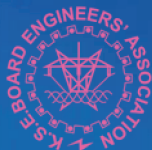


KSEB ENGINEERS' ASSOCIATION



IDUKKI POWERSCENE

JUNE 2015

IDUKKI UNIT

idukkipowerscene@gmail.com

Code of Ethics

Thou shalt maintain thy integrity under all circumstances.

Thou shalt incessantly work for the advancement of the professional knowledge.

Thou shalt not give an incorrect professional opinion

Remember thou art a member of a team and the achievement of the team is thy own success

Thou shall not malign thy co-proffessionalists.

Thou shalt strive for the advancement and dignity of thy juniors in the profession.

Thou shalt strive for the welfare of the community.

Thou shalt enlighten the community with the correct aspect of engineering/technological activities

Thou shall endeavour to develop a dignified status in the society.

Thou shalt strive by conduct and character to be a worthy citizen of the Motherland.



KSEB Engineers' Association, Idukki Unit,
Moolamattom - 685 589
Ph: 9744987420 E-mail: ksebeaidukki@gmail.com

Chairman	Noushad K A 9446008454 (CUG) 7736602437 (Personal)
Secretary	Rajasekhar Rao.T.R 9496009421 (CUG) 9744987420 (Personal)
Treasure	Santhosh kumar .M.V 9496009409 (CUG) 9744560967 (Personal)
Vice Chairman	Shaji. K. Mathew 9446008455 (CUG)
Joint Secretary	Aji Joiseph 9496009400 (CUG)
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Powerscene Editor	Jomon Joseph 9496043173 (Personal)

PRESIDENTIAL ADDRESS

Dear Engineers,

I feel proud to be the chairman of KSEB Engineers Association Idukki Unit at this moment. The releasing of powerscene is a historical moment as far as our unit is concerned. I used this opportunity to congratulate all the engineers who worked behind this glorious powerscene. I again congratulate the editor of this power scene Er. Jomon Joseph for his sincere effort. I request all the members to contribute with your articles, news and creation for the great success of this great motive. I wish all success for this esteemed venture.

Your's Faithfully,
sd/-
Chairman



*Editorial Column***NEED FOR RENOVATION, MODERNISATION &
UPRATING OF GENERATING STATIONS**

In the present power scenario the need of Renovation, Modernization & Up rating (RMU) is in an increasing trend rather than implementation of new power projects which involves many controversial factors -technical as well as non-technical.

The main objective of RMU is to make the operating units modified/augmented with latest technology with a view of improving their performance in terms of efficiency, output, reliability, reduction in maintenance requirement and ease of maintenance. The RMU is aimed at overcoming problems due to generic defects, design deficiency, ageing, obsolescence of equipment/component and non availability of spares, in-efficiency of generating unit and safety requirements etc.

The normal life span of hydro electric power plant is 30 to 35 years after which it normally requires Life extension through renovation. By undertaking timely renovation the generating plants can be made to operate for an extended period of 20 to 25 years with improved reliability and availability. RMU programmes can be expected to yield benefits in about 3 to 4 years as against installation period for new hydro generating capacity of 6 to 7 years.

By undertaking up rating programmes it is possible to up rate the generating capacity of existing units by 10 to 30% based on the water availability, operating margin and technical up gradation. However, up rating of generating capacity may be taken up after detailed investigations and studies.

The performance of the generating units should be the guiding factor in selection of RMU activities rather than the period of their operation.

For carrying out the renovation of the station as a preliminary factor, RLA studies may be carried out so that a realistic picture is available in regard to the residual life/condition of the entire power station equipments, systems and sub systems.

The strategy of RMU programme is to determine the optimum RMU works, so as to achieve restoration/enhancement of the plant's average performance, reliability, availability, safety of operation, life extension for further 20-25 years and updation/up gradation of equipment/system and to determine the potential for up rating the capacity of the units/plant as a whole.

