CAPACITY BUILDING OF PUBLIC SECTOR UNDERTAKINGS OF KERALA

- Review of Energy Conservation Project Proposals -








Organized by:

Bureau of Public Enterprises
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Capacity Building of Public Sector Undertakings of Kerala in Energy Management

Bureau of Public Enterprises, Government of Kerala (BPE) and Energy Management Center- Kerala (EMC), who is the State Designated Agency (SDA) in implementing Energy Conservation, Act, 2001 in Kerala, have jointly undertaken a capacity building programme for Public Sector Undertakings in Kerala (PSUs) in energy management.

In the first phase, three days programmes were conducted during 10 to 14, March 2008 in three locations, viz., Thiruvanathapuram, Ernakulam and Kozhikode. Sixty middle to senior level engineers of various Kerala PSUs were trained in Energy Conservation and Energy Audit in these three programmes(List of the participants given in Annexure-I). During the first two days interactive training sessions were held with experts in the field of energy audits on various systems, equipments and industrial sectors; and on the third day an industrial visit was conducted, wherein practical on-site discussions were conducted on energy efficiency considerations and audit methodology. The programmes were held as follows:

- 10-12th March 2008 at Mascot Hotel, Thiruvananthapuram with the practical session at Hindustan Latex Ltd, Aakulam Plant Thiruvananthapuram;
- 11-13th March 2008 at Gokulam Plaza, Kochi with the practical session at Apollo Tyres, Kochi and
- 12-14th March 2008 at Fortune Hotels, Kozhikode with the practical session at MILMA Dairy, Kozhikode.

In the Phase II, a three day residential programme was conducted at Rivera Suits, Thevara, Kochi during 23rd to 25th July 2008. In this programme the energy managers/engineers presented sectoral specific and energy end-use equipment/system specific proposals on Energy Efficiency programmes and projects identified in their respective units. During these presentations experts from National Productivity Council, Industries, Bureau of public Enterprises and Energy Management center had in-depth interaction and critical analysis on these proposals. About fourty-two representatives from fourty Kerala PSUs participated in this programme (List of the participants given in Annexure-II), where in proposals having considerable energy saving potential.

This report is a compilation of the proposals as reviewed and analyzed in the Phase II, based on which subsequent activities such as detailed energy audit and/or the preparation of DPR and steps converging to implementation may have to be taken up.

PROPOSALS AT A GLANCE

Sl No:	Classification as per BPE-Kerala	Name of the PSU	Name of the Participant	Recommendations On Proposals
1	Ceramics and refractories	KERALA CLAYS AND CERAMICS PRODUCTS LTD	Shri A K Krishnakumar	• Detailed Energy Audit has to be conducted. • There is energy saving scope in Pumping system. • Scope for improvements in compressed air system.
2	Chemical Industries	MALABAR CEMENTS LTD	Shri Reji Abraham	• Energy efficiency project and Wind power generation to be included for CDM benefit. • Detailed Project Report (DPR) is required in the case of Captive Power Plant (CPP) and for micro hydro power. • Comparing the bench mark at each stage required. • Specific energy consumption norms already specified by the Cement Industries Association; this may be taken as reference basis for benchmarking energy efficiency of the plant.
3		TRAVANCORE TITANIUM PRODUCTS LTD	Shri M K Prabhakaran	• Steam from waste heat boiler and operation of fuel fired boiler needs to be optimized (avoiding steam venting). • Separate steam audit and thermal system to be carried out. • Waste heat recovery from furnace and combustion improvement of furnace to be taken up in priority. • Conversion of SKO fuel by Furnace Oil. • Detailed analysis of replacement of screw conveyor is needed. • As the plant is highly energy intensive (34% Energy cost) all saving potential in thermal system to be identified and implemented.
4		THE KERALA MINERALS AND METALS LTD	Shri B K Vijayasai	• Installation of waste heat recovery. • Fuel substitution to be explored. • There is a scope for segregation of compressed air line. • Leakage assessment and FAD test for compressed air system to be carried out.
5		OUSHADHI	Shri K A Chandrasekhara Rao	• Scope for changing boiler fuel to biomass. • Asbestos roofing has to been changed. • Detail energy audit to be carried out.
6		TRAVANCORE COCHIN CHEMICALS LTD	Shri K Madhusoodanan Shri K V Balan	• Suggestion for liquefying hydrogen. It was mentioned that there is huge potential for energy optimization • Scheme to measure the energy utilization in the process, by software support. • Water audit to be conducted.
7		THE TRAVANCORE CEMENTS LTD	Shri P S Sebastian	• Detailed Energy audit is necessary. • More details required about the present condition.

8	Development & Infrastructural agencies	KERALA STATE FILIM DEVOLEPMENT CORPORATION	Shri M A Chandran Nair	• Detailed Energy Audit is necessary. • Performance assessment of Ac systems (kWh/T). • Replacement of all old chiller compressors. • Chiller manufacturer to be contacted for assessing the performance as well as installation of new chiller with performance guaranty. Development of energy indicators for all the properties.(kWh/sqm ; kWh/occupancy)
9		KTDC	Shri M Madhusoodanan Pillai	• Centralized control systems for power and Ac. • Power consumption for AC and other utility should be metered separately. • Water audit to be conducted. • Cooler pump operations to be studied and checked to identify the scope for avoiding pumps which are operating in parallel.
10		KINFRA	Smt K Rekha Shri K S Kishore Kumar Smt A K Geesha Shri S Riyas	• The occupancy of the video park is too low. • Detailed energy audit to be conducted.
11		SIDCO	Shri T K Santhosh Kumar	• Detail energy audit and energy information system need to be taken up.
12		KSIE	Shri D Suresh Kumar	• More details required.
13	Electrical equipments	UNITED ELECTRICAL INDUSTRIES Ltd	Shri G Unnikrishnan Nair	• Use of Star labeled equipment in the offices such as lightings; and use of energy efficient fan. • In the tender specification, requirement of Star labeled equipments shall be included.
14		KERALA ELECTRICAL AND ALLIED ENGINEERING COMPANY LTD	Shri P A Sudheeran Smt Nishkala	• Heat recovery form “alternator testing centre “to be given priority. • SFC monitoring to be based on capacity of transformer manufactured not based on the value of the product. • Daily load curve has to be plotted; and from that load scheduling has to be identified.
15		TRACO CABLE COMPANY LTD	Shri Biju Kuriakose Shri A T Manoj	• Detailed Energy audit to be carried out. • Water audit and Energy audit is necessary. • As medium term improvement, rectification of capacitors to be taken up.
16		TELK	Shri A R Bhadran Smt L Kala	• In thyristor control oven, there is scope for close range control. • Scope for heat balance in oven and compressor optimization. • Detailed Energy Audit to be conducted.
17	Electronics	KELTRON	Shri K Sajeev	• Detailed energy audit is necessary.

