

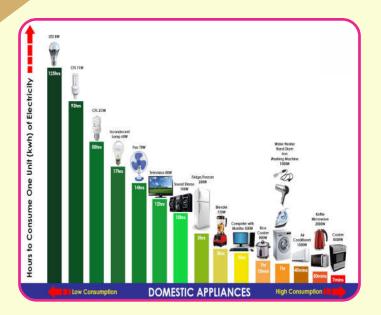


# <section-header>

K.L.N. College of Engineering Department of Electrical and Electronics Engineering

Pottapalayam - 630 612 Sivagangai District, Tamilnadu





Centre of Excellence Energy Audit Division Dr. S. Venkatanarayanan M.E., Ph.D., MBA., M.Phil., MISTE., MIEEE Professor and Energy Consultant, Member IEEE Department of Electrical Electronics Engineering Email ID : venjeyeee@gmail.com Mobile No. +91 96773 20576

Estd : 1994

Energy Managemen Cycle

### **ABOUT THE COLLEGE**

# Vision

To become a Premier Institute of National Repute by Providing Quality Education, Successful Graduation, Potential Employability and Advanced Research & Development through Academic Excellence.

### Mission

To Develop and Make Students Competent Professional in the Dynamic Environment in the field of Engineering, Technology and Management by emphasizing Research, Social Concern and Ethical Values through Quality Education System.

### A Brief History of the College

K.L.N. College of Engineering is the first self-financing Co-educational Engineering College in Madurai, started in 1994 by Munificence of Philanthropist and well-wishers in Sourashtra Community which is a linguistic minority in Tamilnadu. This college is sponsored by the committee of eminent industrialists and academicians led by enthusiastic, educationalist and industrialist (Late) Thiru K.L.N. Krishnan. This college has the approval of All India Council for Technical Education, New Delhi and is affiliated to Anna University, Chennai. We offer seven UG Courses, B.E, Mech, EEE, ECE, CSE, AUE, EIE & B.Tech IT and Seven PG Courses, M.E. CAD / CAM, PSE, CS, CSE, CSE, CSE (N/W, MBA & MCA & PhD Full Time & Part Time Programmes

## The Department of Electrical and Electronics Engineering

Started offering B.E. in Electrical and Electronics Engineering in the year 1994. Started offering M.E. in Power Systems Engineering in the year 2005. Accredited in March 2004 (First time) and Re-accredited (Second time) by National Board Accreditation, New Delhi. Re-accredited (Third time) National Board Accreditation, New Delhi. Recognized Research Centre Approved by Anna University, Chennai with effect from December 2012, and offering guidance for M.S & Ph.D. (Full time/Part time). Both UG and PG programs are permanently affiliated to Anna University, Chennai with effect from December 2012.

B.E Electrical and Electronics Engineering		M.E Power Systems Engineering				Ph.D.		
Year of start & History of Intake	1994, with an intake of 40			2004, with an int of 18		Year of Recognition as Research Centre		2012
	1996, with an intake of 60 2002, with an intake of 90 2011, with an intake of 120	Year of sta History of	Intake	2012, with an int of 24		First Renev		2015, upto December 2018
Both UG & PG programs are permanently affiliated to Anna University, Chennai.								
Accreditation status								
First Accreditation		Second creditation		Third Accreditation		n	Fourth Accreditation	
3 YEARS W.E.F. 3 YEAR 19-3-2004 19-7-2		-		5 W.E.F. 2013			Academic Year 2016-17,2017-18 and 2018-19, i.e., upto 30-06- 2019	

### **HISTORY OF THE DEPARTMENT**

### **Energy Audit**

An energy audit is an inspection, survey and analysis of energy flows, for energy conservation in a building, process or system to reduce the amount of energy input into the system without affecting the output(s). In industries, Hotels, Hospitals, Residential Buildings, Colleges, Schools, Banks, Theatres, HT, LT, LTCT, Mills, SIDCOS & Etc., an energy audit is the first step in identifying opportunities to reduce energy expense. The testing will be conducted asper the standard of IEI, IEEE, IEC, BS, IS for the industries enable to find out the losses and minimizing methods. We verify all AMC records about the activities carried out by the contractor for smooth functioning of the equipments.

