



# Current Waves

ELECTRICAL CONSULTANTS' ASSOCIATION OF INDIA BANGALORE

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EDITOR'S NOTE

23/1/06

Electrical energy conservation, EEC, has become a buzzword in the field of electricity for a good reason. While the nation is writhing in electrical energy crisis, electrical consultants must take a leading role in implementing EEC. Here is why:

It is a known fact that one of the items that is abundant in our country is shortage of electricity and has reached to such a level that it has got our Hon'ble Prime Minister worried. Although the need of the hour is generation of more power at battle speed, it is happening at snail's pace. For example, the Nathpa Jhakri Hydel Power Plant of 6x250MW in Himachal Pradesh, took a staggering 16 years to complete!

Industries and agriculture, the two pillars on which our country's economy is firmly rooted, can progress only when we have sufficient available electricity. Since the private investors are not coming in a big way in the power sector and the government sector, the major player in the power generation business, in spite of the Accelerated Power Development Programme, APDP, is not able to meet the demand, the supply-demand gap is bound to exist, if not widen, for some time.

In this helpless situation, the only recourse left to utilize the available power to the hilt is to seriously embark on EEC. Electrical consultants must play a major role in this front. Electrical consultants, while on one hand, preach EEC to the consumers by means of seminars etc., on the other hand must practice EEC by adopting them in their current and future projects. They must specify only energy efficient motors (EEMs) for the drives, energy efficient transformers (EETs) for the power and distribution networks and design lighting systems that consume the least power without sacrificing the lighting levels etc. Automatic power factor regulators must be made a part and parcel of their system specifications. These must be specified especially in the industrial projects, since industries consume about 40% of the generated power and hence a bulk saving can be achieved. Similarly, in the agriculture sector, which constitutes about 30% of energy consumption, the use of EEMs and EETs must be insisted upon by the government or private specifiers. Yes, these energy saving equipment will cost a bit more, say 10 - 20%, than the conventional, but the electrical consultants should shoulder the responsibility to extol the benefits and economics of using these energy savers and convince any reluctant end user.

It is needless to say that the governmental agencies should also pitch in to make EEC possible by providing subsidies for energy efficient devices, such as CFLs, EEMs, EETs etc.

ELCA is striving to promote the awareness on EEC through seminars and most of the members do their best to specify energy savers in their specs. It is my hope that the power generation improves in the near future and the EEC practice is also taken seriously by the electricity consumers so that we have a cleaner and greener environment for the present and future generations.

Thank you.

Engr. J. D. Krupakar

*Address by the Hon. Secretary  
Electrical Consultants' Association of India  
Bangalore*

It is my privilege and pleasure to address you all through our newsletter 'Current Waves'.

In this modern age, it is hardly possible to imagine a life without electricity in our homes, industries and other places. We have become so dependent on electricity that we rarely look into the perils that go with it. It seems we forget to remember, that electricity, instead of being a good servant, becomes a bad master if treated carelessly. Most electrical accidents are caused by poor quality electrical appliances and equipment, misuse, poor maintenance, ignorance and indifferent attitude of the individuals towards electricity. The National Fire statistics indicate that in one particular year, fire because of electricity caused about 38,300 residential fires, resulting in 284 deaths, 1184 injuries and damage to the properties in the order of 67 crores of rupees. Apart from these, are the scary figures of deaths, injuries and damages to the properties caused by direct electrocution and other electrical accidents. Perhaps, electrical accidents rank second, in comparison with road accidents.

ELCA had conducted a week long 'Electrical Safety Programme' with exhibition and seminars, in Bangalore, from 13th to 19th September 2001 to spread the awareness on electrical safety.

Since promotion of electrical safety is one of the main aims of ELCA, I will be presenting a series of articles on electrical safety, though not comprehensively but at least on first aid basis, covering different areas such as residential, industrial, commercial complexes etc., for the benefit of all concerned. I will keep the language, presentation and the terminologies simple so that children and common man can understand and practice electrical safety at home and other places. I request the recipients of our newsletter to pass them on to their families and personnel concerned so that all are exposed to the basics of electrical safety. Please interact with us for any clarifications and suggestions on electrical safety.

