Cathodic Protection

INSTITUTE OF CORROSION

Meeting standards, exceeding expectations

The Institute of Corrosion Training and Certification Scheme for Cathodic Protection Personnel to BS EN ISO 15257:2017.

Introduction

This scheme has been established to provide training courses, examinations, and assessments for certification in accordance with BS EN ISO 15257, enabling individuals and companies to meet mandated standards throughout the world.

Increasingly, Clients and Employers require personnel to be Certificated to ISO 15257, in the appropriate Sector and to the appropriate Level. In the UK, National Gas and other Gas Transmission and Gas Distribution companies, as well as Highways England, have mandated that certification is a requirement to work on their CP projects. Increasingly, due to requirements in EN ISO standards and DNV, it is required that ISO 15257 certificated Level 4 personnel undertake the corrosion protection / CP designs for offshore wind.

All European and ISO Standards for CP require personnel to demonstrate their experience and expertise at the appropriate level; and the ICorr scheme is the only scheme that does this in all Sectors.

The Training Courses operate independently of the examination and assessment process, ensuring avoidance of conflicts of interest and bias. The courses are administered and delivered by ICorr and all comply with BS EN ISO 15257. This compliance is assessed and verified within ICorr's 9001 certification [annually reviewed by Lloyds Register, accredited by UKAS].

Why Do I Need Certification?

Certification of cathodic protection personnel in accordance with ISO 15257:2017 is increasingly compulsory, making the ICorr Certification Scheme an essential asset for anyone working in cathodic protection. The ICorr courses provide the training that is mandated within ISO 15257 and, subject to their experience, enables a person to sit the exam, and then apply for certification.

The Scheme covers assessment for all levels & training for Data Collectors and Testers (L1), Technicians (L2), and Senior Technicians (L3). Persons who do not directly work in this field [clients, managers, estimators] may find the training courses valuable even if they do not progress to certification. There are no training courses available for Level 4 or Level 5.

Each Application sector is drastically different in terms of practical engineering, requiring specific expertise, but all share a common 'core' of CP knowledge.

The four sectors are:

- On-land metallic structures
- Marine metallic structures
- Reinforced concrete structures
- Inner surfaces of metallic container structures

What Level Should I be Aiming For?

There are five levels of certification, each applicable to particular activities of the cathodic protection personnel, and their training/experience.

Level 1 Tester/Data Collector: This level is intended primarily for either very new entries to the CP industry or for staff, such as pipeline operators, who, on a part time basis, collect CP data as part of a wider job description beyond CP. Training courses for this level are available for the On-land Metallic (Buried) Structures and Reinforced Concrete sectors.

Level 2 Technician: Level 2 is the minimum standard for persons undertaking unsupervised CP work and requires technical knowledge of different types of CP system, anode types, corrosion theory, reference electrodes, corrosion prevention and an understanding of how CP works at a scientific level. Certification requires 1 year's experience, successful examination, course attendance [or equivalent training] and validation by two referees at a higher level. Training courses are available in all sectors except Inner Surfaces of Metallic Container Structures.

Level 3 Senior Technician: This is the minimal level required for supervisory roles, technical inspection & those who assist design engineers. Certification requires 1 - 4 years of experience [dependent on education & existing certification], successful examination, course attendance [or equivalent training] and validation by two referees at a higher level. The application also requires evidence of the applicant's work. Applicants will need to be proficient in various technical tasks such as monitoring, analysis of test data, assisting in simple designs, and directing/supervising L2 Technicians. Training courses are available in all sectors except Inner Surfaces of Metallic Container Structures.

Level 4 Specialist/Engineer: This level of certification is required for engineering professionals who undertake design, design checking, investigation and commissioning activities, or those who are responsible for technical aspects of a project or teams of technical staff. Certification requires 3 to 8 years' experience [dependent on education] if progressing from Level 3, or 5 to 12 years' experience if applying directly. Application will require successful examination, evidence of work [including detailed complex design] and validation by two referees at a higher level. Presently there are no Level 4 training courses for any Sector.

Level 5 Expert: This level of certification can only be achieved if the applicant is already Level 4 certificated in the same sector, and has a broad understanding of the other sectors. In addition, they should have advanced the state of CP by scientific work and peer-reviewed publications, and be able to demonstrate a marked and original contribution to the science or practice of corrosion control by CP. There are no training courses available for Level 5. *All levels of certification require independent assessment by ICorr.*

Institute of Corrosion Cathodic Protection Courses

For more information about CP courses and certifications please visit: www.icorr.org, Training then 'Cathodic Protection, Training, Assessment and Certification Scheme', where you can now book your course directly.

