Cette formation est proposée sous la marque **Alliance4Training**

Formation - Electrical Technicians

ELECTEC-EN-P | **Présentiel** | **35 jours**

Improve electrical technicians performance in safety, quality and work efficiency. This course will provide an IFP Training Certificate according to the IFP Training procedures

Certificat IFP Training

Advanced Certificate

Niveau

Perfectionnement

Public

Electrical technicians from refineries and petrochemical plants

Objectifs

Attendees will be able to implement the following skills:

- Apply electrical safety rules
- Identify equipment used for the grid
- Perform checks in workshop and on the plant
- Explain electric motors and generators technology
- Write/validate electrical maintenance procedures

Pédagogie & ressources techniques

- Training split into thematic modules and "On The Job Training" (OJT). To give participants the opportunity to better assimilate the content of the previous course modules, and apply the studied subjects to the facilities
- Workshop practice
- Exercises on site
- Intermediate and final tests to evaluate trainee according to IFP Training certificate procedure

Évaluation des acquis

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prérequis

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Programme

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MODULE 1: ELECTRICITY FUNDAMENTALS, PROCESS & SAFETY — 5 days

Electricity fundamentals. Voltage. Intensity. Power. Ohm law. Main characteristics of cables and wirings.
Process and electrical equipment: process constraints due to electrical power supply; introduction to electrical drawings.
Physics: pressure, force, temperature and electrical units used in Oil & Gas processes. Main physical parameters of high voltage cells.
Safety at work: general hazards and electrical risks in a petrochemical plant; electrical hazardous area; protections layers concept; work permit and prevention. Application on an electrical equipment maintenance.

MODULE 2: INDUSTRIAL ELECTRICITY BASIS - PLANT ELECTRICAL NETWORK & GRID — 5 days

Main parameters of an industrial electrical power supply. Electrical distribution drawings. Existing electric distribution diagram and grid. Wiring and connecting switchgear inside electrical cabinets. Replace/repair an equipment in a cabinet. Checks and inspection.
Practical works in a workshop according to available equipment.
Hazards: electrical shocks, direct and indirect contact, collective and personal protective equipment, hazardous areas.
Mini-study (1 day team work) for an assigned electrical system: detail specific hazards and barriers, critical process variables, critical pieces of equipment and critical operations.

MODULE 3: ELECTRICAL HAZARDS - ATEX - LOCKOUT/TAG-OUT PROCEDURES — 5 days

Electrical protection: electrical hazards for human body and material; equipotential connections, grounding protection. Fuses - Circuit breakers - Selectivity of protections: main techniques. Protection relays. LV & HV earthing system: protections and preventive measures. Reliability and safety.
Different voltage magnitude. Hazardous area and different electrical equipment installed in ATEX zones; maintenance constraints.
Electrical authorizations - Role and commitments related to work permits.
Lock Out & Tag Out rules before and after maintenance works. Case study and practical works on a switchgear.
Mini-study (1 day) for an assigned electrical substation: identify the grounding system & the possible existing defaults.

MODULE 4: ON THE JOB TRAINING 1 (ELECTRICAL NETWORK) — 5 days

OJT:

- Application of the previous module(s) content to the actual plant.
- According to a subject submitted by the lecturer, the trainees will be requested to prepare a written report and 20 minutes presentation about “Electrical Network”: safety (work permit, risk analysis, safeguards...); detailed network and grid; results analysis (accuracy, acceptance criteria...).
- The trainee will present its work to other trainees and lecturer during other modules.

MODULE 5: ELECTRICAL MAINTENANCE — 5 days

Electrical distribution monitoring: main, auxiliary and safety grid; inspection and failure detection systems; LV & HV cells (standards and technology); maintenance procedures.
Transformers: overall technology, troubleshooting, operating and maintenance procedures; winding connections.
Circuit breakers: technology and switchboard; maintenance, replacement and settings.
Practical works: racking-in/out procedures; main parameters of cables, switchboards, relays, diesel generators, batteries, chargers, UPS.
Steam/gas turbines generators: voltage control and excitation systems; impact of the generator coupling on the grid.
Application: electrical parts replacement and malfunction consequences.
Practical works: applications are performed on representative operating technical substation.

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MODULE 6: ELECTRICAL MOTORS (MAINTENANCE & INSPECTION) 5 days

Technology: working principle of an induction and synchronous motors; features (power, current, torque and power factors); protective modes vs. external environment (temperature classes, protection class index, hazardous area motors, main “EEx” protection); electrical and thermal protection.
Variable speed technology: motor power and network capacity, limiting conditions due to the grid; number of starts.
Control and repair techniques: bearings, lubrication control; main mechanical failures.
Coil insulation repairs: technology and quality; electrical tests (electrical resistance, insulation, polarization...).
Practical work: dismantling of a LV motor; inspection, electrical insulation checks; reassembly the motor.
Visit of a motor repair workshop (if possible): identification of main components on existing motor equipment.

MODULE 7: ON THE JOB TRAINING 2 & FINAL TEST (ELECTRICAL MAINTENANCE) 5 days

OJT (3 days)

- Application of the previous module(s) content to the actual plant. The subject is submitted by the lecturer.
- At the end of the OJT period, the trainees will be requested to prepare a written report and 20 minutes presentation about “Electrical Maintenance”: safety (work permit, risk analysis, safeguards...); topics studied during the previous modules; results analysis (accuracy, acceptance criteria...).

Final test (2 days)

- Presentation of OJTs to the classroom.
- Written test about all the training contents according to the IFP Training Certification procedure.

IFP Training est référencé au DataDock. Rapprochez-vous de votre OPCO pour connaître les possibilités de financement de cette formation.
Pour vérifier l'accessibilité de cette formation à une personne en situation de handicap, contactez notre référent à l'adresse suivante : referent.handicap@ifptraining.com

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