



Current Waves

ELECTRICAL CONSULTANTS' ASSOCIATION OF INDIA BANGALORE

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Electrical Consultants' Association of India, ELCA, formerly known as Electrical Consultants' Association, an Association of only Electrical Consultants, is well known to me for the past several years. Perhaps to the best of my knowledge, ELCA founded in 1990 by a group of dedicated practicing electrical consultants in Bangalore, Karnataka, is only one of its kind in our country. ELCA was founded with objectives to promote electrical safety, electrical energy conservation, use of non conventional sources of energy, to seek a legislation making it mandatory to engage the services of electrical consulting firm for all electrical installations in industrial, commercial and residential projects etc., and to organize and conduct seminars, exhibitions and to publish periodicals, newsletters etc., to establish various chapters in other States of India.

ELCA had organized and conducted many events in the past in Bangalore including a week long event - Electrical Safety Programme, in technical association with the Department of Electrical Inspectorate and a Mega event MEPEX-2004, in Bangalore, from 8th to 11th of January 2004, which was an all India event. Now ELCA has embarked on an international event called EPI-2009 to be held from 5th to 8th June 2009 at Bangalore International Exhibition Centre. I hope that all electrical industries, manufacturers and traders etc. will take part in this international event to enjoy wide publicity. Going by the past performance of ELCA I am sure that EPI-2009 will be a grand success.

I am glad to know that ELCA has spread its wings to other States like Tamil Nadu, Andhra Pradesh, Kerala and Maharashtra and is striving to cover more Electrical Consultants in other States as well in India.

I am here to assure that ELCA will receive all possible support and encouragement from our end and I am sure ELCA will grow from strength to strength and will achieve its objectives in the near future.

I wish the Association all the very best.

D.H. Basavaraju

Chief Electrical Inspector to Government of Karnataka



EDITOR'S NOTE

Let me wish you all a very happy and prosperous New Year.

I am delighted to inform you that Electrical Consultants' Association of India, ELCA, will be organizing a Mega Event called EPI - 2009 (ELCA Power International) from 5th to 8th June 2009 at Bangalore International Exhibition Centre, Bangalore, a modern and the State of art exhibition complex.

Although companies can mail their catalogues to users, there is no better way to promote their products, services, corporate and brand images than to have one to one interaction under a right ambience like exhibition and seminars.

Taking part in EPI - 2009 is certainly a cost effective way to reach users from far and near with your latest products and technology offerings and we at EPI - 2009 are confident that your investment in EPI - 2009 will pay back through a flood of enquires and orders both during and after the Event.

The Event will be organized by ELCA and will be conducted by a Bangalore based Event Managing company M/s. AdsStation. Of course ELCA will be overseeing the entire programme. We will be launching the Event on

Friday, 30 January 2009 at The Lalit Ashok, Bangalore.

In case you happen to be in Bangalore or planning a visit to Bangalore on 30th Jan. you are most welcome to attend the function and take part in the Mega Event. In case you are not able to attend the Launching Function, please block 5th to 8th June 2009 and pay a visit to Bangalore to be with us at EPI - 2009.

I once again wish you all a happy 2009 and see you at EPI - 2009.

Thank you,

Engr. J.D.Krupakar

Editor, Current Waves

Chairman, Organizing Committee EPI - 2009

--o--

VOLTAGE RELAY



H.K. Shivaram



C. Satish Jois



Radhakrihna H. N.

With the invention of electricity, there has been a continuous research and development to provide a better quality of power along with protection. Thus several relays have been designed, each catering to the specific need of protection.

Voltage relay is one such design, which specifically protects the system from the hazards caused due to under-voltage and over-voltage. It can be either for single phase or 3 phases. The phase failure relay protects against phase failure, phase reversal and negative sequence. Few of the voltage relays also incorporate the phase failure, phase reversal and negative sequence along with the under-voltage and over-voltage protection.

UNDER VOLTAGE

Electrical loads are designed to operate under relatively constant voltage conditions. Under voltage, conditions from the supply source can cause corresponding over-current and increased temperature conditions that could have potentially damaging effects to the connected equipment. Protective under voltage relays that monitor supply voltage can provide an output signal when voltage drops below predetermined levels. They can be employed in a wide variety of applications, which include motor protection, transformer protection, generator protection, supervision of automatic

transfer systems, power generation systems, and area protection monitoring systems.

CAUSES OF UNDER VOLTAGE IN A SYSTEM

- I. Due to expansion of Sagging
- II. Life expansion of conductor
- III. Copper loss and core loss
- IV. Phase differences

OVER VOLTAGE

Transferring a system from one operating condition to another may generate a short-time transient over voltage, known as a switching surge. A line-to-ground fault may increase the line-to-ground voltage of the phases. An over voltage results when resonance occurs from single-pole switching of poly-phase circuits. Accidental contact with a higher-voltage system may cause an over voltage. Forced-current zero interruptions, improperly applied, may cause a high transient voltage. The protective devices discussed for lightning-induced surges will also protect the system from these system-generated over-voltages.

