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S P E NEWS LETTER

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THE SOCIETY OF POWER ENGINEERS (INDIA) VADODARA CHAPTER ESTD. 1996

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SPECIAL INVITEE TO THE EXECUTIVE COMMITTEE

Er. N. Dinker



August audience during lecture on Energy Conservation

From The Chairman's Desk



I wish all the readers of this NEWS LETTER a Happy New Year 2015, which filled with success and prosperity for our country. With fast industrial development in India our energy demand is increasing very rapidly. While Government is undertaking massive programmes for construction of power projects based on fossil fuel, it is equally concerned about its environmental effect and actions to make renewable energy as significant part of energy mix in coming years. The solar and wind power are on top of agenda for the planners for energy being clean energy. The nuclear energy is also very clean energy which makes about 4% to 5% of the installed capacity of the country.

Thanks to the sanctions followed by Pokhran nuclear test, India is implementing indigenous nuclear power programme and expects to have 14,600 MWe nuclear capacity by 2020 according to revised estimate in 2011. However, our new Prime Minister has guided Department of Atomic Energy to achieve capacity of 17 GWe by 2024. Our aims are to supply 25% of total electricity from nuclear power by 2050. India also has a vision of becoming a world leader in nuclear technology due to its expertise in fast reactors and thorium fuel cycle, which is developed indigenously during last few years.

However, there remain issues and challenges which are slowing down the industry's future growth. Nuclear power has a low environmental impact and a very low accident risk and it is comparatively less costly, but long-lived radioactive wastes, vulnerability to sabotage, risk in transportation and the potential for spreading nuclear weapons

technology, have limited its use.

SPE(I) Vadodara Chapter is supporting and willing to further promote the use of Nuclear Energy to spread awareness to help Government's policy on nuclear energy. Few years back we had organized a lecture on "Nuclear Power Myth and Reality". The learned speaker from Nuclear Power Corporation had analyzed every aspect of this source of energy. The nuclear power generation is in vogue for more than 50 years now in this country and there have been no incidence of any mishap or even a single death due to radiation. There have been two accidents in nuclear power plants, earlier in Russia and recently in Japan which had some impact on the human life but have taught the scientist and engineers in world to make it more safe and perfect so that chances of any mishap would become very remote.

The time has come when we can think of more nuclear power plants and add more generating capacity without injuring the atmosphere. To achieve this, it will be necessary to create awareness amongst the cross section of population with regards to the level of safety introduced in the system of nuclear power generation. It is heartening to know that GETCO, ASSOCHAM and few other organizations in the country are acting in this direction to promote nuclear energy.

Let all of us in SPE(I) contribute our might in propagating the establishment of nuclear power plant as a means of clear electrical energy.

G. V. Akre
Chairman

Editorial



While we pass through various phases of life, we sometimes find that “History repeats itself”. This is found to be true for the electricity as well. The early days after the invention of electricity when commercial operations started, there were DC Generators and DC Distribution network supplying power to a limited region. Thus, there was a system of distributed DC Generation and a standalone DC Distribution system. The voltage drop was a concern for the consumers at tail end. Amalgamation of generating units was to form a ring system. The load was mostly lighting and heating. With the industrial power demand coming in, the voltage becomes erratic. It was a thought to raise the voltage at supply source and maintain a tail end voltage. AC power system came in to existence. The transformers stepped up the voltages and stepped down the voltages as per load requirement. (Thus the AC transmission network came into being.). As the load demand went on increasing, the voltage level of transmission also increased. The British system has voltages of 3.3, 6.6, 11, 22, 33 and 66kV. They went on increasing to 132, 220, 400 and now to 765kV AC. The French power system has 6.6, 15, 30, 60, 90, 120, 230 and 330kV AC. The system was found to be best suited for developed and developing countries alike.

