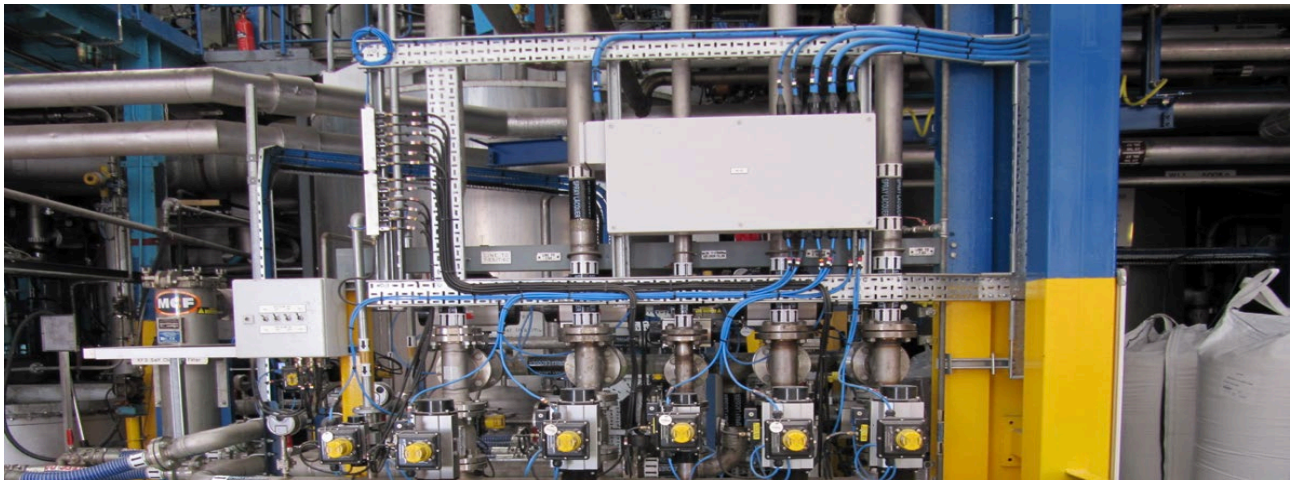
Selection, Installation, Inspection, and Maintenance of Electrical Equipment in Hazardous Areas (IEC & NEC, 4 days course)



Learning objective:

This course aims for giving fundamental knowledge to the users who require the selection and installation of suitable electrical equipment for hazardous classified areas. It also intends for those who operate and maintain the explosion-protected equipment and their installations properly for safety purposes in such an environment. The IEC 60079-14 recommended that the design of the installation, the selection of equipment, and the erection for explosive atmospheres shall be carried out only by persons whose training has included instruction on various types of protection and installation practices, relevant rules and regulations, and on the general principles of area classification, Appropriate continuing education or training shall be undertaken by personnel on a regular basis.
The course is conducted with reference to standards IEC 60079-10/ -14/ -17 and various parts of IEC 60079 standards for specific types of protection, ATEX Directive, IECEx Scheme, and also NFPA 70 (NEC).

Target Audience:

Electrical and instrument tradesmen, technicians, and engineers of all disciplines and similarly qualified personnel who work with electrical equipment for potentially explosive environments or hazardous areas.

Pre-requisite:

A good understanding of electrical installations at the tradesman level is required. Moreover, having some basic knowledge of hazardous areas is supported

Course outline:

Day 1

- Introduction and course objective
- Pre-course exam (30 min)
- Regulation and guidance for working safely in hazardous areas
- Properties of flammable materials
- Basic of Hazardous Areas Classification (HAC) acc. to IEC/EN 60079-10 (for operative)
- Group and temperature classes
- Sources of ignition
- Ex-equipment and Reference standards
- Equipment category & Equipment Protection Level (EPL)
- IP - Ingress Protection
- Overview of ATEX Directive and IECEx Scheme
- Certification process and certificate of equipment
- Equipment marking
- Overview for Ex-equipment for main types (d, e, n, p, i, t) and others

Day 2

- IEC 60079-14: Electrical installations design, selection, and erection
- Scope and general requirement
- Documentation, Initial inspection, Conformity of equipment
- Knowledge, skills, and competencies of personnel as required by IEC/EN 60079-14
- Selection of equipment
- Protection from dangerous sparking
- Electrical protection, Switch-off, Electrical isolation
- Cables and wiring systems
- Cable entry systems and blanking elements
- Additional requirement for protection types d, e, n, p, i
- Cable glanding (videos)

Day 3 (for NEC)

- Hazardous (Classified) Locations acc. to NFPA 70 (NEC): Classes/ Divisions
- Groups and Temperature classes
- Hazardous (Classified) Locations comparison: Class Division v.s. Zone
- NEMA rating
- Protection techniques acc. to NEC
- Electrical installations and wiring in hazardous locations acc. to NEC
- Test and certification authority NRTL: UL, FM, CSA,...
- Equipment label and marking

