



مكتب المستشار الوطني
NATIONAL CONSULTING BUREAU

EXTRA HIGH VOLTAGE

TRAINING & CONSULTATION



IN COLLABORATION WITH
(EHVRC)

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Introduction

Extra High Voltage Research Center (EHVRC) has executed several research projects in the fields of electrical engineering, energy saving, minimizing the electrical losses, limiting the pollution effects on the electrical network, improving the consumer services, minimizing the electrical equipment outages and also developing the national electrical industries. These research projects have provided a great contribution in developing the usage of the electrical equipment, improving its performance and, as well, finding the optimum solutions for the problems that are facing the operation of the electrical unified network.

EHVRC has got a quality management system certificate (DIN EN ISO 9001:2000) for testing servicing and technical researches and studies for electrical network components.

EHVRC have a very specific training and research facilities. These facilities include, Extra High Voltage AC Cascade Transformer to generate AC voltage up to 2250 KV, an Impulse Testing Station 180 KJ to generate impulse voltage up to 2400 KV, Electro-Magnetic Shield Hall and Instruments for Partial Discharge measurement, Mobile Lab for Transient and Over-voltage measurements, Mobile GIS Testing Facility, Mobile Impulse Testing Station 20 KJ up to 800 KV, ... etc. There are also mobile testing facilities, measuring instruments, Short Circuit Testing lab, Tower Testing Station, Indoor Extra High Voltage Test Hall and Fuel Cell Test Lab.

EHVRC welcomes cooperation with National Consulting Bureau for providing practical Hands-on training for electrical engineers & technicians from GCC countries. Training programs can be tailored & conducted to meet the specific training needs of NCB clients in the power industry in the Gulf including generation, transmission, distribution & electrical equipment manufacturers. Please contact us for more & full details on our courses in Extra High Voltage.



Extra High Voltage Center Activities & Training Services

1- Studies, Consultation & Training Topics

- Transient phenomena & over voltage in the unified electrical network.
- Performance of surge arresters under normal & abnormal environmental pollution conditions.
- Harmonics & flickers in the electrical network.
- Effect of climatic conditions & pollution on insulation performance.
- Choose of optimum design of the insulators that suit the environment climatic & conditions.
- The effect of the sand storms on the performance of the extra high voltage transmission lines.
- Live was high of high voltage transmission lines insulators.
- The properties & performance of the insulation materials (gas, liquid & solid).
- Power Quality Improvement in primary distribution networks.
- Design & Measuring of grounding system.
- Performance of high voltage outdoor polymeric insulators under different polluted conditions.
- Damping of vibration of overhead transmission lines.

2- Electrical Acceptance tests and Training for :

- All types of the electrical equipment materials.
- L, M, H & EH voltages up to 500 KV inside or outside the center.
- Tests according to national & international standards.
- Official test reports and/or acceptance test certificate.

3- Services for Electrical Industry & Electrical Equipment Manufactures

- Tailor & conduct training programs to meet the development needs of human resources in the power industry related to generation, transmission and distribution electrical equipment testing & performance.
- Testing electrical products and providing of required the recommendations to enhance products quality.
- Serving manufactures of all types of electrical cables, distribution panel boards, circuit breakers, fuses, electrical power and distribution transformers, etc...

Testing & Training Facilities

1- AC Equipment

- Extra high voltage cascade transformers
- Motor generator set
- High voltage generator volt (150 c/s)
- The experimental overhead lines (750 KV)
- 200 KV indoor testing hall
- Pollution testing room



Fig (1) EHV Cascade Transformers

2- Impulse Testing Station

- Impulse Testing Station up to 2400KV, 180 kj
- Impulse Testing Station up to 500 KV, 2.2 kj

3- Mobile Facilities

- Mobile laboratory for transient overvoltage measurements
- AC Mobile testing unit (100 KV)
- Mobile GIS Testing Facility (800 KV)
- Mobile Impulse Testing Station 800 KV, 20 kj
- Mobile Test System for measuring partial discharge
- Acoustic partial discharge detector
- Mobile thermal resistivity laboratory



Fig (2) Motor Generator Set

4- Testing & Measurement Meters

- Magnetic field meter
- Oil test set
- Insulation resistance meter
- Interference field strength meter
- Automatic RIC meter (Res, Inductance & Capacitance)
- Digital Oscilloscope instrument
- Voltage variation recorder
- Electrical energy analyzer
- Auto earth tester
- Standard AC voltage & current instrument
- Standard DC voltage & current instrument
- Capacitance & dissipation factor
- Ground test system (300 Amps)



Fig (3) Test Transformer
20 KV - 150 c / s



Testing & Training Facilities

5- Other Assisting Facilities

- Current transformer
- Insulators dimension meter
- Conductor vibration meter
- Atmospheric condition measuring instrument
- Oil reclamation machine

