CENTRE FOR POWER SYSTEM PROTECTION & AUTOMATION

SUBSTATION PROTECTION & AUTOMATION

"Transforming Engineers into Protection & SAS Professionals"

1 WEEK (Basic) - 6 WEEKS (Expert)
Intensive Program

PROGRAM HIGHLIGHTS

Real-Time Hands-on Relay Testing
Using industrial relays and Megger SMRT46

Practical Substation & Protection Engineering
Design with live schemes and settings

IEC 61850 & Digital Substation Exposure
GOOSE, MMS, and IED communication

Industry-Grade Lab Infrastructure
GE, SEL, Siemens, MiCOM, ABB/Hitachi, & Schneider

Field-Oriented Training Approach
Bridging classroom learning with real substation practice

KEY EQUIPMENT

- Megger SMRT46
- GE Multilin
- SEL Relays
- Siemens 7SJ/7SA
- MiCOM P14x
- ABB/Hitachi REF/RET

WHO SHOULD ATTEND

- Protection Engineers
- Substation Engineers
- Commissioning Engineers
- Graduate Engineers (EEE/ECE)
- Utility & IPP Professionals

HANDS-ON INDUSTRIAL TRAINING
Bridging the gap between academic knowledge and field-ready expertise

ABOUT SHF & OUR EXPERTISE

SHF Design Engineering Private Limited, established in 2017 in Chennai, India, is a wholly owned subsidiary of Creative Holding Limited, Dubai, UAE. Our company is a specialized engineering organization delivering Design, Engineering, Consulting, and Training services in:

- Substation Protection Systems
- Control & Automation Engineering
- SCADA / SAS
- Secondary Engineering for T&D

Our training centre is equipped with real industrial protection relays, control panels, and automation systems from globally recognized manufacturers, ensuring practical, job-oriented learning.

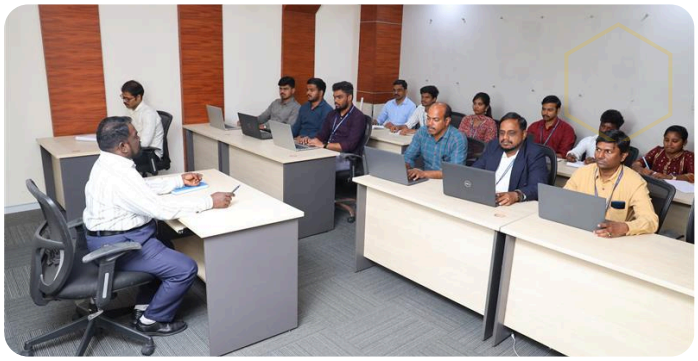
Our engineering team brings extensive field experience in protection design, relay testing, commissioning, and substation automation projects across utilities and industries.

WHY THIS TRAINING IS IMPORTANT?

Modern substations are rapidly evolving into digital, automated, and intelligent systems. Utilities and industries today demand engineers who can:

- Understand protection philosophy
- Substation design software exposure
- Configure and test numerical relays
- Analyze faults and disturbances
- Work with IEC 61850 communication
- Integrate protection with SAS/SCADA systems

This program bridges the gap between academic knowledge and real substation field practice.



8+	100+	6+	60%	100%
YEARS EXPERIENCE	ENGINEERS TRAINED	OEM RELAY BRANDS	PRACTICAL FOCUS	JOB-ORIENTED

"From Fundamentals to Field-Ready — A Complete Substation Training Ecosystem"

OUR TRAINING ECOSYSTEM

Theory & Fundamentals → Hands-On Lab Practice → Relay Configuration → Testing & Commissioning → Field Ready

PROGRAM STRUCTURE & TRAINING SCHEDULE

PROTECTION & AUTOMATION Training Time: 09:30 AM – 04:30 PM · Mon–Fri

COURSE OBJECTIVE

- To develop competent protection and automation engineers through intensive hands-on training in numerical relay configuration, protection testing, and substation automation systems.
- To equip participants with industry-ready skills in IEC 61850 communication, SCADA/SAS integration, troubleshooting, and real-time substation engineering applications.