# **Electrical Energy Audit**

Electrical Energy Audit forms an integral part of an Industrial Energy use. Electrical Energy Audit consists of Studying, Assessing, Measuring and Analysing electrical utilities. In a typical Plant the electrical utilities consists of Generators, EB incoming, Transformers, Power Distribution System, Metering and Monitoring System, Motors, Blowers, UPS, Batteries, Stabilizers, Fans, APFC, Maximum Demand Controllers, Air Conditioners, Compressors, Pumps, Lighting, Lightning arresters, Earthing, Solar Power Plants, On grid, Off grid & Net metering Etc. This all equipments will be tester based on the specification of the equipments.

# **Electricity Bills**

Further to this analysis of electricity bills, energy consumption trends, bench-marking in line with process requirement is also carried out.

# **Benefits of Energy Audit**

Reduces Electricity Bills, Increase energy efficiency, Reduce energy usage, Improve indoor air quality, Produce consistent interior temperatures, Reduce interior drafts, Improve humidity control & ventilation etc.

# **Our Work**

Our Energy audits will evaluate your facility "as a whole", to consider a wide range of available facilities (Electrical, Mechanical, Envelope and Water).

The audit will not only inform you of opportunities but provide you with financial analysis. This will enable prioritization based on financial benefit and return on investment.

Provide you with solid, easy to understand technical information regarding the proposed energy conservation measures.

A good quality audit will analyze your historical energy use and find potential issues using statistical methods.

Provide you with emissions analysis to help you understand the benefits of your decisions from an environmental standpoint.

Understand where energy is used and which areas are worth focusing on the most.

The cost-benefit analysis of the audit suggestion would help decision makers prioritize opportunities and evaluate them as investments.

Training will be provided for the users, operators ,Engineers

The Suggestion and Details will be given through our Department of EEE, K.L.N. College of Engineering with expert opinions.







Energy Audit at M/s.P.K.S.Engineering Kappalore Madurai

**PEACE** Awareness program at Perambalore for General Manager DIC, Perambalore



Energy Audit Awareness program at Theni along with The Collector, Petroleum conservation and research Associations (PCRA) and DIC Theni



**Promotion of Energy Audit and Conservation of Energy** (PEACE) training program for Industries at Rameswaram On behalf of District Industries centre, Ramanathapuram



IEEE HUB CONGRESS AT THIAGARAJAR COLLEGE OF ENGINEERING MADURAI



Electrical Engineers A Grade Association Meeting at Courtralam, Thirunelvel District



**Energy Audit at a Home at Kochadai** 

Energy Audit PEACE Training program and valedictory function along with General Manager, DIC Madurai



Promotion of Energy Audit and Conservation of Energy (PEACE) with Collector Madurai and GM,DIC, Madurai for the promotion of Energy Audit



Energy Audit at Unit Trust of India, Madurai





M/s Ramanujam Mill Owner Residence Theni District



M/s Thambis Theatre Cumbum Theni District



M/s Krishna Theater, Theni Theni District



M/s Vetri cinemas Madurai



M/s Bargavi Textiles, Kappalore, Madurai



M/s Ansell, Bommanasandra Bangalore



M/s. Scientific Agricultural Laboratory, Madurai



M/s CDD Center, Madurai



M/s Tamilnadu Theological college, Madurai



M/s J-Cup Residency, Thirunagar Madurai



Dreaming Inn

M/s Agriya Chemical, Madurai





M/s Temple City Hotel, Mattuthavani, Madurai



M/s Jeyaraj Industries , Periyakulam, Theni District



M/s Apollo First Med Hospital, K.K.Nagar, Madurai



M/s I-TAS, Palanganatham, Madurai



M/s Gokul Industries, Theni District

# 👺 Vikram Multispeciality Hospital



M/s Vikram Multi speciality Hospital, Madurai





M/s TVS and Sons PVT LtD, 211, South veli street Madurai



M/s IK Engineering Solutions, Kappalore Madurai District



M/s Sharon Solar Solutions, Thiruparangundram, Madurai.





