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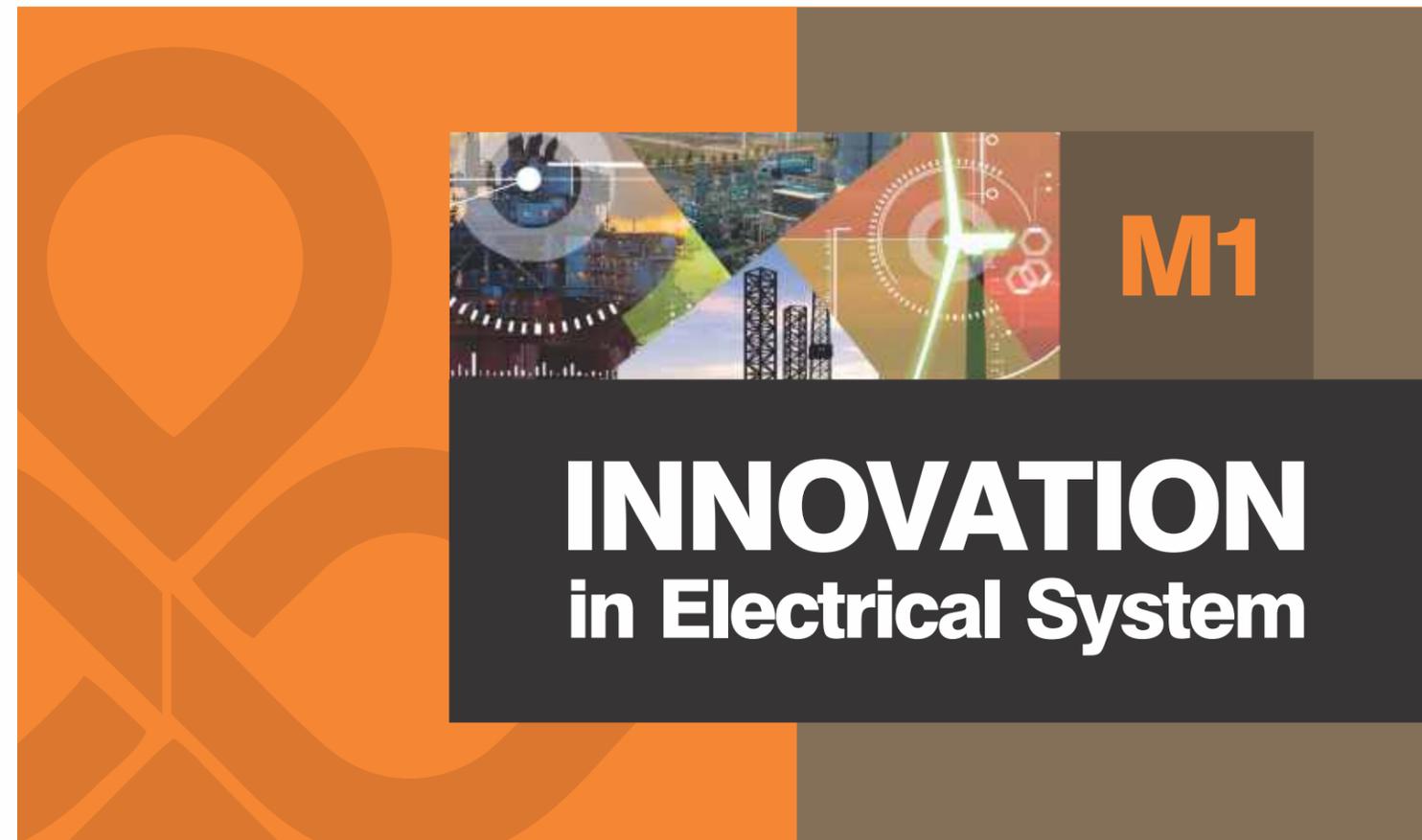


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INTRODUCTION

International Energy Agency (IEA) report on World Energy Outlook 2015 puts India at the center of world energy stage.