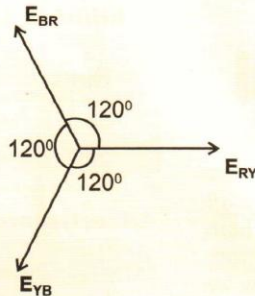
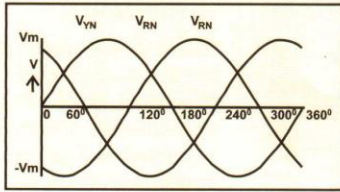
CAUSES OF OVER VOLTAGE IN A SYSTEM

1. Capacitance Switching
2. Arcing Ground
3. Lightning or Thunderstorm

PHASE REVERSAL

In three-phase system three simultaneous linear equations with constant coefficients are obtained they are

1. Positive Sequence Voltage
2. Negative Sequence Voltage
3. Zero Sequence Voltage



REVERSE PHASE SEQUENCE WAVEFORM

Zero Sequence

In zero sequence component that has three vectors of equal magnitude and are in phase with each other.

$$V_0 = V_{a1} + V_{a2} + V_{a0}$$

Negative Sequence Voltage

In negative sequence component that has three vectors of equal magnitude but displaced in phase from each other by 120° and has the phase sequence opposite to the original vectors.

$$V_2 = a^2 V_{a1} + a V_{a2} + V_{a0}$$

Positive Sequence Voltage

In positive sequence component that has three vectors of equal magnitude but displaced in phase from each other by 120 deg and has the same phase sequence as the original vectors.

$$V_1 = a V_{a1} + a^2 V_{a2} + V_{a0}$$

Prok devices private limited, uses the state of the art dedicated micro controller based voltage relay. It can provide protection against over-voltage, under-voltage, phase-unbalance, phase-reversal and phase-failure.

In this relay, all the line voltages are monitored and sensed simultaneously using three independent scaled down potential transducer. This low level ac signal is subjected to signal condition, which includes surge

suppressors and harmonics filter. The filtered signal is fed to the micro controller. When the sensing voltage level exceeds the user set value for under or over voltage, relay gives an output signal in the form of relay change over. Under voltage relay is energized when system is in healthy condition, when the fault occurs the under-voltage relay gets de-energized.

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6. Self reset and site selectable reset gap (5v to 20v in step of 5volts)
7. User friendly setting modes using key pads
8. Low power consumption
9. Tropicalised design using micro controller and ideal for industrial environment
10. Under voltage setting from 50 - 95% (in steps of 1%)
11. Over voltage setting from 105 - 120% (in steps of 1%)
12. On time delay setting from 0.5 - 10 sec (in steps of 0.5 sec)
13. Separate time delay for under and over voltage setting 0.5 - 20 sec (in steps of 0.5 sec)

Phase Failure and Phase Reversal detection indication on the LCD display

APPLICATION

1. Monitoring and Supervision of under and over voltage in power generating plants and distribution system
 2. To protect Generators and AMF switch boards
 3. For protection of synchronous and Induction Motors
 4. For Transformer Feeder Panel
- Protection for Capacitor Control Panels.

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For biodata of the Authors See Page No. 6

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Growing Indian Economy coupled with Indian government's goal of Power for all by 2012, opens up tremendous opportunities for electrical companies, both domestic and international, in India. The above goal puts power generation, transmission, distribution and conservation on a top priority. Massive infrastructure expansion projects in India have resulted in the increased demand for power, electrical and lighting products. The government's increased focus in New and Renewable energy opens up a lot of business opportunities for companies which are into production of green, clean and sustainable renewable energy. With an ever increasing energy requirements and a strong economy, it is apt to say, the future of power is here in India.

ELCA Power International organised, by Electrical Consultants' Association of India (ELCA) and conducted by AdsStation, is sure to become the electrical gateway of India. ELCA Power International 2009 would be a grand stand for you to display your products and get the global attention and recognition of everyone who is someone in the world of electricity. The event also gives you the ideal platform to get your products closer to the electrical consultants who play a key role in deciding the right product for the projects. ELCA Power International 2009 is sure to give your brand more market penetration and greater visibility in India.

ELCA Power International 2009 will feature



Power

Electrical

Lighting

New and Renewable Energy

Service Providers

ELCA Power International 2009 promises

- Face to face business meetings and generate business contacts that will surely increase your brand value.
- To promote electrical safety, energy conservation and green energy.

Exhibition

ELCA Power International 2009 would products and capabilities. The exhibit Electrical, Lighting, New and Renewa exhibition is conducted in air-conditione expected to be attended by over 20,000 a special emphasis on creating opportuniti the exhibitors.