18	Engineering	AUTOKAST Ltd	Shri C Sugunan	• Utilization of the biomass instead of furnace oil in drying has to be explored • Detailed energy Audit for the Compressed air system and pumping to be carried out. • All medium term investment is viable and detailed Engineering studies to be conducted.
19		KERALA AUTOMOBILES LTD	Shri Jibu Tom Joseph	• Detailed Energy Audit is required. • FAD test for air system has to be conducted. • Plotting of daily load curve.
20		KERALA AGRO MACHINERY CORPORATION LTD	Shri A Unnikrishnan, Shri P Radhakrishnan	• Air amplifier can be used in cleaning area; in this case VFD may not be required; better option is to go in for a small sized compressor. • For air requirement, detailed evaluation is required.
21		STEEL COMPLEX LTD	Shri A C Vasudevan	• Energy saving measures in auxiliary system to be studied and implemented. • Energy monitoring system need to be improved. • A detailed energy audit is needed.
22		STEEL AND INDUSTRIAL FORGING LTD	Shri K Laksminarayanan Shri Ramesh Kannapady	• Compressed air system and waste heat recovery can be detailed engineered and implemented. • Detailed study has to be conducted regarding the possibility of implementing producer gas; utilizing the waist energy source available from Palm Oil Corporation can be utilized.
23	Plantation and Agro based units	REHABILITATION PLANTATIONS LTD	Shri N Gopakumar	• An assessment of the availability of the waste needs to be done. • The project of dual mode diesel and biomass gasifier is a viable proposal; detail study/DPR to be done.
24		MEAT PRODUCTS OF INDIA LTD	Shri M V Sreejith	• Biogas can be used for heating. • Water analysis is necessary. • Heat Exchanger model or solar water heating system. • Option of energy efficiency boiler needs to be studied since the boiler is very old. • Combination of solar, biogas and LPG could be a better option; to be studied in detail. • Scope for plant automation for improving efficiency to be looked into.
25		PLANTATION CORPORATION OF KERALA LTD	Shri T M Mathew	• SHP with solar PV and biomass gasifier is better option. • Detailed Energy Audit is necessary.

26	Public utilities	KERALA SHIPPING AND INLAND NAVIGATION CORPORATION LTD	Smt K P Sujatha,	• Data base for the preventive maintenance of the equipments to be made. • Specific fuel consumption of the present engines to be checked. • Scope for making solar Boats.
27		KSRTC	Shri Easter Yashica	• Bench mark for energy consumption for depot • Analysis of the waste lube oil • Energy audit , including fuel efficiency trials to be taken for fleet sample
28	Textiles	KERALA STATE TEXTILE CORPORATION LTD	Shri V Vijayan, Malabar Spinning & Weaving mills Shri C V Vinod kumar, Edarikkode Textiles Shri K G Unnikrishnan, Prabhuram Mills Shri K A Chandrasenan, Kottayam Textiles	• Changing the die cast fan with FRP can be implemented immediately because it is already proven in one of the unit. • Option for high pressure fogging technology for humidity control. • Installation of energy efficient motor to be carried out by the motor manufacturers through differed payment basis for the entire four units together.
29	Traditional Industries	KERALA STATE BAMBOO CORPORATION LTD	Shri T S Viswanathan	• There is a scope of alternate cheaper fuel; Coconut shell with CDM benefits may be evaluated. • A detailed thermal audit to be carried out
30		KERALA STATE COIR CORPORATION LTD	Shri P A Roby	• Detailed energy audit is required. • Evaluate the option of heat exchanger for the waste water drain.
31		FOAM MATTINGS (INDIA) LTD	Shri S Abey Sundaram	• Boiler efficiency evaluation required.
32		HANDICRAFT DEVELOPMENT CORPORATION OF KERALA		• Detailed Energy audit is necessary • More details required on submission made
33		KERALA STATE HANDLOOM DEVELOPMENT CORPORATION Ltd	Shri K Rajan	• Steam Audit and Thermal Audit has to be done • Boiler efficiency Study to be done.
34		KERALA KHADI & VILLAGE INDUSTRIES BOARD	Shri V P Jose	• Dedicated official for Energy conservation is proposed. • Details about energy consumption to be collected • There is scope for Building Energy audit in all units.

ACTIVITY BASED TABULATION OF ENERGY EFFICIENCY AND ENERGY CONSERVATION PROPOSAL

Key activity	Name of the institution and proposal
DPR	**Malabar Cement** Detailed Project Report (DPR) is required in the case of Captive Power Plant (CPP) and for micro hydro power
	Rehabilitation Plantation Ltd The project of dual mode diesel and biomass gasifier is a viable proposal; detail study/DPR to be done
Detailed Energy audit	Kerala Clays and Ceramics Products Ltd
	Oushadi
	The Travancore Cements Ltd
	Kerala State Film Development Corporation
	KINFRA
	SIDCO
	Traco Cable Company Ltd
	TELK
	KELTRON
	Kerala Automobiles Ltd
	Steel Complex Ltd
	Plantation Corporation of Kerala Ltd
	Kerala State Coir Corporation
Water Audit	Travancore cochin chemicals Ltd
	KTDC
	Traco Cable Company Ltd
	Meat products of India
Air audit	Kerala Clays and Ceramics Products Ltd
	Kerala Minerals Metals Ltd
	Steel and Industries Forging Ltd

Name of the Institution	**STEEL COMPLEX LTD**
Address	**Post Box No.42,** **Feroke,** **Calicut- 673631** **Tele phone:0495 2483328 to 2483332** **Fax:2483043** **steelcomplexltd@yahoo.co.in**
Present activity	Manufacturing and marketing of steel billets and constructional steel items like CTD and TMT bars
Capacity of the plant	55000MT of Steel billets
Participant Name	Vasudevan .A.C, Junior Manager (Production)
Key proposals	Mr.Vasudevan explained the process of the plant and Energy saving measures taken by the institution. • Specific Energy consumption 620-650kWh/T • Company is in a transition period (they are going to have a collaboration with SAIL)
Experts Comments	• Specific energy consumption of 650kWh/ton, shall be separately indicated for liquid metal and auxiliaries • Applicability of Energy Conservation measures for 10 ton capacity needs to be assessed; as larger capacity plants may not be a comparable model. . • Economics of oxygen lancing to be reviewed. • Energy saving measures in auxiliary system to be studied and implemented. • Energy monitoring system need to be improved. A detailed energy audit is needed.

STEEL COMPLEX LTD

Name of the Institution	**STEEL AND INDUSTRIAL FORGING LTD**
Address	**Athani P.O,Trichur-680771**
Present activity	Manufacturing and sale of Steel forgings
Capacity of the plant	5040 MT of steel forging
Participant Name	1. Laksminarayanan. K 2.Ramesh Kannapady
Key proposals	Mr. Laksminarayanan. K explained the process of the plant and Energy saving measures taken by the institution. • Installation of 420kVAr with APFC to improve power factor from 0.92 to 0.99 • Reducing the heart loss from the surface of the pit furnace • Rectification of the compressed air leakage in the plant • Replacement of the present compressor with energy efficient compressor • Installation of the energy saver for the lighting • Maximum utilization of natural light • Replacement of 40W tube with choke by 36W slim tube with electronic ballast. • Reduction of time for which furnace door kept open • Provide heat recovery system for 10T and 6T forge furnace.
Experts Comments	• Specific energy consumption for all the products to be estimated • Monitoring of Energy consumption need to be improvised • Study of present loading and unloading pattern of air compressor on shift bases • Combination of load/remote center (R) and station center (SC) will give more results • SC good for base load and RC is good for the fluctuating load

	• Establish the requirement for secondary receiver capacity • Cost per KVAr improvement seems high(Check) • Every Sunday a leak test may be conducted in the air compressors since the investment is low and returns high, more importance may be given to it. • Assess cost per hour of open furnace and display so as to show the employees of the effects of that. • Energy balance for one forging and one heat treatment needs to be carried out • Heat recovery possibilities are there as flue gas temperature is high at present value of 270 degree. • Install temperature monitoring System for heat recovery system. • Detailed flue gas analysis may be done • A baseline status of combustion efficiency has to be noted. • Waste heat recovery to be installed. • Compressed air system and waste heat recovery, both can be detailed engineered and implemented, EMC and its experts are ready to give technical assistance**.** • Possibility of alternative fuel/fuel substitution may be studied; as indicated by the participants from KSRTC considering the option for using waist lube oil • Experts opinion that metallurgy of the products should be studied before the change over to waist lube oil • Energy saver reduce the voltage • Listing and codification of all compressed air usage points. • Use of special pneumatic valves and pipe fittings Detailed study has to be conducted regarding the possibility of implementing producer gas; utilizing the waist energy source available from Palm oil corporation can be utilized