“With policies in place to accelerate the country’s modernization and develop its manufacturing base (via the “Make in India” programme), population and incomes on the rise and an additional 315 million people anticipated to live in India’s cities by 2040, India is entering a sustained period of rapid growth in energy consumption”

– IEA report on World Energy Outlook 2015

A growth of such high magnitudes requires a reliable, robust and efficient power infrastructure with a low-carbon footprint spanning generation, transmission and distribution. India is making rapid strides in building its power infrastructure. Some of these are:

- India has the largest operating synchronous grid in the world.
- India power grid has one of the largest Wide Area Monitoring and Asset Management solutions deployed.
- India has achieved around 74.5 GW of capacity addition in the 12th plan (till January 2016) and the peak and energy deficits have reduced over the last two years. The addition of renewable energy is growing at a rapid pace with around 157% capacity addition of solar energy since 2014 and a highest ever capacity addition of 3.42 GW of wind energy during 2015-16.
- More than 2500 patents / applications related to power generation and transmission technologies have been filed in India in the last ten years. While the above-mentioned facts indicate that progress is

being made in the right direction, a stronger technology innovation supported by competitive markets and strong policymaking to meet the projected growth in energy consumption is required.

Innovation in power sector is primarily technology-driven. In the recent years, environment consciousness has been exerting a key influence on technology direction. At the same time, mega trends like digital technologies are transforming the operations of the utilities, improving the stability and security of the networks, making manufacturing processes more efficient and opening up new market opportunities. As a result, the consumers are benefited by more options to produce and consume energy. This paper talks about a few technology and market innovations that are propelling the change in the industry across the world. It also highlights a few areas that need more innovative solutions for the future.



TECHNOLOGY & MARKET INNOVATIONS

The aforementioned innovations that are transforming the power grids are discussed below. These innovations are making a significant and positive impact on the environment and reducing the operational costs of generation, transmission and distribution. They are also improving the reliability of the power system, enhancing the product quality and capability, making the power system more secure and saving the energy costs for both utilities and consumers.

Clean Energy

- Wind Turbines with higher capacity are contributing to greener energy.
- Fall in polysilicon costs and reduction in processing costs are aiding in lowering the solar module costs.
- High density energy storage devices are being developed.
- Microgrids are enhancing reliability, cost-efficiency and providing cleaner environment.
- Intelligent control systems to optimize the plant output are being implemented.
- Digital technologies to monitor a set of plants to maximize returns are being introduced.
- Sophisticated control mechanisms for interconnecting renewable energy to grid are being designed.
- Efficient Electric Vehicles (EVs) are being developed to replace petrol / diesel operated vehicles.

Energy Storage

- Energy storage space which was previously limited mostly to pumped hydro-electric is witnessing great innovations.
- Lot of research is being done on Sodium-based batteries which are seen as potential replacement for Li-ion batteries. Other technologies like Flow batteries and Liquid metal batteries are also maturing.
- Li-ion battery batteries are still popularly used for energy storage and their costs are coming down due to economy-of-scale manufacturing.
- Compressed Air systems and Hydrogen storage systems are being explored.

Markets

- Markets are evolving to accommodate changes needed to integrate higher levels of renewables. Some key regulations introduced recently in this area include regulatory framework for handling the inter-state settlement system and imbalance handling mechanism, forecasting of renewables and scheduling at inter-state levels.
- Setting up of Renewable Energy Management Centers (REMCs) is a step in the right direction to have a nodal agency for forecasting and scheduling of renewable power at a regional level.
- Short term markets covering the energy exchanges and bilateral transactions (through traders and directly between distribution companies) have matured over the years and for the month of January 2016 constituted about 10% of total generation.
- Demand response technologies and customer participation are further changing the dynamics of the power markets.

