KERALA STATE ENERGY CONSERVATION AWARD 2019

BEST PRACTICES

emc KERALA

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INTRODUCTION

In the context of current energy scenario in India, a lot of efforts are being taken by the Government and industries to meet the current and future demand.Energy efficiency and renewable energy are said to be the twin pillars of sustainable energy policy. Becoming more energy efficient is the cheapest and fastest way to overcome the growing energy demand and mitigation of carbon foot print . Energy Conservation Act 2001, was passed by the Indian Parliament in September 2001 for regulating the wasteful use of energy and implement various energy saving measures in different sectors of economy. Energy Management Centre (EMC) being the State Designated Agency (SDA) of Kerala has the role to facilitate, regulate and enforce the Energy Conservation Act 2001.

Energy Management Centre continues its efforts through various schemes and programs to promote energy conservation and energy efficiency among various sectors in the State. The following paragraphs highlight the major achievements of EMC during the financial year 2019-20.

As a recognition of the excellent performance in the field of energy efficiency and energy conservation, in the year 2019 EMC was adjudged as the Best State Designated Agency (Energy Conservation) in India by Ministry of Power, Government of India. Energy conservation efforts of the State during the year 2018-19 saved 33.754 MU of electricity and 88305 Kilolitre of Oil.

As Part of ENERGY CLINIC programme, 372 women across 14 districts were given training. 5000 Energy Clinics were conducted which covered about 1 lakh consumers across the state. Energy Clinic (EC) is a novel programme of EMC for energy conservation activities in the domestic sector through women as agents of change for creating energy conservation awareness among women. Energy Clinic is the first of its kind at state level, promoting the value of contributions that women can make through energy conservation. Focusing the general public of Kerala, EMC has initiated an awareness campaign "URJA KIRAN" through NGO's to create awareness on the importance of energy efficiency and energy conservation.

As part of URJA KIRAN 2018-19, 280 awareness programmes were conducted covering all the 140 constituencies in Kerala with the association of 153 NGOs.

EMC has several schemes to support students and researchers. EMC provides financial and technical supports to students and researchers of Kerala to carry out energy related projects and researches. 3 engineering student projects on energy efficiency were provided both financial as well as technical assistance. More than 200 Educational institutions and other organizations can avail the support from EMC to conduct energy related workshops, seminars and conference by their organizations. Under this scheme, Nine Energy conservation seminars/workshops were organized by various engineering colleges and technical organizations across Kerala with technical/financial assistance of Energy Management Centre.

As a part of National energy conservation day celebrations, energy conservation seminars were conducted in Trivandrum, kollam, Thrissur, Ernakulam and Idukki through energy clinic facilitators. Energy conservation day celebrations through libraries conducted energy conservation classes and documentary shows in 14 district libraries and 60 Taluk Libraries. Energy conservation classes were conducted in various industries all over kerala.

For inculcating energy conservation habits among school students a program titled "SMART ENERGY PROGRAM (SEP)" is launched for popularizing the importance of energy conservation and energy efficiency measures among students. As part of SEP, around 10,000 schools from 41 Educational Districts are enrolled with 79,800 students. Forty sensitization camps, 38 Oorjolsavams at revenue districts and 14 district level programs were conducted. Kerala State Students Energy Congress 2018-19 was conducted at School level, Educational District level, Regional Level, and State level in both UP and HS at EMC.

EMC as part of its SDA activities, submits draft GOs/Guidelines to the State Government to facilitate issue GOs/Guidelines such as EA Manual, GOs on EE&EC, ECBC, etc. mainly as per the provisions of the Energy Conservation Act, 2001,in close coordination with Bureau of Energy Efficiency (BEE). EMC Stimulate the accelerated penetration of energy efficiency by Demo Projects. EMC supports technically and selectively in financially to conduct DPR oriented Field studies, Investment Grade Energy Audits (IGEA),

investigations, studies and applied research.

One of the main activities of Energy Management Centre is therefore to develop, introduce and promote electricity generation techniques and programmes through Micro/mini & Small Hydro Power (SHP). 20 kW Kaduvetti Vortex based Micro hydroelectric project, the first of its kind in India is under implementation at Thiruvananthapuram Corporation limits. Two SHP projects of cumulative capacity 12.5 MW (8 MW Anakampoil & 4.5 MW Arippara) in Kozhikode district are nearing completion and some of SHP projects are awaiting forest clearance to proceed. Also inorder to ascertain the total small hydro potential of various river basin, EMC had started and completed 4 river basin study in Thiruvananthapuram (Karamana & Vamanapuram river) & Kollam (Ithikara & Kallada river) District through the C.E (civil) Dam Safety & DRIP consultancy division of KSEBL. The river basin study of Achenkovil & Pampa river in Pathanamthitta district is under running phase through Trivandrum Engineering College Consultancy division. The Small Hydro Power Cell at EMC is coordinating, evaluating and monitoring the allotment and implementation of small hydro projects on BOOT basis via competitive bidding route through private participation.

There are many schemes to promote energy audit in industrial and commercial building of the State. "Mandatory energy audit" for HT/EHT consumers and "walk-though energy audit" in Low Tension (LT) consumers has been introduced. This category include State and Central Public Sector Undertakings, State Government and Central Government Institutions and Government funded firms, BSNL telephone exchanges / Buildings, Cooperative sector, Small Scale Industries, Cluster etc. Energy audit completed in Thiruvananthapuram medical college, Kannur Civil Station and Pathanamthitta Civil Station and Rs 1 Crore allocated for implementing the recommendations of Energy Audit Report at Thiruvananthapuram Medical College. Apart from this, Energy Management Centre Kerala is extending financial assistance as subsidy to Public Sector Undertakings/Government buildings, excluding Designated Consumers, for conducting energy audit.

