



SPE Newsletter

SPE(I), Vadodara Chapter
October, 2024 Issue: 4/2024



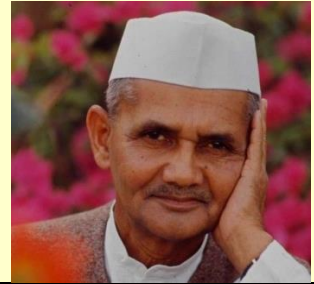
BIRTH DAY WISHES TO

MAHTMA GANDHIJI

2ND October 1869 &

LAL BAHADUR SHASTRI

2nd October 1904



**Electricity
CAN TURN YOU OFF!**



**Leave repairs
to the experts**

**TOO MANY WIRES
CAUSE ELECTRICAL FIRES**

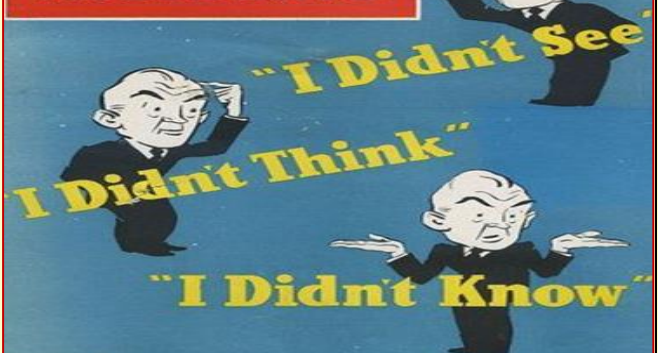


ALL SHOOK UP?



**GROUND IT BEFORE
IT GROUNDS YOU !**

**3 CAUSES OF
ACCIDENTS**



2-DAY NATIONAL CONFERENCE ON ELECTRICAL SAFETY 15-16 Oct 24

The Society of Power Engineers (India)
Vadodara Chapter (Estd. 1996)

FF-48, Avishkar Complex, Old Padra Road, Vadodara – 390 007

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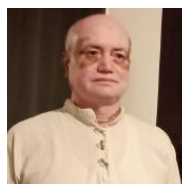
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CHAIRMAN'S DESK



Dear Readers,

The city of Vadodara has experienced an unprecedented fury of nature in terms of heavy rain & flood in the river Vishwamitri following the festival of Janmashtami (26 Aug 2024). Many houses & establishments suffered huge loss due to standing water ranging from a few inches to 8 feet. Entry of water was in 2 different ways. Due to heavy rain (14 inches in a day) many houses were flooded. However, the water receded 10 to 12 hours after the rain stopped. On the other hand, large numbers of houses & establishments suffered due to discharge of water from Ajwa Sarovar into Vishwamitri river. Here the water remained in houses for 36 hours or more.

Large numbers of houses, show rooms, basement shops, departmental stores, hospitals, gardens, hostels experienced standing water for a long period. The loss of property has been enormous.

Whenever natural calamity comes, it is followed by a Blame Game. However, the commonly accepted view is that the pace of development (regular or irregular) has not left any space for grounding the water and charging the Aquifers. Building construction on riverbank, RCC Roads etc. allow the water to accumulate but not ground it. The Govt. notifications to the multistoried building for compulsory provisioning percolating wells (water harvesting) have remained on paper.

Some of the climate experts also blame it to the damage to environment and to the Ozon layer of atmosphere.

This may be partially true as the flooding is happening in every place of the World including the deserts in middle east. In any case, as on the date it is almost impossible to allocate the reasons attributable to each tragedy (Heat Wave, Heavy Snowfall and Flooding).

Talking about the flood in Vadodara, till the middle of September, the Civic Body has not been able to clear the city of piling garbage. On the top of it, many thoroughfares of the city experienced development of craters due to caving in. Fortunately, it has not caused any casualties. The silver lining in the cloud is the service rendered by the Power Engineers and Line Staff of MGVCL in restoring the power supply in least possible time. All the feeders and distribution lines were restored within 24 hours after the flood water disappeared. MGVCL has also suffered huge losses due to power disruption. I learnt that many of our members also suffered losses due to the recent flood. On behalf of the SPE(I) Vadodara and on my own behalf sincere sympathy to them and wish that they would come out of the shock very quickly.

The premises of Avishkar Complex on Old Padra Road, where our office is situated, along with Vidyutnagar (next to it) suffered due to flood. All the establishment on the ground floor had 10 Ft. of standing water. Fortunately, our office is on the first floor. Considering the gravity of situation the 2-Day Conference on Fire Protection System planned on 20 & 21 Sep 2024 had to be postponed to Oct 15 & 16.

We are all aware of the spirit of the people of Gujarat. The pain of loss due to flood will be diluted to some extent due to upcoming Navratri & Diwali festivals.

My Best Wishes to all the Readers and their family upcoming Diwali festival & the New Year.