Digital Technologies

- Internet of Things (IoT), Big Data and Cloud computing are some of the contemporary technologies impacting the power industry in an unprecedented way. They enhance the situational awareness of the system and aid in critical operational decision making.
- Energy Management Systems (EMS), Wide Area Monitoring Systems (WAMS), Distribution Management Systems (DMS), Demand Response Management Systems (DRMS) are getting more intelligent and capable of making better decisions by leveraging the emerging Digital technologies.

TECHNOLOGY & MARKET INNOVATIONS

- Digital substations are replacing conventional substations. The substations are getting more compact, safer for personnel with easier maintenance. Digital Instrument transformers, Merging Units, Intelligent sensors and controllers are improving the overall reliability and availability of power.
- Intelligence at the edge – powerful decentralized controllers at the edge of the network with monitoring, control and bidirectional communication capabilities is enabling new demand response solutions.
- Rapid increase in multi-functional processing in a single chip at decreasing costs, ease of application portability across different hardware platforms and advanced time synchronization technologies are making the edge devices very powerful and versatile capable of processing large amounts of data at high speeds.
- Powerful Intelligent Electronic Devices (IEDs) and Controllers that can implement Special Protection Schemes (SPS) for unplanned contingencies in a power system are being developed.

Cyber Security

- As the automation levels in the power grids get bigger, the connectivity and communication between the systems increase and there is a need for tighter cyber security measures.
- Cyber Security awareness and measures to enhance security has been improving over the last few years. Defense in Depth security methodology is making cyber-attacks very difficult, time consuming and expensive.
- Next Gen firewalls with Deep Packet Inspection, Antivirus, and Web Filtering technologies are enhancing cyber security
- Latest VPN and cryptographic technologies are providing secure network tunnels over the Internet.

Geospatial Technologies

- Advances in Geospatial Information Systems (GIS) are aiding utilities to support electric network planning, design and analysis, maintenance and operations.
- GIS combined with GPS technologies is helping utilities to deploy the best crews (based on the latitude & longitude positions) and track their location to respond quickly during severe weather events.
- GIS visualizations are helping improve regulatory, customer and media communications during extreme weather conditions.

High Voltage Engineering

- Ultra High Voltage AC and DC transmission corridors are playing a key role in addressing the transmission congestion problems.
- HVDC links enabled by break-through innovations in HVDC breaker technology are helping in connecting Renewable energy generated at remote locations to loads.
- Integrated AC / DC hybrid systems are providing better controllability and making the power system more stable and secure.
- Continuous efforts are on to make Gas-Insulated Substations (GIS) up to 800 kV more compact.
- Efforts are being made to replace porcelain by composite materials for HV insulation.
- Innovative solutions are being implemented to predict HV and MV cable failures.
- Innovative high performance conductors are provided to carry more power in the same line corridor.

Power Electronics

- Insulated Gate Bipolar Transistor (IGBT)-based converters with their fast switching capabilities have matured. They are critical to HVDC technologies and FACTS devices.
- Silicon Carbide (SiC) based inverters due to their reduced cooling, filtering and space requirements are being increasingly used in Renewables industry.
- Advanced power converters are being developed for utility scale battery storage solutions.
- Improved controls are being implemented resulting in better integration of renewables to the grid.

Advancements in Material Science

- Composite materials (used for blades in wind turbines).
- Green insulating gas alternate to SF6 used in MV and HV installations.
- High tech soft and permanent magnetic materials with improved efficiency of electric machines.
- Single crystal super alloys for higher efficiency gas turbines.
- Wear & erosion resistant coatings providing step change in product life and maintenance intervals.
- Plastics with environmentally friendly next generation flame retardants.
- 3D printed metal parts for fuel combustion chambers in gas turbines.
- Biodegradable Ester oils as substitute for mineral oil.

Manufacturing

- A high level of automation is gaining prominence in the Manufacturing sector under the names of Brilliant factories / Industry 4.0.
- Real-time visibility into operations and overall equipment efficiency, and Interactive Work instructions are improving the efficiency and productivity in manufacturing.
- Introduction of 3D PLM systems and their integration with ERP systems is eliminating data loss and improving quality.
- Additive manufacturing technology is making it simpler and economic to make complex plastic and metal-alloy parts used in various devices.