Day 4

- IEC 60079-17: Electrical installations inspection and maintenance
- Scope and general requirement
- Documentation
- Knowledge, skills, and competencies as required by IEC/EN 60079-17
- Safe work procedure guidance
- Types and Grades of inspections
- Periodic inspection, Continuous supervision by skilled personnel
- Maintenance requirements
- Isolation of equipment
- Inspection schedule
- Repair and overhaul equipment
- Qualifications of personnel
- IECEx CoPC (Certificate of Personnel Competence) under IECEx scheme 05
- Wrap-up & conclusion
- Post-course exam (1.5 hours)

*Remark: A practical exercise for cable Glanding, Installation, or Inspection of equipment installation can be arranged upon prior discussion. The pre-setting equipment shall be needed.

Methodologies:

A classroom presentation, video, discussion, question & answer, and tests (multi-choices and written answers) are applied to ensure the learner's understanding.

Theory session:	75%
Quiz & exercise:	15%
Examination:	10%
Class size:	8 to 12 pax. is recommended for effective participation (max. 20 pax)
Duration:	9:00 - 16:30 hrs., 4 days (daily attendance check)

Lunch/ break:	12:00 - 13:00 hrs., 2- coffee breaks each day
Training language:	Thai or English
Training material:	English (hard copy only)
Certificate:	Certificate of Attendance, by JTEx upon over 85% attendance and final exam

Option: A “Certificate of Attendance” issued by TÜV Rheinland is an option with additional certificate fee.

Instructor/ Trainer:

Mr. Jumpol Thojun has graduated with a Bachelor of Electrical Engineering (EE), a Master of Engineering Management (EM) and a Master of Business Administration (MBA). He holds a professional engineer license from the Council of Engineers - Thailand, and internationally certified personnel competencies for working with Ex-equip. and explosive atmospheres i.e. IECEx CoPC (9 units) from Baseefa-UK, CompEx from JTL-UK. With over 29 years of experience in electrical engineering, Ex-equipment manufacturing, testing, and certification for ATEX-IECEx, QMS audit for ISO 9001, and ISO/IEC 80079-34, he has been authorized by TÜV Rheinland Industrie Service GmbH as an auditor, trainer, examiner, and expert for ATEX-IECEx explosion protection services. Mr. Jumpol is stationed in Bangkok for servicing through Asia Pacific region.

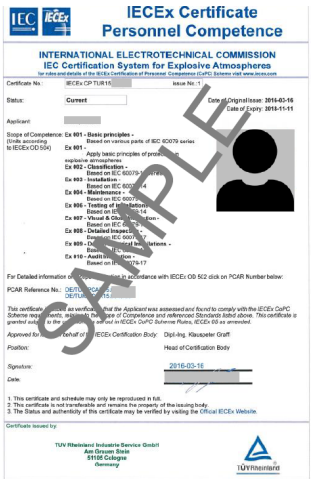
Personnel Competence Certification:

To ensure a suitable knowledge, skills and experience of your people for each duty in hazardous areas, the IECEx Certificate of Personnel Competence (CoPC) provides an internationally recognized scheme of competence for certification of personnel associated with the design, installation, inspection, operation and maintenance services for E&I equipment and system in hazardous areas. The CoPC certificates are available online on the IECEx website (www.iecex-certs.com) for searchable. TÜV Rheinland Industrie Service GmbH is an IECEx Recognized Training Provider (RTP) and an IECEx Certification Body (ExCB) for this scheme. The CoPC examination by TÜV Rheinland is normally arranged in Germany however now this is able to extend the service for applicants in Asia Pacific countries.

Units of personnel competence under IECEx CoPC scheme:

Ex 000 - Basic knowledge and awareness to enter a site that includes a classified hazardous area
Ex 001 - Principles of protection in explosive atmospheres knowledge
Ex 002 - Perform classification of hazardous areas
Ex 003 - Install explosion-protected equipment and wiring systems
Ex 004 - Maintain equipment in explosive atmospheres
Ex 005 - Overhaul and repair explosion-protected equipment
Ex 006 - Test electrical installations in or associated with explosive atmospheres
Ex 007 - Perform visual and close inspection of electrical installations in or associated with explosive atmospheres
Ex 008 - Perform detailed inspection of electrical installations in or associated with explosive atmospheres
Ex 009 - Design electrical installations in or associated with explosive atmospheres
Ex 010 - Perform audit inspection of electrical installations in or associated with explosive atmospheres

For more information: www.iecex.com



CoPC Certificate (Sample)

ID Card (Sample)

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