Er. Mohan R Tilwalli



EDITOR'S DESK



In a country of 140 Crore population, few crore people watch the popular quiz show KBC and few lakh people try to participate in it and out of these few thousand reaches to

audition round and out of these few hundred people becomes part of it and out of this only ten players secure seat to play fastest fingers first and few out of these ten gets chance to play quiz show on hot seat. It is one of the shows for family where all age group of members can seat together, shares the possible reply amongst themselves and test their knowledge. The winners of the quiz capture heart of viewers with their deep knowledge, resilience and humility. Many contenders are trying with firm determination even for more than decade to make their dream come true. The show reveals heartwarming stories over the years. In some of their episode, the show also invites low profile iconic personalities who are contributing at ground level with full dedication for upliftment of ignored segment of the society.

One such ambassador of knowledge of KBC-season 16, Chander Prakash, age 22 years from J&K who has undergone seven surgeries and one more is advised by surgeons. Chander showed his determination as he climbed the price-ladder and finally walks away with substantial winning prize of rupees one crore, won a car and a blissful hug from Amitabh Bachchan. He proved himself as strong evidence to the Power of dreams and perseverance. Responding to the story of Chander, Amitabh Bachchan shared an inspirational quote narrated by his father and said:

"Mere babu ji ne kaha – beta, jab tak Jeevan hai, tab tak sangharsh hai (My father once told me, you struggle till the day you die)."

Now coming to the present-day issue, Fire

Protection and Prevention is a topic of major concern for all of us. We have observed climate change due to Green House Gas (GHG) emission by various sector. Increasing level of GHG results in rising temperature of planet earth every year. This leads to increase in electricity consumption and subsequently, leads to overloading of electrical equipment, lines and Distribution and Power Transformers. If this is not timely and properly attended may results in explosion with fire. Not only these, but poor workmanship, substandard quality of material and ignoring safety measures in over confidence are also root cause of major fire causing loss of precious human lives and damage to assets. It is also difficult for people to come out of mental trauma for a certain period. Our public places are also ignoring fire protection system and if it is installed were not attended periodically or the people may not be aware of how to use the fire protection system when needed.

Our Chapter is organizing, **2-Day Conference on "Fire Protection System in Industries, Hospitals, Buildings and Power Sector"** on 15th and 16th Oct 2024 @ Vadodara. The aim of arranging conference on this topic is to bring awareness of fire protection system amongst the fraternities working in Industries and Hospitals. This conference will discuss on important topics of present-day requirements and will also provide common platform to manufacturers of fire protection system and its users. Keeping in mind, the quote of Helen Keller "Alone we can do so little; together we can do so much", Team SPE(I), Vadodara is working hard for all-round success of the conference.

I also greet all the members on the occasion of 28th Foundation Day of our **Chapter** which falls on 3rd Oct 2024 and also acknowledge active support of members and well-wishers of the SPE(I) during successful journey.

Warm Wishes to all members and their families for Navratri and safe and joyous festive season of Diwali ahead.

Er. Umesh Parikh



CHAPTER'S ACTIVITIES

➤ On **26 Jul 2024**, the **Chapter**, jointly with the **IE(I)** Vadodara, organised a lecture on “**Decoding Green Energy Regulations**” at Vasvik Auditorium, Vadodara. The eminent speaker was **Er. Umesh Parikh**, Executive Committee Member, SPE(I) Vadodara. In his presentation he covered the following:

- Need for Green Energy.
- Genesis of Regulations and Rules prevailing in the State.
- Installed capacity of power generation in India and share (in %age) of Renewable (about 44%) and RE capacity requirement by 2030.
- Definition of Open Access,
- Open Access mode.
- Grid interactive net metering mode.
- Govt. measures to promote Green Energy in the country to achieve set target.
- Green Energy Open Access. (GEOA).
- Categorization of GEOA.
- Various business models, Nodal agencies for Green Open Access, Categorization of OA, Allotment priority
- Energy Accounting
- Green Energy Open Access charges, surcharges and additional charges.
- Banking provisions.
- RPO obligations.
- Wheeling agreements.
- Case study with schematic diagram on wheeling of Green Energy under Captive Mode having inter-se location of injection and drawl is within same DISCOM and explained its energy accounting and commercial settlement.
- Compliance with statutory requirement.



Er. Umesh Parikh delivering lecture

The lecture was followed by a Question & Answer session. The lecture was appreciated by the members.

Before the presentation **Er. Setul Shah**, Director, MEC Power Solution made presentation on the role of his organization in RE development.

Er. MR Tilwalli, Chairman, SPE(I) Vadodara and **Er. (Dr.) SK Joshi**, Chairman, the IE(I) Vadodara and **Life Member**, SPE(I) spoke on the occasion.

Er. VB Harani, I/c Secretary, SPE(I) Vadodara presented vote of thanks.

Er. PA Shah, AC Member, SPE(I) Vadodara anchored the event.