Grid Management

- Indian power transmission network has become one of the largest in the world consisting of AC voltages up to 765 kV and DC transmission up to ± 800 kV.
- The grid operation has to tackle many characteristics like one nation - one frequency; conventional generation resources in eastern part while load in northern and western part; diverse load in different states/regions; multi weather scenario as well as different peak & off peak timings in states/regions in real time.
- Top of this, substantial Renewable Energy resources would raise the issue of load balancing, harmonics, reactive power management, spinning reserve and energy storage etc.
- An integrated grid operation, which takes care of dynamic and transient stability as well as automatic remedial actions, is essential.
- The real time PMU data transmitted in milliseconds to centralized Load Despatch Center would be used for developing Analytics to show the health of grid in terms of voltage stability, frequency stability, oscillation mode, dynamic security etc.

TECHNOLOGY GAPS

Let us look at a few areas that require further advancements to make power grids more reliable, available, secure and safer.

Renewables, Energy Storage & Markets

- Selection of technology for maximum output from solar PV in Indian weather conditions.
- Tapping the potential of offshore wind energy.
- Forecasting of Renewable energy with higher accuracy.
- Cost-effective energy storage solutions.
- Development of Capacity markets to take care of higher renewable penetration at distribution voltage level.
- Regulatory framework for reserves at an intra-state level.
- Incentivization of Ancillary services market players at both inter and intra state levels for providing services.

Transmission & Distribution

- System level monitoring of generation, transmission and distribution systems.
- Effective management of large Synchrophasor networks and development of Analytics.
- Coordinated operation of DA, AMI, GIS, NMS, OMS, MDMS and DRMS systems.
- Interoperability across systems and devices from different vendors.
- Higher Power theft/Non-Technical losses.
- 4D based GIS (3D + time) to maintain temporal changes of utility networks for better predication and planning.
- Robots for transmission line monitoring.
- Advanced Metering Infrastructure (AMI) to optimize power consumption.

Improvement of cyber security is critical for seamless connectivity required for Internet of Things (IOT) and Industrial Internet. Traditionally, technology development in power sector is carried out in the labs set up by Government, Public sector organizations, Universities and large Private industry players. Of late, a new trend is emerging. Many entrepreneurs are setting up their startups, mostly in renewable energy space and contributing to innovative solutions that are transforming the sector. There is a need to have forums to bring such entrepreneurs and mentors from Government, Financial institutions & Industry together and nurture these innovations. The Innovation & Technology Summit of SWITCH-2016, a global Expo in Electrical Engineering, promoted by Government of Gujarat is one forum in this direction.

Cyber Security

- Strategies to counter Advanced Persistent Threat (APT) from state sponsored actors with unlimited resources and technical skills.
- Historically, critical infrastructure systems used legacy technology that is not hardened and patchable, compared to IT infrastructure. An appropriate policy framework to address this issue.