However, the AC system and grid network with elevated voltages started showing negative effects. The inductive and capacitive reactance caused reactive power flow, power swing, voltage collapse, system instability (transient and steady state), over voltages and cascade tripping. All of them needed lot of system studies before expansion of the grid network. The long AC transmission lines of any voltage have proven to be unstable under transient and steady state when forming part of a large power system. Elevating voltage to 765kV and above for en-block transfer of power, needs lot of studies and contingency analysis. Any outage on such line may

make the power system unstable.

The HVDC network has brought in a solution for en-block power transfer over a long distance (say 2500MW over 1500km) through ± 500 and ± 800 kV HVDC lines. HVDC lines also work as link between two large power systems. Absence of capacitive and inductive reactance make such lines independent of frequency and thus helps in saving the system from total collapse. The disadvantage of HVDC is high construction and operation cost. HVDC line is point to point and needs the support of HVAC system at both the ends.

The recent global trend is to promote renewable energy sources such as wind and solar. Here the DC generation is converted to AC and then absorbed in the AC grid. The roof top solar plants and solar plants on canals, highways, railways and other public utility corridors are already constructed on trial basis and many more are under construction. The wave of thinking to use the DC power generated through renewable sources directly through DC equipment, is already set. Days are not far when all the AC gadgets will be replaced by DC gadgets. Thus, the distributed generation, which was the practice in the early days of electrical power system, is again coming very soon. This will reduce burden of the existing AC generation, transmission and distribution system.

The system planners and designers will have to consider the changing scenario of the power sector while working on the new equipment in general and the power system in particular.

I wish all the readers of this newsletter a very Happy and Prosperous New Year of 2015.

**SM Takalkar
Editor**

New Elected President of Society of Power Engineers (India)



Er. SK Negi has been unanimously elected as All India President of the Society of Power Engineers (India) during the Annual General Body Meeting of SPE(I) held at Vadodara on 11 Oct 2014.

Born on 03 Mar 1958, he graduated in Electrical Engineering from GB Pant University, Pantnagar in the year 1980..

He has to his account Design, Engineering and execution of many AC and HVDC stations and transmission lines and EHV substations. He has been member of many expert groups including transformer maintenance and cost effective design and engineering solutions for Renovation and Modernization jobs.

He joined PGCIL (former NTPC) in 1980 as Executive Trainee and left as Sr. Manager in 1998. He joined Alstom and worked as GM (Engineering and Project Management) till Jan-2005. Later he joined Reliance Energy transmission and worked as Addl. VP till Aug-2006.

He took up as a Managing Director, GETCo and till date he is providing valuable service to the state of Gujarat.

He has to his credit, concept to commissioning of 400kV sub-stations at Bangalore, Vishakhapattanam, Rourkela, Baluti, Dadri(extension) and Metro city.

He has exhibited his skills of Project Management and Implementation at various 220kV and 400kV sub-stations at Kondapalli, Koyna, Neyvelli, Essar Steel (Hazira), Siliguri and Purnia.

He has participated in many National and International forums which includes

1. TRFOTECH 2009 ad 2013 – Transformer Asset Management, Condition Monitoring and R&M
2. CBIP – Network development, System Reliability, Polymer Insulator

3. TECH-IT-Instrument Transformer failure analysis
4. GRIDTECH-Chairing session
5. India Smart Grid Forum-Smart Grid road map of GETCo
6. Member of Alstom user Group on Switchgear

He has an eye for implementation of New Technologies. He has worked in the following areas.

1. Established Design and Engineering process for ISO 9001-2000
2. Developed manual on 400kV Sub-station Design calculations. Design optimization in switchyard layouts, lighting protection, Earth mat, Cabling, control room design.
3. Integration and interface of civil, electrical and automation in a complex projects like HVDC
4. Cost effective design and engineering solutions for Renovation and Modernization of EHV sub-stations.
5. Transformer standardization manual for IEEMA released on 10 Jan 2014.
6. Adoption of following Smart grid technologies in State Transmission Utility.
 - Optical CT
 - Digital sub-station
 - RE integration
 - System operation monitoring-PMU and WAMS

After he took over as MD of GETCo, the transmission network of Gujarat state has assumed very high reliability. The transmission losses have reduced to a good extent. The availability of the network is around 99%.

