GLOBAL
INDUSTRIES
INTELLIGENCE

TRANSFORMER PROTECTION TRAINING

3rd - 7th NOVEMBER, 2024

SHERATON HOTEL MUSCAT OMAN

ONLINE ON ZOOM

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A transformer protection course is essential for engineers, technicians, and professionals responsible for the design, operation, and maintenance of transformer systems.
This course covers the below topics:

- Transformer introduction
- Transformer simulation
- Transformer faults
- Transformer protection
- SIPROTEC 4 7UT6 Transformer relay config and settings
- SIPROTEC 5 7UT8 config and settings
- Transformer fault simulations and analysis

DAY 1

TRANSFORMER INTRODUCTION:

- Transformer Definition
- How a transformer works
- Eddy current and core lamination
- Three-phase transformers and single-phase transformers
- Core and shell type transformer
- Equivalent Circuit of a Transformer
- Transformer Winding Connections
- Vector Group and phase shift
- Transformer Nameplate
- Transformer simulation & calculations

TRANSFORMER FAULTS

- Earth fault on H.V. external connections
- Phase-to-phase fault on H. V. external connections
- Internal earth fault on H.V. windings
- Internal phase-to-phase fault on H.V. windings
- Short circuit between turns H.V. windings
- Earth fault on L.V. external connections
- Phase-to-phase fault on L.V. external connections
- Internal earth fault on L. V. windings
- Internal phase-to-phase fault on L.V. windings
- Short circuit between turns L.V. windings

- Internal faults: Winding short circuits, inter-turn faults, and earth faults
- External faults: Overloads, overvoltage, and external short circuits
- Mechanical failures: Core faults, insulation breakdown, and overheating
- Transformer inrush current and its effects

DAY 2

TRANSFORMER PROTECTION RELAYS

- Protection relay evaluation
- Numerical transformer protection relay IEDS
- Typical numerical relay block diagram
- Numerical relay advantages
- Digital phase measurement
- Phasor values
- Symmetrical component
- Overcurrent element
- Negative sequence element
- Voltage protection element
- Differential protection
- Impedance plane
- Distance element
- Metering of voltages, currents, power, and other measurements
- Oscillography; sequence of events capture with time tagging

TRANSFORMER PROTECTION FUNCTIONS:

- Differential Protection
- Restricted Earth Fault Protection
- Thermal overload Protection
- Over-excitation Protection
- Overcurrent protection
- Earth fault protection
- Under and over voltage protection
- Thermal overload protection
- Mechanical protection such as Buchholz-relay, winding temperature, …

