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The Indian power grid is becoming highly complex owing to the integration of large-scale renewables, growth in decentralised generation, penetration of electric vehicles, and a rise in digital loads. This necessitates electric utilities to take steps to expand their transmission networks expeditiously as well as strengthen existing transmission links to ensure seamless flow of power. A large part of transmission system expansion in the coming years will be driven by the need to evacuate renewables, which are projected to reach 450 GW by 2030. Since a large part of the renewable capacity is expected to come up in remote, far-flung regions, there will be an increased focus on developing long-distance high-capacity transmission lines using advanced technology to compress construction schedules so that transmission projects can be commissioned in tandem with generation projects.

In recent years, advanced conductor technologies such as high-temperature low-sag (HTLS) conductors, superconductors and HVDC cables, among others, have gained prominence among transcos. Modern tower designs such as multi-circuit towers, narrow-based towers and monopoles are also being adopted to address right-of-way (RoW) issues, reduce visual impact, save costs, and expedite construction and installation. Additionally, in order to reduce project execution time, helicopters are being used for erecting towers and stringing conductors, particularly in inaccessible regions. Further, new approaches have emerged in surveying, patrolling, and operations and maintenance of transmission lines and tower structures, such as aerial patrolling solutions, GIS mapping, LIDAR, and unmanned aerial vehicles (UAVs)/drones.

The power grid of the future would need to be more flexible, smart and resilient with growing decarbonisation and digitalisation across sectors. Transmission utilities will need to lay considerable emphasis on modernising intra-state networks and strengthening the grid. Significant demand is expected to come up for retrofitting, uprating and upgrading of networks including the replacement of conductors to better utilise the existing RoW. Furthermore, greater upstream expansion of cross-order networks is expected as the country pitches for the "One Sun One World One Grid" initiative.

The mission of this one-day virtual conference is to highlight the latest technologies and solutions for the design, erection, commissioning and maintenance of transmission lines and towers. It will also provide a platform for showcasing successful projects and best practices in the segment.

**AGENDA/STRUCTURE**

**KEY TRENDS AND OUTLOOK**
- How has the transmission network grown over the years?
- What are the key growth drivers for the sector in the near to medium term?
- What are key issues in the sector & emerging technology options to address these issues?

**UTILITY AND DEVELOPER PERSPECTIVE**
- What are the transmission network development plans of leading transmission utilities?
- What are the issues faced by the company in project execution?
- What upcoming technologies are being deployed?

**EPC PERSPECTIVE**
- How has been the experience of EPC companies in executing transmission line projects?
- What are the issues and challenges faced and the solutions adopted?
- What are some of the new designs and technologies being introduced in the market?

**ADVANCES IN TRANSMISSION LINE CONSTRUCTION AND STRINGING**
- What are the latest advancements in transmission line design?
- What are the key bottlenecks in the construction of new transmission lines?
- What are the new techniques being used for transmission line stringing?

**EMERGING TOWER AND FOUNDATION DESIGNS**
- What are some of the key emerging tower designs/structures to optimise RoW?
- How have tower foundations evolved over the years and what are the latest techniques in laying foundations?
- What are the challenges in designing towers and structures?

**ADVANCED CONDUCTOR TECHNOLOGIES**
- What are the issues in conventional conductor technologies and which new technologies are being adopted to improve conductor performance?
- How has been the adoption of HTLS, superconductors, XLPE cables and GILs by utilities?
- What are the future growth drivers for advanced conductor technologies?

**RECONDUCTORING AND UPRATING OF LINES**
- What are some of the solutions for uprating and reconducturing the existing lines?
- What are the key economic and technical considerations for selecting optimal conductors in this regard?
- What are some of the issues and challenges faced by developers during the process?

**FOCUS ON AERIAL TECHNOLOGIES**
- What are the aerial technologies being deployed in the design, construction and O&M of transmission lines and towers?
- What are their potential benefits vis-à-vis conventional technologies?
- What technologies can be adopted for grid restoration during extreme weather events such as cyclones?