METHODOLOGY FOR IMPLEMENTATION

- u Scope of R&M works and life extension programme in respect of generating units having completed more than 30 years of service life should be firmly based on RLA studies. Up rating, if feasible shall also be taken up along with life extension programme.
- u RLA studies should be conducted through competent vendors and the Detailed Project Report for the scheme be prepared based on the findings of RLA studies.
- u Job of RLA studies and execution of RMU works should be tendered out separately with the later being based on the findings of the first one.
- u Prior to undertaking up rating works, it is necessary to go for up rating studies. Up rating studies should be conducted through reputed agencies like CWPRS, CPRI, BHEL, etc.
- u R&M works as firmed up in the detailed project report should preferably be tendered out on turn-key basis to the reputed manufacturers/vendors.
- u A high level task force is to be constituted by the utility for implementation of RMU schemes as per time bound programme.
- u Completion of activities as well as performance of the equipment after RMU should be guaranteed through stringent penalty clauses.
- u Addition/deletion of RMU activities from those incorporated in the DPR should not be permitted. Allocation of funds should be activity based and implementation of the scheme should be monitored activity-wise.

“Renovate existing Stations to perform better”

Secretary's Desk

The publication of Idukki Power Scene June 2015 edition has begun with a view of motivating the activities of KSEB Engineers' Association Idukki Unit. In this occasion I am greatly indebted to the endless support and encouragement given by the members for the activities of the association till date. Along with this I gratefully remember the contributions of the senior fellow engineers for strengthening the activities of the association in the past years.

For the smooth publication of the Power Scene I sincerely request the co-operation of the members in enriching the power scene by giving valuable technical and cultural articles.

Your's Faithfully,
sd/-
Rajasekhar Rao T.R.



KSEB AT A GLANCE

Er. Naveen T R, AE

KSEBL is enriched with the rain of anomaly transfer orders while expecting monsoon in the month of June. Along with these transfer orders, 37 AEE posts out of 167 posts which were upgraded earlier was also regularised. This month also witnessed promotion orders of ten DyCE -CE, seventeen EE-DyCE and twenty four AEE-EE. There were some significant changes in the higher management level. The post CE (HRM) itself is demolished. The DyCE (HRM-1) would have the “full powers” of CE(HRM). Re designation of some posts such as Director (Gen) to Director (Gen & HRM), Director (Corporate Planning) to Director (Renewable Energy & Energy Saving), Director (IT) to Director (IT& Consumer Relation) were also ordered by KSEBL. New

post namely CE(Centrally Aided Projects & Safety) is created instead of CE(HRM) in addition to new post CE(APTS).

The order for giving incentive to off grid solar panels will promote the use of solar power. An incentive of Rs 1 per unit will give to the energy generated (measured with the help of a solar energy meter) from off grid solar panels.

The order for referendum of workmen category also received attention in this month. Realization of the backlog contribution of National Pension Scheme (NPS) was another decision taken by KSEBL which is to be implemented. Officers/employees who were recruited/appointed on or before 31.05.2014 will have the choice to exercise option to remit their pending backlog contributions either through 30 equal monthly instalments (EMIs)/ 15 equal multiple instalments/lump sum payment. In the case of appointments made on or after 01.06.2014, the backlog contributions pending if any shall be recovered from their salaries in instalments equivalent to the number of pending instalments and the above deduction shall be made along with their regular monthly contribution. Even though the minimum subscription is 10%, the employee would also have the option of above 10% subscription. But the extra amount will put in a separate account head(without employer subscription) and can withdraw at any time. This amount is not considered for any tax reduction purpose.

The works which are not completed under RGGVY scheme can be continued till 30-09-2015 or till the amount is expired. This will facilitate to continue the works that is undergoing in Thiruvananthapuram, Ernakulam, Trissur and Kottayam districts under RGGVY scheme. These districts can start the new DDUGY scheme when the RGGVY is expired. The other districts should start the new scheme now itself. Thus the BPL consumers will continue to get electricity connection without much financial burden.