➤ On **17 Aug 2024**, **Chapter**, jointly with the **IE(I)** Vadodara, organized lecture on “on “**Pushing Insulation to its Limits, Investigating the Role of Space Charge**”. The speaker was **Er. Chinmay Jani**, Asst. Professor, SVIT, Vasad. He covered the following topics in his presentation.

- History of space charges with reference to the work done by Japan.
- Causes of space charge formation.
- Insulation diagnosis.
- Ageing of insulation in the transformer.
- Ambiguity in structural and chemical properties of space charge.
- Space charge measurement techniques.
- Experimental work description.

There were many questions and also discussion during the presentation. The presentation was appreciated by the house.



Er. Chinmay Jani delivering lecture

Initially **Er. YV Joshi**, I/c Vice-Chairman, SPE(I) Vadodara introduced the speaker. **Er. (Dr.) SK Joshi**, Chairman, the IE(I) Vadodara and **Life Member**, SPE(I) Vadodara also spoke in the event.

Er. VB Harani
I/c Secretary

UP-COMING EVENTS

1. **Satyanarayan Pooja on Foundation Day of the Chapter** at 16.00 hrs. in the office (Avishkar complex).
2. **2-Day Conference on “Fire Protection System in Industries & Power Sector** on **15 & 16 Oct 2024 (re-scheduled)** at Federation of Gujarat Industries (FGI), Vadodara.
3. **2-Day Workshop on “Industrial Auto-mation (PLC, Servo, SCADA & AC VFD)** on **07 & 08 Jan 2025** at Federation of Gujarat Industries (FGI), Vadodara.



TERMINATING STRUCTURES FOR EHV CABLES – CASE STUDIES

By

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Er. KG Gaikwad

General Manager

1.0 Introduction

1.1 Due to space constraint, many times overhead bare conductor power transmission is not possible. In such a situation it becomes necessary to lay underground cables for a short or long distance.

1.2 In some cases, cables are also used for a short distance Loop-In-Loop-Out (LILO) from an overhead transmission line.

1.3 There are cases where EHV cables are laid for a distance of 5kM to 15kM. They can be as a bypass arrangement or standby arrangement.

1.4 In the area prone to snow Avalanche, underground cables of EHT class are laid in between as a section of the overhead transmission line.

1.5 The presentation below gives brief account of various cable termination arrangement on specially designed structures.

2.0 Specific Requirements

2.1 Most common requirement of power cable termination scheme is to provide Lightning Arrester (LA) in series with the cable termination assembly. The LA protects the cable from lightning surges and switching surges.

2.2 If the length of the power cable is long (say more than 5-6kM) some utilities also prefer to provide current transformers (CTs) at both ends of power cables to afford differential protection. Hard cable of fibre optic wires can be used for this purpose.

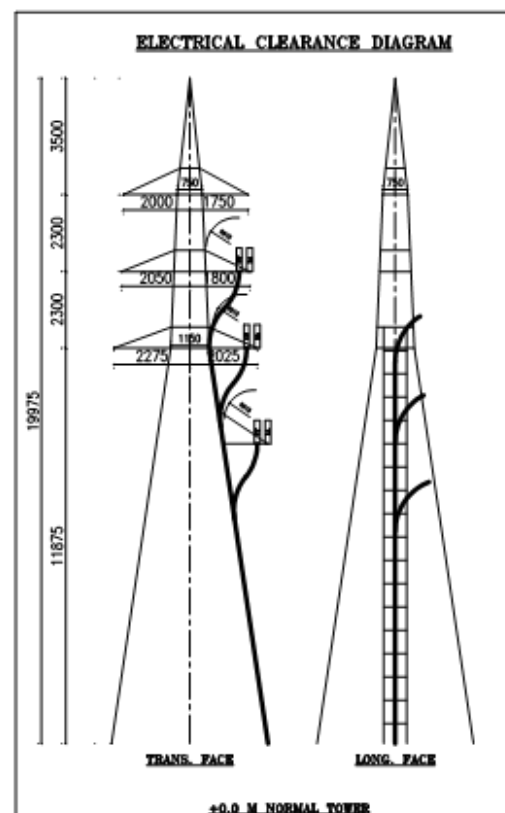
2.3 When LILO is to be done from existing EHV overhead line and length of LILO cable is more, some utilities also prefer to provide isolators at both the ends along with the LA & CT for proper isolation and safety.

2.4 The cable termination structure needs to

body clearances and spacing between the equipment depending upon voltage class. If the cage is provided to guide the cable (below the x-arm), one side of the cage shall be kept open to avoid circulating magnetic field.

3.0 Structural Changes

3.1 If the existing tower structure is to be used, one additional cross-arm (below the existing bottom x-arm) shall be provided. This can be done without bothering about the ground clearance as the live point is going to be at much higher level.