He has conceptualised the smart grid in the state and working hard on multidirectional development of the network in the state. SPE(I) Vadodara Chapter congratulates Er. S K Negi. He is supporting all the activities of SPE(I) and CBIP in the best manner.

Under his leadership, the SPE(I) is bound to develop and flourish.

New Elected Vice-President of Society of Power Engineers (India)



Er. Prabhat Varshney has been unanimously elected as a Vice-President of the Society of Power Engineers (India) in the All India General Body Meeting of SPE (I) held at Vadodara on 11 Oct 2014.

Er. Prabhat Varshney holds a Bachelors in Engineering (1976) from National Institute of Technology (erstwhile Regional Engineering College, Kurukshetra) India and Masters of Business Administration (1988) from Faculty of Management Studies (Delhi University) with concentration on Finance and International marketing.

He is Senior Vice President, with PTC India Ltd (formerly Power Trading Corporation of India Ltd) set up by Government of India and was associated in developing market mechanism for initializing Power Trading activity in India. He has conceptualized Marketing Development, facilitated Trading Operations & Reconciliations / Regulatory issues and later involved with climate change / environment and emission trading.

He has over 38 years extensive hands on multi layered multi sectoral post qualification experience in government and technology behind him. Prior to joining PTC , had served clients across industry

related to power sector having served in different capacities with leading government corporations like Power Grid Corporation of India (the Central Power Transmission Utility of India); National Thermal Power Corporation of India Ltd. etc.

He is also fellow of various national and international professional associations. Fellow of the Institute of Engineers (India), Fellow and Vice Chair of Indian Institute of Plant Engineers (former Secy. General), Fellow & past National Secretary of Society of Power Engineers, Governing Council Member & Vice Chairman of South Asia Forum of Energy Efficiency (SAFE), etc and on the international forum is a Senior Member of IEEE(USA) (former secretary ,India chapter), etc.

He had also been member of various committees set up by Government and professional associations like CII, FICCI, ASSOCHAM, PHD Chambers etc on special studies encompassing energy sector. He was a committee member on World Bank / ADB funded projects, USAID, SARI, UNTAD etc.

SPE (I), Vadodara congratulates Er. P Varshney and hope that under his leadership alongwith Er. S K Negi (Elected President) SPE(I) will acquire new dimensions.

Members in NEWS

By : VB Harani

- * Er. HR Karandikar, Life Member of SPE(I) Vadodara has taken over as a Director of Gujarat Energy Training & Research Institute (GETRI) recently. Congratulation to him.
- * Er. SM Takalkar, former secretary and now active member of SPE(I) Vadodara has shifted his

consultancy office named "Takalkar Power Engineers and Consultants Pvt. Ltd." to Monalisa Business Centre, Manjalpur, Vadodara giving a corporate look and with all facilities. Congratulation to him.

Conservation of ENERGY – 'WITHIN.'

Normally, generally, when we talk about conservation of Energy, we usually think only in a limited serves the different forms of Energy – viz, Heat, Light, Sound, Potential, Kinetic, mechanical, electrical etc and resources of energy trapped in raw materials – coal, oil, gas. Another classification and description is to demarcate it as “Replenishable” and Non –Replenishable'. Yet another term which has become very popular in recent times, is “Clean and Green Energy” All the terms of energy' we have come across and available are external to us (mankind).

What we intend to discuss today is the 'Vital Energy' that is internal to all of us– spiritually termed as 'PRANA', without which we can do nothing we cannot see this Prana, though we have unconsciously doing everything automatically through habit. We utilize our internal energies without thought about the nature and use of the Prana. We have to conserve and direct them to definite ends, to learn how to gather up these Vital forces and command them at our will. When all the forces manifested through our body, mind and senses are stored, regulated and focused we discover possibilities of wisdom and happiness within us.

Thought guides all our bodily activities and so it is the best medium for directing life – force. When we cease to dissipate our mental energies and establish a balance between outer & inner activities, between body and mind, we can hope to have peace and strength.