Module M1 : Innovations Date: 7th October 2016

Sequence	Topic	Speaker	Duration (Mins)	From	To
Introduction	Welcome & Inaugural Address	GE T & D india	15	9:30	9:45
Key Note Address	Digitalization: An important differentiator for Innovation	Mr. Laurent Schmitt, GE	30	9:45	10:15
	•The Convergence of the Physical and the Digital worlds				
	•The Key lever for Energy infrastructure Performance, Reliability, Sustainability and Maintainability				
	•Key innovations expected from the next Digitalization of Energy Infrastructures				
Session 1	Innovation Showcase from Scholars of Research Institutes / Universities	Top 5 Innovators	60	10:15	11:15
	Tea Break		15	11:15	11:30
Session 2	Industries Innovation / Startup	Top 5 Innovators	60	11:30	12:30
Session 3	Government of Gujarat Startup Policies	Ms. Mamta Verma, IAS	30	12:30	13:00
	Lunch Break		60	13:00	14:00
Session 4	Financing of Startups and Incubators	Mr. Dinkar Venkatasubramanian, E&Y	45	14:00	14:45
Session 5	Panel discussion: Industry & Academia collaboration in India for Innovation - How to bridge the gap	Prof. V. Ramgopal Rao, IIT, Delhi Dr. R. Nagaraja, PRDC Mr. Kannan Tinnium, GE Mr. Giandomenico Testi, ABB Mr. S. K. Negi, GETCO Dr. Ajay Ranka, Zydex Industries Mr. Harish Mysore, IEEE	45	14:45	15:30
	Tea Break		15	15:30	15:45
Session 6	Role of Plastics in Electrical Industry - Yesterday, Today & Tomorrow	Mr. Pankaj Garg Covestro India.	30	15:45	16:15
	Technical Paper Review and Q & A Session	Mr. B. B. Chauhan, GETCO	90	16:15	17:45
Closing	Vote of thanks from Knowledge Partner	Mr. Nagesh Tilwani, GE	15	17:45	18:00

SPEAKERS



Mr. Laurent Schmitt,
Smart Grid Strategy Leader,
Grid Solutions, GE

Laurent Schmitt is the Smart Grid Strategy Leader at Grid Solutions a GE and Alstom joint venture, in GE's Energy Connections business. He joined GE's Grid Solutions, when it was formed in 2015 after 18 years in several positions within Alstom.

Laurent Schmitt joined the Alstom's Grid sector as Vice President for Smart Grid Solutions with the responsibility to develop Alstom's offer on the Smart Grid segment, following the integration of Areva T&D's activities within Alstom in June 2010.

He began his career in the field of Power Generation with Alstom Hydro and Thermal Plant Controls in North America. In 2007, he became Director for Strategy at the AREVA T&D Automation Business Unit. He was appointed Vice President for Strategy & Innovation for the Energy Management Business of Alstom Power in 2008.

Laurent graduated from Supélec, Paris in France with a degree in Power System Engineering. He is a member of several strategic industry committees working on Smart Grids such as CIGRE, IEC, EPRI, ENTSOe

and the European Smart Cities Platform, and contributes to a number of expert advisory taskforces to the European Commission on the topics of Generation, Grid and Storage applications.

from IIT Bombay, JC Bose National Fellowship and CNR Rao National Nanoscience Award. Prof. Rao was an Editor for the IEEE Transactions on Electron Devices during 2004-2012 for the CMOS Devices and Technology area and currently serves on the Editorial boards of various other international journals. Dr. Rao is a Fellow of the Indian National Academy of Engineering, the Indian Academy of Sciences, the Indian National Science Academy, and the National Academy of Sciences. He is a Distinguished Lecturer, IEEE Electron Devices Society and interacts closely with many semiconductor industries including Intel, IBM, Infineon, Applied Materials, Maxim and Texas Instruments.

Dr. Rao is currently the Chairman, IEEE AP/ED Bombay Chapter and Vice-President, Materials Research Society of India. He also served as a Vice-Chairman, IEEE Asia Pacific Regions/Chapters sub-committee during 2007-2013 and was the first elected Chairman for the India section, American Nano Society during 2013-2015. For more information about Prof. Rao's current research interests and a list of publications visit:

<http://www.ee.iitb.ac.in/~rrao/>



Dr. V. Ramgopal Rao
Director
IIT, Delhi

Dr. V. Ramgopal Rao is the Director at IIT Delhi. Before this, he was P. K. Kelkar Chair Professor for Nanotechnology in the Department of Electrical Engineering and the Chief Investigator for the Centre of Excellence in Nanoelectronics project at IIT Bombay. Dr. Rao has over 400 publications in the area of Electron Devices & Nanoelectronics in refereed international journals and conference proceedings and is an inventor on 32 patents (including 12 issued US patents) and patent applications, with many of his patents licensed to industries for commercialization. He is also a co-founder of the company NanoSniff Technologies Pvt. Ltd. at IIT Bombay which is developing products in the area of Nanotechnology. Prof. Rao has supervised/co-supervised over 100 Masters students & 32 Ph.D. students at IIT Bombay in the area of Nanoelectronics since the year 2000.