The water storage in hydroelectric projects is better than that of previous year. Even though the heavy storm and rain causes severe losses in the transmission and distribution sector, water level in all reservoirs increased this month. The storage in Idukki reservoir increased to 44.18% from 33.29% during the this month. The Maximum Consumption and Maximum Demand in this month is 3513 MW (on 02-06-2015) and 65.3778MU (on 02-06-2015) respectively .

POWER SYSTEM PROTECTION

Er. L MANOJ GOPAL, AEE

My humble aim of writing this column is to give some idea regarding the protection scheme/philosophy adopted for generators, transformers, transmission lines, bus bar etc to my fellow engineers. Also I take this opportunity to share some of my experience with you in the protection field.

The very purpose of an electrical power system is to generate, transmit and distribute electrical energy to consumers. The system should be designed to deliver this energy both reliably and economically. Frequent and prolonged power outages result in severe disruption to the normal routine of modern society, which is demanding increasing reliability and security of supply. As the requirement of reliability and security are largely opposed, power system design is inevitably a compromise.

The grid disturbance that took place in North India on 30th and 31st of July 2012 was a prolonged one that stopped even the rail service. Such events should not repeat in future. The ministry of power, Govt. Of India, constituted a 'Task Force On Power System Analysis Under Contingencies' in December 2012. The term of reference of task force broadly cover analysis of the network behavior under normal conditions and contingencies, review of the philosophy of operation of protection relays, protection coordination, review of islanding schemes and technological options to improve the performance of the grid..

When the system is large, the chance of a fault occurring and the disturbance that a fault would bring are both so great that without sufficient mechanism to remove faults the system will become inoperable. A protective relay will protect the system and its equipment from unnecessary damage due to faults, such as short circuits, earthing etc. The damage caused by a fault is certainly minimized by clearing it quickly and is essential to maintain system stability. The relay is to detect and locate a fault and issue a trip command to the circuit breaker to disconnect the faulty element. So the protection relays are also called as 'Silent Sentinels'.

In many cases it is not feasible or possible to protect against all hazards with a single relay. So a combination of different types of relays are used which individually protect against different risks. Each individual protection arrangement is known as a protection system (protection function in numerical relays) while the integration of all is called a protection scheme. Protection for generators at Moolamattom or Lower Periyar is an example of such an integrated scheme. But with the advent of numerical type of Generator Management and Transformer

Management relays, a number of protection functions can be incorporated in a single relay. The Generator Management relay at Moozhiyar Pallivasal, Neriamangalam, Sengulam, Panniyar etc are examples.

Protective Relaying Systems and the design criteria

Any protection scheme is required to safeguard the power system components. The protection scheme basically consists of CTs PTs, Protective Relays, Circuit Breaker, Batteries etc. The protective relay is primarily the brain behind the whole scheme, plays a very important role. Therefore proper care should be taken in selecting an appropriate protective relay which is reliable, efficient and fast in operation. We can not say that a power system is properly designed and managed if it is not adequately protected. This shows the importance of protection system within the electrical power system and of the responsibility vested in the protection engineer. The following are the design criteria.

1. Reliability.

A protection system must operate reliably when a fault occurs in its zone of operation (the zone of operation will be explained in coming papers). The reliability of protective relay system has two aspects: dependability of operation and security from failure of operation. Since no human invention is perfect, and the protective relay system is no exception, compromise between dependability and security is inevitable. To achieve a high degree of reliability, greater attention should be given to the design, installation, maintenance and testing of the various elements of the protective system. Reliability can be ensured by Routine Testing. Security is very difficult to test because there can be infinite variety of transients that might upset protection system. Predetermination of all these possibilities is difficult or impossible.