It is my fervent appeal to all the parents and other concerned personnel, not only as the Hon. Secretary of ELCA but also as a practising electrical consultant, a part time housewife and a parent, to educate your children in electrical safety and spread the awareness, so that our future generations need not suffer from the agonies of electrical accidents.

I take this opportunity to express my gratitude to all the sponsors of 'Current Waves' and the advertisers for having supported us and I hope that many more will come forward in the future.

I wish you all the very best.

Thank you.

Engr. Jayashree Umesh



### **ELECTRICAL SAFETY AT RESIDENCES**

by Engr. Jayashree Umesh, Pie Consultancy Services  
Bangalore

In this article, guidelines for safe electrical working practice to be adopted at residences are presented.

#### **Introduction:**

Electric current always flows through the path of least resistance. The human body offers low resistance to electric current because of its high water and electrolytic contents, which are very good conductors of electricity. Electrocution of the body takes place when any part of the body makes contact with improperly insulated wires/conductors or when in contact with bare conductors such as power lines etc. or when in contact with electrically charged

appliances. Electrocution will be severe when any part of the body in contact is wet or when the person in contact with live part is standing in water, like in bathroom etc.

When electric current flows through the body (from the point/s of contact with live part to the point/s of contact with the ground), especially near the heart, death may occur. Electric shocks can also cause severe pain, damage to nerves, muscles, tissues and any part of the body and other organs of the body, loss of muscle co-ordination, internal bleeding and cardiac arrest. Electric current flowing through the body can

cause serious internal or external burns. Severe burns result from direct contact with equipment, like motors etc. overheated by continuous overloading of equipment/appliances.

#### **Safe Practice :**

It is important to adopt safe electrical working practice at residences. The following simple guidelines will avoid electrical accidents:

1. Make sure that you have a proper ground (grounding rod/s) in your premises. If you do not have or if it is in a bad condition, get it installed immediately by a certified electrical contractor, because it is the key to all electrical safety in your premises. Regularly keep watering the ground rod/s, especially during summer.
2. Use properly rated Miniature Circuit Breaker (MCB) and Earth Leakage Circuit Breaker (ELCB) in your premises.
3. Make sure that the power is switched off and the electrical circuit or appliance is isolated before cleaning, repairing, shifting, examining etc.
4. Do not work with electrical sources when the surroundings, tools, clothing, hands are damp or wet.
5. Keep your feet, hands and loose clothing or apron dry and stand on electrical grade rubber mat or dry wooden plank while using electrical appliances like ironing box, refrigerator, etc.
6. When appliances are cleaned with water after their use, dry the appliances immediately and thoroughly before using again.
7. Make sure that all sockets and plugs are of 3-pin type and that the earth pin of the socket is connected to the ground at your premises. Similarly, ensure that the earth pin of the plug is connected to the ground terminal of the appliance/equipment.
8. Always use 3-pin socket with switch and safety shutters.
9. Always use matching socket and plug to avoid loose contacts and consequent heating and melting.
10. Do not use broken sockets and plugs.
11. Do not overload a socket or a plug by connecting more appliances than allowed.
12. Do not adopt joints in the wires/cords. Always use wires/cords without joints.
13. Use proper grade (like Flameproof / Flame retardant / Waterproof) electric wires/cords near sources of heat, water and flammable materials.
14. Use only waterproof / weatherproof wires/cords for outdoors such as garden, swimming pool etc.
15. Stop all outdoor electrical work during rain.
16. If you are not sure of attending on electrical

repairs, call a certified electrician/contractor to attend the same.