Name of the Institution	**AUTOKAST LTD**
Address	**S N Puram.P.O, Cherthala-688582**
Present activity	Manufacturing and marketing of GI,SG iron casting mainly for Automobile and Engineering Industries including exports.
Capacity of the plant	G.I Castings 15000MT SGI Casting 5000MT Steel Casting 3000MT
Participant Name	Sugunan.C
Key proposals	Mr. Sugunan.C explained the process of the plant and Energy saving measures taken by the institution. **Short term Proposals** • Reduction in contract demand • Concrete platform for sand drying **Medium term proposals** • Purchasing of lower capacity compressors • Providing new cooling tower near the pump • Replacing low efficient pumps, valves, motors and pipe lines **Long term proposals** • Purchasing of medium frequency induction furnace • Replacing old air circuit breakers (ACBs) and oil\circuit breakers(OCBs) • Replacing existing 20MVA transformer

Experts Comments	• Conduct capacity test, that is, free air delivery (FAD) for air compressors • More conscious approach and technical evaluation need to be taken for purchasing of the proposed new air compressors • Air demand to be studied • Existing pump details such as efficiency to be analyzed • Flow requirement to be found out for pump • Cooling tower performance to be studied • Energy saving in the replacement of line frequency with medium frequency has to be reviewed. • medium frequency furnace can be switched off as per requirement and can reduce the holding Energy consumption • Utilization of the biomass instead of FO in drying has to be explored • Detailed energy Auditing of Compressed air system and pumping to be carried out. • Short and Long term investment is not viable now • All medium term investment is viable and detailed Engineering studies to be conducted. • A bank guaranty of Rs44 lakh required to contract demand (annual saving 14lakhs) as per KSEB • Replacement of 20MVa transformer is not feasible.

Name of the Institution	**UNITED ELECTRICAL INDUSTRIES LTD**
Address	**Pallimukku, Vadakkevilla.P.O,Kollam-691010**
Present activity	Production of single phase and poly phase static energy meters, motor starters ,cross arm, AB switches and tube light fittings
Capacity of the plant	SP static meter 600000 PP static meter 6000 2 line cross arm 10000 11kV V-cross arm 5000 NSD starter 300 ATS starter 400 OSR starter 100 FAATS starter 50
Participant Name	G. Unnikrishnan Nair
Key proposals	Mr. G. Unnikrishnan Nair explained the process of the plant and Energy saving measures taken by the institution • Installation of 50kVAr with APFC and 17.5kVAr Capacitor for welding sets to keep minimum power factor of 0.95. • Replacement of three old compressor and associated equipments with two air compressors of 5HP and 3HP for use at user end point. • Replacement of all 40W tube with choke by 36W slim tube with electronic ballast. • Replacement of 100W incandescent lamps with 22W CFls. Replacement of 163 conventional regulators of fan with electronic regulators
Experts Comments	• Installation of the Capacitor Bank is sufficient for pf improvement. • Automatic pf control not required in this case • Use of Star labeled equipment in the offices such as lightings and energy efficient fan. • In the tender specification, requirement of Star labeled equipments shall be included. • Energy saving given in the report to be re-calculated.

Name of the Institution	**KERALA ELECTRICAL AND ALLIED ENGINEERING COMPANY LTD**
Address	**7th Floor,** **KSHB office complex,** **Panampilly Nagar,** **cochin-682036**
Present activity	Manufacturer of distribution Transformers, Steel structures, Rail coach bogies, iron castings, alternators (train lightings), Electrical and wiring accessories ,LT switchgear, Alternators (general purpose) and DG sets
Capacity of the plant	Distribution transformers , KVA 500000 HRC fuses and electric wiring accessories, No 253000 Steel structers,Ton 1200 Alternators(TL) and spares, No 1500 Alternators(GP) and DG sets, No 3000
Participant Name	P.A.Sudheeran Nishkala
Key proposals	Mr. P.A.Sudheeran explained the process of the Mamala Unit and Energy saving measures taken by the institution **Short term proposal** • Controlling the maximum demand with in 120KVa by the staggering the loads. • Controlling the extensive loading during peak hours **Medium term proposal** • Action to improve the loading of the generator to at least 60% capacity for effective utilization/better fuel efficiency • Replacement of all 40W tube with choke by 36W slim tube with electronic ballast. • Replacing faulty analog meters with digital meters for reading actual power consumption **Long-term proposal** • Adding 100KVAr capacitor bank to the existing bank to improve power factor from 0.92 to unity.

	• Installation of the maximum demand controller to monitor and limit power consumption. • Utilization of natural lighting and turbine air ventilator. • Providing energy efficient motors and pumps as and when replacement require. Ms.Nishkala explained the process of the Kundara Unit and Energy saving measures taken by the institution **Short term proposal** • Installation of maximum demand controller. • Installation of time delay switch in water pumping system **Medium term proposal** • Replacement of existing fans • Replacing tube light with metal halide lights • Utilization of power wasted during testing for canteen water heating purpose • Installation of biogas plant at canteen • Rescheduling of melting activities
Experts Comments	• Daily load curve has to be plotted; and from that load scheduling has to be identified. • Verification of specification of SFC (kWh/litre) for the present diesel engine • New engine have 3.5 units per litter diesel against 2.5 of old engines • SFC monitoring to be based on capacity of transformer manufactured not based on the value of the product. • Alternator division pf to be improved up to 0.98 and demand to be revised • Savings calculation of replacement of the fans based on the actual power measured. • Heat recovery form " alternator testing center" to be given priority

Name of the Institution	**TRACO CABLE COMPANY LTD**
Address	**4th floor, KSHB office complex, Panampilly Nagar,cochin-682036**
Present activity	Manufacturing and supplying of various kind electrical and telephone cables
Capacity of the plant	AAC&ACSR, MT 3000 PVC covered conducters MCM 32.92 JFTC, LCKM 17.5
Participant Name	Biju Kuriakose Manoj .A.T
Key proposals	
Experts Comments	• Water audit and Energy audit is necessary. • Detailed study has to be conducted on the process equipments. • Explore the advantage of reduction of Contract maximum demand (CMD) after improving pf up to 0.98. • As medium term improvement, rectification of capacitors to be taken up. • Measurement of harmonics to be carried out. • Detailed Energy audit to be carried out.