2) Selectivity

It is the quality of a protective relay by which it is able to discriminate a fault in the protected section and the normal condition. Also it should be able to distinguish whether a fault lies within its zone of protection or outside the zone. Sometimes this quality of the relay is also called discrimination.

3. Sensitivity

It refers to the minimum level of the fault current/energising parameter at which relay operates. Now a days the sensitivity is an issue for 11kV feeders and you might have heard of Sensitive Earth Fault relays. These types of relays are being installed when there is complaint of non tripping of feeders for conductor snapping if it is a sensitivity issue.

4) *Stability*

The term stability is often used to describe the quality of a protective system by virtue of which it remains inoperative under specified conditions. Or in other words it is the ability of the system to remain inert to all load conditions and faults external to the relevant zone. Strictly speaking it is a quality that only unit protection system can possess (R EF, Differential relay etc) because they are required to remain inoperative under all conditions associated with faults outside their own zone.

5) *Speed*

A protective system should be fast enough to isolate the faulty element of the system as quickly as possible to minimize damage to the equipment and to maintain power system stability. For modern power system, stability criterion is very important and hence the operating time of the protective system should not exceed the critical clearing time to avoid the loss of synchronism.

6) *Cost*

Maximum protection at the lowest cost possible. But I strongly believe that our system of purchase of the lowest as per tender should be changed at least for the purchase of critical items like protective relays. Apart from the cost the relay should have some track record. We cannot purchase a new comer even though its cost is minimum.

RELAY PERFORMANCE

Relay performance is generally classified as Correct, Incorrect or No Conclusion.

Incorrect operation may be either failure to trip or false tripping. The cause of incorrect operation may be

- a. *Wrong application*
- b. *Incorrect setting*
- c. *A personnel error*
- d. *Equipment mal-operation*

Equipment that can cause incorrect operation includes CTs, PTs, Cable and Wiring, Relays, Channels, station batteries, battery earth leakage which is common in our system, etc.

Incorrect tripping of CBs not associated with the faulty area is often as disastrous as a failure to trip. Hence special care must be taken in both application and installation to ensure against the possibility of incorrect tripping.

No conclusion is the last resort when no evidence is available for a correct or incorrect operation. Quite often this is a personnel involvement.

To Be Contd.....

*Service Matters**Er. Radhakrishnan C.G. AE***Duty**

“A person is said to be “on duty” as a member of a service:-

- (a) When he is performing the duties of a post borne on the cadre of such service or is undergoing the probation, instruction or training prescribed for such service;
- (b) When he is on joining time; or
- (c) When he is absent from duty during vacation or on authorized holidays or on casual leave taken in accordance with the instructions regulating such leave issued by the State Government having been on duty immediately before and immediately after such absence; or
- (d) When he is on deputation, during his period of probation, for training or for acquisition of higher additional qualifications in public interest; or
- (e) When he is waiting for posting orders after reporting for duty; or
- (f) When he is given the benefit of notional promotion consequent on revision of rank and seniority etc; or
- (g) In the case of a female member, when she is on maternity leave during her period of probation.”

Here the points of interest are***A person is on duty :-***

- On authorized holidays
- On casual leave
- On maternity leave during her period of probation in the case of a female member.

(To be contd..)

Salaam –e- Apps

Any.do: To-Do List | Task List

Er.Amalchith V.A., AE

Platform: Android

Developers: Any.do

Category: Productivity

Remember what matters to you, things you wanted at the right place or time. Tasks/reminders can be organised to folders such as Work, Personal, Shopping etc. as you wish. Sub tasks are available and notes can be added for more details. Priority can be set and snooze function also included. Reminders/tasks can also be added to Any.do from any other applications simply by using the share button from that app.

Can automatically handle calls that were missed out, reminds to call back after a specific time, ie. one or two hours as specified by you, for each call. With Any.do you won't forget your tasks.

Simply swipe right to strike out completed tasks, left to recollect it and to delete press the cross button which appears on striking out or using "clear completed" from menu.