Additional x-arm for cable termination

3.2 Ladder like galvanized steel frame is provided in the longitudinal direction on the x-arm (extending on both the sides) to accommodate LA and cable termination kit. Body clearance is important while providing the frame.

3.3 When cable termination structures are to be spotted in hilly region, the topography and contour plans will govern the structural arrangement.

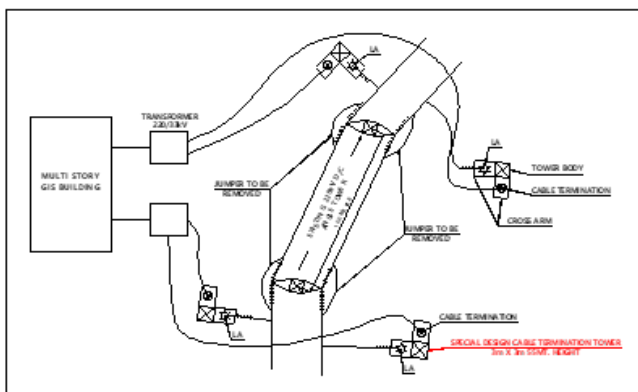
3.4 If the structural arrangement for LILO of multi-circuit/multi-voltage line is to be done through cable, the structural arrangement will be different.

4.0 Case Studies

4.1 220kV multi-circuit/multi-voltage cable termination at Goregaon (W) Mumbai.

4.1.1 Adani Electricity Mumbai Ltd. (AEML), formerly known as R-Infra wanted to construct 220/33kV GIS in Goregaon(W) Mumbai. Incidentally a

4.1.2 It was proposed to remove jumpers from both the existing tension towers but keep the in-span conductors as it is. Thus, the tension towers will remain mechanically connected but the span between them will be electrically dead.



Plan layout of 220kV D/C LILO cable termination

4.1.3 After removing the jumpers on tension towers LILO of 220kV & 33kV of all the circuits have been done by designing two special cable termination towers two each near the existing tension tower. Due to space constraint the 55M tall 220kV tower was designed with 3M x 3M base width and two cross-arm at 90° for each phase to accommodate LA and Cable termination.

4.1.4 The design was done keeping in view the bending radius of 220kV cable(3M) and a guide cage with one side open to prevent circulating current



220kV Multi-ckt. /Multi voltage cable termination at Goregaon(W) Mumbai

4.2 220kV multi circuit multi voltage (220/33kV) cable LILO at Gorai(West Borivali) Mumbai.

4.2.1 Adani Electricity Mumbai Ltd. (AEML) formerly known as R-Infra wanted to construct 220/33kV GIS at Gorai (West Borivali) Mumbai for strengthening their transmission and distribution network. A 220/33kV multi-circuit multi-voltage line is passing at a distance less than a km. AEML decided to make LILO through 220kV & 33kV cables from the existing tower at a small distance. AEML wanted to make LILO of all the circuits from both the sides of the tower.

4.2.2 It was therefore found necessary to design 2 special cable termination towers on the transverse sides of the existing tower. The entire region covering the tapping tower and the line section was a garbage fill site of Municipal Corporation. Thus, the new cable termination tower was required

to be founded on garbage filled area.



Garbage filled area

4.2.3 Since the garbage area Since the garbage was piled for a depth of more than 30 meters, it was not possible to do pile foundation. Besides the entire area was being covered by Geo – Textile and development of garden by the municipal corporation. There was no time to do soil investigation, design of pile and construction of pile. Therefore, a special type of open cast foundation was designed by the team of engineers of the consulting firm of the authors.

4.2.4 Since both the circuits and both the voltage class line was to be made LILO, placement of LA & cable termination kit with proper clearance from structure and the distance between them, had to be provided in the design. This was a challenging structural



220kV M/C LILO at Gorai-Mumbai

4.3 132kV cable termination near Nagpur.

4.3.1 M/s Reliance had established a power station & wanted to evacuate the power in the nearby 132kV substation of Maharashtra State Transmission grid. The 132kV bus of the substation was on the opposite side of the proposed transmission line from power station. Due to acute Right of Way (ROW) issue it was not possible to allow entry of the overhead line directly on 132kV bus by encircling the substation.