Exhibition Tariff

Type of Stall	** Rate per Sq. in Rs.
Shell Scheme	9000
Bare Space	8000

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Seminar

The Seminars in ELCA Power Interna leading experts in the field to share in best practices in their domains.

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- Power Generation
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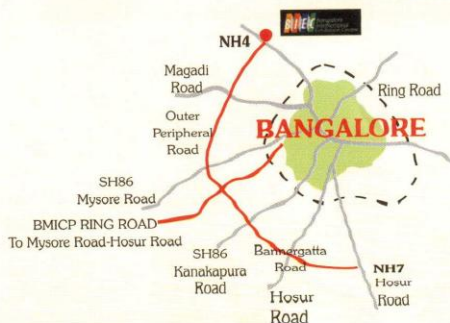
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n to sponsor, book stall and book for seminar

Venue

**Bangalore International
Exhibition Centre**
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Location Guide



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POTPOURRI PAGE

ONE LINERS

Regular naps prevent old age, especially if you take them while driving.

A child's greatest period of growth is the month after you've purchased new school uniforms.

Bad officials are elected by good citizens who do not vote.

Laziness is nothing more than the habit of resting before you get tired.

My wife and I always compromise. I admit I'm wrong and she agrees with me.

It doesn't matter how often a married man changes his job, he still ends up with the same boss.

Wise men talk because they have something to say; Fools talk because they have to say something.

There is only one perfect child in the world and every mother has it.

There is only one perfect wife in the world and every neighbour has it!

*

A woman awakes during the night to find that her husband was not in their bed. She puts on her dressing gown and goes downstairs to look for him. She finds him sitting at the kitchen table with a hot cup of coffee in front of him. He appears to be in deep thought, just staring at the wall.

She watches as he wipes a tear from his eye and takes a sip of his coffee.

'What's the matter, dear?' she whispers as she steps into the room, 'Why are you down here at this time of night?'

The husband looks up from his coffee, 'I am just remembering when we first met 20 years ago and started dating. You were only 16. Do you remember back then?' he says solemnly.

The wife is touched by his tears thinking that her husband is so caring, so sensitive.

'Yes, I do' she replies.

The husband pauses. The words were not coming easily.

'Do you remember when your father caught us in the back seat of my car?'

'Yes, I remember!' said the wife, lowering herself into a chair beside him.

The husband continues. 'Do you remember when he shoved the shotgun in my face and said, 'Either you

marry my daughter, or I will send you to jail for 20 years?'

'I remember that too' she replies softly.

He wipes another tear from his cheek and says...

'I would have been released today.'

*

A teacher was giving a lesson on the circulation of the blood.

Trying to make the matter clearer, she said, 'Now, class, if I stood on my head, the blood, as you know, would run into it, and I would turn red in the face.'

'Yes,' the class said.

'Then why is it that while I am standing upright in the ordinary positions the blood doesn't run into my feet?'

A little fellow shouted, 'Because your feet aren't empty.'

*

Four friends, who hadn't seen each other in 30 years, reunited at a party. After several drinks, one of the men had to use the rest room. Those who remained talked about their kids.

The first guy said, 'My son is my pride and joy. He started working at a successful company at the bottom of the barrel. He studied Economics & Business Administration and soon began to climb the corporate ladder and now he's the president of the company. He became so rich that he gave his best friend a top of the line Mercedes for his birthday.'

The second guy said, 'Darn, that's terrific! My son is also my pride and joy. He started working for a big airline, and then went to flight school to become a pilot. Eventually he became a partner in the company, where he owns the majority of its assets. He's so rich that he gave his best friend a brand new jet for his birthday.'

The third man said: 'Well, that's terrific! My son studied in the best universities and became an engineer. Then he started his own construction company and is now a multimillionaire. He also gave away something very nice and expensive to his best friend for his birthday: a 30,000 square foot mansion.'

The three friends congratulated each other just as the fourth returned from the restroom and asked: 'What are all the congratulations for?'

One of the three said: 'We were talking about the pride we feel for the successes of our sons.What about your son?'

The fourth man replied: 'My son makes a living dancing at a nightclub.'

The three friends said: 'What a shame...what a disappointment.'

The fourth man replied: 'No, I'm not ashamed. He's my son and I love him. And he hasn't done too bad either. His birthday was two weeks ago, and he received a beautiful 30,000 square foot mansion, a brand new jet and a top of the line Mercedes from his three boyfriends. !!!'

*

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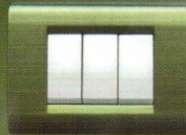
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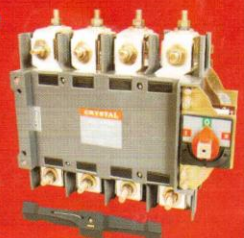
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