Seamlessly syncs between mobile, desktop, web and tablet so you, and everyone you like to, can access it from anywhere making your reminders always updated. With Any.do you can handle work, family, and personal life in one place, you end up having a lot more time for what matters.

If you have more space and computing capacity to spare in your device try "[Cal - Calendar Google/Exchange](#)" from the same developer which is an alternative for google/android calendar

ചിന്തകൾ ചിറകിലേറുമ്പോൾ

എഞ്ചിനീയർ ബിനോയ് ആർ.

ലോകം സാങ്കേതികവിദ്യയിലൂടെ ഉയരങ്ങൾ കീഴടക്കിക്കൊണ്ടിരിക്കുന്നു. കാലത്തിനൊപ്പം നടക്കാത്തവർ പിൻതള്ളപ്പെടും. സാങ്കേതിക വളർച്ചയുടെ വേഗതയ്ക്കനുസരിച്ച് നടന്നാൽ മാത്രം പോരാ അതിവേഗം ഒട്ടേങ്ങിവന്നിരിക്കുന്നു നമുക്ക്. അതിനാൽ എഞ്ചിനീയർമാരുടെ പ്രാധാന്യവും, ഉത്തരവാദിത്വവും അനുദിനം വർദ്ധിച്ചുകൊണ്ടിരിക്കുന്നു. നമുക്കോരോരുത്തർക്കും എഞ്ചിനീയറിംഗ് പ്രൊഫഷണലുകളായതിൽ അഭിമാനിക്കാം.

പ്രൊഫഷണലിസം ഒരു എഞ്ചിനീയർക്ക് ഉണ്ടായിരിക്കേണ്ട അടിസ്ഥാനഗുണം. ഇന്നത്തെ എഞ്ചിനീയർമാർ എത്രത്തോളം പ്രൊഫഷണലുകളാണെന്ന് നാം ചിന്തിക്കേണ്ടിയിരിക്കുന്നു. നാം അഭിമുഖീകരിക്കുന്ന സമസ്യകളെ എങ്ങനെ നേരിടുന്നു എന്നതാണ് പ്രധാനം. ദുരിദാഗം എഞ്ചിനീയർമാരും തുച്ഛമായ സ്വാർത്ഥലാഭത്തിനായി സ്വന്തം വ്യക്തിത്വവും മുല്യങ്ങളും അടിയറവയ്ക്കുമ്പോൾ നഷ്ടപ്പെടുന്നത് എഞ്ചിനീയറിംഗ് സമൂഹത്തിന്റെ ആത്മാഭിമാനമാണ് എന്ന് നാം ഓർക്കണം.

എല്ലാ ജോലികളും മാന്ദിര്യപ്പെടേണ്ടതാണ് എന്നത് ഏതൊരു പ്രൊഫഷണലിസ്റ്റിനും ഉണ്ടായിരിക്കേണ്ട ഗുണമാണ്. ഇലക്ട്രിസിറ്റി ബോർഡ് സെക്ഷൻ ഓഫീസുകളിൽ ജോലി ചെയ്യുന്ന ജീവനക്കാരുടെ പ്രയത്നത്തേയും മനസ്സിനേയും മുറിവേൽപ്പിക്കുന്ന ഒരു പോസ്റ്റ് ഇന്ത്യയിലെ സോഷ്യൽ മീഡിയായിൽ കാണാനിടയായി. അത് ഇപ്രകാരം ആണ്.

അടുത്ത ഒരു മഴയോടുകൂടി കെ. എസ്. ഇ. ബി. തീയേറ്റേഴ്സ് അഭിമാനപുരസ്സരം സമർപ്പിക്കുന്നു.