**PROJECT SHOWCASE**
- What are the salient features of the project (in terms of equipment, technology, design, commissioning, etc.)?
- What were the issues and challenges faced?
- What lessons can be learnt?
The Indian power grid is undergoing a significant transformation owing to the growing trend of decarbonisation, decentralisation and digitalisation of energy. Substations, which are an integral part of the transmission grid, need to keep up with these changes and adopt advanced technologies to make the future grid more resilient and flexible.

Utilities are increasingly looking at technologies that facilitate the remote operation and monitoring of substations, especially as the Covid crisis and the subsequent lockdown have forced transcos to look at digitalisation initiatives more seriously. Substation automation, digital substations and smart transformers are the key emerging solutions.

Digital substations are likely to witness significant growth in the coming years. Equipped with smart transformers, these substations independently regulate voltage and maintain contact with the grid to enable remote administration and receive real-time feedback on power supply parameters. The benefits of digital substations are plenty, including improved productivity and functionality, greater reliability of assets and safety of substation operators, and low cost and space requirements.

In addition, gas-insulated switchgear (GIS) substations continue to be of high interest to utilities owing to their space saving benefits, higher safety and low maintenance costs. GIS variants like hybrid substations and vertical GIS substations have also come up in recent years. New environment-friendly insulation mixtures are also being developed to address the environmental concerns related to the use of SF6 in GIS.

Further, new transformer technologies such as HVDC converter transformers, phase-shifting transformers, coupling transformers and mobile transformers are witnessing higher uptake. HVDC technology has gained traction in recent years due to its ability to transmit large amounts of electricity over long distances with lower losses. Mobile substations have emerged as the perfect solution to provide temporary power supplies in the wake of emergency or extreme weather events. Similarly, containerised and prefabricated substations can be deployed for faster installation and commissioning at sites.

Substation operations and maintenance (O&M) is also crucial for utilities, which are now shifting to condition-based and predictive maintenance practices. The augmented reality (AR) and digital twin technologies are also coming up in a big way to improve asset performance and availability. AR technology can help utilities get in touch with original equipment manufacturers to troubleshoot O&M issues in a substation without field visits, thereby resolving issues in an expeditious manner.

Meanwhile, solutions such as FACTS and capacitor banks are being deployed to ensure grid stability and reliability as more renewable energy is being integrated to the grid and consumers demand quality power.

The mission of this one-day virtual conference is to highlight the latest technologies and solutions for the design, installation and O&M of high voltage transformers, switchgear and substations. It will also provide a platform for showcasing successful projects and best practices in the segment.

**AGENDA/STRUCTURE**

**KEY TRENDS AND OUTLOOK**
- How has the country’s substation capacity grown over the years?
- What technology options are currently being deployed by utilities?
- What are the issues faced by utilities and what are the possible solutions?

**UTILITY AND DEVELOPER PERSPECTIVE**
- What are the key ongoing/upcoming substation projects by leading transmission utilities?
- What are some of the advanced substation technologies being deployed by the utility?
- What are some of the issues faced in project execution?

**EPC PERSPECTIVE**
- How has been the experience of EPC companies in executing substation projects?
- What are the issues faced and solutions adopted?
- What are some of the new designs and technologies being introduced in the market?

**DIGITAL SUBSTATIONS**
- What are the key features and benefits of digital substations?
- What has been the utility experience in the deployment of digital substations?
- What are the key demand drivers for digital substations?

**NEW TRANSFORMERS AND SWITCHGEAR TECHNOLOGIES**
- What are the latest transformer & switchgear technologies being adopted by the industry?
- What are some of the solutions for enhancing the health of substation assets?
- What has been utilities’ response to these technologies?

**MODERN SUBSTATION TECHNOLOGIES**
- What are some of the emerging technologies (digital, smart, energy efficient, remote monitoring, etc.) in the high voltage substation segment?
- What are the potential benefits of these technologies vs conventional ones?
- What has been the utility experience in the adoption of technologies? What are the key drivers or challenges?