Prof. Rao's work is recognized with many awards and honors in the country and abroad. He is a recipient of the Shanti Swarup Bhatnagar Prize in Engineering Sciences in 2005 and the Infosys Prize in 2013. Dr. Rao also received the Swarnajayanti Fellowship award from the Department of Science & Technology, IBM Faculty award, Best Research award from the

Intel Asia Academic Forum, Techno-Mentor award from the Indian Semiconductor Association, DAE-SRC Outstanding Research Investigator award, NASI-Reliance Platinum Jubilee award, Excellence in Research Award



Dr. R. Nagaraja,
Managing Director,
M/s. Power Research &
Development Consultants
Pvt. Ltd

Dr. R. Nagaraja is the founder and Managing Director of M/s. Power Research & Development Consultants Pvt. Ltd., Bangalore, INDIA. He has vast experience of 27 years in the field of power system simulation and consulting. His specialization includes Power System Analysis, Operations, Power Engineering Education and Power System Protection. He has conducted several power system studies and was a key contributor in the formulation of the wind energy grid code in India.

He is the architect and chief mentor for the design and development of the MiPower – Power system analysis software package widely used by Electric utilities, Industries, Consultants and Educational Institutions for power system analysis and research purposes.

Dr. R. Nagaraja has worked in the smart grid sphere and has guided the development of tools as part of SCADA and EMS in power industry.

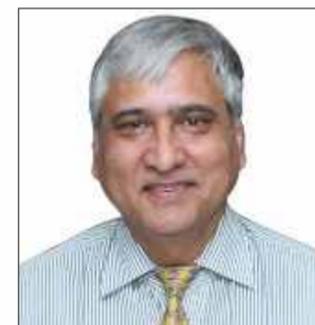
Dr. R. Nagaraja is Senior Member of IEEE and currently chapter representative for Power Engineering Society (PES) for R-10 west. He has contributed to IEEE by holding various positions and also as Chair for IEEE PES, Bangalore Chapter.



Mr. Kannan Tinnium
Technology Leader - Electrical
Technologies & Systems,
GE Global Research,
John F. Welch Technology
Centre.

Kannan is the Technology Leader – Electrical Technologies & Systems at GE Global Research, Bangalore. Based out of GE's largest multidisciplinary R&D facility, the John F. Welch Technology Centre, he is responsible for driving technology development in the areas of controls, optics and instrumentation, electrical power systems, power electronics, safety and electromagnetics.

He has been with GE since 2001, holding various leadership positions within the research organization, GE Global Research. Kannan obtained his Phd in Electrical Engineering from Tulane University in 1996. Prior to GE, he worked with Entergy Services Inc., one of the largest electric power utilities in the US, where he was responsible for bringing new technologies to the transmission system, performing technical studies and recommending solutions. He is the immediate past Chair of the IEEE – Power and Energy Society, Bangalore Chapter.



Mr. Surinder Kumar Negi,
Managing Director,
Gujarat Energy Transmission
Corporation Ltd, Vadodara

He passed out from G.B. Pant University of Agriculture & Technology, Pantnagar in the year 1980 as an Electrical Engineering graduate and same year joined NTPC as 5th Batch Executive Trainee. He has been in Transmission and Distribution of Power Sector throughout his career both in Public and Private Sector companies. He has taken lead role in execution of many Extra High Voltage AC and HVDC stations and transmission lines, Design and Engineering of EHV Substations, implementation of Project Management Practices, established Design and expert groups including Transformer Maintenance and Cost Effective Design and Engineering Solutions for Renovation and Modernization in T&D.