വിളിക്കേണ്ട മക്കളെ... ഫോണെടുക്കല്ല

ഈ കലാകാരന്റെ കഴിവിനെത്താൻ അഭിനന്ദിക്കുന്നു. ഇതിലെ നർമ്മം ആസ്വദിക്കുകയും ചെയ്യുന്നു. കെ. എസ്. ഇ. ബി. ലിമിറ്റഡിലെ ഒരു എഞ്ചിനീയർ എന്ന നിലയ്ക്ക് ചിന്തിച്ചുനോക്കിയപ്പോൾ മഴയത്തും വെയിലത്തും രാത്രിയിലും പകലും ജോലി ചെയ്യുന്ന ഓരോ ജീവനക്കാരുടെയും ആത്മാഭിമാനത്തിന് മുറിവേൽപ്പിക്കുന്നതായിപ്പോയി എന്ന് തോന്നി. ഇതിൽ നാം പ്രധാനമായും വിചിന്തനം ചെയ്യേണ്ടത് എന്തെല്ലാമാണ്. മഴക്കാലത്ത് എന്തുകൊണ്ടാണ് കറണ്ടുപോകുന്നത് എന്ന് എല്ലാ എഞ്ചിനീയർമാർക്കും വളരെ നന്നായി അറിയാവുന്ന കാര്യമാണല്ലോ?

ഇനി രണ്ടാമത്തെ കാര്യം. സെക്ഷൻ ഓഫീസിലെ ഫോണുകൾ ബിസി ആകുകയോ എടുക്കാതിരിക്കുകയോ ചെയ്യുന്നത് എന്തുകൊണ്ടാണ്?

ശരാശരി പതിനയ്യായിരത്തോളം ഉപഭോക്താക്കൾ ഓരോ സെക്ഷൻ പരിധിയിലും ഉണ്ടാകും. 60 ഓളം ട്രാൻസ്ഫോർമറുകൾ മൂന്ന് ഫീഡറുകളിലായി ക്രമീകരിച്ചിട്ടുണ്ടാകും. അങ്ങനെയൊന്നെങ്കിൽ ഏകദേശം 20 ഓളം ട്രാൻസ്ഫോർമറുകളുടെ സപ്ലൈ ഒരു 11 കെവി തകരാറിൽ നിലച്ചേക്കാം. ഇത് ഏകദേശം നാലായിരത്തോളം ഉപഭോക്താക്കളെ ബാധിക്കും.

ഇത്തരം സാഹചര്യത്തിൽ ടെസ്റ്റ് ചാർജ്ജ് സമയത്തിനുള്ളിൽ (5 മിനിറ്റ്) 10 ശതമാനം ആളുകൾ സെക്ഷൻ ഓഫീസിലേക്ക് വിളിച്ചാൽപ്പോലും മിനിറ്റിൽ 400 കോളുകൾ. മിനിറ്റിൽ 5 കോളുകൾ എടുക്കാൻ കഴിയുന്നത് അസാധ്യമാണ്, എങ്കിലും 5 മിനിറ്റിനുള്ളിൽ പരമാവധി 25 കോളുകൾ മാത്രമേ അറ്റൻ്റ് ചെയ്യുവാൻ കഴിയൂ എന്ന് മനസ്സിലാകും. ബാക്കിയുള്ള 375 പേർക്കും ബിസി ടോൺ മാത്രമാകും കിട്ടുക. അതല്ലാതെ, ഫോൺ തകരാറുള്ളപ്പോഴല്ലാതെ ഒരു സെക്ഷൻ ഓഫീസിലും ഫോൺ എടുക്കാതിരിക്കുകയില്ല എന്ന് നാം മനസ്സിലാക്കണം. മാത്രവുമല്ല, തകരാറുകൾ വളരെ വേഗത്തിൽ പരിഹരിക്കുന്നതിന് ഫോൺ സന്ദേശം വളരെ പ്രയോജനകരമാണെന്ന് ഓരോ ജീവനക്കാരനും അറിയാം. അതുകൊണ്ട് വളരെ പ്രതീക്ഷയോടെ ആണ് ഓരോ ജീവനക്കാരനും ഫോൺ കോളുകൾ കൈകാര്യം ചെയ്യുന്നത് എന്ന സത്യം നാം മനസ്സിലാക്കണം.

