

A 2-Day Professional Development Seminar on

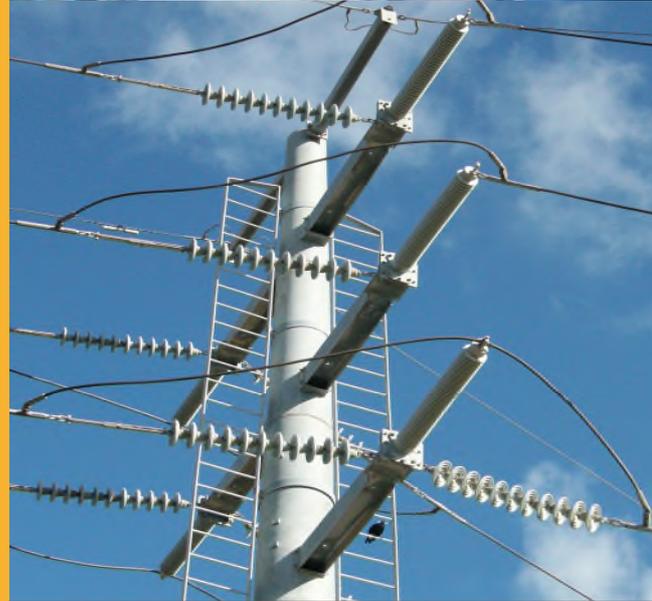
High Voltage Insulators

*- Improving network reliability
and minimising failures*

Organised By :



*Your True Partner in Attaining Professional
Excellence*



The reliability of power delivery is intimately related to insulators. The performance of a power system under normal operation at power frequency, or in abnormal conditions like during lightning and switching surges is dependent on the integrity of insulators. The payback to the utility stemming from careful attention to insulator design and selection is enormous. This 2-day seminar is focused on improving reliability of power delivery and minimising system failures that are related to outdoor insulators.

This seminar deals with all three insulator technologies that are widely deployed by utilities worldwide, porcelain, toughened glass and composite (non-ceramic). Issues that are important to the suppliers such as, materials selection and formulation, design, quality control and testing are discussed in detail. User side aspects including specifications, product selection, inspection and replacement criteria will be covered in-depth.

This seminar will also address economic issues such as life extension techniques, inspection methods and criteria to be used to enable decision making like reinsulation, retrofitting, and preventive maintenance. Details of performance improvement techniques such as water washing, greasing, creepage extenders, RTV coatings and semiconducting glazed Insulators will be presented.

Lastly, this seminar will address the important issue of insulator outages that are caused by birds and animals. Methods to prevent such outages and their effectiveness will be discussed. One optional session is dedicated to presentation of case studies by participants.

CPD Recognition

This training program is designed to meet the Continuing Professional Development (CPD) needs of participants. A Certificate of Attendance will be awarded at the end of the program. This serves as evidence of your personal and professional commitment to your career.

1. Introduction

- Reliability concepts
- Life Cycle Cost considerations
- Benefits and limitations of life extension

2. Overhead line and station outages

- Causes
- Reasons and costs

3. Birds, and Animal and Environmental problems

- Mitigation techniques for line and station applications
- Effectiveness

4. Porcelain, nonceramic and glass insulators

- Important characteristics related to performance and design for transmission, distribution and station applications
- Advantages and disadvantages of different types of insulators

5. Insulator manufacturing

- Design
- Materials
- Process
- Quality control

6. Failure modes of outdoor insulators

- Nonceramic, porcelain and glass insulators

Who Should Attend?

The two-day seminar is intended for: managers, engineers and other personnel involved in line and station insulator design, specification, procurement, construction, testing and maintenance; insulator manufacturers; and laboratory personnel involved in insulator testing and research.

7. Condition assessment of insulators

- Identifying failed insulators
- Consideration for replacement

8. Utility engineering

- Specification
- Selection
- Manufacturer approval process
- Application

9. Utility operations

- Handling
- Installation
- Testing
- Patrols
- Inspections
- Maintenance

10. Performance enhancement of insulators in critical locations

11. International standards

12. International utility experience

13. Life extension

- Methods and effectiveness

14. Insulation for apparatus and protection

15. Presentation of case studies by participants (Optional)

16. Open discussion

In-House Course Available

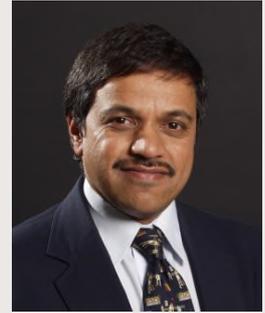
This program can be customised to suit specific needs of your organization at significant savings.

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Dr. Ravi Gorur

(IEEE Fellow)



Dr. Gorur is a professor in the Electrical Engineering Department at Arizona State University (ASU). He is responsible for numerous research projects in the areas of insulators for electric power transmission and distribution, sponsored by utilities, government and industry. He has published a textbook on Outdoor Insulators and over 150 papers in IEEE Journals and Conferences.

He has worked with numerous utilities on the subject of technical specifications, maintenance, design and selection of insulators for overhead lines and stations. He chaired the IEEE Working Groups on Insulator Contamination and Dielectric Aging, Outdoor Service Environment committee that prepared IEEE standard (P1523) on High Voltage Insulator Coatings and Polymeric Cable Terminations. He is the US representative for CIGRE Study Committee D1 (Materials for Advanced Technologies), and the CIGRE Task Force Convenor on Interfaces in Composite Insulators. He was elected to IEEE fellow in 1998 for contribution to aging of polymeric materials used for Outdoor HV insulation. He has supervised about 50 graduate students (MS and Ph.D). He teaches a short course on high voltage outdoor insulators that is offered annually at ASU, and at various companies on demand.

Ravi Gorur obtained his Ph. D degree from the University of Windsor, Canada, and BS and MS degrees from the Bangalore University and Indian Institute of Science, respectively. He was a visiting professor at the Queensland University of Technology during 2002 and worked on projects with Powerlink, Australia.