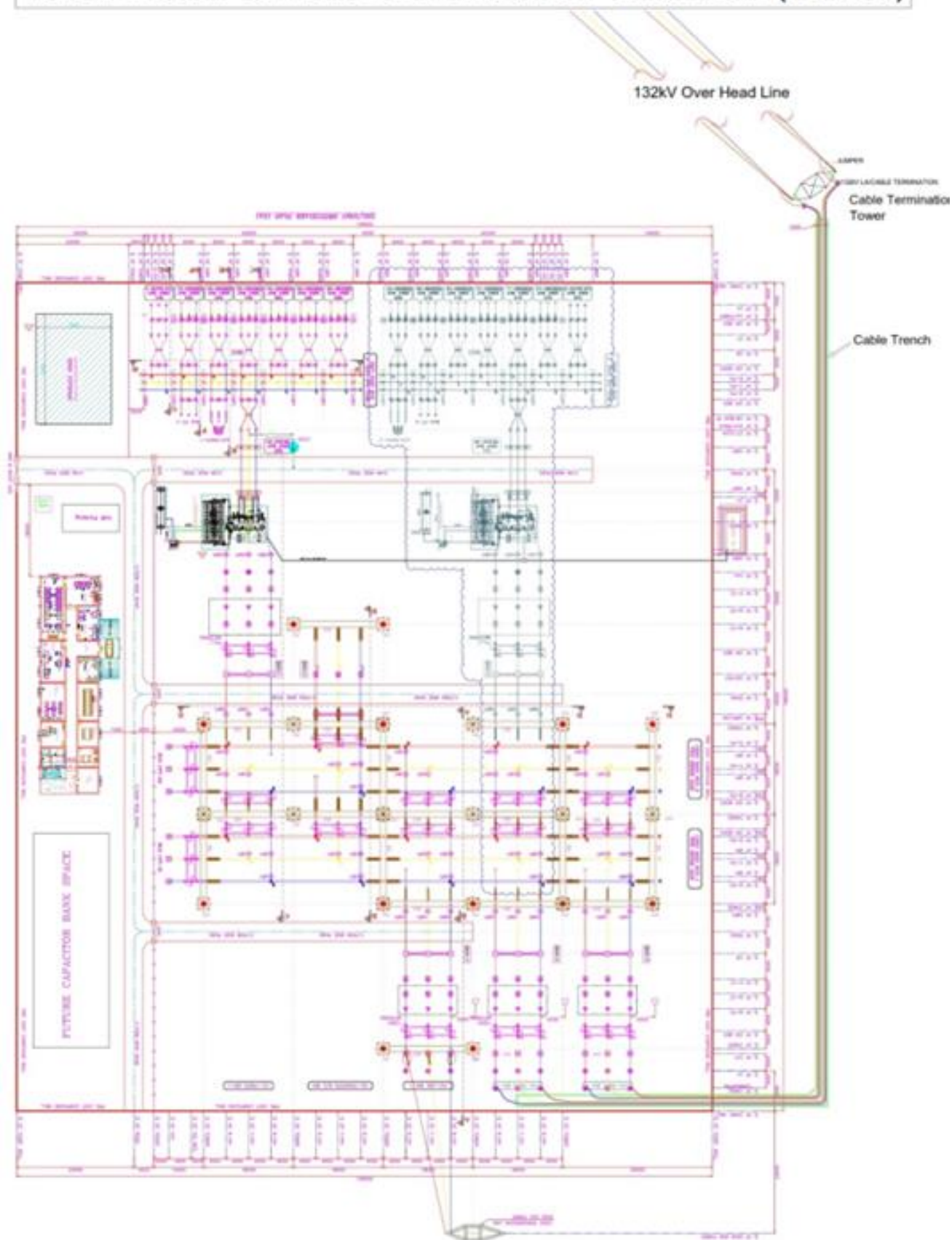
4.3.2 It was therefore decided to erect a cable termination tower on the 33kV side of the substation and then run the 132kV cables along the periphery of the substation to allow entry of the line on 132kV side.

4.3.3 In addition to 132kV cable termination tower it was also found necessary to erect support structures on 132kV side of the substation.



132kV Cable Termination

RELIANCE POWER GENERATION STATION (132KV)

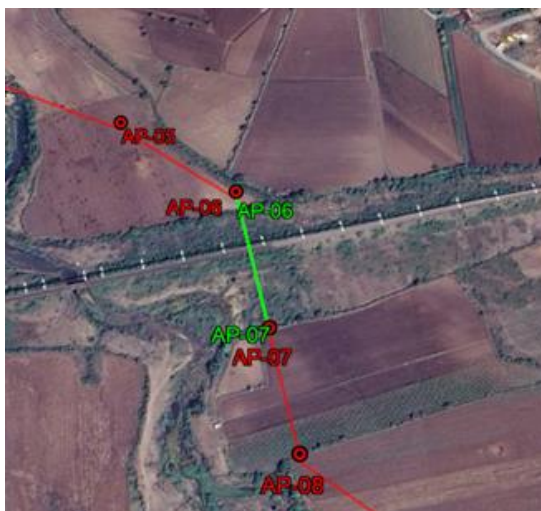


Plan Layout of 132kV Cable Termination

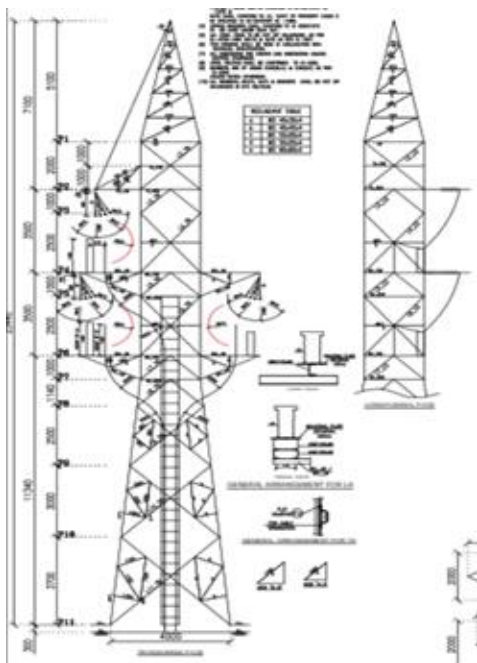
4.4 66kV Cable Termination for Railway Crossing

