רמת מומחיות נדרשת של אנשי הגנה קתודית בהתאם לתקן ISO 15257:2017

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 15257

June 2017

ICS 77.060

Supersedes EN 15257:2006

English Version

Cathodic protection - Competence levels of cathodic protection persons - Basis for certification scheme (ISO 15257:2017)

רמת מומחיות נדרשת של אנשי הגנה קתודית

EUROPEAN CERTIFICATION Cathodic Protection

CEFRACOR CERTIFICATION
Protection cathodique

INSTITUTE OF
CORROSION

CEFRACOR

CERTIFICATION

PROTECTION CATHODIQUE


75
NACE INTERNATIONAL
1943 – 2018


STANDARDS
Australia

4 Cathodic protection persons competence

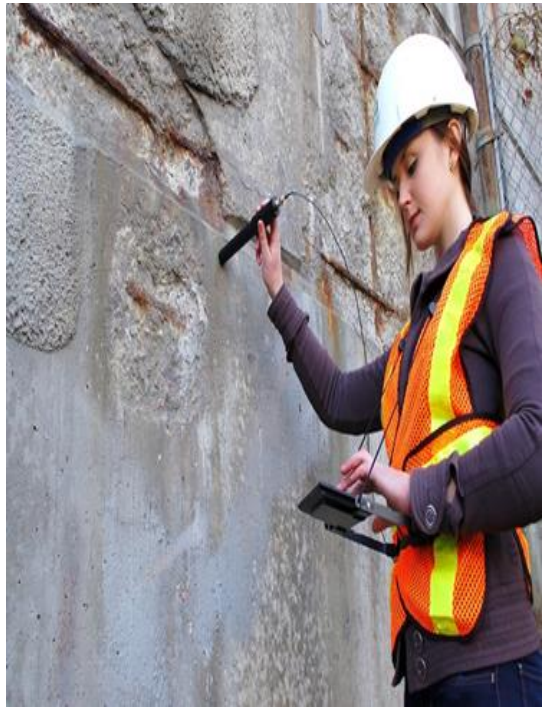
Persons who undertake the design, supervision of installation, commissioning, supervision of operation, measurements, monitoring, and supervision of maintenance of cathodic protection systems shall have the appropriate level of competence for the tasks undertaken.

EN 15257 or NACE Cathodic Protection Training and Certification Programme constitute suitable methods of assessing and certifying competence of cathodic protection personnel.

Competence of cathodic protection persons to the appropriate level for tasks undertaken should be demonstrated by certification in accordance with prequalification procedures such as EN 15257, NACE Cathodic Protection Training and Certification Programme, or any other equivalent scheme.

Competence of personnel

רמת מומחיות נדרשת



Application sector	Level 1 of this document	Level 2 of this document	Level 3 of this document	Level 4 of this document
Buried on-land structures	NACE Level 1 (CP Tester)	NACE Level2 (CP Technician) EN 15257 Level 1	NACE Level3 (CP Technologist) EN 15257 Level 2 AS 2832.1 (Corrosion Technician)	NACE Level4 (CP Specialist) EN 15257 Level 3 AS 2832.1 (Corrosion Technologist)
Marine and immersed structures	Level 1S CEFRACOR Certification/Protection cathodique (France)	NACE Level2 (CP Technician: maritime ships only) EN 15257 Level 1	EN 15257 Level 2	EN 15257 Level 2
Steel-reinforced concrete structures	No present equivalent	EN 15257 Level 1	EN 15257 Level 2	EN 15257 Level 2
Inner surfaces	No present equivalent	EN 15257 Level 1	EN 15257 Level 2	EN 15257 Level 2

SI 18086

March 2018

ICS CODE: 77.060

שיתוך של מתכות ושל סגסוגות – הגדרה של שיתוך זרם חילופים – קריטריונים להגנה

Corrosion of metals and alloys – Determination of AC corrosion – Protection criteria

תקן ישראלי ת"י 18086

ניסן התשע"ח - מרס 2018

INTERNATIONAL STANDARD

ISO 18086

First edition
2015-06-01

Corrosion of metals and alloys — Determination of AC corrosion — Protection criteria

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 16299

April 2013

ICS 77.060

English Version

Cathodic protection of external surfaces of above ground storage tank bases in contact with soil or foundations

5 Competence of personnel

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EN 15257 constitutes a suitable method of assessing and certifying competence of cathodic protection personnel which may be utilised.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 15280

August 2013

ICS 23.040.99; 77.060

Supersedes CEN/TS 15280:2006

English Version

Evaluation of a.c. corrosion likelihood of buried pipelines applicable to cathodically protected pipelines

4 Cathodic protection personnel competence

Personnel who undertake the design, supervision of installation, commissioning, supervision of operation, measurements, monitoring and supervision of maintenance of cathodic protection systems shall have the appropriate level of competence for the tasks undertaken.