Presently, he is Managing Director of Gujarat Energy Transmission Corporation Limited (GETCO), a State Transmission Utility in Gujarat for last ten years. GETCO has taken a lead role in promoting and implementation of state of art technology solutions like Digital Substation, FOTE, Hybrid Switchgear, High Performance Conductor, Asset Management etc.

Mr. S.K. Negi has the honour of title "Distinguished Member" from the Administrative Council of CIGRE in the year 2016.



Mr. Giandomenico Testi,
Chief Technology Officer -
ABB India Ltd, and
Head of Engineering Council -
ABB Group

In his role as CTO for India, Giandomenico contributes to the country's profitable growth by leveraging local R&D processes and resources in line with the global technology strategy of the Group entity.

Such local R&D resources are also driving the next generation of products for the entire Group. India is the largest R&D and Engineering Hub in ABB with 3,000+ engineers and scientists.

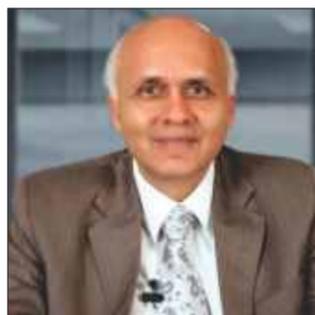
He has a doctorate in electrical engineering from Rome University.



Mr. Harish Mysore,
Director,
IEEE India Operations

Harish has worked in Technology industries for over 25 years in India. Prior to IEEE, Harish worked in IBM India Labs and handled IP Licensing and Alliances program and technology operations for IBM in India. Previously Harish has worked in Texas Instruments, Motorola, Analog Devices and Wipro in technology development and business leadership roles.

In his current role as Director-IEEE India Operations, Harish is focusing on IEEE Standards Development and Education programs in India and to increase IEEE visibility in India through various initiatives. He is also working on expanding IEEE membership base and improves membership experience in India. Harish is working towards bringing internationally acclaimed IEEE seminars and Conferences to India.



Dr. Ajay Ranka,
CEO

Zydex Industries, Vadodara

ACADEMICS

- B.Tech. Chemical Engineering (Nagpur University).
- M.S.Chem. Engineering (University of Detroit - USA)
- Ph.D.Polymer Science & Engineering (Lehigh University – USA)

WORK EXPERIENCE

- PPG Industries (Pittsburgh, USA)
- After for four years with PPG Industries, returned to India to start own venture.
- Established Zydex Industries (1997, Vadodara)

ZYDEX - A SINGLE SOURCE FOR MULTI APPLICATIONS

Zydex has developed and markets 200+ innovative solutions for Textiles, Waterproofing & Paints, Road Constructions and Agriculture.

ZYDEX INNOVATIONS

TEXTILE SOLUTIONS

Zydex started its journey with polymers based solutions for sustainability in all areas of textile processing from preparatory to wet processing to printing. Our products have been certified with Eco Passport, GOTS standards etc. We have been working with supply chains of AFIRM group of retailers like C&A, H&M, S.Oliver, Levis, Nike, Puma, Adidas, Gap etc. to help them meet the RSL & Quality standards.

WATERPROOFING AND PAINT SOLUTIONS

Zydex R & D team, under Dr. Ranka's guidance, has indigenously developed a unique nanotechnology based waterproofing solution with multiple advantages viz.

- Long Useful Service Life (UV stability upto 20 years)
- Water Dilutable – 20 times its volume (cutting transportation cost)
- Easy spray Application
- Eco-friendly (Meets the toughest Californian VOC norms)
- Affordable (useful for Low-cost housing projects) The product can waterproof most of the materials used in building construction, like Sand, Cement, Stone, soil, bricks etc. A unique, high opacity, long lasting paint will shortly be launched.