4.4.1 For evacuation of Renewable energy, a 66kV line is constructed in Gujarat. The power is to be evacuated in the 66kV substation of Gujarat Energy Transmission Corporation (GETCO). A major broad gauge Railway line was required to be crossed. The overhead crossing by spotting special tower was not possible and therefore special cable termination towers for 66kV class were required to be designed by the consulting firm of the authors in Favor of the Renewable developer.

4.4.2 The towers were required to be designed as per the statutory requirements.



66kV Cable Termination Schematic SLD for Railway



4.5 220kV M/C cable termination tower for Torrent in Ahmedabad.

4.5.1 Due to space constraint M/S Torrent Power is laying 220kV multi-circuit line in the city of Ahmedabad. For one such M/C line cable termination had to be designed for a major road crossing where overhead crossing with bare conductor was not possible.

4.5.2 The design of termination tower was done keeping in view the clearance requirement and client's specifications.



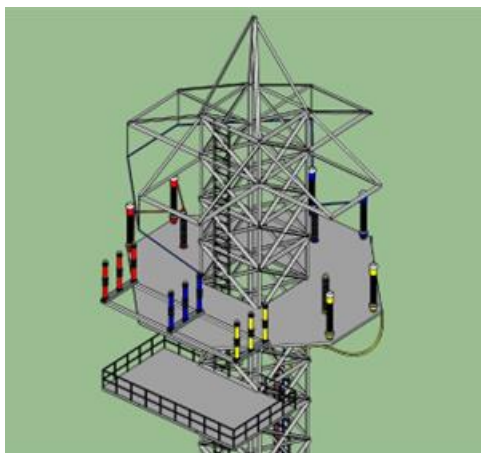
220kV M/C Cable Termination Tower, Ahmedabad

4.6 220kV LILO cable termination towers for M/s Calcutta Electric Supply Company Ltd. (CESC)

4.6.1 M/s CESC wanted to connect the existing 220kV D/C line to a remote 220kV substation by making a LILO. However, due to acute space constraint CESC decided to make LILO through a 7kM underground cable.

4.6.2 Since the route length of the cable was about 7kM CESC decided to provide cable termination kit along with current transformer, lightning arrester and an Isolator. This made the tapping arrangement structurally very different.

- 4.6.3** A special platform has to be devised to accommodate cable termination, current transformer, LA and Isolator for facilitating maintenance.

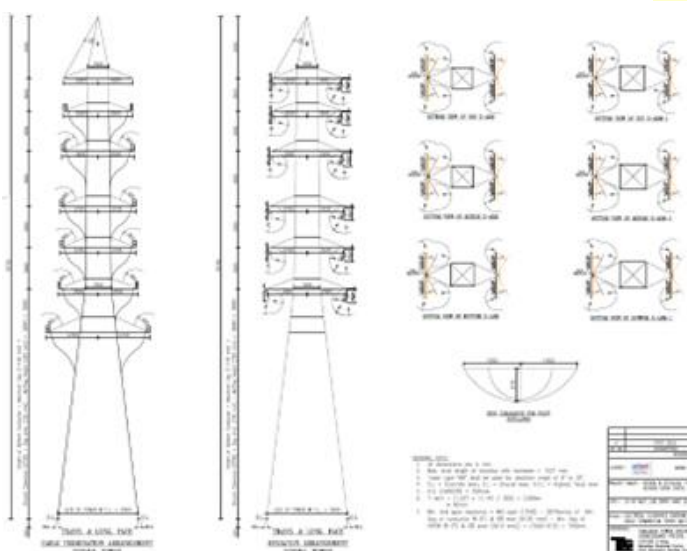


220kV LILO Arrangement

- 4.7** 33kV Cable termination tower for creek crossing

4.7.1 In Gorai (West Borivali) Mumbai, long creek crossing of 33kV line had to be done with the help of cable.

4.7.2 Special cable termination tower had to be designed.



33kV Cable Termination Tower

- 4.8** 220kV S/C Cable Termination Tower at Sonmarg (J&K)

4.8.1 PGCIL has constructed a 300KM long 220kV S/C line from Srinagar (Kashmir) to Leh (Ladakh). The line needed diversion through cable as the tunnel work was taken up by BRO near

Sonmarg.