Award for 2019

This year the Awards were instituted for six categories as detailed below. The State Level Monitoring Committee for Energy Conservation in Kerala in

its sittings approved the Award scheme. The Kerala State Energy Conservation Awards 2018 scheme started with a one-day sensitization program by inviting industrial and commercial consumers in the State on 30th July 2018 at Energy Management Centre, Thiruvananthapuram. The last year award winners presented their success stories and best practices before the prospective award applicants. A Judging Committee with Prof. P.O.J Lebba (Member-Executive Committee, EMC) as Chairman, Prof. V.K. Damodaran (Founder Director, EMC), Shri. J. Nagesh Kumar (former Director, NPC, Chennai), Shri. M Suresh Kumar (Joint Director, PCRA), Shri. Jibu varghese, (BPCL Kochi Refinery as the representative of previous year energy conservation award winners), Dr.R.Harikumar, Joint Director, EMC as members was constituted to evaluate the shortlisted applicants (by the technical secretariat in EMC). The short listed applicants were invited for presentation before the judging committee on 21th and 22th November 2019 for final evaluation. Based on the recommendation of Judging Committee, the awards for 2019 were finalized by the State level Monitoring Committee.

The following are the categories for the Award 2019

Category 1: Large scale energy consumers:

(Including large scale industries –All consumers in the State with a total (electricity + fuel) annual energy consumption more than 1000 TOE (Ton of Oil Equivalent))

Category 2: Medium scale energy consumers:

(Including large & medium scale industries – All consumers in the State with a total (electricity + fuel) annual energy consumption between 150 to 1000 TOE)

Category 3: Small scale energy consumers:

(Including small scale industries – All consumers in the State with a total (electricity + fuel) annual energy consumption up to 150 TOE)

Category 4: Buildings:

(Commercial Buildings and Public Buildings-new & retrofits- including

hotels, hospitals etc who have implemented energy conservation/ efficiency programs)

Category 5: Individuals:

(Including Individuals involved in promotional efforts and Research & Innovation in energy conservation, energy efficiency)

Category 6: Institutions & Organizations:

(Including Local Bodies, NGOs and organizations involved in promotional efforts and Research & Innovation in energy conservation, Manufacturers of BEE Star labeled equipments, energy efficient retrofits/controls suitably proven and certified by competent /accredited labs/institutions in the State. And Institutions who has designed and/or developed such buildings/campus including LEED/green Building, GRIHA rated or ECBC Compliant building or with proven/certified Energy Efficiency and conservation including Green/Eco friendly considerations)

CRITERIA FOR JUDGING THE MERIT

The recipients of the awards are judged on the basis of outstanding achievements and contributions in the field of energy conservation and management. The Award may not necessarily be decided on the basis of only quantitative achievements but also taking into account various other factors such as innovative techniques and technologies adopted, commitment of the management, employee participation, environment friendliness and organizational set-up to promote energy conservation in the unit, etc.

KERALA STATE ENERGY CONSERVATION AWARD 2019

WINNERS LIST

SL. No	INDUSTRIES	CATEGORY	RECOGNITION
1	APOLLO TYRES, Perambra	Large Scale Energy Consumers	Award
2	The Kerala Minerals and Metals Ltd, Kollam	Large Scale Energy Consumers	Commendation
3	Vagavurrai Factory (KDHP), Munnar	Medium Scale Energy Consumers	Award
4	BEML Ltd, Palakkad complex	Small Scale Energy Consumers	Award
5	Allianz Technology SE, Technopark, Trivandrum	Buildings	Award
6	Vaidyaratnam P.S Varier Ayurveda College Hospital, Kottakkal	Buildings	Commendation
7	Shri. K Madhu Krishnan, Peermade	Individual	Award
8	Shri. V Jayaprakash, Koyilandy	Individual	Award
9	Chemanchery Grama Panchayat	Institutions/Organisations	Award
10	Kerala State Electricity Board Ltd, Trivandrum	Institutions/Organisations	Commendation
11	Society of Rural Science and Technology Centre, Ernakulam	Institutions/Organisations	Commendation

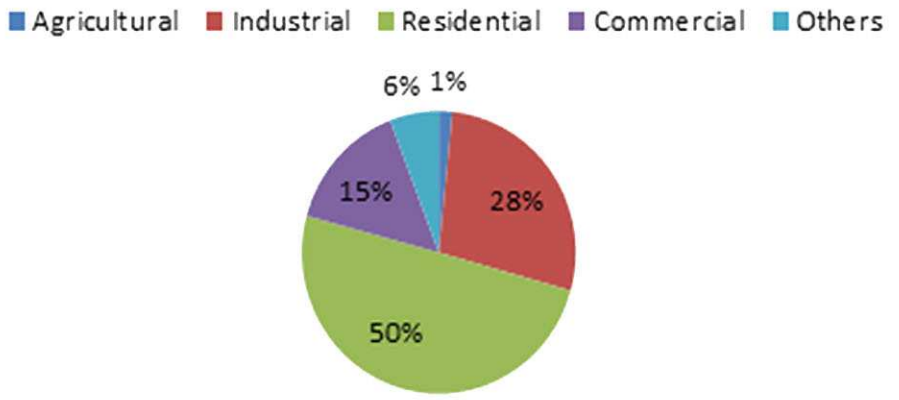
AWARD DISTRIBUTION CEREMONY

KERALA ENERGY SCENARIO

Energy is one of the major inputs for the economic development of any country. Development of conventional forms of energy for meeting the growing needs of society at a reasonable cost is the responsibility of the Government. Development and promotion of non-conventional/ alternative/ new and renewable sources of energy such as solar, wind and bio energy etc are getting sustained attention.