ROAD SOLUTIONS

Zydex Nanotechnology for roads addresses problems of all the road layers by eliminating moisture susceptibility through modification of surfaces at nano level. It enables construction of moisture-resistant, long lasting and maintenance- free roads on long term basis. The globally patented and marketed formulation has distinct advantage over conventional ones on application, cost & durability.

AGRICLUTURE SOLUTIONS

Zydex offers bio-degradable, water retaining soil fertility enhancer to replace chemical fertilizers. The product creates a "Healthier Bio World" by promoting the functioning of soil microbes, by increasing their population and activity. It revives the soil fertility and delivers upto 50 to 100 % higher yields.



Pankaj Garg

Head - West, Central &
Strategic Channel Management
(Indian Sub-Continent)
Covestro India
(Formerly Bayer MaterialScience)

Pankaj Garg is the Head of Sales for West & Central India, apart from leading Strategic Channel Management for Indian Sub-Continent (BU : Polycarbonates), at Covestro India.

Over last 11 years at Covestro, he has led many functions within Indian Sub-continent such as Automotive Segment Business, Marketing, Strategy Facilitation, apart from Regional Key Account Management & Channel Management for 3 years at Covestro Asia Pacific HQ, at Shanghai (China). Pankaj Garg was born in 1972 in Punjab, India. He is an Engineering Graduate with PG Diploma in Export Import Management, and 21 years' experience of Industrial Sales, Marketing & Strategic Management in TATA & BAYER (now Covestro) Group Companies globally.

Other than his strong techno- commercial background, Pankaj Garg has key skills around Strategic Marketing, Business Development, Key Account Management and Strategic partnership building.

Pankaj Garg is married and has one daughter & one son, both studying in a prestigious school at Mumbai.



Mr. Bhadresh B. Chauhan,

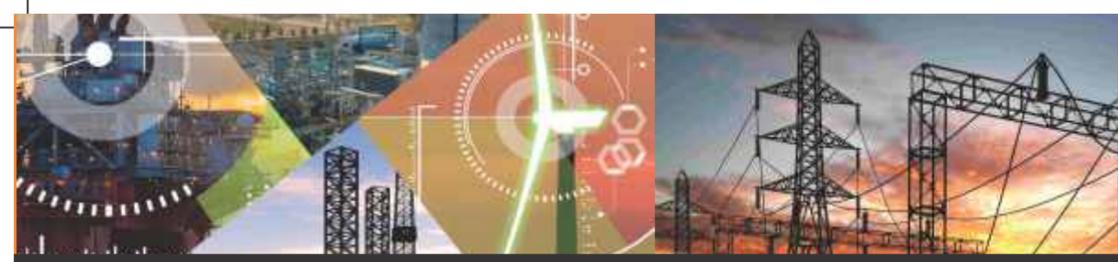
Chief Engineer, Project
Gujarat Energy Transmission
Corporation Ltd, Vadodara

After completion of his B.E. in electrical from L. E. College, Morbi, he has started his career as a graduate apprentice in GEB from the year 1984. Since then, he has been in Generation & Transmission of Power Sector throughout his career.

In January 2011, He was entrusted as head of the Project department of GETCO as a Chief Engineer. Since then, He has handled more than 100 projects per year with handling of the investment of almost Rs 2500 cr. per year and commissioned 520 nos of substations in last 5 years, which include adoption of new technologies like GIS, Hybrid, SCADA system, Optical bays of voltage class ranging from 66 kV to 400 kV. Further, under his leadership, almost 13014 Ckm of transmission lines commissioned in last 5 years against challenges of RoW, construction in different terrains and other statutory requirements such as Forest, Railways etc.

Apart from the above, as a senior management level, He has streamlined the process of the project handling and management with include standardization of the design, flow of the work, monitoring and closing of the projects. Further, He has dealt the funding of the projects from overseas like ADB as well as nationalized financial institutions.

Presently, he is Chief Engineer (Project), Gujarat Energy Transmission Corporation Limited, the State Transmission Utility in Gujarat.



M1

INNOVATION in Electrical System