Benefits of Certification to ISO 15257 by ICorr

ISO 15257:2017 is increasingly a requirement for the cathodic protection industry throughout the world and should be recognised and specified by all companies involved in the application of cathodic protection. All BS EN and ISO Standards for cathodic protection require Competence of cathodic protection personnel to the appropriate level for tasks undertaken to be demonstrated by certification in accordance with EN 15257 or by another equivalent prequalification procedure. All CP personnel working in accordance with these Standards should therefore have their competence certificated to the necessary grade for the work being carried out and within the appropriate industry sector.

Benefits of Certification to Companies

Properly trained, competent staff perform their tasks better, more safely and more efficiently.

This advantages Owners, Clients and CP Service Providers. As more Clients demand proof of competence, those service providers offering staff with ISO 15257 competence certification will be advantaged. Owners and Clients should require competence certification; how else do they know they are paying for competent work?

Benefits of Certification to Individuals

Staff with ISO 15257 competence certification better understand the work that they are doing and the limits of their responsibilities. Their value to their Employer or Clients is increased.

On-land Metallic (Buried) Structures Training Courses

This application sector includes:

- Buried onshore pipelines
- Buried tanks
- Sections of onshore pipelines crossing rivers, lakes or short lengths of sea
- Landfalls of offshore pipelines protected by an onshore CP system
- Bottoms (external side) of above-ground tanks
- Complex structures
- Well casings
- Buried plant modules

ISO Level 1 - Tester/Data Collector:

Duration: 2-3 days

Why attend this course?

The course and examinations are suitable for candidates with no previous experience in cathodic protection.

The course is primarily practical to ensure that the Tester can accurately measure and record data. It is a requirement for National Grid and others.

Course content

- Basic corrosion and CP core theory
- General principles of CP & specific applications in soils
- Buried onshore pipelines
- CP criteria
- CP measurement techniques
- Touch potentials
- Basic monitoring

ISO Level 2 - Technician:

Duration: 4-5 days with pre-course study.

Why attend this course?

The course and examination is suitable for candidates with or without experience in cathodic protection, although certification requires a minimum of one year of approved experience.

Course content

- CP general principles and specific applications in soils and inland waters
- Principles of corrosion in soils and waters
- CP system installation and testing
- Protection against corrosion by stray current from direct current systems
- CP measurement techniques
- Interference, AC and DC
- Safety in measurements and touch potentials
- Principles of fluctuating Interference

ISO Level 3 - Senior Technician:

Duration: 4-5 days with pre-course study.

Why attend this course?

The course and examination is suitable for candidates with 6 years' experience [or less if suitably academically qualified] and those who have Level 2 Certification. Please note that applicants for examination must hold either ICorr ISO Level 2 Cathodic Protection Technician certification for this sector, or have at least one year of approved experience and have attended the Level 2 training course to satisfy the educational and experience requirements.

Course content

- CP general principles and specific applications in soils and waters
- Principles of corrosion in soils and waters
- Surveys for CP design
- CP system installation and testing
- CP measurement techniques
- Measurement safety and touch potentials
- Measurement and mitigation of stray current from DC and AC systems
- Measurement and mitigation of fluctuating interference alternating current
- Preparation of risk assessments and method statements for Level 1 and Level 2 Technicians

Reinforced Concrete Structures Training Courses

This application sector includes:

- Atmospherically exposed steel-reinforced concrete structures, such as bridges, walls, piles or buildings
- Suspended concrete decks and multi-storey car parks
- Buried steel-reinforced concrete structures, such as pipelines, tunnels or foundations
- Concrete & masonry encased steel frames (such as those found in early 20th Century Buildings)
- Steel-reinforced concrete structures exposed to or immersed in seawater, such as harbour facilities, piers, jetties or offshore platforms (this application also requires certification in the Marine Metallic Structures sector).

ISO Level 1 - Tester/Data Collector:

Duration: 2-3 days

This course is suitable for candidates without experience in cathodic protection, but candidates are expected to have some site experience in concrete repairs, and they may have been a part of teams installing CP systems in concrete. The courses are also directed to testers or data collectors who collect simple CP performance data.

Course content

- The basics of metals and corrosion
- Basic potential measurement techniques of metals in solution
- Half-cell potential survey techniques for steel in concrete
- Resistivity survey techniques for steel in concrete
- Calibration and checking of NDT equipment
- Galvanic Anodes (Repair Enhancers) for steel in concrete
- Introduction to the concept of CP
- Basic CP system measurements and data recording
- Introduction to electrical safety in CP.