- 4.8.2** Since this is a snow bound area cable termination tower design had to be very specific to afford maintenance.



220kV S/C Cable Termination Tower at Sonmarg (J&K)

- 4.9** Cable Termination Arrangement at Zozila pass (UT of Ladakh)

4.9.1 The 220kV S/C 300km line from Srinagar (Kashmir) to Leh (Ladakh) has been constructed by PGCIL. The line section beyond Zozila pass is experiencing snow avalanche many times. This results into a damage to line section between location number 287 & 327 (Counting from Srinagar end). The incidences of damage and restoration increased. This resulted into increase in disruption of power in Ladakh (UT).

4.9.2 PGCIL, therefore, decided to bypass this snow avalanche prone section by 220kV underground cable for 14km stretch.

4.9.3 PGCIL however wanted that cable bypass shall be used only during winter and rest of the time overhead line should be used.

4.9.4 The cable termination arrangement at both the end needed special arrangement for Jumpering & de-Jumpering as per the requirement.

4.9.5 Since the line is single circuit there are two cross arms on the left side and one on the right side (Viewing from Srinagar end).

4.9.6 Availability of space is a biggest challenge for designing and spotting cable termination towers.

4.9.7 Another challenge is the time available for construction. The road is open between June and October. The construction activities have to be done only during this period.

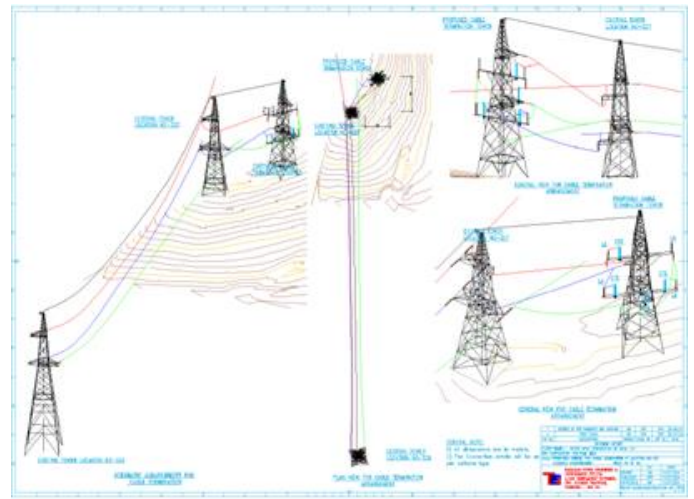
4.9.8 The next challenge is designing the cable termination tower. Since, the towers are single circuit (S/C) maintaining body clearances from the existing tower and mounting of L.A. & cable termination tower is very difficult. In addition to this the fourth spare cable has also to be placed so that the transferring connection from the faulty cable to the spare cable & vice-versa, should be easy.

4.9.9 The designs are in drafting and approval stage.

5.0 Conclusion

5.1 Cable termination towers need tailor made designs depending upon the site requirement.

5.2 The cable termination tower have to account for clearances and operational facilities. Thus, their designs are always challenging.



Cable Termination arrangement at Zozila pass
(UT of Ladakh)

5.3 When LILO arrangement is to be done through cable for a longer length the cable termination tower design may need to accommodate additional equipment.



Er. SM Takalkar
Patron
SPE(I) Vadodara



Er. Kishor G Gaikwad
Life Member
SPE(I) Vadodara

MEMBERS IN NEWS

SAFETY AUDITOR

The following **Life Members**, SPE(I) Vadodara have successfully passed **SAFETY AUDIT** Examinations i.e. “**NABET (National Accreditation Board for Educational and Training) Accredited NSCI Internal Auditor Course for SHE Statutory Compliance**” conducted during 26th to 28th June 2024 by **National Safety Council of India**, Navi Mumbai. They received Merit certificate (2-year validity) issued for passing the tests as per NSCI criteria.



Er. BN Raval



Er.(Ms) Binal Modi



Er. Hetal Prajapati



Er. Ishan Desai



Er. PA Shah

ACTUAL / VIRTUAL RESISTANCE / CONDUCTANCE

Electricity flows through the conductor but faces difficulty due to internal obstructions in the conductor like driver has trouble while driving vehicle through the busy road. Difficulty depends upon traffic on the road. Similarly, obstruction to flow of electricity depends on the material of conductor. It is related to the atomic structure of the material. This phenomenon of obstruction to flow of current in conductor is known as **Resistance**.

$$\text{Resistance of conductor } R = \rho \frac{L}{A}$$

L = Length of current path,

A = Area available for current to flow.

ρ = Resistivity or Specific Resistance of material used as conductor.

Electricity flowing through conductor produces magnetic field around the conductor. This magnetic field is steady while steady (unidirectional-DC) current is flowing.

