



3 Days Training Programme on **Power System Protection, Short Circuit Calculation, Parameters, Relay Setting & Relay Co-ordination**

(2-4 July and 27-29 Sept 2018 at Nagpur)

Description:

Protection of Electrical power systems requires an understanding of complete power system design, system faults and their detection, as well as their safe disconnection. This course presents a comprehensive and systematic description of the concepts and principles of operation and application of protection schemes for various power system elements, setting and relay coordination. The course begins with an overview of power system, various causes of system failure, improper relay setting, components of power system protection schemes as well microprocessor-based relays and their application. This course deals with protection systems from a practical perspective and includes important functional aspects such as testing and coordination of protection systems.

Objectives:

Upon Completion of this course the participant will be able to

- Enhance your knowledge and skill of electrical system protection techniques including fault
- understanding of Electrical protective devices
- Understand problems generally faced and solutions successfully adopted by industry
- Learn to calculate the basic fault currents flowing in any part of the electrical system
- Design your own system of Power flow and analysis.
- Do relay setting by your own.

Improve your electrical system protection against possible electrical faults.

Who Should Attend:

This course has been specifically designed for Electrical utility Managers, engineers, supervisors, having knowledge of Power system, Power Distribution Managers and others involved in the electric power generation and distribution systems.

The course will definitely be beneficial for the all the other department people concerned with the plant operations, maintenance and safety. It could be also useful for the procurement and quality personnel.

Course Contents:

Major Contents:

1. Important basics of Power System protection.
2. Key Elements of Power system and Protection
3. Types of Power System Protection
4. Importance of relay, Relay setting and Co-ordination
5. Power system protection for Transformer, Line & Bus Bar & Motor.



6. Advanced Relay coordination.

7. Lots of Practical's,.

Sub contents: PROTECTIVE RELAY COORDINATION IN ELECTRICAL POWER SYSTEM

- Type of faults in electrical system and electrical machines
- Methodology adopted for detection of faults
- Current, voltage and power operated relays
- Protective relays for protection of electrical power system
- Protective relays for protection of electrical machines i.e. Generators and Motors
- Security of power supply and isolation of faulty section/ equipment in the event of faults and on interrupted operation of healthy sections of power system and equipment
- Primary and Back up protection relays
- Short circuit withstand capability of electrical equipment and fault clearing time
- Critical fault clearing time based on power system stability consideration
- Discrimination/ coordination of relay operations in power system
- Discriminative relay coordination of main and back up protection relays
- Relay co-ordination based on magnitude of fault current
- Relay coordination based on operating time of relays
- Relay errors
- Relay overshoots
- Relay coordination for Carrier aided protection systems and communication based protective systems using optical fiber cables for transmission lines and cables
- Coordination of stalling protection relays for motor protection and use of speed switches
- Relay coordination graphical plots
 - Relay coordination using the Relay coordination module,
 - Numerical relays: Introduction, advantages and applications.

Case Studies and Real time Solution:

Certification

Every successful participant will be awarded an Attendance Certificate

Delivery Methodology

- Pre Course Test
- Classroom Sessions, Animations & Videos
- Real Life Case studies
- Assignments & Exercises
- Discussion and Interaction
- Feedback and Assessment
- Post Course Test
- Delivery 9:30 AM to 17:00 PM



Organisers

This specialised course is launched by CISAT in collaboration with SAN Techno Mentors Pvt. Ltd. Pune.

CISAT (Centre for Industrial Solution & Advanced Training), Nagpur

CISAT is a group of Industrial Experts with experience from diversified fields and passion of teaching from various fields such as Electrical, Mechanical, Instrumentation & Process Control and Computer/IT from Power, Aluminium, Steel, Oil and Cement Industries.

CISAT delivers various services, consultancy & customized trainings to employees of many esteemed corporates. CISAT impart quality in knowledge sharing to the Employees of Corporate at all levels on various topics



SAN Techno Mentors Pvt. Ltd. Pune

SAN Techno Mentors Pvt. Ltd. is managed by a group of technocrats (COEP and IIT Bombay alumni) with long years of professional experience in diverse industry verticals. It is focused on providing Value Engineering Services by "Training", "Mentoring" and "Consultancy" for "Building KASH (Knowledge, Attitude, Skills, Habits)" / "Performance Excellence".

The Executive team set up SAN Techno Mentors to impart technical education to satisfy not only the demands of the industry but also bridge an ongoing gap between academia and industry on the foundation of the knowledge base, international projects experience, industrial contacts and the SAN Group's brand image of manufacturing of premium products.

SAN Techno Mentors is an outsourced "Training Partner" for premium MNC (USA HQ) in India. It is also a "Training Service Provider" to the same company for EMEA (Europe, Middle East & Africa). **It has also conducted training programmes for Japanese, European, Asian and Arabian professionals in Pune.**

Having a pool of more than 50 eminent Subject Matter Experts (SMEs) with brilliant academic background (from IITs and premium engineering colleges) long industrial experience, and teaching passion, SAN Techno Mentors is in a unique position to provide above services for corporate companies.

Training Facility:

CISAT & SAN Techno Mentors has International Level Training Centre Located in a learning atmosphere at Nagpur & Pune (India) respectively. It is equipped with training facility fully air conditioned, LCD Projector, Audio-Video, White Board and all other necessary infrastructure.

CISAT & SAN Techno Mentors jointly have facilities for conducting hands on practicals including



1. Electrical, Test & Measurement Instruments
2. Electrical Equipments, Motors & Drives, Mechatronics Setup
3. PLC (Allen Bradley, Siemens, GE) & SCADA (GE/Allen Bradley/Siemens)
4. Field Instrumentation (Sensors, Transducers, Meters etc.) & Flow Control Loop
5. Computer Lab with required software support
6. Industry Grade Panels, Electronics Kits for Experiments

Registration Details

Dates of the program: 2-4 July and 27-29 Sept 2018 at Nagpur.

Participation fees: 27000/- Per participant (GST extra@18%, Includes Course material, Tea/snacks/Lunch, Excluding Lodging & Boarding) Nonresidential Training Program.

Payment: ECS/NEFT/DD in favor of "Centre for Industrial Solution and Advanced Training" Payable at Nagpur, Maharashtra, India. Account No: 0509102000003353 Bank: IDBI, Wardha- 442001, MS, India. IFSC Code: IBKL0000509; Swift Code IBKLINBBNGP; MICR Code 442259001.

Venue: *KEC International Training Centre, Butibori, Nagpur, Maharashtra, India*
(20 min from Nagpur Airport towards Wardha or Hyderabad. City busses are available from Nagpur)

For Registration, please contact:

1. Mahendra Dhande: 9168326662;
2. Mr Vikas 7709012815; 8669546332; cisat.nagpur@gmail.com, vikas@cisat.co.in

Contact for any In-house Training at your plant. We do undertake all types of Training activities at all levels

Centre For Industrial Solution and Advanced Training

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"A Complete Training Solution under One roof"

(Technical- Electrical/Mechanical/Automation/Chemical, Behavioral, Soft Skill, Safety, Out Bound training, Business Excellence, Safety Audit, Energy Audit, Automation Solution)