M/s Arunachalam Lathe Industries, Urnganpatty, Madurai District



M/s Mookan Rice Mill, Uranganpatty, Madurai



Visited University of Nottingham Kuala Lumpur Malasyia Kuala Lumpur Malasyia



M/s Pondicherry Engineering College, Pondicherry, Hotel Accord, Pondicherry as ICCPEAT2017 International conference SESSION CHAIR Energy Assessment Methodology



M/s Meenakshi Urangan patty, Madurai District



KS Hospital, Near Anna Bus stand, Madurai-625020



Visited CDAC, Power Electronics Group Thiruvananthapuram, Kerala



M/s Madanapalle Institute of Technology & Science , Angallu (Village), Madanapalle-517325, Chittoor District, Andhra Pradesh



M/s J.S.Publication, Mattuthavani, Madurai- 625007



M/s Jawahar wood , Thankkankulam, Madurai



M/s Standard Enterprises Kappalore, Madurai



M/s Jeyarenge Textiles, Theni For PhD work Of Mr.A.Sahayaraj



M/s Aurolab, Veerapanchan, Madurai.



IEEE, Madras Section At CEG's TAG Auditorium SB Introduction and Energy Audit Speech For all IEEE Members



M/s Vasundra Textiles Shed 9,



Vijay polymer, unit-II, SIPCOT,Nilakottai Dindigul



M/s Amway India Enterprises Pvt. Ltd., SIPCOT, Nilakottai Dindigul







M/S Jeevan Nission, Thoppor, Madurai



M/s Jawaharlal and Co, Vasanthanagr, Madurai



Star Biological,Kappalore Madurai



M/s Dhaya Calibrations, Andalpuram, Madurai



M/s AVN Hospital, Vilacherry, Madurai



M/s Raj weaving Shed No 18, Unit – I, SIDCO Industrial Estate Kappalore Madurai



AAA College of Engineering Sivakasi



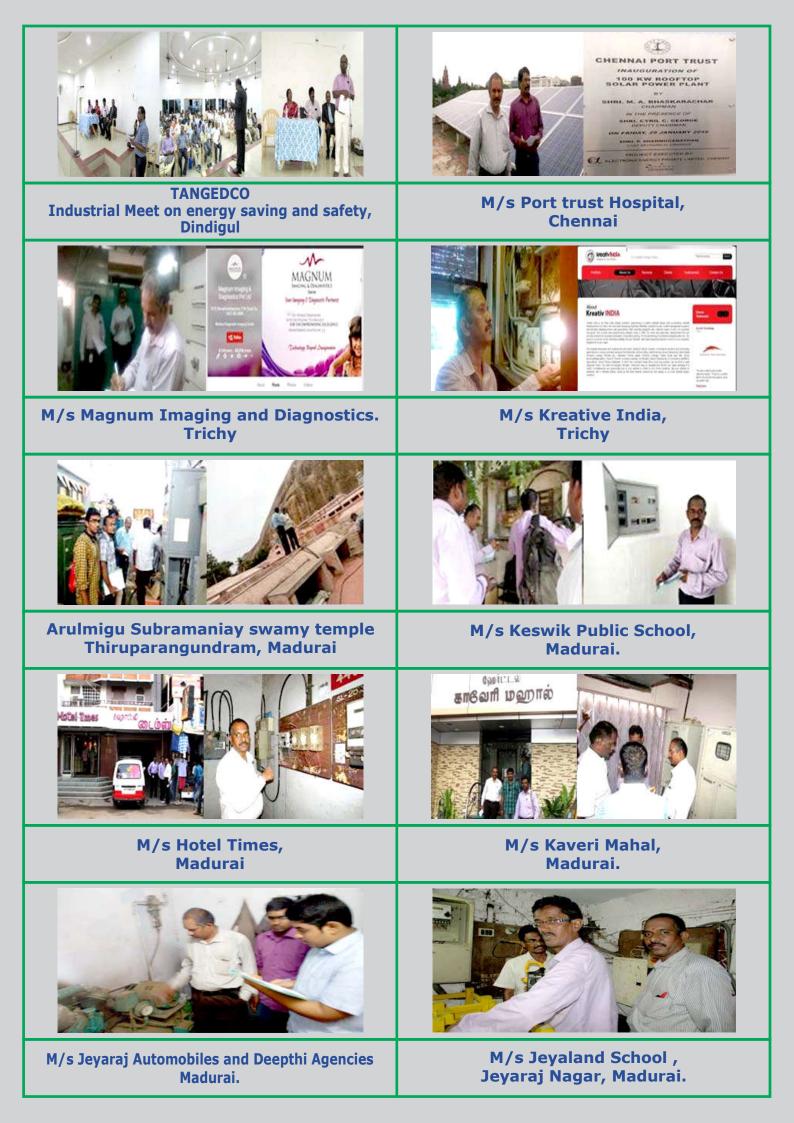
M/s Bagathsing Furniture, Thanakkankulam, Madurai