MODULE A Week 1 | Days 1–5

Protection Scheme Engineering

- Power system overview
- Concepts of protection & automation
- C&R panel design using CAD
- C&R panel scheme check demo
- Function check of numerical relays

🎯 **Understanding protection scheme functions**

MODULE B Week 2 | Days 6–10

Advanced Relay Configuration (OEM-1)

- Evolution of protection relays
- Numerical relay software overview
- Relay configuration principles
- Testing of Over Current & differential relays
- Testing of distance protection relays

🎯 **Competency in relay testing & configuration**

MODULE C Week 3 | Days 11–15

Advanced Relay Configuration (OEM-2)

- Numerical relay software overview
- Relay configuration principles
- Testing of Over Current & differential relays
- Testing of distance protection relays
- Testing of transformer AVR relays

🎯 **Competency in control & relay testing**

MODULE D Week 4 | Days 16–20

Advanced Relay Configuration (OEM-3)

- Numerical relay software overview
- Relay configuration principles
- Testing of Over Current & differential relays
- Testing of distance protection relays
- Concepts & testing of energy meter

🎯 **Mastering in control & relay testing**

MODULE E Week 5 | Days 21–25

Substation Automation (SAS) – Basics

- Concepts of substation automation with IEC 61850
- Architecture preparation using MS Visio
- SCADA software overview
- Integration of IED's with SCADA
- Developing SLD in HMI

🎯 **Understanding SAS principles**

MODULE F Week 6 | Days 26–30

Substation Automation (SAS) – Advanced

- BCU logic configuration
- Operational sequences in HMI
- Alarms and events handling
- Practices in troubleshooting
- Case study / Evaluations

🎯 **Mastering in control & relay testing, configuration**

CONTROL & RELAY PANEL DESIGN

COURSE OBJECTIVE

- Develop practical competency in designing & drafting Protection & Control Panels
- Develop practical competency in professional electrical CAD software

KEY OUTCOMES

✓ Design protection & control panels independently

✓ Prepare complete engineering documentation

✓ Understanding SLD/PLD into detailed schematics

✓ Professional CAD software proficiency

MODULE G Week 1 | Days 1–5

Design Fundamentals & Schematic Development

- Introduction to Protection & Control Panel Engineering
- Reading & Understanding Engineering Drawings
- Software Setup & Project Creation (GstarCAD)
- Software Setup & Project Creation (Elecdes)

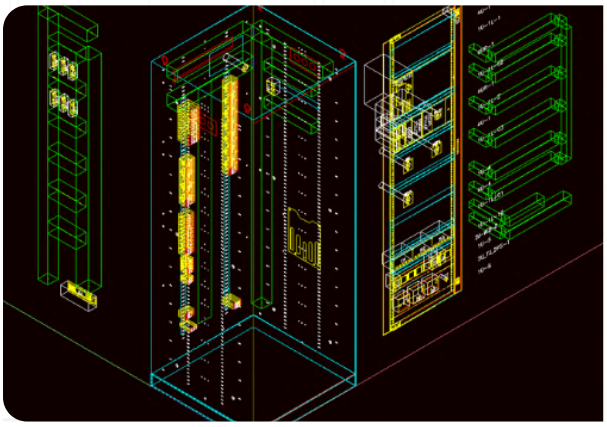
🎯 Exposure to electrical CAD software

MODULE H Week 2 | Days 6–10

Advanced Drafting, Layout & Documentation

- Preparation of detail design using CAD software
- Cable Schedule & BOM Preparation
- Panel Layout & GA Drawing
- Final Project Development
- Project Review & Evaluation

🎯 Prepare complete engineering documentation



ePLAN

Bentley MicroStation

Elecdes Design Suite BY SCADA SYSTEMS

PROGRAM STRUCTURE & COURSE MATRIX

LEVEL	CODE / TITLE	MODULES	DURATION
Beginner Level	**101** Fundamentals of Power System & Substation	A	1 Week
Intermediate Level	**102** Protection Relay Configuration & Testing	A+B	2 Weeks
Advanced Level – Protection	**103** Control & Protection Relay Configuration & Testing	A+B+C	3 Weeks
Advanced Level – Automation	**104** Substation Automation Systems (SAS)	A+E+F	3 Weeks
Expert Level	**105** Comprehensive Control & Protection Relay Testing with SCADA/SAS Integration	A+B+C+D+E+F	6 Weeks
C&R Panel Design	**106** Protection & Control Panel Design Engineering with EPLAN / GstarCAD / Elecdes	G+H	2 Weeks

LAB INFRASTRUCTURE

Training is delivered using **live industrial-grade** protection and control devices.