17. Do not be over confident and careless while working with electricity.
18. Do not allow children (say below the age of 5 years) and old persons to operate electrical appliances/equipment.
19. Do not use open heating coil for heating water.
20. Always buy appliances with ISI mark.
21. Read and understand the instruction manual of appliance/equipment before using them.
22. Always keep a set of simple insulated tools like line tester, a set of screw drivers, cutting pliers, knife, insulation tape, torch light etc. handy at a designated place.
23. Do not attend to any electrical work in darkness. Use torch light to illuminate the work area.
24. If power lines pass near the balcony, get the lines covered by insulating sleeves by the electricity supply authorities.
25. Do not touch a person who is in contact with electric supply, with bare hands. Use rubber gloves or dry thick cotton rags or sheets of dry papers or a dry wooden pole to extricate the person from the point of contact with electricity.
26. Do not use mobile / cordless phone, especially in outdoor and near the windows / doors, during stormy/rainy weather conditions.

**Your Home Is Your Heaven.  
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Be Electrically Safe, Not Sorry!**

**KNOW Electrical Safety, NO Electrical  
Accidents !  
NO Electrical Safety, KNOW Electrical  
Accidents !!**

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## SEMINAR ON STRUCTURED CABLING

ELCA organized and conducted an evening programme of seminar on 'Structured cabling for the 21st century' on Friday, 29th April 2005, at Le Meridien, Bangalore. The speaker was Mr. Sreelal Nellary, Technical Support Manager, Panduit International Corporation, India Branch Office, Bangalore.

Mr. Nellary diligently brought out the basics and the latest trends in structured cabling to the invitees comprising of electrical consultants and contractors, architects, builders etc.

Mr. Nellary, an engineer by profession from Bangalore University, has put in about 10 years of experience in the structured cabling industry. He is a RCDD (Registered Communication Distribution Designer) from BICSI (Building Industry Consultancy Services International) Tampa, Florida, USA. He is also a Certified Fiber Optic Technician from FOA (Fiber Optic Association, USA).

ELCA thanks the management of M/s. Anchor Daewoo Industries Limited for sponsoring the entire seminar. Special thanks to Mr. Nilesh Jhaveri, State Head, and his team for taking active part during the seminar.



The seminar is being inaugurated by Mrs. Jayashree Umesh, Hon. Secretary, ELCA. Mr. B. R. V. Murthy, Hon. President, ELCA, (Middle) and Mr. G. P. Bhat, Hon. Vice President, ELCA, (Right) are also seen.



Mr. Sreelal Nellary, the speaker of the seminar (extreme left) is being welcomed by Mr. B. V. Ram Mohan, Hon. Executive Committee Member, ELCA, (Second from left).



'Man at work' - Mr. Nellary delivering his lecture, during the seminar.



A section of invitees.

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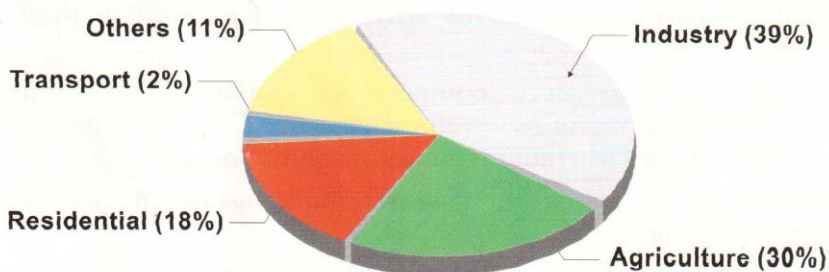
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**PIE CHART OF  
 MAJOR CONSUMERS OF ELECTRICITY IN INDIA \***



**Table of break-up of costs in percentage for different industries \***

Break-up of costs in percentage			
Type of industries	Raw Materials	Power and fuel	Salaries and Wages
Alloy Steel	57	30	13
Aluminium	55	32	13
Castings and Forgings	40	35	25
Cement	47	41	12
Composite Mills	69	16	15
Glass and Glass Products	50	27	23
Hotels	43	21	36
Ingots and Billets	69	24	07
Man Made Fibres	73	17	10
Nitrogenous Fertilizers	73	21	06
Organic Chemicals	72	19	09
Papers	54	33	13
Petrochemicals	72	17	11
Tubes and Pipes	87	07	06