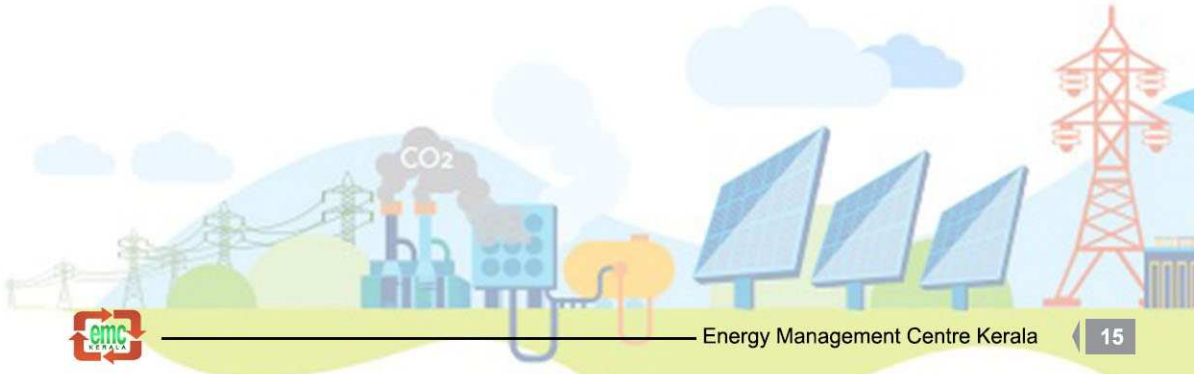
The power System in Kerala encompasses Hydel, Thermal and wind sources. Hydel energy is the most reliable and dependable source in Kerala. As of April 2020, the state had a total peak demand of 4300 MW; out of which total installed power generation capacity of the state is 2823 MW, remaining accounted by central. Total captive power generation of hydro, solar, thermal and wind in Kerala are 33 MW,32.70 MW,10 MW ,10 MW and 10 MW. Total independent power project generation of thermal, hydro, wind and solar in Kerala are 359.58 MW, 33 MW, 58.25 MW and 52 MW

SECTOR WISE ENERGY CONSUMPTION IN KERALA

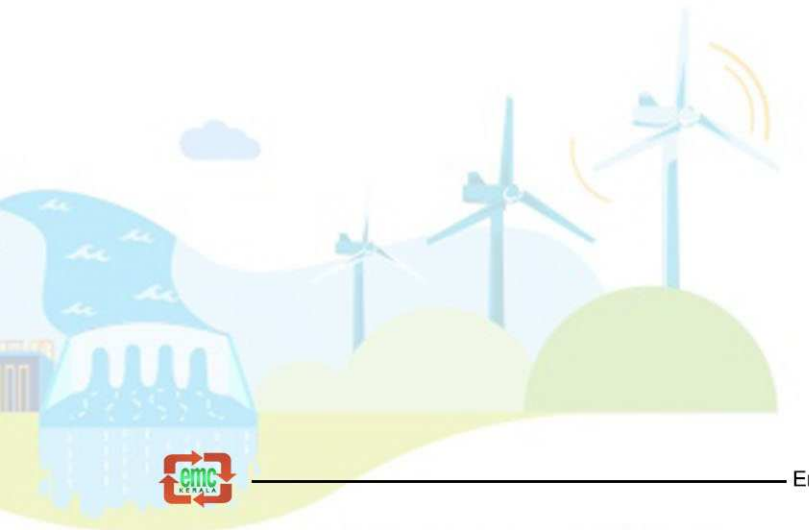


The chart shows the major commercial energy consuming sectors in Kerala. As seen from the chart, Residential sector remains the biggest consumer of commercial energy and its share in the overall consumption is 50% followed by Industrial sector - 28%, Commercial - 15%, Agriculture - 1% and other sectors - 6%. Hence we should focus more attention in the residential sector and also the industrial sector to reduce the energy consumption.

We know that primary energy sources such as Coal and other fossil fuels, which have taken three million years to form, are likely to deplete soon. For sustainable development, we need to adopt energy efficiency measures. Today, 85% of primary energy comes from non renewable, and fossil sources (coal, oil, etc.). These reserves are continually diminishing with increasing consumption and will not exist for future generations. The scope of energy efficiency and conservation exist in such context. Energy Conservation and Energy Efficiency are separate, but related concepts. Energy conservation is achieved when growth of energy consumption is reduced, measured in physical terms. Energy Conservation can, therefore, be the result of several processes or developments, such as productivity increase or technological progress. On the other hand Energy efficiency is achieved when energy intensity in a specific product, process or area of production or consumption is reduced without affecting output, consumption or comfort levels.



PROFILE OF INDUSTRIES



APOLLO TYRES, PERAMBRA

LARGE SCALE ENERGY CONSUMERS

Apollo Tyres took a humble birth at a small village called Perambra in the year 1977 with a production capacity of 32MT per day. Perambra Plant is very challenging and turbulent as the Bias tyre market is shrinking day by day. . Perambra is employing around 1800 employees with an age group ranging from 22 years to 58 years.