TRACO CABLE COMPANY LTD

Name of the Institution	**MALABAR CEMENTS LTD**
Address	**Walayar,Palakkad-678624**
Present activity	Manufacturing and sales of Cements
Capacity of the plant	Walayar Cement 420000MT CGU Cement 200000MT
Participant Name	Reji Abraham
Key proposals	Mr. Reji Abraham explained the process of Malabar Cements and Energy saving measures taken by the units respectively **Short term proposal** • Purchase of new mining equipments • Power factor improvement and harmonic filtration project • Installation of X-Ray analyzer **Medium term proposal** • Increasing capacity of ropeway by strengthening the towers, erecting additional towers and strengthening the rope way. • Up gradation of crusher at raw mill. • Installation of electronic packer. **Long-term proposal** • Installation of in pit crusher in the mine • Installation of thermal energy saving equipment • Diversification projects such as Wind farm micro hydel power station

Experts Comments	• Malabar Cement Limited (MCL) is the one of the "designated consumer (DC)" in the state • Cost difference between coal imported and Indian coal to be reviewed • Specific energy consumption norms already specified by the Cement Industries Association; this may be taken as reference basis for benchmarking energy efficiency of the plant • Best cement industry is Ramco cement, Tamilnadu 66kWh/Ton • Comparing the bench mark at each stage required. • Specific Energy Consumption (SEC) of crusher to be assessed. • Detailed calculations to be made for power factor(pf) improvement, up gradation of crusher, and electronic packer. • Detailed Project Report (DPR) required to be prepared for micro hydro power and grate cooler improvement required. • Increasing ropeway capacity and plant production capacity needs to be assessed. • Energy efficiency project and Wind power generation to be included for CDM benefit. • Detailed Project Report (DPR) is required in the case of Captive Power Plant (CPP)

Name of the Institution	**KERALA STATE FILM DEVOLEPMENT CORPORATION**
Address	**Chalachithra Kalabhavan, Vazhuthacaud, Thiruvanathapuram-695027**
Present activity	Providing infrastructure facility for the production of feature film shortfilim ,doccumentry,digital video production and running of cinema theatre
Participant Name	Chandran Nair
Date	23-07-2008
Key proposals	Mr. Chandran Nair explained the process of KSFDC and Energy saving measures taken by the units respectively. • All the HT installations are too old and whole system is in working condition now; at the time of failure or replacement of lights and equipment, replacement with energy efficient lights and equipment is being proposed • Replacement of faulty power capacitors at the time of failure • Replacement of incandescent lamps with CFL • Replacement of all 40W tube with choke by 36W slim tube with electronic ballast. • Replacement of existing motors with energy efficient motors. • Constitute energy management cell at each unit and to implement suitable energy policy. • Installation of the maximum demand controller to reduce contract demand. • To control and minimize the operation of equipment according to the actual parameters.

	• Installation of T5 and LED lamp. • Installation of APFC panel at all units.
Experts Comments	• Development of energy indicators for all the properties.(kWh/sqm ; kWh/occupancy) • Power factor (pf) correction • Star rated fluorescent tubes • Operating hours of centralized AC to be monitored. • Performance assessment of AC systems(kWh/Tr) • Replacement of all old chiller compressors. • Chiller manufacturer to be contacted for assessing the performance as well as installation of new chiller with performance guaranty. • Automatic power factor correction (APFC) requirement to be reassessed. • Detailed Energy Audit is necessary

Name of the Institution	**KERALA STATE TEXTILE CORPORATION LTD**
Address	**Annapurna ,** **Kochar road,** **Edappazhanji,Sasthamangalam,** **Thiruvanathapuram-695010**
Present activity	Manufacturing and marketing of Cotton yarn.
Capacity of the plant	86236 spindles
Participant Name	1. Vijayan V Asst Mgr-Ele, Malabar Spinning & Weaving mills 2. Vinod kumar C. V, JM (E) Edarikkode Textiles 3. K G Unnikrishnan, Ast. Mgr - Ele, Prabhuram Mills 4. Chandrasenan K A Mgr.-Ele., Kottayam Textiles
Key proposals	Mr. Chandrasenan K A explained the process of Sinning mills and Energy saving measures taken by the units respectively **<u>Short term proposal</u>** • Switching off lights and exhaust fans during intervals. • Cleaning of prime movers, ventilators and trench grills. • Leak arresting in compressed air lines. • Mechanical maintenance and overhauling of machine. • Install VFD humidification fans can reduce speed during favorable conditions. • Replacing leakage compressed air lines in prep carding and spinning • Replacement of old GI pipe with latest poly-propylene joint free pipe lines to arrest leakage in compressed air lines • Replacement of axial flow aluminum fans with FRP fans in humidification plants. • Replacement of Energy saving type pneumafil fans in ring frames, carding and cone winding machines. • To provide 50KVA servo stabilizer for lighting. **<u>Long-term proposal</u>**

	• Replacement of pneumafil motors in ring frames which are already under gone more than 5 rewinding • Replacement of inefficient motors with energy efficient motors in ring frames and HMD plants. • Replacement of existing dual speed drives with A.C. inverter (VFD) in Ring Frames .This will leads to 5% savings • Installation of APFC panel
Experts Comments	• Option for high pressure fogging technology for humidity control. • Cable sizing to be done at design stage • Changing the die cast fan with FRP can be implemented immediately because it is already proven in one of the unit. • Energy Conservation measures can be implemented in the project mode through bankable projects • Go for ESCOS only when the risk and investment is huge. • It is suggested to review the option of going in for Energy Service Companies (ESCOs) • Installation of energy efficient motor to be carried out by the motor manufacturers through differed payment basis for the entire four units together. • Rewinding motor policy for pneumafile motors to be finalized and replacement to be carried out accordingly

Name of the	**TRAVANCORE TITANIUM PRODUCTS LTD**

Institution	
Address	**P.Bno1,Kochuveli,Thiruvanathapuram-695021**
Present activity	Manufacturing and sales of Titanium dioxide and sulphuric acid
Capacity of the plant	Titanium dioxide 24500MTS Sulphuric acid 99000 MTS
Participant Name	M K Prabhakaran,
Date	23-07-2008
Venue	Hotel Reviera Suites
Key proposals	Mr. M K Prabhakaran, explained the process of the plant and Energy saving measures taken by the units respectively **Short term proposal** • Replacing Existing lamps with energy efficient lamps. • Replacement of inefficient motors with energy efficient motors. • Insulation steam distribution and condensate return lines. • Effective working of vacuum pump used in rotary filters. • Replacement of presently using Special Kerosene Oil (SKO) by Furnace oil(FO) **Medium term proposal** • Installation of VFD for electric motor(Compressor motor, fan motor, process water pumps, cooling tower pump for acid cooler). • Rain water harvesting **Long-term proposal** • Generation of Electric power from excess steam available at high pressure in the waste heat boiler • Heat recovery from the steam condensate of concentrator in Titanium dioxide plant. • Replacement of inspection lamps used in Titanium dioxide plant by torch with cell. • Replacement of screw conveyor system of transporting by

	pneumatic conveyor system • Replacement of HSD by SKO in Generator • Installation of biogas plant at canteen • Replacement of EOT crane by belt conveyor.
Experts Comments	• Sulphur loading project needs to be reviewed • Steam from waste heat boiler and operation of fuel fired boiler needs to be optimized (avoiding steam venting). • Separate steam audit and thermal system to be carried out. • Waste heat recovery from furnace and combustion improvement furnace to be taken up in priority • Conversion of SKO fuel by Furnace Oil • Detailed analysis of replacement of screw conveyor is needed. • As the plant is highly energy intensive (34% Energy cost) all saving potential in thermal system to be identified and implemented. • The savings projected for replacing a 20 HP to 10 HP motor is not correct. The savings would be much less. than projected

Name of the Institution	**THE KERALA MINERALS AND METALS LTD**
Address	**Sankaramangalam.P.O,Chavara,Kollam-691583**
Present activity	Manufacturing Titanium dioxide pigments and mineral separation
Capacity of the plant	Titanium dioxide 40000MT Ilmenite 51600MT Rutile 2400MT Zircon 1500MT Monozite 240MT
Participant Name	Vijayasai B K,
Date	23-07-2008
Key proposals	Mr. Vijayasai B K, explained the process of the plant and Energy saving measures taken by the units respectively **Short term proposal** • Lighting level management • Shifting of possible loads to off peak hours. **Medium term proposal** • Roots blower for aeration of water instead of presently used compressed air at 9kg/sqcm. • Replacement of inefficient de aerator pumps in boiler. **Long-term proposal** • Re insulation of HP and LP steam distribution lines. • Replacement of "Selas" furnace. • AC VFD are suggested for FD fan, ID fan and boiler feed water pump, based on air to fuel ratio, furnace draft and drum level respectively.