\* Source: Tata Energy Research Institute, Bangalore

## ELECTRICAL ENERGY CONSERVATION

(Commercial Complexes/Offices/Hospitals/Hotels)

- ▶ Use slim fluorescent lamps with electronic ballasts.
- ▶ Maximise the use of Compact Fluorescent Lamps (CFLs).
- ▶ Maximise combination of de-lamping and use of high efficiency reflectors for light fittings which gives better lighting levels, reduce load on HVAC systems and therefore reduce energy consumption.
- ▶ Replace mercury vapour lamps with sodium vapour lamps which give better lighting levels with lower wattage.
- ▶ Design the lighting system keeping in mind the power consumption (running cost) rather than the initial cost of lighting.
- ▶ Switch off air conditioning equipment when not required (as these could be a major power consumer) either manually or by timer switches.
- ▶ In the design stage of the building itself ensure that the building walls/roofs are well insulated to have energy efficient HVAC system.
- ▶ In new buildings use energy efficient motors (EEMs) to drive chillers, compressors, package AC units, air handling units etc.
- ▶ In the existing buildings, if EEMs are not used, replace the existing motors with EEMs.
- ▶ Use electronic variable speed drives (Thyristor drives etc.) to reduce energy consumption.
- ▶ High performance rotary/screw compressors consume lesser energy than conventional compressors for AC equipment. Where ever possible use thermal absorption chillers which will reduce energy consumption.
- ▶ Use high efficiency exterior glazing system for buildings to reduce solar heat gain and hence overall AC load.
- ▶ Install power factor correction capacitors with automatic power factor controller for power factor improvement, to reduce power loss.
- ▶ Use solar water heaters and solar panels to reduce power consumption.
- ▶ Switch off computers/monitors when not in use for a long time.
- ▶ Energy audit of buildings may be carried out in order to pin point the areas of energy conservation.
- ▶ For large buildings incorporate Building Management System (BMS) to integrate monitoring and control of HVAC, lighting, fire alarm, security systems, plumbing equipment etc. BMS can be used to provide energy management by controlling lighting levels and HVAC equipment.

### MOVING ?

IN CASE YOU ARE PLANNING TO MOVE PLEASE SEND US YOUR  
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PLEASE INTIMATE THE EDITOR  
THANK YOU!

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# POTPOURRI PAGE

A visitor from Holland was chatting with his American friend and was jokingly explaining about red, white and blue in the Netherlands flag. "Our flag symbolizes our taxes," he said. "We get red when we talk about them, white when we get our tax bill and blue after we pay them".  
"That is the same with us," the American said, "except that we see stars also".

A man about to enter a hospital saw two white-coated doctors searching through the flower beds. "Excuse me," he said, "have you lost something?".  
"No," replied one of the doctors. "We are performing a heart transplant for an income tax inspector and want to find a suitable stone".

A little boy wanted \$100 badly and prayed for two weeks but nothing happened. Then he decided to write a letter to the Lord requesting the \$100.

When the postal authorities received the letter addressed to the Lord, USA, they decided to send it to the President. The President was so impressed, touched and amused that he instructed his secretary to send the little boy a \$10 bill, as this would appear to be a lot of money to a little boy.

The little boy was delighted with the \$10 and sat down to write a thank-you note to the Lord.

It said:

Dear Lord:

Thank you very much for sending me the money. However, I noticed that for some reason you had to send it through Washington, DC, and as usual, those jokers deducted \$90.