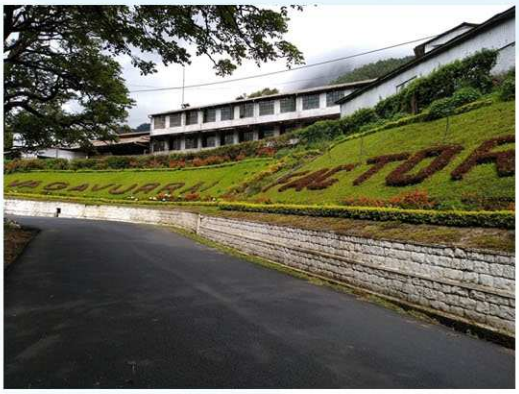
COCHIN SHIPYARD LIMITED

LARGE SCALE ENERGY CONSUMERS

Cochin Shipyard was incorporated in the year 1972 as a fully owned Government of India company. In the last three decades the company has emerged as a forerunner in the Indian Shipbuilding & Ship repair industry. This yard can build and repair the largest vessels in India. It can build ships up to 1,10,000 DWT and repair ships up to 1,25,000 DWT. Shipyard commenced ship repair operations in the year 1982 and has undertaken repairs of all types of ships including up gradation of ships of oil exploration industry as well as periodical layup repairs and life extension of ships of Navy, UTL, Coast Guard, Fisheries and Port Trust besides merchant ships of SCI & ONGC.

VAGAVURRAI TEA FACTORY

MEDIUM SCALE ENERGY CONSUMERS



Vagavurrai factory is owned by of M/s Kanan Devan Hills Company Private Limited, which has its registered office at KDHP House, Munnar and its operations dates back to 1912.

M/s KDHP Co Pvt Ltd is unique in the sense that it is the largest employee owned company in the world. Vagavurrai factory is an ISO-22000 and RA certified factory. Vagavurrai factory produces 1.8-2.1 million kgs of teas annually and most of its produce is sold in Cochin Auction under the mark "VAGAVURRAI". Vagavurrai factory also has a mini hydel generator with the capacity of 0.5MW and its runs around 6-7 months in year utilizing water flowing downstream. The power generated is synchronized with the grid.

BEML LTD, PALAKKAD

SMALL SCALE ENERGY CONSUMERS

BEML Limited was established in May 1964 as a Public sector undertaking under the administrative control of Ministry of Defence for manufacturing of Rail coaches & spare parts, Mining Equipments & spare parts, Defence Equipments & spare parts and Aerospace components etc. The company has partially disinvested and presently Government of India owns 54 percent of total equity and rest 46 percent is held by Public, Financial Institutions, Foreign Institutional Investors, Banks and Employee

RBI TRIVANDRUM

BUILDING

The Regional Office of the Reserve Bank of India started functioning in Trivandrum, the capital city of this picturesque state, in 1954. At its inception there was only one Department in the Office viz., Department of Banking Operations (DBO). The operations of the Regional Office expanded in 1968 with the addition of the Agricultural Credit Department. The present office building at Bakery Junction was opened in 1982 and all the departments housed elsewhere were shifted to this premise. Other departments also started functioning and the issue sub office was converted into a full-fledged Issue Department. The Department of Non-Banking Supervision was created in the Office in 1997and in 1998 the Department of Information Technology Cell was set up in the Office.

ALLIANZ TECHNOLOGY SE TRIVANDRUM

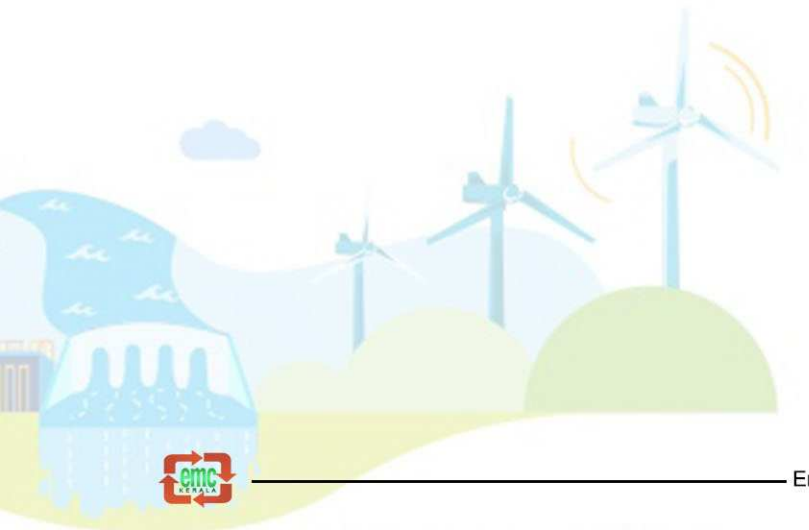
MEDIUM SCALE ENERGY CONSUMERS

Allianz Technology was founded in 1890, Allianz Group provides financial services predominantly in insurance and asset management. Our 88 million clients in over 70 countries, as well as our more than 140,000 employees rely on our knowledge, global presence, financial strength and solidity. Allianz SE, the parent company, is headquartered in Munich, Germany. With more than 10,000 employees located in 36 countries.

