessment Amount 21. Other Adjustment 19/2016 ce Excess prod - Ade -51,767.00. 22. Self Generation Tax 23. Nett Total 12, 19, 346, 00 Supees Twelve Lakhs Nineteen Thousand Three Hundred And Forty Six Only 0 f the last day of the due date happens to be a holiday, the due date shall be tended till the next working day ***** Payment of CC charges through RTGS facility shall be availed ****** sp PUTY FINANCIAL CUNT For DEPUTY & 0. E



Energy Audit 2015-2016