- *A fine is a tax for doing something wrong.*
- *A tax is a fine for doing something right.*
- *Where there is a will, there is an inheritance tax.*
- *What is the difference between tax avoiding and tax evading? The jail walls.*
- *For every tax problem there is a solution which is straight forward, uncomplicated and wrong.*
- *In this world nothing is certain but death and taxes.*  
- Benjamin Franklin.

An applicant was filling out a job application, when he came to the question, "Have you ever been arrested?". He answered "No".

The next question, intended for applicant who had answered in the affirmative to the last question was "Why?".

The applicant by oversight answered it, "Never got caught".

New job interview techniques:

Take the prospective employee and put him in a room with only a table, two chairs and ashtray. Leave him alone for two hours, without any instruction. At the end of that time, go back and see what he is doing:

If he has taken the table apart, put him in Engineering.

If he is counting the butts in the ashtray, assign him to Finance.

If he is waving his arms and talking out loud, send him to Consulting.

If he is talking to the chairs and table, Personnel is a good spot for him.

If he is sleeping, he is Management material.

If he is writing up experience, send him to Technical Documentation team.

If he doesn't even look up when you enter the room, assign him to Security.

If he tries to tell you it's not as bad as it looks, put him to Marketing.

If he mentions what a good price we got for the table and chairs, send him to Purchasing.

If he mentions that hardwood furniture does not come from rainforests, PR will suit him well.

A panda walks into a restaurant, sits down and orders a sandwich. He eats the sandwich, pulls out a gun and shoots the waiter dead. As the panda stands up to leave, the manager shouts, "Hey! Where are you going? You just shot my waiter and you didn't pay for your sandwich!"  
The panda yells back at the manager, "Hey man, I'm a PANDA! Look it up!"

The manager opens his dictionary sees the following definition for panda: "A tree dwelling marsupial of Asian origin, characterized by distinct black and white colouring. Eats shoots and leaves."

A student was hit by a brick that fell from a house. He fainted, but came around after a while and started smiling. The onlookers were worried, so they ask him why the smile.  
"You see, I am a student of physics and I just realized how lucky I am because the kinetic energy is only half  $m v^2$  squared".

Two elderly couples were enjoying friendly conversation when one of the men asked the other, "Fred, how was the memory clinic you went to last month?"

"Outstanding," Fred replied. "They taught us all the latest psychological techniques- visualization, association- it made a huge difference for me."

"That's great! What was the name of the clinic?"

Fred went blank. He thought and thought, but couldn't remember. Then a smile broke across his face and he asked, "What do you call that flower with the long stem and thorns?"

"You mean a rose?"

"Yes, that's it!" He turned to his wife... "Rose dear, what was the name of that clinic?"

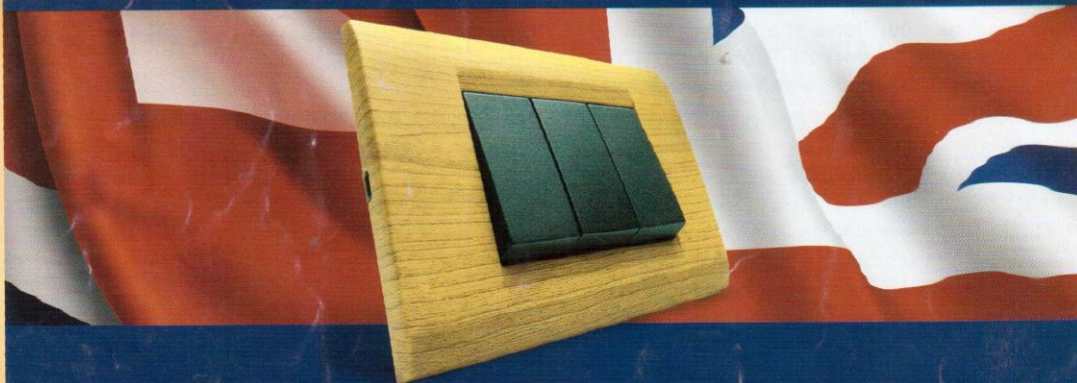
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