**ASSET MANAGEMENT STRATEGIES AND SOLUTIONS**
- How have asset management strategies for substations evolved over the past few years?
- What are the new technology solutions for increasing the life and reliability of substation assets?
- What are some of the advantages of AR/VR and digital twin technologies in substation maintenance?

**SOLUTIONS FOR IMPROVING POWER QUALITY**
- What are some of the technological solutions for improving PQ at the grid level?
- What are the potential benefits of these solutions?
- What have been the utilities’ experience and initiatives in this regard?

**PROJECT SHOWCASE**
- What are the key features of the substation project (in terms of equipment, technology, design, etc.)?
- What were the issues and challenges faced?
- What lessons can be carried forward?
Target Audience

- Transmission companies
- Interstate transmission operators
- Technology providers
- Transmission structure manufacturers (towers and substations)
- Conductor manufacturers
- Transmission line manufacturers
- State electricity boards
- Private developers
- Foundation and piling companies
- Private utilities
- Design and consulting organisations
- Steel companies, etc.

Previous participants

Some of the participants in our previous transmission conferences were: AMAT; Accenture; ACME; Adani Transmission; Adhunik Power; Aditya Birla Insulators; AES; AIC Steel; Airbus Group; Allianz; Altec Worldwide; Amara Raja; Angelique International; Apel Industries; Arcturus Business Solutions LLP; Arrelo Solutions; Assam Electricity Grid Corporation; Associated Power Structures; Astera Aerospace; AVEVA Information Technology; Bain & Company; Bajaj Electricals; Barclays; Bechtel; Bentley Systems; BGR Energy; Bhakra Beas Management Board; Bharat Heavy Electricals; Bihar State Power Transmission; Bihar State Power Transmission Company; BNC Power Projects; Boltel Windfarm Development; Brugg Cables; Burns McDonnell; Cabcon; Cargill; CESCI; Chloride Power Systems; CLP: CHISIL; Crompton Greaves; CTC Global; Customized Energy Solutions; Damodar Valley Corp; Delhi Transco; DNV-GL; Easun R-MT Tap Changers; EDAC Engineering; Electrotherm; Elite Powertech; EMEC; Enea; EPCO; ERA T&D; ERDA; Eros Group; Essar Power; Exide Industries; FLIR; Fluke Technologies; Focal Energy; Fugro; Galaxy Transmission; Garware Wall Ropes; GE T&D; GIZ; Godrej & Boyce Mfg. Co.; Good Luck Steel; Gujarat Energy Transmission Corporation; Gupta Power; Halda Energy Limited; Himalayan Hill Services; Hind Aluminium; Hitachi ABB; HPERC; HVNL; Hysos Energy Industries Co; IIFL; ITC Engineering; IFC; IL&FS Energy Development; Indabia; India Power; Indian Railways; Indo-German Energy Forum; International Energy Resources; Isolux Corsan; IVRLCL TLT; Jagdamba International; Jai dad Power Transco; Jindal Steel; Jindal Steel & Power; J-Power Systems; JSK Industries; JSW Power Trading; JUTE Structures; Kalapatar Power Transmission; Kamtara; Karnataka Power Transmission; KEC International; KEI Industries; Kloeckner DESMA Machinery; KSEB; Kudgi Transmission Limited; L&T (Kudgi Transmission); L&T Infrastructure Development Projects; L&T Sargent & Lundy; Lara Global; Larsen & Toubro Limited; M&I Materials; M.P. Power Transmission; MacLean Power; Madhav Engineers; Madhya Pradesh Power Transmission Company; Madura Transco; Maharashtra Eastern Grid Power Transmission Company; MAN Structurals; MAP Power LLP; Mitsui & India; MMC UAV; Modern Insulators; Monnet Ispat & Energy MP Power Transmission; Motilal Oswal Financial Services Limited; MP Power Transmission Co.; MTEK PRO; Nandan Steel; NLC; NTPC; Odisha Power Transmission Corporation; Orange Renewable Power; Paras Aerospace Solutions; Parbati Koldam Transmission; PFC; POSOCO; Power Grid; Power Transmission Corporation of Uttarakhand; Powerlinks; Pradman Engineering Services; Primespec Technologies; PTC India Financial Services; Punj Lloyd; Punjab State Transmission Corporation; Purulia & Khabarpur Power Transmission; PWC; Quality Austria Central Asia; R.S. Infra Projects; Ramboll; Ramelex; REC Transmission; Reliance Infrastructure; Rileis; RRVPN; SAIL; SBI; SBI Capital Markets; Shenzhen Micromechatronic Aerotech Technology; Shyam Indus Power; Sicame; Siddharta Engineering; Siemens; SJVN; Skipper; Sleepwalkers Creatives & Consultants; SMAC; State Grid Corporation of China; Sterling and Wilson; Sterlite Power Grid; Supreme & Co; Suzlon EnergyTag Corporation; Tamil Nadu Transmission Corporation; Tata Power; Tata Projects; Taurus Powertronics; TBEA; TESMECT; The Motwane Manufacturing Company; The Tata Power Company; Tokyo Rope International Inc.; Trentor Power; Transmission Corporation of Andhra Pradesh; Transsri Lighting; Trimble; TS Transco; TSE International; UbiFrance; UP Power Transmission Corporation; Utkash Tubes & Pipes; Valmont Structures; Virtuous Energy; West Bengal State Transmission Corporation; Wipro; Yes Bank; ZTT Cable; etc.