- Transformer Protection Schemes

DAY 3

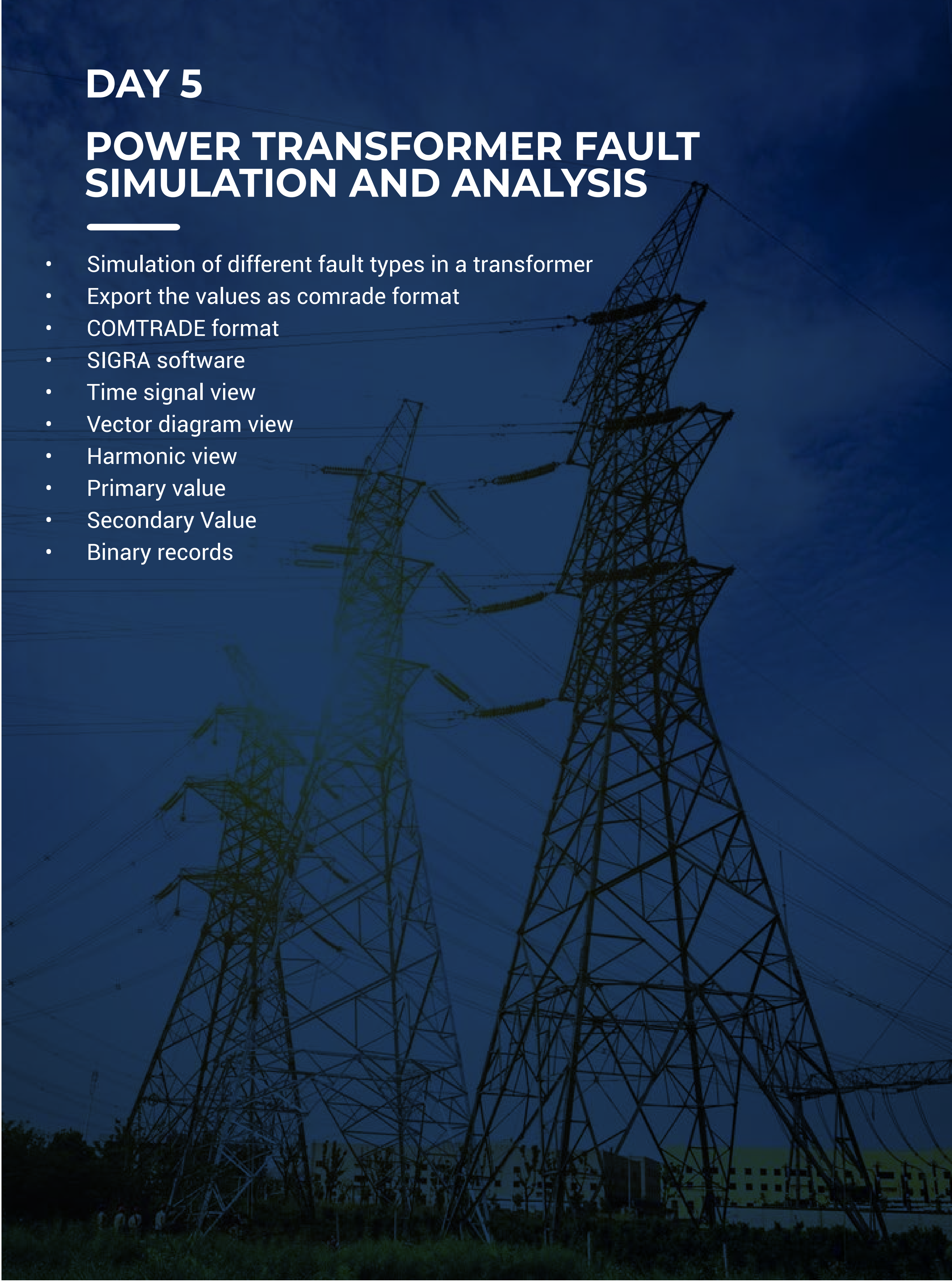
SIPROTEC 4 7UT6 CONFIGURATION, AND SETTINGS

- 7UT633 for protection objects with three ends
- 7UT635 for protection objects up to five ends
- CT Connections
- VT connection
- 7UT6 connection diagram
- 7UT6 MLFB
- 7UT6 Functional scope
- CT configuration and assignment in DIGSI 4
- Power system settings in DIGSI 4
- Transformer settings in DIGSI 4
- CT settings in the DIGSI 4
- 7UT6 differential protection settings
- 7UT6 differential characteristic settings
- 7UT6 inrush 2nd harmonic settings
- 7UT6 n-th harmonic settings
- Circuit breaker settings in the 7UT
- Restricted earth fault protection 87N (7UT6)

DAY 4

SIPROTEC 5 7UT8 CONFIG AND SETTINGS

- SIPROTEC 5 hardware
- SIPROTEC 5 7UT8 Functional Scope
- SIPROTEC 5 7UT8 Application configuration
- 7UT8 order code
- Measuring Points
- CT Connections
- VT connection
- Function groups and functions configuration
- Meas. Point & Function point connections
- Binary inputs configuration
- Binary outputs configuration
- LED configuration
- Transformer side settings
- Over excitation protection
- Over Voltage protection
- Under voltage protection
- REF protection settings
- Trans Diff protection config and settings
- SIPROTEC 5 7UT8 LCD config



DAY 5

POWER TRANSFORMER FAULT SIMULATION AND ANALYSIS

- Simulation of different fault types in a transformer
- Export the values as comrade format
- COMTRADE format
- SIGRA software
- Time signal view
- Vector diagram view
- Harmonic view
- Primary value
- Secondary Value
- Binary records

Trainer Profile

Dr. Saeed Roostaee

Sr. Technical Trainer in Power System Protection & Automation (IEC61850, SIPROTEC, ABB Relion,Omicron, SEL, GE, MiCOM, ETAP, Digsilent, PSCAD.