M/s Raj weaving Shed No 18, Unit – II, SIDCO Industrial Estate Kappalore, Madurai



TANGEDCO Industrial Meet on energy saving and safety, SIDCO, Kappalore Madurai District







State Bank of India, Personal Banking, Madurai City Branch Madurai

State Bank of India, SME Branch, Madurai

A JENEVEL



M/S Barkavi Textiles Kappalur, Madurai.





M/s Hayargreeva school, Mayladumparai, Theni District



M/s Unnamalai Ammal Multispecialty Hospital & Research Centre, Kadamalaikundu, Theni



M/s Thiagarajan Automobiles, IOC, Thallakulam, Madurai



M/s Rajkumar Restaurant Triplicane, Chennai



M/s Thiagarajan Automobiles, IOC, South veli Street, Madurai



M/s Aravind Eye Hospital, Anna Nagar, Madurai



M/s Madurai City Hospital, Sathamangalam, Madurai



**Kappalore** R DESIGNER TILE OT NO: 43,WIP DCO,KAPPALUR.

M/s ACME Elastomer,



M/s Madurai ACME Enterprises, Madurai



M/s Natchiar Silks, Madurai



K.L.N.C.E Solar PPA Meeting



M/s Tusker Designer Tiles, **Kappalore** 



Mr.Rengarao /K.L.N.C.E Solar PPA, Madurai



**KLN College Function** 



K.L.N.C.E A/C Power Saver



M/S Man Make Tailors, Near Madanagopalasamy temple street, Madurai



M/S VSR(P) LTD, K.Pudur, Madurai 625 007



M/S Chiamala Pressing, K.Pudur, Madurai – 625 007



M/S Priya Complex, Anna Nagar, Madurai - 625 020



Aravind Eye Hospital, Madurai Interaction for 100 th Program on Instrumentation



IVLR Concrete No 9, Madurai Ramnad Main Road, Near Teppakulam Iravathanallur Madurai City, Madurai - 625001



Air conditioner Energy Testing at M/S Meenakshi Mission Hospital Madurai for Positive Power solution, Madurai



M/S Mahendra Crushers, Checkanurani (PO), Madurai – 625 514



SIDCO Association, K.Pudur, Madurai.



Feel the Value BUILDERS & PROMOTERS

# M/S TOUCH INFRAS, MADURAI(Builders and Promoters)



Pre Energy Audit Talk at M/S Meenakshi Mission Hospital Madurai for their Employees



J.K. Fenner (India)Ltd., Madurai- 625016.

M/S Vijay polymer, SIPCOT, Pallapatti (Post), Nilakottai (TK), Dindigul District.



Sri Ayyanar Aqua Farm., Pudupatti, Othakadai, Madurai



# M/s Vetri Theatre, Villapuram, Madurai



**News Paper - 2017 Clippings** 



**IEEE & Energy Audit Activities** 

# MADURAI









# **SIVAGANGAI**











Awareness Programme on Promotion of Energy Audit &Conservation of Energy (PEACE) Meeting at District Industries Centre, Erode District.