Experts Comments	• There is a scope for segregation of the pipeline for compressed air • Leakage assessment and FAD test for compressed air system to be carried out • Resizing of furnace/Air fuel control system with small burner will result in combustion efficiency improvement. • Installation of waste heat recovery is essential as the flue gas temperature is higher. • Fuel substitution to be explored.

Name of the Institution	**KERALA STATE BAMBOO CORPORATION LTD**
Address	**P.B.No.20,Angamaly South,Eranakulam-683573**
Present activity	Conversation of reeds collected from forest into bamboo mat by traditional workers. Manufacturer and sale of bamboo ply. sale of bamboo mats.
Capacity of the plant	Bambooply 71.16MM in lakhs
Participant Name	T S Viswanathan
Key proposals	Mr. T S Viswanathan explained the process of the plant and Energy saving measures taken by the institution. • Installation of suitable capacitor bank for improving the power factor. • Maximum utilization of natural lighting. • Water leakages arresting at the joints and bends of the feed water pumping system. • Maximum utilization of condensate recovery system.
Experts Comments	• Combustion efficiency has to be determined and monitored • A detailed thermal audit to be carried out • Scope for water conservation and, in turn the energy conservation scope exists in the facility • There is a scope of alternate cheaper fuel ; Coconut shell with CDM benefits.; Details of the coconut shell consumption is needed

Name of the Institution	**KERALA AUTOMOBILES LTD**
Address	**Aralumood.P.O,** **Thiruvanathapuram-695123**
Present activity	Manufacturing and sales of three wheelers.
Capacity of the plant	Three wheeler 7200 nos
Participant Name	Jibu Tom Joseph
Date	23-07-2008
Key proposals	Mr. Jibu Tom Joseph explained the process of the plant and Energy saving measures taken by the institution. **Short term proposal** • Replacement of all 40W tube with choke by 36W slim tube with electronic ballast. • Training for the employees. • Maximum utilization of natural lighting. • Replacement of incandescent lamps with CFL. **Medium term proposal** • Electrical energy audit. • Provide wires and cables of specified gauges. • Avoid chance of electricity leakage. • Provide induction motors very near to the load ends. • Minimizing the frequency of rewinding of motors for achieving efficiency and effectiveness. • Providing harmonic filters in the furnaces. • Install Energy efficient pump sets and motors **Long-term proposal** • Demand side management. • Power factor improvement. • Improve the effectiveness of the compressor. • Procurement of most modern as well as energy efficient CNC machineries.

	• Monitoring and evaluating the electrical energy consumption. • Installation of indoor current transformer and potential transformer. • Reduction of Electrical energy consumption during the peak period. • To shift the certain loads from peak hours to off peak hours.
Experts Comments	• Plotting of daily load curve • Voltage of the capacitor • FAD test for air system has to be conducted • Scope for Electric three wheeler • Detailed Energy Audit is required

Name of the Institution	**KERALA AGRO MACHINERY CORPORATION LTD**
Address	**Athani.P.O,** **Eranakulam**
Present activity	Manufacturing and sale of power tillers, diesel engines and power reaper
Capacity of the plant	Power Tiller 6000 nos
Participant Name	1. A Unnikrishnan, 2. Radhakrishnan P,
Key proposals	Mr. A Unnikrishnan explained the process of the plant and Energy saving measures taken by the institution. **Short term proposal** • Rectifying leakage in the compressed air line. • Replacement of all 40W tube with choke by 36W slim tube with electronic ballast. • Connecting the existing 25KVAR capacitor in the compressor room across the motors to avoid the compensation of the motors in the Athani unit. • Maximum utilization of natural lighting. • To use energy efficient motors as replacement for the present ordinary motor when it is due for replacement in the unit. **Medium term proposal** • Installation of capacitor bank for improving power factor. • Provide VFD compressors in all unit **Long-term proposal** • Installing APFC in all unit except Athani unit . • High FAD compressor to be provided, when due for replacement, in units. • Introduction of Poly-urethane paints for its entire product. • New seven tank system for phosphating is proposed in Palakkad unit instead of present conveyor system.

Experts Comments	• Automatic power factor controller is not required • Air amplifier can be used in cleaning area; in this case VFD may not be required; better option is to go in for a small sized compressor • For air requirement, detailed evaluation is required • Operating hour counter is available with the compressor • 30% of the motor rating is capacitor

Name of the Institution	**KERALA SHIPPING AND INLAND NAVIGATION CORPORATION LTD**
Address	**38/924A,Udayanagar road,Gandhinagar,Kochi-682020**
Present activity	Passenger ferry and tourist boat services, Construction and repair of marine vessels.
Participant Name	K P Sujatha,
Key proposals	Miss. K P Sujatha explained the process of the plant and Energy saving measures taken by the institution. **Short term proposal** • Replacing all halogen incandescent lamps with CFLs and all ballast with more efficient copper choke. • Periodic maintenance on all rotating machineries such as motors gears winches etc. • Monitoring of fuel consumption of earth vehicles or engines against standard fuel consumption. • Timely preventive maintenance of vessels. **Medium term proposal** • Replacement of less efficient arc welding sets by DC welding machines. • Renewing the present distribution boards and controls to improve the efficiency and the productivity. • Renewal of mechanical system at slip way to make friction less and thus reducing wastage of energy. **Long-term proposal** • Replacement of existing rotor resistance and associated control will result in considerable energy savings. • Installation of separate transformer and electrical line based on the latest energy efficient concepts. • Replacing entire electrical power equipment with energy star tubes, motors, Equipments, etc. • Exploring the possibility of introducing solar panels to meet power requirements of lighting.

	• Replacing existing engines with more fuel efficient engine as and when they are due to replace. • Introduction of new vessels with advanced design capable of moving more cargo with less fuel consumption. • Introduction of LCD monitor in the place of CRT.
Experts Comments	• Scope for making solar Boats. • Electronic choke will be more efficient than ordinary wound choke. • Specific fuel consumption of the present engines to be checked. • LCD monitors are more efficient that CRT. • Data base for the preventive maintenance of the equipments to be made.

Name of the Institution	**KTDC**
Address	**Mascot square,** **Vikas bhavan.P.O,** **Thiruvanathapuram-695033**
Present activity	Hoteliering, Boating and Tour operation
Participant Name	Madhusoodhanan Pillai M,
Key proposals	Mr. Madhusoodhanan Pillai M explained the process of the plant and Energy saving measures taken by the institution • Conducting awareness programme in the operating staff to switch off unwanted lights in his area of operation. • As a long term measure it is proposed to conduct energy audit and find out energy saving measures which can be adopted or implemented with in the available budget. • Incorporating energy efficient lighting or equipments so that cost of energy can be reduced • In the project construction or planning stage itself energy saving methods are been introduced. • Use of CFL lamps and T5 lamps in place of ordinary bulbs and tubes.
Experts Comments	• Centralized control systems for power and AC • Power consumption for AC and other utility should be metered separately • Air conditioned area and non air conditioned areas to be determined • Water audit to be conducted • Cooler pump operations to be studied and checked to identify the scope for avoiding pumps which are operating in parallel • Develop a energy indicator

Name of the Institution	**REHABILITATION PLANTATIONS LTD**
Address	**Punalur – 691305,Kollam**
Present activity	Maintenance and management 2030 hectares of rubber plantation developed for setting repatriates from Srilanka and processing natural rubber and manufacturing rubber sheeting's.
Participant Name	Gopakumar N
Key proposals	Mr.Gopakumar N explained the process of the plant and Energy saving measures taken by the institution. • Additional power capacitors have to be installed for the further improvement of power factor. • Maximum utilization of natural light by providing transparent sheet for roofing. • Providing CFL where ever possible. • Providing electronic choke for fluorescent tube fittings. • Modernization of curb rubber factory. • Installation of biogas plan; Installation of the gasifier • Installation of solar lamps. • Rain water harvesting.
Experts Comments	• An assessment of the availability of the waste needs to be done. • The project of dual mode diesel and biomass gasifier is a viable proposal; detail study/DPR to be done