ISO Level 2 - Technician:

Duration: 4-5 days Mon–Fri, or 1 day per week over 5 weeks with pre-course study.

Why attend this course?

The course and examination is suitable for candidates with or without experience in cathodic protection, although full certification to this level requires a minimum duration of one year of approved experience.

Course content

- CP general principles for steel in concrete
- Principles of corrosion in concrete
- Structure survey techniques prior to CP
- CP system installation and testing
- CP measurement techniques
- Specific applications of steel in concrete
- Other electrochemical techniques for corrosion mitigation in concrete: electrochemical re-alkalization and chloride extraction

ISO Level 3 - Senior Technician:

Duration: 4-5 days Mon–Fri, or 1 day per week over 5 weeks with pre-course study.

Why attend this course?

This course is suitable for more experienced candidates who must either hold ICorr ISO Level 2 Cathodic Protection Technician certification for Steel in Concrete CP, or have at least one year of approved experience and have attended a Level 2 training course to satisfy the educational and experience requirements set out in ICorr QPD.

Course content

- CP general principles for steel in concrete
- Principles of corrosion in concrete
- Structure survey techniques prior to CP
- CP system installation and testing
- CP measurement techniques
- Measurement safety
- Specific applications of steel in concrete
- Other electrochemical techniques for corrosion mitigation in concrete that are also aimed at mitigating corrosion of steel embedded in concrete, such as: electrochemical re-alkalization and chloride extraction treatments for:
- Preparation of risk assessments and method statements for Level 2 Technicians

Marine Metallic Structures Training Courses

This application sector includes:

- Ships (external hulls and ballast tanks)
- CP measurement techniques
- Fixed offshore structures, such as platforms, jackets, monopiles or tension leg platforms
- Offshore renewables, windfarms, wave and tidal
- Floating structures, such as buoys, semi-submersible platforms, floating production storage or offloading structures (FPSO)
- Underwater structures (well heads, manifolds, piping)
- Coastal and offshore pipelines, risers
- Harbour facilities, piers, jetties and lock gates
- Landfall of offshore pipelines protected by an offshore CP system

ISO Level 2 - Technician:

Duration: 4 days with pre-course study.

Why attend this course?

This course and examination for Level 2 Technicians is in compliance with BS EN ISO15257 and is suitable for candidates with or without experience in cathodic protection, but please note that full certification to the level requires a minimum duration of approved experience.

Course content

CP general principles

- Principles of corrosion in seawater, estuarine conditions and saline sea/river beds
- Structure and environment survey techniques prior to CP
- CP system installation and testing

CP measurement techniques

- Measurement safety
- Specific applications in seawater and marine sediments
- Ships (external hulls and ballast tanks)
- Fixed offshore structures, such as platforms, jackets, monopiles or tension leg platforms
- Offshore renewables, windfarms, wave and tidal
- Floating structures, such as buoys, semi-submersible platforms, floating production storage or offloading structures (FPSO)
- Underwater structures, such as well heads, manifolds or piping
- Coastal and offshore pipelines or risers
- Harbour facilities including piers, jetties and lock gates
- Landfall of offshore pipelines protected by an offshore CP system

ISO Level 3 - Senior Technician:

Duration: 5 days.

Why attend this course?

This course and examination is in compliance with ISO 15257:2017 and is suitable for candidates with ICorr ISO Level 2 Certification (or EN Level 1). Please note that applicants must either hold ICorr Level 2 Cathodic Protection Technician certificate in Marine Metallic Structures, or have at least one year of approved experience and attended a Level 2 training course to satisfy the educational and experience requirements set out in ICorr QPD.

Course content

CP general principles

- Principles of corrosion in seawater, estuarine conditions and saline sea/river beds
- Structure and environment survey techniques prior to CP
- CP system installation and testing

CP measurement techniques

- Measurement safety
- Preparation of risk assessments and method statements for Level 2 Technicians

We now have two training centres:

The ICorr Training and Examination Centre in Telford

The IMechE Argyll Ruane Engineering Training Centre in Sheffield

INSTITUTE OF CORROSION

Corrosion House
5 St Peters Gardens, Marefair
Northampton, NN1 1SX, United Kingdom

tel: +44 (0) 1604 438222
email: admin@icorr.org

www.icorr.org

www.twitter.com/instofcorrosion

www.linkedin.com/groups/4308333/

www.facebook.com/icorradmin/

www.instagram.com/institute_of_corrosion/

Revised August 2023