Awareness Programme on Promotion of Energy Audit & Conservation of Energy (PEACE) Meeting at District Industries Centre, Erode District.



Awareness Programme on Promotion of Energy Audit & Conservation of Energy (PEACE) Meeting at District Industries Centre, Trichy



Awareness Programme on Promotion of Energy Audit &Conservation of Energy (PEACE) Meeting at District Industries Centre, Dindigul



**Energy Audit at Dindigul** 



St Joseph Engineering College, Chennai



**Energy Audit Speech at TVS, Tuticorin** 



Ramakrishna Engineering College, Trichy



Ind Expo, Madurai

**Meeting with the Deputy Chief Minister** 



Awareness Programme On Energy Audit at Karaikudi Sivagangai District



PCRA Energy Audit Meeting at Thanjavur.

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PCRA Energy Audit Speech at District Industries Centre, Thanjavur .

**Promotion of Energy Audit and Conservation of Energy (PEACE) with The Collector Theni and GM, Theni** 



**Promotion of Energy Audit and Conservation of Energy (PEACE) at Theni** 



(PEACE) Meeting at District Industries Centre, Thoothukudi District.



(PEACE) at District Industries Centre, Thoothukudi.



(PEACE) at District Industries Centre, Thoothukudi District.



Investment Opportunities for MSMEs With Honorable Minister Meeting at Thirunelveli District.



Awareness Programme Energy Audit at Thirunelveli.



**Industrial Workshop Meeting at Thirunelveli District.** 



**Energy Audit Training Programme at Thalavaipuram Rice Mill** 



PCRA Institutional Training Programme at Thalavaipuram



**Kappalur Industrial Association Meeting** 



**Promotion of Energy Audit and Conservation of Energy (PEACE) , Training Programme at Kappalur.** 





PCRA, Energy Audit Institutional Training Programme at Mangayarkarasi College of Engineering, Madurai.



PCRA, Energy Audit Institutional Training Programme at K.L.N.College of Engineering, Sivagangai



PCRA, Institutional Energy Audit Training Programme at Thalavaipuram



PCRA, Institutional Energy Audit Training Programme at Thalavaipuram



Promotion of Energy Audit and Conservation of Energy (PEACE) Meeting with The Collector Salem and The GM, Salem





Energy Audit Training Programme, Namakkal.



Energy Audit Training Programme, Namakkal.



PCRA,Industrial Workshop, Energy Audit Nagapattinam



Energy Audit Training Programme at Namakkal.



**Electro Plating Energy Audit** 



Energy Audit Training Program at Nagapattinam



# Honorable Minister Program at Namakkal





VIRUDHUNAGAR DISTRICT TINY & SMALL SCALE INDUSTRIES ASSOCIATION

8/2, Patel Road, VIRUDHUNAGAR - 626 001. Ph: 243378

Viditssia உறுப்பினர்கள் அனைவருக்கும் அன்புடன் கிறிஸ்துமஸ், புத்தாண்டு & பொங்கல் தின நல்வாழ்த்துக்கள்

விடிட்சியாவின் சென்ற மாத (நவம்பர் 2018) நிர்வாகக் குழு கூட்டம்



நாளது 2018ம் ஆண்டு நவம்பர் மாதம் 22ம் தேதி வியாழக்கிழமை மாலை 5.30 மணி அளவில் SIDCO தொழிற்பேட்டையில் உள்ள விடீட்சியா இதயம் வளாகத்தில் அமைந்துள்ள PMAN இராதேந்திரன் அரங்கத்தில் நமது சிறு தொழில் சங்கத்தின் நவம்பர் மாத நீர்வாகக் குழு கூட்டம் சிறப்பாக நடைபெற்றது.