Name of the Institution	**KERALA STATE COIR CORPORATION LTD**
Address	**Factory Ward, P.B.no 191,Alleppey-688001**
Present activity	Manufacturing and trading of Coir products
Participant Name	P.A. Roby
Key proposals	Mr. P.A. Roby explained the process of the plant and Energy saving measures taken by the institution. • Installation of electric hoist with a capacity 4 or 5 Tons. • Installation of two hydro extractor of 110 kg. • Proper insulation of Thermic heating system. • Replacement of hot air blower dryer by compact compartment dryer with continuous conveyor belt system. • Installation of 62.5KW generator. • Installation of gasifier for heating system. • Installation of partial double roofing for Dying plant to reduce the room temperature and humidification of the plant. • Maximum utilization of natural light. • Replacement of incandescent lamp with LED and CFL where ever possible. • Renovation of old electrical wiring system to avoid distribution loss.
Experts Comments	• No resilience time management • Evaluate the option of heat exchanger the waste water drain; there is scope for savings. • If one batch water at 90degree is used to recover anywhere between 30 to 60 degree then saving up to 17 liters of furnace oil per batch is possible; this would work out to be a substantial savings. • Hydro extractor efficiency is very important • Thermic fluid heating has to be reduced. Look for alternative fuel. • Detailed energy audit is required.

Name of the Institution	**MEAT PRODUCTS OF INDIA LTD**
Address	**Edayar.P.O, Kuthattukulam,Eranakulam-686662**
Present activity	Production and processing of meat and meat products, Live stock feed, rearing of pigs and rabbit.
Capacity of the plant	Meat 300MT Feed 7200MT
Participant Name	Sreejith .M.V
Key proposals	Mr. Sreejith .M.V explained the process of the plant and Energy saving measures taken by the institution. • Installation of Solar water heating system. • Replacing furnace oil boiler with wood fired/multi fuel boiler. • Replacement of old ammonia refrigerated with modern technology.
Experts Comments	• The preheating temperature of furnace oil is 90 degree. • Scope for automation for improving efficiency to be looked into • The boiler system was described. • Biogas can be used for heating • Water analysis is necessary • Heat Exchanger model or solar water heating system. • Go for energy efficiency boiler since the boiler is very old. • Combination of solar, biogas and LPG could be a better option; to be studied in detail

Name of the Institution	**KINFRA**
Address	**Kinfra house,TC31/2312, sasthamangalam,Thiruvanathapuram-695010**
Present activity	Development of industrial park at various locations in Kerala with industry specific infrastructure.
Capacity of the plant	Meat 300MT Feed 7200MT
Participant Name	Rekha K Kishore Kumar K.S Geesha .A.K Riyas,s
Key proposals	Mr. Riyas,s explained the process of the plant and Energy saving measures taken by the institution. **Short Term Proposals** • Switch on the street lights around occupied area only • Timer control for street lights. • Monitoring and recording of Energy consumption. • Regular monitoring of power factor, maintaining above 0.9 and getting power factor incentive. • Minimize the consumption during peak hours. • Pumping of the consumption during peak hours. • Pumping of water is scheduled to off-peak hours • Switching off A/C half hour before the end of office time **Medium Term Proposals** • Centralized energy saver for light load. • Regular maintenance ,calibration and testing of meters • and relays. • Installation of capacitor banks • Corridor lighting using sensors for effective power saving • Using BMS in Animation building. • Long Term Proposals

KINFRA

	• Joint Venture Company with NTPC to become Licensee in all parks and explore the conventional sources like Wind energy • Licensee to promote prepaid meters to encourage customers to avoid wastage and default • Building are constructed with the view to utilize natural light and ventilation • Installation energy efficient and standard equipments • Implementation of ISO 14001 under processing
Experts Comments	• The occupancy of the video park is too low • Detailed energy audit to be conducted

Name of the Institution	**OUSHADHI**
Address	**P.B.No. 174,Shornur Road, Thirssur -680001**
Present activity	Manufacture and sales of Ayurvedic medicines
Capacity of the plant	Asavarishtam 675 Ltrs Pills And Tablets 100 Lakh (Nos) Kashayachoornam 274 Tons Sookshmachoornam 50 Tons Thylams and medicated oils 170 K.Ltrs Ghrithams 39 K.Ltrs Lehyams And Rasayanams 100 Tons Liquid Kashayam 60 K.Ltrs
Participant Name	K.A.Chandrasekhara Rao
Key proposals	Mr. K.A.Chandrasekhara Rao explained the process of the plant and Energy saving measures taken by the institution. • Use of Natural Daylight • Install solar light system by replacing sodium lamp street light • Installation of Energy efficient Motors • Energy Efficient Tubes
Experts Comments	• Solar lighting in this case is not economic as capital investment is more. • Scope for changing boiler fuel to biomass. • Asbestos roofing has to been changed • Detailed energy audit to be carried out

Name of the Institution	**FOAM MATTINGS (INDIA) LTD**
Address	**P.B.No. 4619,** **Civil station Ward,** **Alappuzha-688012**
Present activity	Manufacturing and Exporting of coir ,jute and sisal products. doing job work for Latex backing, Dyeing and bleaching
Capacity of the plant	Matting Plant 475000 Sqm Backing Plant Lakh 1200000 Sqm Dyeing Plant 840 MT Power loom Plant 190000 Sqm
Participant Name	Abey Sundaram .S
Key proposals	Mr. Abey Sundaram .S explained the process of the plant and Energy saving measures taken by the institution. • Installation of plate heat exchanger in dyeing plant for heat recovery from waste water • Installation of Biomass Hot Air Generator in Dyeing Plant and Latex Backing Plant
Experts Comments	• Efficiency of existing boiler has to be Measured • Analysis flue gas is required • Temperature of flue gas to be monitored • Details regarding evaporation ratio necessary

Name of the Institution	**KERALA CLAYS AND CERAMICS PRODUCTS LTD**
Address	**Clay House,** **Pappinisseri,** **Kannur-670561**
Present activity	Mining & purification of china clay, aluminous laterite & manufacture of refractory/wire cut bricks.
Participant Name	Krishnakumar.A.K
Key proposals	Mr. Krishnakumar.A.K explained the process of the plant and Energy saving measures taken by the institution.
Experts Comments	• Detailed Energy Audit has to be conducted • There is energy saving scope for Pumping system • Scope for improvements in compressed air system.