BEST PRATICES

CHAPTER-1

MECHANICAL SYSTEMS



Organisation	Apollo Tyres, Perambra, Thrissur
Category	Large Scale Energy Consumers

Projects implemented:

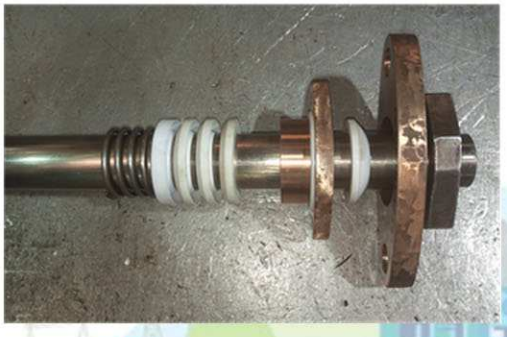
A) COOLING CONVEYER UPGRADATION TO POSITIVE DRIVE IN DUAL EXTRUDER

Upgradation of the existing conveyor to positive drive. By which a power saving of 300 unit /day

Investment	Rs 12000000
Financial saving	Rs 840000
Year of implementation	2018-19
Energy Saving	300 units/day
Vendor	Prithvi Engineering

B) GLAND SEAL MODIFICATION

Eliminate CM and slide pipe gland leaks from Tyre curing presses. Modify and horizontally implement the design change from taper clamp type to V Packing type in all curing presses.



Investment	Rs 350000
Financial year saving	Rs 1704000
Year of implementation	2018-19
Energy Savings	4.59 MTPD

Organization	Vagavurrai Tea Factory
Category	Medium Scale Energy Consumers

The projects implemented:

A) SAVINGS DUE TO REDUCTION IN CONNECTED LOAD, REPLACEMENT OF OLD INDUCTION MOTORS WITH IE3, IMPROVED THROUGH OUT

The kilogram of tea product per unit of electricity was achieved for the year was at 1.00 kgs/unit as against 0.92 kgs/unit during the last year. This achieved due through load reduction and improved throughput due to better preventive maintenance. Phased replacement of Old induction motors is in progress which helped in reduction of power consumption. A total 18 hp of load was reduced due to replacement of motors. It lag on estimated 22000 units of energy was achieved could be saved on account of the above

Investment	Rs.1.5 Lakh
Financial Year Saving	Rs.155266.05
Year of Implementation	2018-2019
Energy Savings	22000 units

B) SAVINGS IN FIREWOOD DUE TO INSTALLATION OF FORCED DRAFT FANS FOR HEATERS

The firewood consumption during the season reduced to the installation of forced draft fans for heaters. The saving in firewood was around 1146 cubic meters

Investment	Rs 3.58 lakhs
Financial year savings	Rs. 886646
Year of implementtion	2018-2019
Energy Savings	1146 cubic meters of firewood

Organization	BEML LTD, PALAKKAD COMPLEX
Category	Small Scale Energy Consumers

Projects implemented:

A) REDUCTION OF LEAKAGE OF COMPRESSED AIR LINE

BEML Ltd, Palakkad Complex was equipped with 4 nos of 200CFM compressors. With the existing production facility only one compressor was to be operated. The compressed air is required for operating shot blasting & painting facility, pneumatic tools, Vehicle tyre inflation, CNC Plasma machine etc. The set pressure was 9.5 bar. During the Energy Audit in the year 2014, it was noticed that the compressed air line leak is 16.2%. Since the leaking of compressed air will increase the energy requirement of compressor, the leak has been reduced by replacing the faulty gaskets & repair of valves in compressor airline. During the audit in the year 2019, the leak test has been carried out and it is found that the leak has been reduced to 6.25%. The anticipated annual energy saving is 15530 units and anticipated annual cost saving is Rs.93000/-. Investment is Rs. 5000/-.

Investment	Rs. 5000
Financial savings	Rs. 93000
Year of implementation	2018-2019
Energy Savings	15530 units

B) REDUCTION OF DRINKING WATER PIPE LINE PRESSURE FROM 2 BAR TO 1 BAR

In factory, the drinking water is supplied through Hydro-pneumatic system pipe line system. The drinking water is supplied to all over the factory, executive residences & Guest house. The Hydro- pneumatic system consists of pressure pumps & pressure switch control, hydro-pneumatic tank and pipe line. The required pressure is set in pressure switch control. Once the pressure is set, the pump will operate when the pressure in pipe line is fall below the set pressure and will stop operation after reaching the set pressure. The initial line pressure was set to 2 bar. After carrying out study, it is found that the line pressure can be sent to 1 bar to cater the drinking water need throughout the factory. Hence the line pressure has been reduced to 1 bar which eliminates the frequent operation of pumps. The anticipated annual energy saving is 2000 units and anticipated annual cost saving is Rs. 12400/-. Investment: **NIL.**

Investment	NIL
Financial year savings	Rs. 12400
Year of implementation	2018-2019
Energy Savings	2000 units

C) PIPE LINE MODIFICATION FOR AVOIDING USAGE OF 12.5HP PUMP OPERATION FOR RAIL SHOWER TEST & PUTTY CUTTING MACHINE OPERATION

The shower test facility has been installed in Palakkad Complex for testing Rail shells & PINAKA vehicles. The PINAKA vehicles require water at a pressure of 4 bar for 30 minutes for testing the leak of Tarpaulin. The rail shower test requires water at 2 bar pressure for 10 minutes & putty cutting operation for 20 minutes. In the present condition the shower test facility is charged through 12.5HP pump which can develop 4 bar pressure suitable to test PINAKA vehicles. The main raw water pipe line is laid near the shower test facility to supply water to water storage tank of shower test. Hence the pipe line connection has been extended to connect to the existing shower test facility to cater the needs of Rail shell leak test and putty cutting operation without operating the 12.5HP motor. The anticipated annual energy saving is 1395 units and anticipated annual cost saving is Rs. 8700/-. Investment is Rs. 3000/-.