Protection Relay Lab


Hands-on Testing Setup

RELAY TEST RACKS

(Industrial Models)

GE Multilin
F650, T60, C70

SEL
311L, 451, 487E, 387, 421

MiCOM
P643, P543, P142

Siemens
7SD5X, 7UT6

ZIV
6RTV, 8IDV

CONTROL & AUTOMATION

Test Racks

ABB
REC670

Schneider
C264

SEL
451

Revenue Metering
Landis+Gyr – E850

RELAY TESTING EQUIPMENT

Megger SMRT46
Three-phase numerical relay testing kit

Aplab L12825
Professional protection testing

TRAINING DELIVERED BY

- Doctorate in power system engineering
- Engineers with global utility experience
- SCADA/HMI software experts

LAB TRAINING WORKFLOW

Equipment Setup → Relay Configuration → Secondary Injection Test → Test Report & Analysis → Commissioning

COURSE PROGRESSION PATH

Beginner — 1 Week → **Intermediate** — 2 Weeks → **Advanced** — 3 Weeks → **Expert** — 6 Weeks

Certified Training
Industry-recognized certification upon successful completion of each course level

Small Batch Size
Maximum 10 trainees per batch ensuring personalized attention and hands-on practice

OEMs Exposure
Training on actual ABB, Siemens, GE, SEL, Schneider & Alstom relay platforms

COURSE OFFERED FOR

- Final year Electrical Engineering students
- Fresh graduate Engineers (EEE/ECE)
- Protection & Testing Engineers
- Substation O&M Professionals
- SCADA / Automation Engineers
- Diploma Engineers

CAREER PATHWAY PROGRAM

We bridge training to industry by connecting skilled participants with leading power sector organizations, EPC companies, and multinational testing firms.

TECHNICAL MANPOWER SOLUTIONS

We provide technically trained Protection & Automation engineers to support utilities, panel manufacturers, and commissioning projects across the power sector.

CAREER PROGRESSION

Training > Assessment > Certification > Placement Competency

METHODOLOGY & LEARNING APPROACH

This program emphasizes skill-based, practical learning.

- Classroom-based theory sessions
- Extensive hands-on relay configuration
- Real-time protection testing practice
- Substation site exposure
- Case studies, fault analysis & troubleshooting

COURSE WEIGHTAGE

Practical Training	60%
Theoretical Concepts	40%

Small batch sizes ensure individual attention and deep technical understanding.

CERTIFICATION & EVALUATION

Professional Competency Certificate after:

- Test Evaluation
- Practical assessment
- Project / case study

SHF, a place where Engineers become Protection & SAS Professionals

OUR EXPERT'S INSIGHT

01

Er. APPARSWAMY. K — Director

Utility engineers play a vital role in ensuring the reliability and safety of power systems. This training is designed to address real protection and automation challenges faced in substations.

02

Er. TAMIZH MARAN. D — Director

Our mission is to develop industry-ready engineers through practical, real-time training in protection design, relay testing, and substation automation.

03

Er. MADHAN KUMAR — Manager – Automation

Substation automation and SCADA systems are at the core of modern power infrastructure. This training emphasizes real-time automation and system integration practices.

04

Dr. ANTHONY MOHANASUNDARAM — Manager – Training & Business Development

The future of power systems lies in intelligent protection and advanced automation. This training equips students and graduates with strong, hands-on industry skills.

OUR CORE VALUES

- Industry-Focused Curriculum
- Hands-On Practical Training
- Skill Development
- Expert-Led Mentorship

SHF, a place where Engineers become Protection & SAS Professionals

WHAT MAKES US DIFFERENT?

- Training on real-time industrial panels
- Trainers with utility, substation testing & commissioning experience
- Focus on job-ready practical skills
- Small batch size for individual attention
- Exposure to digital substation concepts

Ready to take the next step in power system protection training?

Enroll now and transform your career in substation protection & automation

CONTACT US

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SHF DESIGN ENGINEERING PVT LTD

A wholly owned subsidiary of Creative Holding Limited, Dubai, UAE. Specialized in Design, Engineering, Consulting, and Training services for the power sector.

"Transforming Engineers in to Protection & SAS Professionals"