KERALA CLAYS AND CERAMICS PRODUCTS LTD

Name of the Institution	KSRTC
Address	**Transport bhavan,** **Fort,** **Thiruvananthapuram.**
Present activity	Operation of state carriages under the public transport system
Participant Name	Easter Yashica
Key proposals	Mr. Easter Yashica explained about KSRTC and Energy saving measures taken by the institution. • For 1km of service average cost is Rupees 25 • Utilization of waste lube oil. • The main factors affecting the efficiency is load, speed, driving habits, traffic condition
Experts Comments	• Bench mark for energy consumption for depot • Analysis for the waste lube oil • Energy audit , including fuel efficiency trials to be taken for all major facilities and fleet sample

KSRTC

Name of the Institution	**KELTRON**
Address	**Keltron house,** **Vellayambalam,** **Thiruvanathapuram**
Present activity	Designing, Manufacturing and Marketing of various IT or Electronic products/system
Participant Name	Sajeev K
Key proposals	Mr. Sajeev K explained the process of the plant and Energy saving measures taken by the institution.
Experts Comments	• Think of setting higher set temp for AC • Check the sealing of the AC room • Check the Lighting in the AC room • Detailed energy audit is necessary

Name of the Institution	**SIDCO**
Address	**T.C XI/266.** **Keston road ,** **Kowdiar,** **Thiruvananthapuram-695003**
Present activity	Providing promotional and financial assistants for industries in Kerala.
Participant Name	T.K.Santhosh Kumar
Key proposals	Mr. T.K.Santhosh Kumar explained about SIDCO and Energy saving measures taken by the institution.
Experts Comments	• Power factor(pf) improvement during welding • Scope for automatic pf controller • Welding rod consumption to be assessed • Detail energy audit and energy information system need to be taken up

SIDCO

Name of the Institution	**HANDICRAFT DEVELOPMENT CORPORATION OF KERALA**
Address	**PB .No .171,** **Puthenchanthai,** **Thiruvananthapuram**
Present activity	Development of handicrafts and handloom
Participant Name	
Key proposals	Nobody from the Kerala state handloom development corporation Ltd was present; therefore, an official from EMC presented the proposal submitted by the Kerala state handloom development corporation Ltd. • Lighting system improvement in SMSM institute, CFSC and in Head Office Building • Installing electronic regulators for fans in SMSM institute, CFSC and in Head Office Building • Energy efficiency improvement in AC
Experts Comments	• Detailed Energy audit is necessary • More details require on submission made

HANDICRAFT DEVELOPMENT CORPORATION OF KERALA

Name of the Institution	**KSIE**
Address	**St. Joseph's Press Building** **1st Floor ,Cotton Hill** **Thiruvananthapuram-695014**
Present activity	Managing the air cargo complexes at Thiruvananthapuram and Kozhikode ,trading Activities, virtual office of APEDA in Kerala
Participant Name	
Key proposals	Nobody from the KSIE was present; therefore an official from EMC presented the proposal submitted by the KSIE. • Energy audit has been conducted. • Energy circle has been formed. • Switching off of light when not in use. • Optimization of lighting system. • Steps have been taken for replacing old AC units with star labeled one. • Planning to replace CRT monitor with LCD monitor • Restriction of use of Ac in the peak loading time. • Installation of APFC panel at main centers. • Changing the conventional regulator with electronic regulator • Installation of turbo ventilator for air ventilation.
Experts Comments	• More details required.

KSIE

Name of the Institution	**TELK**
Address	**Angamaly South P.O** **Ernakulam Dist.**
Capacity	Power Transformer 4500 MVA CT/PT 1000 Nos
Present activity	Manufacturing And Supply of transformers and switch gears
Participant Name	Kala.L
Key proposals	Ms Kala.L explained about TELK and Energy saving measures taken by the institution.
Experts Comments	• Detailed EA to be conducted • All the state board is going for HT transformers for even 50 consumers to avoid theft etc. So there is scope in that area. • In thyristor control oven, there is scope for close range control • Scope for heat balance in oven and compressor optimization

TELK

Name of the Institution	**KERALA STATE HANDLOOM DEVELOPMENT CORPORATION LTD**
Address	**PM 32/249** **Thillery road,** **Kannur-670001**
Present activity	Production and sales of handloom fabrics
Participant Name	Mr.Rajan.K
Key proposals	Mr.K.Rajan explained about Kerala state handloom Development Corporation Ltd and Energy saving measures taken by the institution.
Experts Comments	• Scope is there is dyeing process • Steam Audit and Thermal Audit has to be done • Boiler efficiency Study to be done • Steam leak utilization to be studied.

Name of the Institution	**TRAVANCORE COCHIN CHEMICALS LTD**
Address	**Eloor,** **Udyogamandal P.O** **Kerala -683 501**
Capacity	**Caustic. Soda 55518 MT** **Chloride Products 42857 MT**
Present activity	Manufacture and sales of caustic soda products
Participant Name	Madhusoodanan
Key proposals	Mr. Madhusoodanan explained about the plant and Energy saving measures taken by the institution. • To implement software based energy monitoring system. • Comprehensive energy conservation awareness programme among staff • Suggestion schemes and rewards • Poster campaign, competitions • Strengthening the energy management cell • Implement all low cost and no cost energy saving measures • Gather international bench marks available in the chlor-alkali segments in electrolyser and other equipments and utilities energy consumption. • Go for major equipment retrofits • CDM Projects
Experts Comments	• Suggestion for liquefying hydrogen. It was mentioned that there is huge potential for energy optimization • Scheme to measure the energy in the process , while considering the software design • Water audit to be conducted

Name of the Institution	**KERALA KHADI & VILLAGE INDUSTRIES BOARD**
Address	**Grama soubhagya,** **Vanchiyoor** **Thiruvananthapuram-695 035**
Present activity	• The major scheme for employment generation is the rural employment generation scheme of the Commissionerate of Khadi and village industries. According to this scheme, margin money grant @25% or 30% as eligible ,is extended to the beneficiaries for their industrial loan availed from various financial institutions • The board runs Khadi and village industries institutionally and departmentally to provide employment to the rural people • Sales outlets for khadi and village industries products are run by the board through out the state • A special scheme foe Commissionerate of khadi and Village industries viz.,PRODIP under Khadi industry also being implemented
Participant Name	V.P Jose
Key proposals	Mr. V.P Jose explained about Khadi Board activities and Energy saving measures taken by the institution.
Experts Comments	• Dedicated official for Energy conservation • Details about energy consumption to be collected • There are scopes for Building energy audit

Name of the Institution	**PLANTATION CORPORATION OF KERALA LTD**
Address	**Kottayam -686 004**
Present activity	Cultivation development and carrying on the business of rubber, cashew oil, palm and other crops, rubber processing
Participant Name	T.M.Mathew
Key proposals	Mr. T.M.Mathew Explained about Plantation Corporation and Energy saving measures taken by the institution. • Installation of bio gasifier at Vettilappara factory • Energy Auditing &implementation of latex processing factory
Experts Comments	• SHP with solar and biomass gasifier is better option • Detailed Energy Auditing is necessary

PLANTATION CORPORATION OF KERALA LTD

Name of the Institution	**THE TRAVANCORE CEMENTS LTD**
Address	**Nattakom.P.O,** **Kottyam-686013**
Present activity	Manufacturing and sales of white cements and cement paints.
Capacity of the plant	White Cement 30000Tons Cement Paint 1050Tons
Participant Name	
Key proposals	As Nobody from the TCL was present, an official from EMC presented the proposal submitted by the TCL. • Reduction of contract demand from 1800 KVA to 1400 KVA • Installation of APFC capacitors of 350 KVAr to improve pf from 0.92 to one. • Provide Natural sunlight in all possible areas • Steps have been taken to reduce diesel consumption for the transportation of lime shell barges • Utilization of Maximum Capacity during off-peak hours • Monitoring and reduction of power consumption of cement mill based on output • Replacement of pump having a discharge of 18ltr/sec with a pump of same power having a discharge of 32 ltrs/sec
Experts Comments	• Detailed Energy audit is necessary • More details required about the present condition

ANNEXURE-I

PARTICIPANTS OF CAPACITY BUILDING PROGRAMME FOR PSU'S –1ST PHASE
10-12th March 2008 Thiruvananthapuram,11-13th of March 2008 at Kochi
12-14th March 2008 at Kozhikode

