
MEDIUM & HIGH VOLTAGE TESTING OF ELECTRICAL EQUIPMENT FOR ENGINEERS AND TECHNICIANS



WHAT YOU WILL LEARN:

- Types of HV and MV test performed
- Good industry practice
- The need for testing of MV and HV electrical equipment
- Various types HV equipment encountered in the industry
- Testing equipment
- The need for good record keeping on tests conducted
- The role of standards on testing, test basis and interpretation of results
- National test labs and their importance in quality assurance

WHO SHOULD ATTEND:

- Instrumentation and Control Engineers
- Consulting Engineers
- Electrical Engineers
- Project Engineers
- Maintenance Engineers
- Power Systems Protection and Control Engineers
- Building Service Designers
- Data Systems Planners and Managers

The Workshop

Testing is an essential activity in any engineer's career. Whatever your role in the industry - electrical designer, purchase engineer, manufacturer, installation contractor or maintenance engineer, solid knowledge of electrical tests is a necessity. This workshop is designed to familiarise you with various aspects of testing general electrical equipment and high voltage testing in particular.

Examples are used from various international standards regarding the procedures for conducting tests and interpreting the results. The need for keeping proper records of tests conducted both in the initial stages and later during routine maintenance is discussed. Some of the tests are too complex to be performed on a routine basis or may require specialised equipment which may not be normally available to user industries or even manufacturers. This is where the services of an independent and accredited test lab are useful. The roles of such labs are briefly discussed.

The Program

INTRODUCTION

- HV AND MV equipment
- Need and purpose of testing
- Categories of testing

INSULATION TESTING

- Purpose of insulation testing
- Equipment
- Insulation
- Construction of a tester
- Connections of tester to test equipment
- Safety precautions
- Discharging
- Noting of readings and interpretation
- Determining dryness of insulation using absorption ratio

Practical Session: Insulation Testing

HIGH POTENTIAL TESTS

- Purpose of testing
- AC and DC Hipot tests
- Test equipment/block diagram and construction details
- Connections of tester to test equipment
- Safety precautions
- Discharging after test
- Noting of readings and interpretation
- Standards and precautions

Practical Session: High Voltage Test Equipment

OIL TESTING

- Dielectric test using high voltage testing kit
- Electrodes and test voltage
- Test voltages as per applicable standards
- Tests of acidity
- Effect of additives
- Other possible uses of oil testing (dissolved gas analysis)
- Improvement of dielectric strength by filtration

Practical Session: Oil Dielectric Testing

TRANSFORMER TESTING

- Induced over voltage tests
- Winding resistance measurement
- Ratio testing
- Vector group verification
- Tests for transformer losses
- Partial discharge testing
- Tan Delta testing
- Test Instruments

Practical Session: Transformer Testing

CT TESTING

- Ratio test of Current Transformers (CTs)
- Test with rated burden
- Polarity testing
- Magnetising current and knee point voltage measurement
- Insulation test and high voltage test
- Test instruments

Practical Session: CT Testing

PT TESTING

- Ratio test of Potential Transformers (PTs)
- Test with rated burden
- Polarity testing
- Magnetising current measurement
- Insulation and HV tests
- Test instruments

Practical Session: PT Testing

DUCTOR TESTING

- Working principle
- Use of doctor for verifying contact resistance of circuit breakers
- Precautions and analysis

Practical Session: Ductor testing

OTHER MISCELLANEOUS TEST EQUIPMENT SUMMARY