ഇക്കാരണങ്ങൾ മനസ്സിലാക്കുന്ന ഓരോ എഞ്ചിനീയർമാരും ഇത്തരം പ്രവണതകൾ പ്രചരിപ്പിക്കുന്നതിൽ നിന്നും വിട്ടുനിൽക്കണമെന്നും മറ്റ് ജീവനക്കാരേയും ബോധവൽക്കരിക്കണമെന്നും അഭ്യർത്ഥിക്കുന്നു.

Ground Rules for Electrical Safety

Do's and Don'ts

Do:

Stay away from exposed electrical parts unless you are a qualified worker.

Check that wire insulation is in good condition.

Keep machines and tools properly lubricated.

Use extension cords only when necessary and only if they're rated high enough for the job.

Use waterproof cords outdoors.

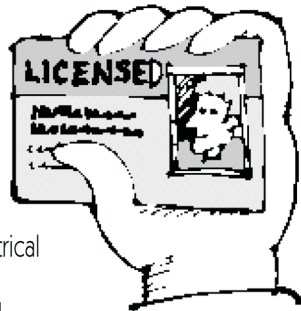
Use approved extension lamps only.

Leave at least 3 feet of workspace around electrical equipment for instant access.

Keep the work area clean. Be especially careful with oily rags, paper, sawdust, or anything that could burn.

Follow manufacturer's instructions for all electrical equipment.

Leave electrical repairs to qualified personnel.



Don't:

Don't overload outlets or motors.

Don't let grease, dust, or dirt build up on machinery.

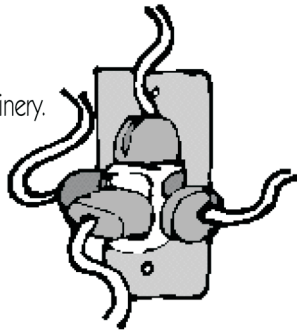
Don't place cords near heat or water.

Don't run cords along the floor where they can be damaged.

Don't touch anything electric with wet hands.

Don't put anything but an electric plug into an electric outlet.

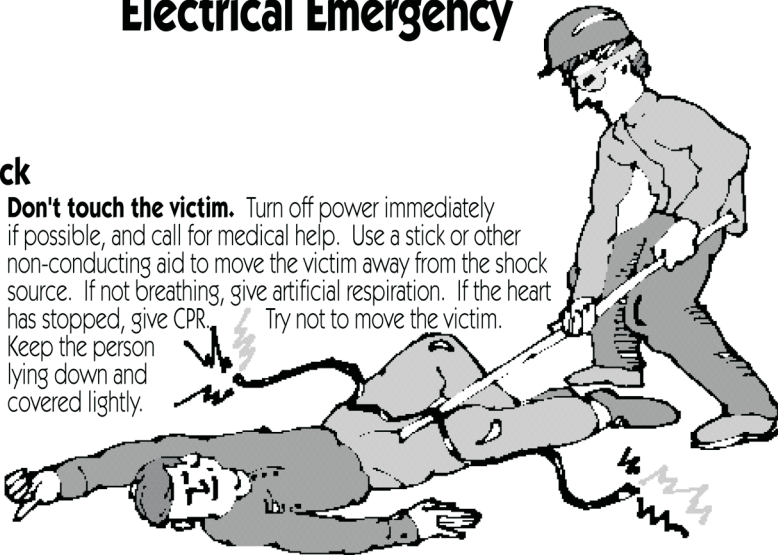
Don't use temporary wiring in place of permanent wiring.