Sl.no	Name	Company
1.	D Suresh Kumar	KERALA STATE INDUSTRIAL ENTERPRISES LTD
2.	George Alexander	THE TRAVANCORE SUGARS & CHEMICALS LTD.
3.	K Krishnankutty Nair	KERALA AUTOMOBILES LTD
4.	M K Prabhakaran	TRAVANCORE TITANIUM PRODUCTS LTD
5.	Nishkala	KEL
6.	Jayakumar P	THE KERALA CERAMICS LTD
7.	V Vinod Kumar	STATE PLANNING BOARD
8.	P Velappan Nair	KERALA AGRO INDUSTRIES CORPORATION LTD
9.	K Animon	HINDUSTAN LATEX LTD
10.	P Mohammed Ansari	KELTRON
11.	M C Gregory	SPB
12.	T M Mathew	PLANTATION CORPORATION OF KERALA LTD
13.	T Appukuttan Asary	KPHCC
14.	R L Latha	STATE PLANNING BOARD
15.	C Manoj	TRACO CABLE COMPANY LTD
16.	P F Sherain Francis	STATE PLANNING BOARD
17.	P Omana	GOVT. SECRETARIAT
18.	P Dilip Kumar	KERALA TOURISM DEV.CORPN. LTD.
19.	S Shibu	KERALA STATE BEVERAGES CORPORATION LTD
20.	Madhusoodhanan Pillai	KERALA TOURISM DEV.CORPN. LTD
21.	K K Kaladharan Nair	KERALA KHADI AND VILLAGE INDUSTRIES BOARD
22.	M Jayan	KERALA LIVESTOCK DEV.BOARD LTD
23.	R S PadmaKumar	KERALA STATE HOUSING BOARD
24.	K G Unnikrishnan Nair	KOTTAYAM TEXTILES
25.	S Seenathu Beegam	KERALA STATE BEVERAGES (M & M) CORPORATION
26.	N Gopakumar	REHABILITATION PLANTATIONS LTD
27.	M A Chnadran Nair	KSFDC
28.	S Manu	FOAM MATTINGS INDIA LTD

29.	C.Sugunan	AUTO CAST LTD
30.	N G Sudheer	KERALA FEEDS LTD
31.	K P Sujatha	KERALA SHIPPING & INLAND NAVIGATION CORPRATION LTD.
32.	Noorul Hassan	MALABAR CEMENTS LTD.
33.	Reji Thomas	KERALA STATE BAMBOO CORRPARTION LTD.
34.	S.Venukumar	MPI LTD.
35.	D.Rajkrishnan	THE STATE FARMING CORPORATION OF KERALA LTD.
36.	V.R.Rajeevan Nair	KERALA STATE DRUGS & PHARMACEUTICALS LTD.
37.	T.P. Biju	FOREST INDUSTRIES TRAVANCORE LTD
38.	K.A.Venugopalan	TRACO CABLE COMPANY LTD.
39.	P.A.Roby	KERALA STATE COIR CORPORAQTION LTD.
40.	V.Kuriakose	SITARAM TEXTILES LIMITED
41.	B Baburaj	KERALA STATE HOUSING BOARD
42.	P.A.Sudheeran	KERALA ELECTRICAL & ALLIED ENGINEERING CORPORATION LTD.
43.	Manoj Mathew	KTDC
44.	Jaibee Kollarmalil	KTDC
45.	K.A.Chandrasenan	KERALA STATE TEXTILES CORPORATION LTD.
46.	E Elizabeth Kurian	KERALA STATE WARE HOUSING CORP
47.	R Rajeev	TCC LTD
48.	B Anil Kumar	TCL KOTTYAM
49.	K C Lawrence	KERALA STATE MARITIME DEVELOPMENT CORPORATION LTD
50.	V Kuttialy	STEEL COMPLEX LTD.
51.	N P SureshKumar	KELTRON ELECTRO CERAMICS LTD.
52.	C V Vinod Kumar	EDARIKKODE TEXTILES
53.	K Vijayan	MALABAR SPINNING & WEAVING MILLS
54.	P N Manoj Kumar	KTDC
55.	P P Binoy	KTDC
56.	A P Ranjith Kumar	KERALA ELECTRICAL & ALLIED ENGINEERING CORPORATION LTD.
57.	K A Chandrasekharan	OUSHADHI
58.	P Raji	KHADHI AND VILLAGE INDUSTRIES OFFICE
59.	P Deepu Kumar	SIFL
60.	K S Kishore Kumar	KINFRA TECHNO INDUSTRIAL PARK

ANNEXURE-II

PARTICIPANTS OF CAPACITY BUILDING PROGRAMME FOR PSU'S –2ND PHASE
23rd To 25th July 2008 at Cochin

Sl No:	Participants Name	Name of the Industry
1.	Vijayan K	MALABAR SPINNING AND WEAVING MILLS
2.	Madhusoodanan Pillai .M	KTDC LTD
3.	Vasudevan A.C.	STEEL COMPLEX LTD
4.	Abey Sundaram .S	FOAM MATTINGS(INDIA) LTD
5.	1) A.R.Bhadran 2) Kala.L	TELK
6.	TS Viswanathan	K.S.B.C LTD
7.	Krishna Kumar A.K	KERALA CLAYS AND CERAMIC PRODUCT LTD
8.	Sajeev .K	KELTRON
9.	Vinod Kumar .C.V	EDARIKKODE TEXTILES
10.	1) K. Madhusoodanan 2) K.V.Balan	TCC LTD
11.	Geesha .A.K	KINFRA SMALL INDUSTRIES PARK
12.	Kishore Kumar K.S	KINFRA TECHNO INDUSTRIES PARK
13.	K.P. Sujatha	KERALA SHIPPING & INLAND NAVIGATION CORPORATION LTD
14.	Nishkala	KEL
15.	Vijayasai .B.K	KMML
16.	1)Radhakrishnan .P 2)A.Unnikrishnan	KAMCO LTD
17.	Reji Abraham	MALABAR CEMENTS LTD
18.	Sugunan.C	AUTOKAST
19.	1) Laksminarayanan. K 2) Ramesh Kannapady	SIFL
20.	Sreejith .M.V	MEAT PRODUCTS OF INDIA LTD
21.	M.K Prabhakaran	TRAVANCORE TITANIUM PRODUCTS LTD
22.	Chandrasenan K.A	KOTTAYAM TEXTILES
23.	1) Biju Kuriakose 2) Manoj .A.T	TRACO CABLES CO LTD
24.	K.G. Unnikrishnan Nair	PRABHURAM MILLS
25.	Roby .P.A	KERALA STATE COIR CORPORATION LTD
26.	Rekha K	KINFRA TEXTILE CENTER

ANNEXURE -II

27.	T.M.Mathew	PLANTATION CORPORATION OF KERALA LTD
28.	T.K Santhosh Kumar	KERALA SIDCO LTD
29.	Rajan K	KERALA STATE HANDLOOM DEV CORPORATION
30.	V.P Jose	KHADI BOARD
31.	P.S Sebastian	THE TRAVANCORE CEMENTS LTD
32.	Riyas. S	KINFRA FILM & VIDEO PARK
33.	Mersa .K.P	M/S OIL PALM INDIA LTD
34.	GopaKumar .N	REHABILATION PLANTATIONS LTD
35.	Jibu Tom T Joseph	KERALA AUTOMOBILES LTD
36.	Easter Yashica	KSRTC
37.	Suresh Kumar .D	KERALA STATE INDUSTRIAL ENTERPRISES
38.	P.A Sudheeran	KEL
39.	M.A Chandran Nair	K.S.F.D.C
40.	K.A.ChandrasekharaRao	OUSHADHI
41.	Lawrence K.C	KEALA STATE MARITIME DEVELOPMENT CORPORATION LTD
42.	G. Unnikrishnan Nair	UNITED ELETRICAL IND LTD