Dr. Saeed Roostaee has Experience in Protection Relay IEDs, Substation Automation, IEC 61850 and Training Industry. Strong quality assurance professional with Ph.D. in Electrical Engineering from JMI (A central University), New Delhi, India. Expert in: DIGSI 4; DIGSI 5; OMICRON Test Universe; IEC 61850 System Configurator; SEL ACSELERATOR QuickSet; ETAP; PSCAD; OMICRON IEDScout; SIPROTEC 5; SIPROTEC 4; SEL Relays; OMICRON CMC; RTDS; Vizimax IEC 61850 Merging unit.

Highlights: Research in power system automation, specifically in substation automation, Power system protection, and smart grid Published more than technical 20 papers and E-books in the area of SAS, IEC 61850, and protection system Experimental works in: Protection relays (SEL and Siprotec products) Protection Relay test kit (OMICRON CMC-256 Plus) IEC61850 tools (IEDScout, IEC61850 configurator, GOOSE Air, and Merging Unit and IEC 61850-9-2) Knowledge based websites developed for researchers. trainee engineers, industry personals and students (www.FB.com/IEC61850 (with more than 3500 followers), www.Elec-Engg.com and www.ProtectionRelay.ir) to share the experiences Workshops, Tutorials and lectures Substation Automation Design and Configuration using IEC 61850 Devices Investigation and Design of Communication Requirements for SAS and Analysis of IEDs Data Research on protocol testing, and implementation.

Experience Highlights:
PLC installation PLC programming.
Industrial Automation.
Compact substation installation.
Power transformer installation.

Certifications:
- Power Quality
- Home Automation
- Labview
- Design and analysis of PIC
- Microcontroller, 250 hours, 96 of 100

Publications:
- TRANSFORMER TAP CHANGER USING IEC61850.
- Performance Evaluation of IEC 61850 GOOSE based distance protection for inter substation communication.
- Practical Consideration of IEC61850 in Interlocking Functions in Substation Automation System.
- Traveling-Waves-Based Ground Fault Location Using Zero-Sequence Detection and Wavelet Transform.
- Performance Evaluation of IEC 61850 GOOSE based distance protection for inter substation communication.

Education:
Doctor of Philosophy (Ph.D.), Electrical Engineering.
Master's degree, Electrical and Control Engineering.
Bachelor's degree, Electrical Engineering.

TRANFORMER PROTECTION TRAINING

3rd - 7th NOVEMBER, 2024
Sheraton Hotel Muscat Oman
& Online on Zoom

FOR REGISTRATION PLEASE COMPLETE THIS FORM AND EMAIL BACK TO
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REGISTRATION DETAILS

NAME ....

JOB TITLE ....

MOBILE NUMBER ....

EMAIL ....

NAME ....

JOB TITLE ....

MOBILE NUMBER ....

EMAIL ....

NAME ....

JOB TITLE ....

MOBILE NUMBER ....

EMAIL ....

ORGANISATION ....

ADDRESS ....

TOWN .... STATE ....

COUNTRY .... POSTAL CODE ....

PHONE .... FAX ....

NATURE OF BUSINESS ....

REGISTRATION FEE:

Book and Pay Before 10th October @GBP 3200/person (Should be min. 3 participants)
Book and Pay After 10th October, 2024 @GBP 3595/person (Should be min. 3 participants)
Original Fee @GBP 3995/person (For single participant)

AUTHORIZATION:

Signature ____________________ Date _______________

Name ______________________ Position ____________________

THIS BOOKING IS INVALID WITHOUT A SIGNATURE.
AUTHORIZATION SIGNATORY MUST BE AUTHORIZED TO SIGN ON BEHALF OF CONTRACTING ORGANISATION