Know What to Do in an Electrical Emergency

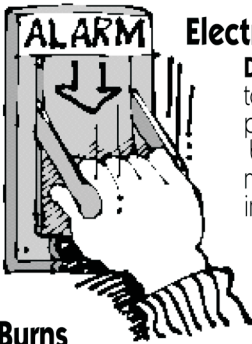
Shock

Don't touch the victim. Turn off power immediately if possible, and call for medical help. Use a stick or other non-conducting aid to move the victim away from the shock source. If not breathing, give artificial respiration. If the heart has stopped, give CPR. Try not to move the victim. Keep the person lying down and covered lightly.



Electrical fire

Don't use water or touch the burning object. If possible to do it safely, unplug or turn off the current. If the fire's small, put it out with a CO₂ or multipurpose ABC extinguisher, or baking soda. Always notify firefighters immediately.



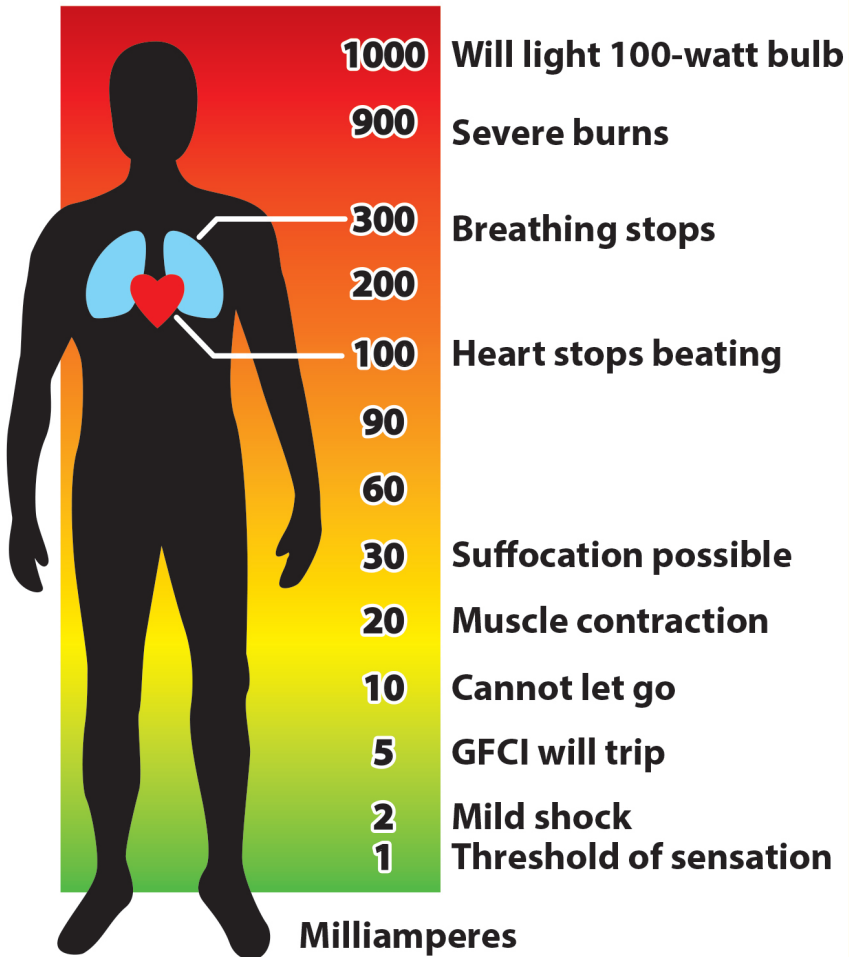
Burns

For a minor burn, rinse with cool water and cover with a clean dry cloth.

Cover a major burn with a sterile dressing and get immediate medical attention.



Electricity's Effects



Congratulations

Full A+ in S.S.L.C.



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idukkipowerscene@gmail.com*



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KSEB Engineers' Association, Idukki Unit,
Moolamattom - 685 589
Ph: 9744987420 E-mail: ksebeaidukki@gmail.com