Investment	Rs. 3000
Financial year savings	Rs. 8700
Year of implementation	2018-2019
Energy Savings	1395 units

D) SWITCHING OFF COMPRESSOR 4 HOURS EARLY IN II-SHIFT

BEML Ltd, Palakkad Complex is equipped with 4 nos of 200CFM compressors. With the existing production facility only one compressor is to be operated. The compressed air is required for operating shot blasting & painting facility, pneumatic tools operations, Vehicle tyre inflation, CNC Plasma machine operations etc. Due to the very less pneumatic operation in II shift, the compressor is switched OFF 4 hrs early in II shift on daily basis for saving the energy. The air stored in receiver tank & pipe line is sufficient for operating pneumatic tools for the remaining shift hours.

Investment	NIL
Financial year savings	Rs. 83000
Year of implementation	2018-2019
Energy Savings	13500 KWh

E) INTRODUCTION OF INVERTER TYPE WELDING MACHINES

BEML Ltd, Palakkad Complex has adopted a policy for procurement of energy efficient inverter type welding machines for welding applications. Since the inception of factory in the year 2010, Palakkad Complex is using only inverter type welding machines (80 nos). For the past 3 years, BEML had procured 10 Nos of Inverter welding machines for different applications. In current FY 2019-20, another 8 nos of inverter welding machines are proposed.

Investment	Rs. 20 lakhs
Financial year savings	Rs. 2.79 lakhs
Year of implementation	2018-2019
Energy Savings	45000 kWh
Agency that executed the project	M/s. ESAB INDIA LTD

Organization	Allianz Technology SE, Trivandrum
Category	Building

The Projects implemented :

A) DATA CENTER TEMPERATURE OPTIMIZATION

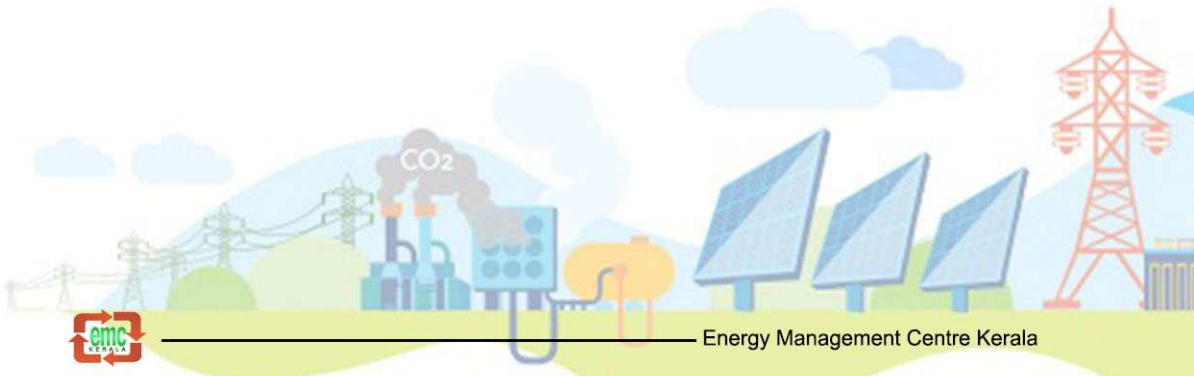
Revised set temperature for data centers from 21 to 23 degrees

Investment		NA
Financial year saving		5.04 Lakh
Year of implementation		2018-19
Energy Savings		67.27 MU
Agency		Allianz Internal team

BEST PRATICES

CHAPTER-2

ELECTRICAL SYSTEMS



Organisation	Apollo Tyres, Perambra, Thrissur
Category	Large Scale Energy Consumers

Projects that were implemented :

a) REDUCTION OF HARMONICS IN TRANSFORMER

Reduction of harmonics in the system by installing Harmonic filter in LT side of MCC-1 Transformer. Transformer temperature is reduced by 8 degrees. Power factor improved from 0.7 to Unity in individual transformer and total system power factor improved from 0.98 to 0.99. Current harmonics reduced from 16% to 6% and voltage harmonics reduced from 5% to 2%. All the above factors contributes to reduction in power by 300 units per day.

Investment	Rs.42 Lakhs
Financial year savings	Rs.6.3 Lakhs
Year of Implementation	2018-19
Energy Savings	300 units per day
Vendor Details	ENCON

B) OPTIMISATION OF CURING VENTILATION SYSTEM USING TIMERS

Timers installed for switching OFF ventilation fans alternatively based on ambient temperature during night shifts. Estimated saving of 200 units / day.

Investment	Rs 50000
Financial year saving	Rs 630000
Year of implementation	2018-19
Energy Savings	200 units per day

C) ELECTRONIC CONTROLLER FOR ENSURING MINIMUM FLOW IN PCWS

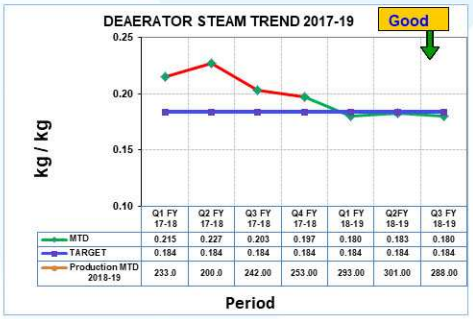
By cutting off bleeding lines, energy savings of 300 units/day.

Pump life improvement by ensuring minimum flow.