But magnetic field is continuously changing while alternating (bidirectional-AC) current is flowing. Here, the conductor itself is within this varying magnetic field. Therefore, electromotive force (EMF) is produced in the conductor itself due to electromagnetic induction. The EMF produced is opposite to the voltage applied as per Lenz's law. Therefore, it partially nullifies the applied voltage. Therefore, current reduces because of reduced effective applied voltage.

But apparently imitates as if circuit resistance has increased. This is due to skew colleague X_L joined R of the conductor.

X_L is Inductive Reactance of the coil = $2\pi \times \text{Frequency} \times \text{Inductance of coil}$.

Resistance is an inherent characteristic of conductor material. Inductive Reactance X_L depends on layout of conductor, irrespective of conductor material.

Measuring units for both, Resistance R and Reactance X_L is Ohms (Ω).

Current in resistive circuit = Applied Voltage / Resistance R

Current in inductive circuit = Applied Voltage / Reactance X_L

Because of this feature of inductance, it is **Virtual Resistance**.

Resistance is an obstructive characteristic whereas conductance is permissive characteristic of media for current. Highly resistive (i.e. almost non-conductive) material having adequate dielectric strength to withstand expected potential gradient is used as insulation to prevent diversion of current to undesired path.

A capacitor is a device consisting of two conductor plates kept close to each other but separated by dielectric material. So, capacitor is a non-conductive device because of dielectric in the circuit.

However current seems to flow through the capacitor. It is due to accumulation of positive and negative charges on opposite plates. Actually current (flow of electrons) is not through the capacitor. Unidirectional (DC) current seems to flow initially only for a while because of charging of capacitor. Alternating (AC) current seems to flow continuously because of charging and reverse charging of capacitor. Capacitor is non-conducting element but imitates as if conducting with alternating current.

Because of this feature of capacitance, it is **Virtual Conductance**.

Current in capacitive circuit = Applied Voltage $\times$ Conductance G_C

Conductance $G_C = 2\pi \times \text{Frequency} \times \text{Capacitance of device}$.

Conductance is inverse of resistance $G = 1/R$.

Measuring Unit of Conductance is Mho i.e. **reverse** of Unit of Resistance Ohm.

Symbol of Mho is $\mathcal{U}$, upside down Symbol of Ohm Ω

Reactance $X_C = 1/G = 1 / 2\pi fC$

Virtual Resistance and Virtual Conductance have opposite attributes. Therefore, they offset each other when in the circuit.



Er. ND Makwana
former **Secretary**,
SPE(I) Vadodara

NEW LIFE MEMBERS

GR No.	Name	Grade	GR No.	Name	Grade
2453	Chinmay Y Jani	LM	2455	Arjun R Jadav	LM
2454	Zulfiqarali S Vohra	LM			

Title Page Theme:

➤ About Mahatma Gandhi

1. Famous as: For his Philosophy of Truth and Non-violence.
2. Nationality: Indian.
3. Religion: Hinduism.
4. Born on; 02 Oct 1869.
5. Birthplace: Porbandar, Kathiawad Agency, British Indian Empire
6. Death: 30 Jan 1948 at New Delhi.
7. Epitaphs: Hey! Ram.
8. Father: Karamchand Gandhi.
9. Mother: Putlibai Gandhi.
10. Spouse: Kasturba Gandhi.
11. Children: Harilal, Manilal, Ramdas, Devdas.
12. Education: University College, London, Alfred High School-Rajkot.
13. Works & Achievements: Key Role in Indian Freedom Struggle, Philosophy of Truth and Non-violence.
14. Awards: 1930-Man of the Year by Time Magazine.

➤ About Lal Bahadur Shastri

1. Lal Bahadur Shastri born on 02 Oct 1904 in India
2. He was India's second Prime Minister after Jawaharlal Nehru
3. Shastriji promoted the slogan "jai Jawan Jai Kisan" meaning Hail the Soldier, Hail the Farmer.
4. He played 3 key roles in India's struggle for freedom against British rule.
5. Shastriji was known for his honesty and simplicity.
6. He served as Prime Minister from 1964 to 1966.
7. During his time, he supported the White Revolution to increase Milk production in India.
8. He promoted peace and led India during the 1965 war with Pakistan.
9. He died in Tashkent, Uzbekistan on 11 Jan 1966.
10. He is remembered as a great leader who worked hard for India's progress.

➤ **About 2-Day Conference on Fire Protection Systems in Industries and Power Sector**

1. Conference title: 2-Day Conference on Fire Protection Systems in Industries and Power Sector
2. Date: 15 & 16 Oct 2024.
3. Venue: Federation of Gujarat Industries, Gotri-Sevasi Road, Vadodara.
4. Nos. of papers to be presented: About 20
5. Nos. of participants expected: More than 150
6. Nos. of Platinum Sponsors: 2
7. Nos. of Golden Sponsors: 5
8. Nos. of Silver Sponsors: 10
9. Nos. of Advertisement: 10



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