6- Executed Projects for Testing Development

- Partial discharge measuring laboratory
- Shielded hall against external electromagnetic interference which affect the PD measurements according to IEC 60270
- Voltage measurements in true RMS
- Schering bridge for capacitance & tan measurement

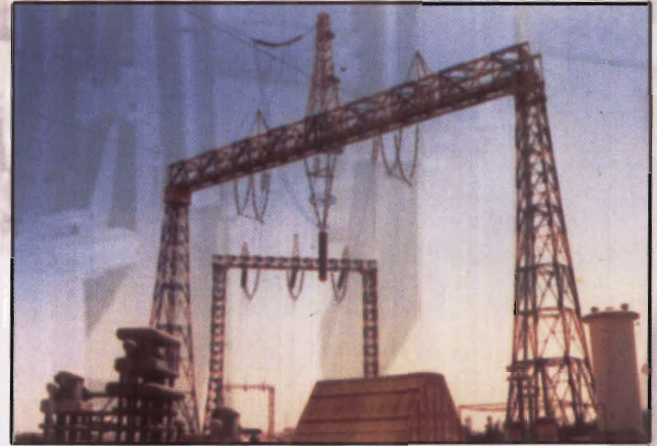


Fig (4) Experimental E.H.V. Overhead Lines



Fig (6) Control Console Instruments

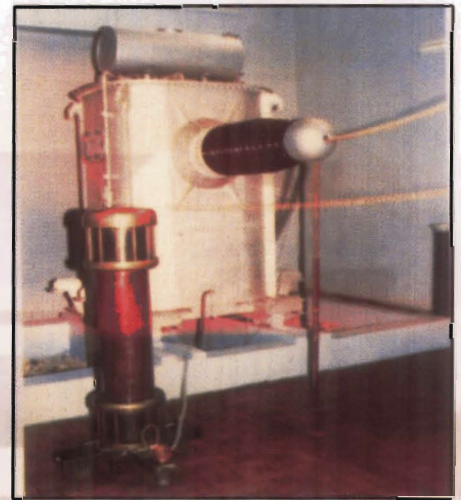


Fig (5) Testing Transformer
200 KV, 10 Amp



Fig (7) Impulse Testing Station
2400 KV, 180 KJ



Fig (8) Impulse Testing Station
500 KV, 2.2 KJ



Fig (9) Mobile Lab. Transient Overvoltage Measurement



Fig (10) Sequence Control Unit



Fig (11) Computer and Printing Unit

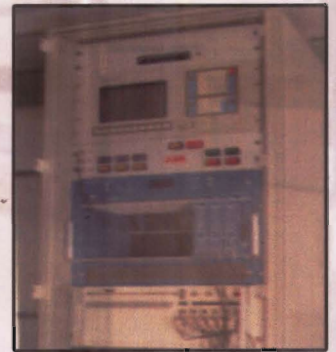


Fig (12) Receiving Unit



Fig (13) Mobile AC Testing Unit up to 100 KV



Fig (14) Mobile GIS Testing Facility 800 KV

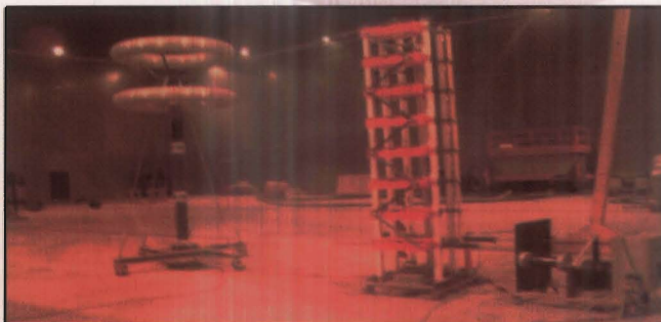


Fig (15) Mobile Impulse Generator 800 KV, 20 KJ



Fig (16) Mobile Test System 500 KV For on Site Measuring Partial Discharge

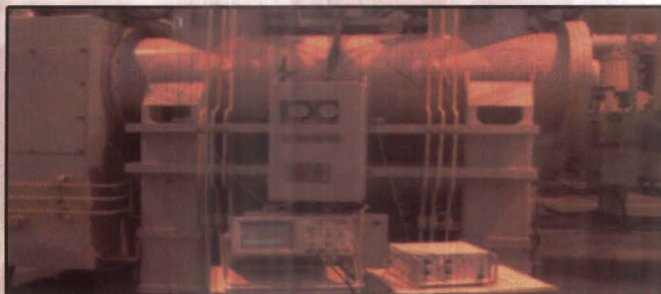


Fig (17) Acoustic PD Detector



Fig (18) Thermal Soil Resistivity Measuring Instrument

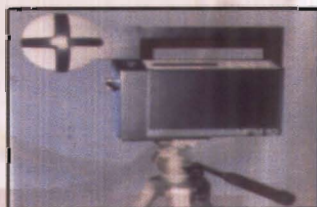


Fig (19) Magnetic Field Strength Meter



Fig (20) Oil Test Set