Matter cannot exist without the support and Co-operation of Prana. So man must try to understand this vital principle through balance. We cannot gain either health or strength until we have proper control over the nature that is the source of all his power. Man has to discover and connect with his inner resources to awaken his spiritual nature.

All the imperfections and limitations of our body and mind can be removed by not constantly thinking of the immediate apparent, physical existence but by joining our thoughts with the Higher Source, the fountainhead of life and energy. If we learn to practice balance and moderation in all our activities, we shall enjoy true health of body and mind and attain

spiritual illumination and freedom

'Out of the Box' thinking'

(All problems do have a solution look them in a different way)

A story, as an example, is narrated below.

Hundreds of years ago a merchant in a small town owed a large sum of money to a local moneylender.

The moneylender, an old man, proposed a peculiar bargain

He said that he would forego the merchant's debt if he was permitted to marry the merchant's beautiful daughter. Both the merchant and his daughter were horrified by the proposal.

The moneylender told them that he would put a black pebble and a white pebble into an empty bag. The girl would then have to pick one pebble from the bag.

If she picked the black pebble, she would become the moneylender's wife and her father's debt would be written off. If she picked white pebble she need not marry him and her father's debt would be treated as cleared. If she refused to pick a pebble, her father should pay his debt or go to jail. They were standing on a pebble strewn path in the merchant's garden. As they were talking, the moneylender bent over to pickup two pebbles.

When he picked up, the sharp-eyed girl noticed that he had picked up two black pebbles and put them into the bag. The girl realized that the merchant was trying to cheat her.

The moneylender then asked the girl to pick a pebble from the bag.

There were only three possibilities

1. The girl should refuse to take out a pebble.
2. She should show that both pebbles in the bag were black and expose the moneylender as a cheat
3. She should (no option as both the pebbles are black and therefore forced) pick a black pebble and sacrifice her life by marrying the moneylender in order to save her father from his debt and imprisonment.

The wise girl put her hand into the moneylender's bag and drew out a pebble without looking at it, she

fumbled and let it fall on the pebble strewn path, where it immediately became lost among the many other pebbles.

“O, how clumsy of me”, she said, “But never mind, if you look into the bag for the stone that it is left, you will be able to tell which pebble I picked.

So saying, she took out the remaining stone from the bag. It was black the wise girl said, “It must be assumed that I Had picked the white one earlier”,

The moneylender could not reject the logic because it would expose his dishonesty and prove that he is a cheat.

The girl changed what seemed an impossible situation into an advantage.

Even most complex problems do have a solution if we are able to look at them in a different way.

This story will make us appreciate the difference between lateral and logical thinking.

Difference in Perspectives - Presentation Matters

Two wives were chatting in office

Wife 1 : “I had a fine evening, how was yours”?

Wife 2 : “It was a disaster. My husband came home from his office, ate his dinner in three minutes and fell asleep in two minutes. How was yours?”

Wife 1 : Oh mine was amazing. My husband came home and took me out for a romantic dinner we walked for an hour. When we came home he lit the candles around the house. It was like a fairy tale'

At the same time, their husbands are talking at work in a different adjacent office.

Husband 1 : “How was your evening?”

Husband 2 : Great I came home; dinner was on the table I ate and fell asleep. And what you” ?

Husband 1 : It was horrible. I came home, there's no dinner, they cut the electricity because I forgot to pay the bill so I took her out for dinner which was so

expensive that I didn't have money for a cab or auto. We walked home which took an hour and when we got home I remembered there was no electricity so I had to light candles all over the house. Whatever the reality is, presentation does matter.