Investment	Nil
Financial year saving	Rs 630000
Year of implementation	2018-19
Energy Saving	300 units per day

D) TO REDUCE DEAERATOR STEAM CONSUMPTION

Install RTD in HW Recovery line, the feedback of which is used to control the operation of HW Recovery Piston valve to bring forth temperature based recovery in place of time based recovery using PLC/Controller



Investment	Rs 3520000
First year saving	Rs 2780000
Year of implementation	2018-19
Energy Savings	150 units per day

Organization	Vagavurrai Tea Factory
Category	Medium Scale Energy Consumers

The projects implemented:

A) CHANGING OLD TYPE LIGHTS TO LED LIGHTS

All the electrical conventional electrical lights (250 watts mercury Vapour and ordinary 40 watt tube lights) in the factory were replaced with 50 W Luker / Lutron LED lights and energy efficient 18 watt LED tube lights respectively. A total number of 5 nos 250 watts and 70 numbers conventional tube lights were changed.

Investment	Rs 37500
Financial year savings	Rs 95985
Year of Implementation	2018-19
Energy Savings	13500 units
Agency : In house with help of the Engineering Department	

Organization	BEML Ltd, Palakkad Complex
Category	Small Scale Energy Consumers

The Projects implemented:

A) AVOIDING THE USAGE OF 1.5 HP PUMP FOR WATER TRANSFERRING FROM MAIN WATER STORAGE TANK

In Pump house, underground water storage tanks are constructed to store water available from KINFRA. The storage capacity of main tank is 3 lakhs litres. From there it is transferred to sub water storage tanks for different usage. The water from main tank is pumped with the help of 1.5HP pump and transferred to sub tank for other usage. The water from main tank is pumped with the help of 11KW motor throughout the factory at a pressure of 2 bar. In order to avoid the usage of 1.5HP pump, minor pipe line modification work has been done to utilize the running of 11KW motor to transfer water from main pump to sub tank.

The anticipated annual energy saving is 1600 units and anticipated annual cost saving is Rs. 10000/-.

Investment	Rs. 2000
Financial year savings	Rs. 10000
Year of implementation	2018-2019
Energy Savings	1600 units

B) INTRODUCTION OF ASTRONOMICAL TIMER FOR STREET LIGHTS

The Astronomical timer is a timer which automatically adjusts the time, to switch ON/OFF based on the Sun rise/ set. The existing street lights in BEML Ltd, Palakkad Complex were operated using normal timers and the same needs to be adjusted every time during the change in Sun rise/set. Hence the ignorance of time setting, shall affect the unnecessary energy wastage during when there is enough sun light. There are totally 4 nos of Astronomical timers are introduced for each street light circuits. The anticipated annual saving is 200 units.

Investment	Rs. 9980
Financial year savings	Rs. 1200
Year of implementation	2018-2019
Energy Savings	200 units
Agency	Astronomical timers supplied by M/s. MC GOTAWAT ELECTRICALS & Installation carried out by M/s. BEML Ltd, Palakkad Complex

Organization	Allianz Technology SE, Trivandrum
Category	Building

The Projects implemented:

A) INTRODUCTION OF 4 ELECTRIC VEHICLES INTO THE EMPLOYEE TRANSPORT FLEET

Investment	20.16 Lakh
Financial year saving	Nil
Total Year of implementation	2018-19
Other saving for 2018-19	Carbon foot print reduction – 19542 kg
Project vendor details	Mahindra Logistics

B) CONVERSION OF CPU TO THIN CLIENT

Replacement of 3200 conventional CPUs with power saving Thin client equipment

Investment	480 ₹ Lakh
Financial year saving	56.76 ₹ Lakh
Year of implementation	2018-19
Energy Savings	756.92 MU
Agency	Allianz Project

C) INSTALLATION OF PHOTO LIGHT SENSORS FOR EMERGENCY LIGHTING

15 nos. of Photo light sensors installed

Financial year saving	1.94 Lakh
Year of implementation	2018-19
Energy Savings	26.28 MU
Agency	Micron Electricals

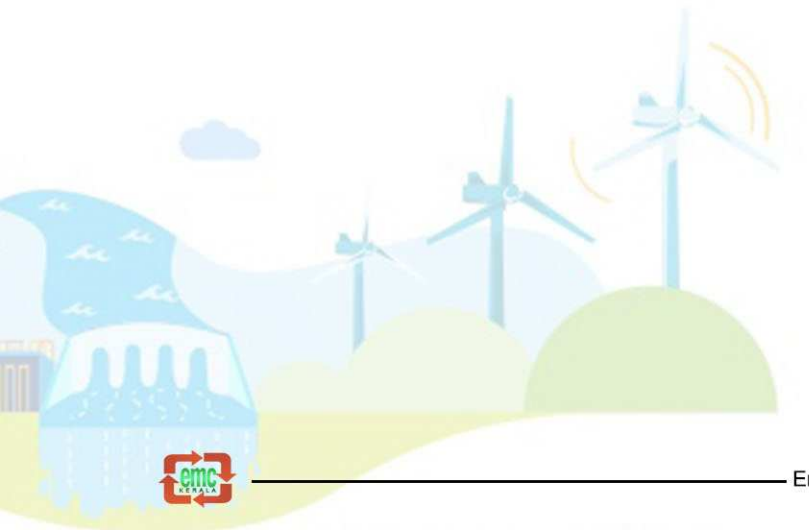
D) CONVERSION OF CFL LAMPS WITH LED LAMPS

Investment	18.39 Lakh
Financial year saving	5.58 Lakh
Year of implementation	2018-19
Energy Savings	74.48 MU

BEST PRATICES

CHAPTER-3

THERMAL SYSTEMS



Organisation	Apollo Tyres Perambra
Category	Large Scale Energy Consumers

Project that was implemented

A) ENERGY EFFICIENT HOTBOX FOR TYRE BUILDING MACHINE

Replace the old hotbox with new energy efficient hot box in all Tyre building machine.