அப்போது Dr. S.VENKATANARAYANAN M.E., Ph.D., Energy Auditor (Professor - KLN College of Technology, மதுரை) தொழிற்கூடங்களில் ஆற்றல் தணிக்கை (ENERGY AUDIT) மற்றும் ஆற்றல் சேமிப்பு (ENERGY SAVING) மேம்படுத்துதல் ஆகியவற்றிற்குரிய வழிமுறைகள் பலவற்றை மிகச் சிறப்பாக

மின்னொளி காட்சி (POWER POINT DISPLAY) மூலம் மிகச் சிறப்பாக எடுத்துரைத்து விளக்கவுரை ஆற்றினார். தெனால் கூட்டத்தில் பங்கேற்ற நமது குறு. சிறு தொழில் சங்கத்தின் உறுப்பினர்கள். தொழில் முனைவோர் ஆகியோர் மிக்க பயன் அடைந்தனர்.

படத்தில் அமாந்திருப்போர் : (இடமிருந்து வலம்)

- (1) தரு. Er. S.சிவகுமார் PCRA Energy Consultant.
- (2) தரு. K.C.குருசாமி Secretary, விடீட்சியா.
- (2) தீரு **தெயம் V.R.முத்து –** President, விடீட்சியா.
- (3) தரு. SPGC.பிருந்தாவன் Honorary President, விடீட்சியா.
- (4) தீரு P.மகேந்தீரன் EDII Business Coordinator, விருதுநகா.

இந்த மாதக் கூட்ட அழைப்பிதழ் உள்ளே முன் பக்கம் பார்க்கவும்





Dr S.Venkatanarayanan ME.,PhD.,MBA.,MPhil.,MISTE., SMIEEE.,MIE Charted Engineer., EnMs Lead Energy Auditor Petroleum Conservation Research Association (PCRA) Professor/EEE K.L.N.College of Engineering, Pottapalayam-630612 Sivagangai District

The awareness program on Energy Audit and conservation have been arranged on 23.12.2018 at INDEXPO seminar which was the 4th Industrial Exhibition held at Madurai organized by Madurai District Tiny & Small Scale Industries Association (MADITSSIA).

In this program Dr S. Venkatanarayanan and Mr S. Sivakumar gave talk on Energy Audit and Conservation. While speech by Dr S. Venkatanarayanan, mentioned about various sources of Energy, Impact of Environmental issues such as Global warming, He mentioned about the industrial Energy saving measures and importance of Energy Audit, He explained about the Power Factor, Maximum Demand, Harmonics issues. He mentioned about the areas where you can save energy such as Lightings, Motors, Air-conditions, Boilers, Heaters, Fans, Blowers, etc. He pointed out some of the issues where we get the problem industries such as voltage sag, swell, fluxuations, failure of motors etc. He gave the tips on Monitoring energy on Zero cost, Low cost, Medium cost, High cost measures to save the energy in the Industries. He explained about minimum 10 % Energy saving is assured on conducting energy audit in the Industries. He mentioned about the long term measures on energy saving. He explained the practically experience on the Industries. He explained about the various subsidies available for the Energy Audit through the District Industries Centre, Government of Taamilnadu on PEACE(Promotion of Energy Audit and Conservation of Energy) scheme for conducting energy Audit.



Mr S.Sivakumar ME.,(PhD) Exyernal Faculty of Petroleum Conservation Research Association (PCRA) Green Solar Techlogy Solutions Madurai

Mr S.Sivakumar explained about the Solar energy is radiant light and heat from the Sun that is harnessed using a range of everevolving technologies such as solar heating, photovoltaics, solar thermal energy, solar architecture, molten salt power plants and artificial photosynthesis. It is an important source of renewable energy and its technologies are broadly characterized as either passive solar or active solar depending on how they capture and distribute solar energy or convert it into solar power. He explained about the On Grid and Off grid solar technology. He explained about the varius subsidies are issued by the government for the Solar energy harvesting. He explained about the inverters, converters, solar battaries technologies etc.

He explained about the energy substitution which is very useful to meet the Maximum demand consumers such as LT,LTCT, HT consumers. He explained to meet out the tariff benefits on the Solar energy harvesting. He explained about the Photovoltaic as well as the Thermal Solar technology systems

On the whole this program was very useful to the industries who participated. Participants were interacted with the above two speakers on the Energy Audit and conservation.

