

Basics of Electrical Insulation Materials

Have you wondered how materials for motors and generators are selected? What's the difference in them? What is important? This course will focus on answering those questions. The fundamentals of electrical insulation materials and testing for motors or generators over a range of thermal and voltage (600V to 23,000V) needs will be discussed. An introduction to basics will be given prior to main aspects of insulation materials and applications. Major test methods and standards used in selecting and qualifying insulation systems will be reviewed. And then you will be able to answer the burning question "Why is insulation important?"!

Course Outline:

Module 1 – Basic Introduction

- Common Electrical Terminology
- Components of Motor/Generator
- Why need insulation?

Module 2 – Insulation Components

- Material families
- Magnet wire
- Resins
- Mica
- Composites
- Process aids

Module 3 – Insulation Systems

- Process techniques
- Motor/Generator system needs
- Voltage requirements
- Thermal stresses
- Interactions between components

Module 4 – Testing

- Standard based testing
- Quality control testing
- System testing
- PD testing
- Life assessment

Module 5 – Failure Modes

- "TEAM"
- Multi-factor aging
- Reliability

Who Should Attend?

- Both technical and non-technical personnel would find this course useful.
- Engineers who desire a more in-depth knowledge of motor/generator components.
- Marketing and Sales Managers who need to understand the basics of electrical insulation.
- Maintenance, Service and Technical staff responsible for electrical machinery systems.
- Management of any level.
- Refresher course for experienced engineers to gain more insights into insulation systems.

Key Benefits:

Upon completion of this course, attendees will be able to:

- Describe the components of electrical insulation.
- Select material options for insulation systems.
- Identify fundamental material and system testing that could be performed.
- Learn from case studies and practical insulation material solutions.
- Interactive instruction and hands-on of materials.

Duration and Price:

1/2 Day 8:30 – 12:30
 - \$X+GST

Register now:

On-line: www.
 E-mail:

If you have any questions regarding Short Courses please contact: Inna.Kremza@voith.com

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Instructor:



Nancy Frost Ph.D.:

Dr. Nancy Frost is a Dielectrics Engineer that has worked in the industry for over two decades. She currently works for Gerome Technologies as their Business Development Manager, and as an engineering consultant, involved in material selection, research and development on materials and manufacturing techniques, as well as the design of testing protocols. She has worked for GE Global Research and for material suppliers Von Roll and Krempel, through which she worked with a large variety of OEMs and repair shops. Nancy's education includes a B.S. in Chemistry and M.S. & Ph.D. in Electrical Engineering.

She has published technical papers in conferences regularly for the past two decades and has given nearly 100 presentations and courses on insulation materials. Since 2000 she has been very active in the IEEE Standards Working Groups, having served as the Chair of the Materials Subcommittee. This group, where she continues to serve, is responsible for working on 25 standards for materials and testing. She is the Past Chair of IEEE EIC (Electrical Insulation Conference 2011) and presently serves on the AdComm (Administrative Committee) of the IEEE Dielectrics and Electrical Insulation Society (DEIS). She also contributes to the International standards group, IEC, on TC 15 and TC 112 standards through NEMA's 6IM, Insulation Materials Group.

Through these various roles, Dr. Frost has seen and experienced the electrical insulation business from the points of view of vendors, customers, utilities and manufacturers. She has been exposed to a variety of insulation types and systems and has had the unique opportunity to see the many manners in which motor and generator insulation systems can be composed, designed and manufactured.