Thoughts for the First Quarter 2015

- ❖ There is often less danger in the things in fear than in the things we desire.
- ❖ You cannot always have happiness, but you can always give happiness.
- ❖ People are not disturbed by things, but by the view they take of them.
- ❖ Promise only what you can deliver, then deliver more than you promise.
- ❖ Being good is important, being trusted is essential.
- ❖ Indifference is the highest cruelty you can have in life.
- ❖ People know the cost of everything but the value of nothing.
- ❖ A bend in the road is not the end of the road, unless you fail to make the turn.
- ❖ Arguing with a fool proves there are two.
- ❖ Lower your voice and strengthen your agreement.
- ❖ More things grow in the garden than the gardner knows.
- ❖ Caution is not cowardice; even the ants march armed.
- ❖ A spoon does not know the taste of soup nor a learned fool the taste of wisdom.
- ❖ If a link is broken, the entire chain breaks.

A Pound of Butter (What you sow, so you reap, Sant Kabir says – when you sow any Other seed, how can you expect mangoes?)

There was a farmer who sold a pound of butter daily to a baker. One day the baker decided to weigh the butter to see if he was getting a pound correctly and he found that it was not. This angered him and he took the farmer to court.

The judge asked the farmer if he was using any measuring weights. The farmer replied, "yes, your Honour, but I am primitive I do not have proper measuring weight but I do have a scale' (Common Balance). The judge asked, "Then how do you weigh the butter?"

The farmer replied, "Your Honour, long before the baker started buying butter from me, I have been buying a pound loaf of bread from him. Every day the baker brings the bread, I put it on the scale (Common

Balance) and give him the same weight in butter"

The judge passed his Judgment that it is the baker who is to be punished and released the farmer.

What does this story leads us to think we get back in life what we give to others. Honesty and dishonesty become a habit some people practice dishonesty and lie with a straight face. Others alter lies so many times that they do not bother what the truth. But whom are they deceiving? Themselves

Chapter's Activity

- On 15 Nov 2015 Chapter organised a lecture on "Green Energy" at Getri Auditorium. The Speaker was Mr. Amarjeet Singh Bohmra from RIL - Vadodara
- SPE(I) Vadodara Chapter celebrates 'Energy Conservation Day' every year on 14 Dec by inviting a renowned expert in the field of Energy Conservation. On 14 Dec 2014, SPE(I) Vadodara invited renowned Energy Conservation Consultant Dr. BG Desai. He delivered a talk on the topic of 'Energy Efficient Motors' and 'BEE Standards'. In his speech, he gave detailed account of the contribution of induction motors in the total industrial loads. Use of high efficiency

motor will reduce consumption. Even fraction of a percentage improvement in motor efficiency will mean a great saving. Use of proper starters will also lead to power saving.

The lecture was well received by the members present in the GETRI Auditorium. Er. Hitesh Karandikar who is a Life Member of SPE(I) Vadodara has taken over as a Director, GETRI. He had presided over the event as a chief guest. In his speech, he explained role of GETRI in training the engineers of constituent companies of erstwhile GEB. He expressed the need of training by senior and experienced members of SPE(I)

Wisdom Evergreen

Er. N. D. Makwana

**Talent is God given, be humble.
Fame is Man given, be grateful.
Conceit is self given, be careful,
else slips to egoism.**

**જે ગમે તે મળે તે સુખ, તે હંગામી આનંદ છે.
જે મળે તે ગમે તે સંતોષ, તે કાયમી આનંદ છે...**

Obituary

- Er. (Mrs.) Anjali V Paknikar, Superintending Engineer, MGVCL and Life Member of SPE (I) Vadodara Chapter passed away recently after a brief illness. God may give piece to the departed soul and give strength to her family members to bear the impact.
 - Er. Rameshchandra M Patel, Retd. Chief Engineer, GEB and Life Member of SPE (I) Vadodara Chapter passed away recently. God may give piece to the departed soul and give strength to his family members to bear the impact.
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LECTURE ON ENERGY CONSERVATION



Er. (Dr.) B G Desai delivering talk on Energy Efficient Motors



Er. H R Karandikar, Chief Guest of the function speaking on the occasion



Executive Committee, Advisory Committee and Editorial Board of SPE NEWS LETTER wish all the Members, Readers, Patrons and Well Wishers a Very Happy New Year 2015

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