Official Bulletin of Madurai District Tiny & Small Scale Industries Association





# PROMOTION OF ENERGY AUDIT AND CONSERVATION OF ENERGY (PEACE)

In many of the MSME sectors, energy is often the single largest operating cost and consequently energy productivity is the key to their competitiveness and survival. Micro, Small and medium enterprises (MSMEs) are under tremendous pressure to increase productivity, maintain quality, and deliver within remarkable timeframes; at the same time, work alongside the rising cost of energy, material and other resources required for production, and remain competitive in the market.

Realizing the need to save energy, the Government have issued orders duly sanctioned for a special scheme vide G.O.Ms No 35 MSME (G) department dated 0 9.06.2017 for promoting energy efficiency in MSME units namely "PEACE" (Promotion of Energy Audit and Conservation Of Energy) . Under this scheme, suitable incentives will be given to MSME units based on Energy audit. .....

K.L.N College Of Engineering Centre Of Excellence Energy Audit Division, Department Of Electrical Electronics Engineering Is Promoting Energy Audit From Jan 2016. We Have Completed energy audit for 125 industries.

We Promote Energy Audit As Per The Government Guidelines

# **Awareness Programme**

Awareness among MSMEs is the level of understanding about the importance and implications of energy audit and conserving energy. High awareness among MSMEs occurs when a significant proportion of the MSMEs agree that the energy audit and conserving energy is an issue that is of great importance to the financial performance and competitiveness of their enterprise.

# **Training Programme**

The objective of the training programme is to enable MSMEs to establish the systems and processes necessary to improve energy performance, energy efficiency, and help reduce energy consumption and costs. The training programme enables the MSMEs to take a systematic approach towards achieving substantial improvement in energy management .....

# **Conduct Energy Audit**

We are Conducting Energy Audit, MSMEs, LT & LTCT, HT Industries. We have achieved prove and energy conservation for the consumers. We suggest for reducing electricity bill, power factor penalty, Maximum Demand issues.



# கே.எல்.என். பொறியியல் கல்லூரி K.L.N. College of Engineering

Pottapalayam–630612.(11 km from Madurai City) Sivagangai District,Tamilnadu,India. (Sponsored by K.L.N. Sourashtra College of Engineering Council,Madurai) Approved by AICTE,New Delhi and Affiliated to Anna University, Chennai. Approved Research Center for MECH, EEE, ECE, CSE & MBA by Anna University. Approved research center for Quality Improvement Cell by Anna University, Chennai. Accredited by NBA, New Delhi for B.E. – MECH, EEE, ECE, CSE and B.Tech – IT. An ISO 9001 : 2015 Certified Institution - Sourashtra Linguistic Minority Institution



Counselling Code

5904

Amarar Shri K.L.N. KRISHNAN

# **Courses Offered**

# Name of the programmes approved by the AICTE

# **UG Programmes**

- B.E. Mechanical Engineering (4thtime Accredited)
- B.E. Electrical and Electronics Engineering (4thtime Accredited)
- B.E. Electronics and Communication Engineering (2ndtime Accredited)
- B.E. Computer Science and Engineering (3rdtime Accredited)
- B.Tech. Information Technology (3rdtime Accredited)
- **B.E.** Automobile Engineering
- B.E. Electronics and Instrumentation Engineering

# PG programmes

- Master of Business Administration Master of Computer Applications (2ndtime Accredited) M.E. CAD / CAM M.E. Communication systems M.E. Power Systems Engineering
- M.E. Computer Science and Engineering
- M.E. Computer Science and Engineering(WITH SPECIALISATION IN NETWORKS)

# Ph.D Full Time & Part Time programmes

# For Industrial & Domestic **Energy Audit & Reduce Electricity Bill**



# Contact

Dr. S. Venkatanarayanan M.E., Ph.D., MBA., M.Phil., MISTE., MIEEE

Professor and Energy Consultant, Member IEEE Entrepreneurship Development Institute - Chennai Mentor, Department of Electrical Electronics Engineering Email ID : venjeyeee@gmail.com Mobile No. +91 96773 20576

# Dr. A.V. Ram Prasad M.E., Ph.D., MISTE., F.I.E.,

Principal K.L.N. College Of Engineering Ph: 0452 - 2090184