Previous Speakers

- Kunal Agarwal, B.N. De Bhowmick, Executive Director, Power Grid Corporation of India
- Sourav Chakraborty, Chief General Manager, Power Grid Corporation of India
- I.K. Dubey, Head, Engineering, Transmission & Distribution, Adani Transmission
- Anil Rawal, Senior Vice-President and Global Head, Business Acquisition, Sterlite Power Transmission
- Herr Ram Patel, Additional General Manager, Bharat Heavy Electricals
- T. Jagat Reddy, Director, Transmission Corporation of Telangana
- P.K. Shah, Superintending Engineer, Projects, Gujarat Energy Transmission Company
- Praveen Kumar Gargava, Superintending Engineer (T&C) Madhya Pradesh Power Transmission Company
- Sanjay Bhambhani, Commercial Leader – GIS, GE
- S.L. Mahajan, Vice-President and Head, Substation BU, L&T Construction
- E.V. Rao, Vice-President, Engineering Services, KEC International
- Amritnesh Srivastava, Vice-President, Domestic Transmission Business, Kalpataru Power Transmission
- Krishnakumar Ramanathan, Vice-President and Head of Sales, Siemens
- Achal Trivedi, Associate General Manager, Motwane
- R.R. Patel, General Manager, KEC International

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| Both conferences
| Login     | 9,000 | 1,620   | 10,620    | 150       |
| 2 - 3 Logins | 15,000 | 2,700   | 17,700    | 250       |
| 4 - 5 Logins | 21,000 | 3,780   | 24,780    | 350       |
| 6 - 9 Logins | 27,000 | 4,860   | 31,860    | 450       |
| 10 - 20 Logins | 33,000 | 5,940   | 38,940    | 550       |

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| Any one conference
| Login     | 6,000 | 1,080   | 7,080     | 100       |
| 2 - 3 Logins | 10,000 | 1,800   | 11,800    | 169       |
| 4 - 5 Logins | 14,000 | 2,520   | 16,520    | 236       |
| 6 - 9 Logins | 18,000 | 3,240   | 21,240    | 304       |
| 10 - 20 Logins | 22,000 | 5,400   | 25,960    | 370       |

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- GST @18 per cent is applicable on the registration fee.
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