

# High Voltage Engineering Applications

## Overview

Transmission of large amounts of electric power over long distances is virtually impossible without the use of high voltage (HV) engineering. In addition to power transfer, a major application of HV engineering in the power sector is testing the performance of electrical insulation of power components. Increasing demands on power consumption and penetration of distributed generation of electrical energy, requires the use of power electronic circuits. To ensure system reliability, knowledge about the performance of electrical insulation systems under new types of stresses from the addition of sources that generate fast transients, is essential. Alternatively, the range of HV applications is no longer confined to the power industry; wide ranges of other industries use high voltage and often encounter problems needing diverse solutions. Applications include: electrostatic precipitators for air cleaning, medical imaging, scientific instrumentation, pulse power in food processing and water treatment, and electrospinning and electrospinning applications in the automobile and pharmaceutical industries.

In the above context, the technological world today presents many challenges to engineers and scientists in keeping current and taking advantage of latest developments. Benefits of attending this GIAN course are: 1. gaining up-to-date information in the HV engineering field, 2. hearing leading experts in the field discuss practical experiences and case studies, 3. enhancing your own expertise and credibility, 4. obtaining state of the art knowledge for your company or institution, 5. improving your future career prospects, and 6. obtaining course credits, and course notes.

We will use a combination of different teaching and learning methods, including interactive lectures and cases for problem solving, to guide our tutorials. The programme uses real case studies to enable a better understanding and management of new and ongoing challenges. Use of corona in particle charging, and fabrication of nanofibers using electrospinning, are some of the laboratory studies that will be conducted in the course.

<b>Modules</b>	Monday, December 11 to Friday, December 15, 2017 (two hours of lecture every day and three, three-hour laboratory sessions). <b>Number of participants for the course will be limited to fifty.</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"> <li>• Engineers, supervisors and technical staff involved in operation, maintenance, construction, design, and specification of MV/HV power equipment, such as transformers, underground cables, line insulators and rotating machines.</li> <li>• Consultants involved in design, construction, commissioning, and diagnostics of power system components, maintenance of MV and HV substations.</li> <li>• Faculty and graduate students from academic institutions involved in teaching HV engineering, and interested in research related to HV Engineering and its applications.</li> <li>▪ Scientists working for National Labs and Industry R&amp;D in the development of new materials, and techniques and instrumentation for monitoring and diagnostics.</li> </ul>
<b>Fees</b>	<p>The participation fees for taking the course is as follows:  <b>Participants from abroad : US \$250</b>  <b>Industry/ Research Organizations: INR15000</b>  <b>Academic Institutions: INR5000</b></p> <p>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.</p>

## The Faculty



Dr. Shesha Jayaram is a Fellow of the IEEE, Professor and University Research Chair in the Department of Electrical and Computer Engineering, and Director of the High Voltage Engineering Laboratory at the University of Waterloo, Canada. Dr. Jayaram's research emphasizes solution-based outputs and focuses on four main areas: high voltage engineering and insulation diagnostics, high voltage engineering applied to environment, nanocomposite materials, and pulse power applications. She has published extensively, and holds many patents in HV applications to biotechnology and nanotechnology. She has been an active member of the IEEE Dielectrics and Electrical Insulation and Industry Applications Societies, and the Electrostatic Society of America. She is a registered Professional Engineer in the Province of Ontario, Canada.



Dr. N. K. Kishore is a Senior Member of the IEEE, Fellow of Institution of Engineers (India), a Professor of Electrical Engineering, and an Associate Faculty of Energy Science and Engineering at the Indian Institute of Technology Kharagpur. His research interests are in the areas of Power Systems, High Voltage Engineering, Applications of High Voltage Engineering, Renewable Energy, and EMI/EMC.



## Course Co-ordinator

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