Investment	Rs 300000
Financial year saving	Rs 630000
Year of implementation	2018-19
Energy Saving	200 units per day
Project Vendor Details	VTECH

BEST PRATICES

CHAPTER-4

RENEWABLE ENERGY INTEGRATION

Organization	BEML Ltd, Palakkad Complex
Category	Small Scale Energy Consumers

The Projects implemented:

A) PROPER MAINTENANCE & MONITORING OF 50KW SOLAR POWER PLANT

In factory a 50KWp Solar power plant was installed in the year 2018, and the energy generated by the Solar plant is monitored on daily basis and frequent cleaning of solar panels (two weeks once) has been carried out meticulously. The Solar power plant has generated 64714 units from the year 2018-19 against anticipated generation of 72000 units there by achieved 88% of target. The anticipated annual energy generation is 72000 units and anticipated annual cost saving is Rs. 4.5 lakhs/-.

Investment	NIL (as the Solar plant is under warranty period)
Financial year savings	Rs. 4.5 lakhs/-
Year of implementation	2018-2019
Energy Savings	72000 units
Project Vendor Details	M/s. MC GOTAWAT ELECTRICALS

Organization	Cochin Shipyard
Category	Large Scale Energy Consumers

The project implemented:

A) INSTALLATION OF 300 KWP GRID CONNECT SOLAR PV POWER PLANT AT ROOF TOP OF HULL SHOP

As a part of green energy initiative Cochin Shipyard Limited (CSL) has started installing solar power plants in roof tops of various buildings/shops since 2013. CSL has provided an additional 300 kWp Grid connected Solar Power Plant at roof top of hull shop in October 2018 in addition to the 535 kWp solar power plant installed earlier at various locations of the plant. With the commissioning of this plant the total installed capacity of solar power plant in CSL became 835 kWp. In addition to the above, a 650 KWp solar power plant installation is under progress and is expected to be completed by March 2020.

Investment	Rs. 15322611
Financial year savings	Rs. 2520000
Year of implementation	2018-2019
First year other savings	Rs. 340 Ton CO2 per Year
Agency that executed the 300 KWP solar project	M/s. Sunsure Energy Pvt Limited

Organization	RBI, Trivandrum
Category	Building

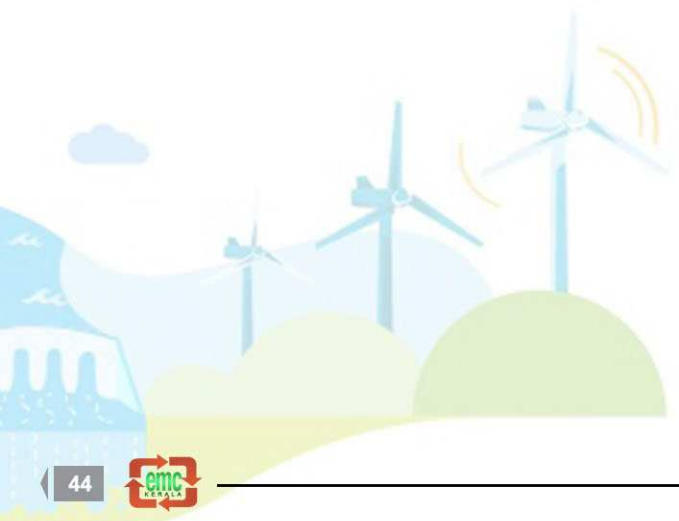
The Project implemented :

A) INSTALLATION OF 30KWP SOLAR POWER PLANT

Investment	Rs 16.00 lakh
Financial year savings	Yet to assess
Year of Implementation	May 2019
Energy Saving	23.42 MWh
	M/s Adtech Systems Ltd.5/2523, Golf Links Road Kowdiar P O, Thiruvananthapuram – 695 003

CONCLUSION

Kerala State Energy Conservation Awards organises by the EMC since 1997 recognise and honour outstanding achievements and commitments of States Energy Consumers in the field of efficient use of energy and its conservation. Such measures contribute to the sustainable socio-economic growth and development of the State, supplementing the movement across the globe towards sustainability. EMC encourage all the stakeholders in the state to actively participate in this movement for clean and green future



SMALL SCALE ENERGY CONSUMERS

SL NO	DETAILS OF PERSON TO BE CONTACTED FOR MORE INFORMATION
1	BEML LTD, PALAKKAD COMPLEX Name : Ullas R Shenoy Designation : Asst. Manager (Maintenance) Mob : 9496332960 Email : ullasrshenoy@gmail.com, pse@beml.co.in

BUILDINGS

SL NO	DETAILS OF PERSON TO BE CONTACTED FOR MORE INFORMATION
1	ALLIANZ TECHNOLOGY SE, TECHNOPARK CAMPUS, TRIVANDRUM Name : Santhosh Godwin Mob No. : 9895868590 Email : Santhosh.godwin1@allianz.com, Smitha.nair2@allianz.com

INSTITUTIONS AND ORGANISATIONS

SL NO	DETAILS OF PERSON TO BE CONTACTED FOR MORE INFORMATION
1	RBI, TRIVANDRUM Name : Shri V Jayaraj Designation : Manager Estate Department, Reserve Bank of India, Trivandrum

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