EN 15257 constitutes suitable methods of assessing competence of cathodic protection personnel, which may be utilised.

Competence of cathodic protection personnel to the appropriate level for the tasks undertaken should be demonstrated by certification in accordance with qualification procedures such as EN 15257 or any other equivalent scheme.

Table 2 — Tasks to be fulfilled by the various competence levels for all application sectors

Task number	Description of task	Level 1	Level 2	Level 3	Level 4
1	Prepare technical reports	No	No	No	Yes
2	Prepare technical instructions	No	No	Yes	Yes
3	Collect general information for design purposes based on technical instructions for simple CP systems (as defined in 3.10)	No	Yes	Yes	Yes
4	Collect detailed information and data for design purposes	No	No	Yes	Yes
5	Check calibration validity of CP measuring and testing equipment based on documentation	Yes	Yes	Yes	Yes
6	Measure structure to electrolyte potential	Yes	Yes	Yes	Yes
7	Perform verification test of working portable reference electrode against master electrode of the same type based on measurement	Yes	Yes	Yes	Yes
8	Perform verification test of working portable reference electrode against another type of reference electrode	No	Yes	Yes	Yes
9	Perform verification test of stationary reference electrode against a portable reference electrode	No	Yes	Yes	Yes
10	Perform pre-commission testing	No	Yes	Yes	Yes
11	Check whether the positive output of the rectifier is connected to the anode and the negative output is connected to the structure	No	Yes	Yes	Yes
12	Identify a wrong polarity of the CP system by structure to electrolyte potential measurement	Yes	Yes	Yes	Yes
13	Perform start-up and commissioning	No	No	Yes	Yes

16	Define the limitations of application of the testing method according to established procedures	No	No	Yes	Yes
17	Interpret commissioning or performance verification data and prepare commissioning report, performance verification report or system review report for simple CP systems (as defined in 3.10)	No	No	Yes	Yes
18	Interpret commissioning or performance verification data and prepare commissioning report, performance verification report or system review report for non-simple CP systems (simple CP systems are defined in 3.10)	No	No	No	Yes
19	Measure current and voltage in the CP circuit	Yes	Yes	Yes	Yes
20	Carry out basic maintenance work on CP systems	Yes	Yes	Yes	Yes
21	Inspect and measure of DC power supply output current and voltage	Yes	Yes	Yes	Yes
22	Inspect and verify DC power supply overall operations	No	Yes	Yes	Yes

6.4 Specific tasks for on-land metallic structures application sector for Levels 1 to 4

Table 3 details the specific tasks for each competence level from 1 to 4 in the on-land metallic structures application sector.

Table 3 — Specific tasks for on-land metallic structures application sector

Task number	Description of task	Level 1	Level 2	Level 3	Level 4
1	Measure metal to electrolyte natural (free corrosion) potential	Yes	Yes	Yes	Yes
2	Measure resistivity: four-pin Wenner	Yes	Yes	Yes	Yes
3	Measure resistivity: soil box methods	No	Yes	Yes	Yes
4	Measure resistivity: Schlumberger method	No	No	Yes	Yes
5	Calculate vertical resistivity distribution	No	No	Yes	Yes
6	Design simple CP systems. Examples are galvanic anode systems for small tanks in known soil conditions not affected by AC or DC stray current (as defined in 3.10)	No	No	Yes	Yes
7	Design non-simple CP systems (simple CP systems are defined in 3.10)	No	No	No	Yes
8	Supervise the preparation of metallic surface for making cable connections and for repairing coating	No	Yes	Yes	Yes
9	Supervise the installation of cable connections: bolting, compression and conductive adhesive	No	Yes	Yes	Yes
10	Supervise the installation of cable connections: soldered, exothermic welded, pin brazed	No	Yes	Yes	Yes
11	Supervise the installation of galvanic anodes	No	Yes	Yes	Yes
12	Supervise the installation of DC power supply (electrical AC supply excluded)	No	Yes	Yes	Yes
13	Supervise the installation of deep anode impressed current groundbeds	No	Yes	Yes	Yes
14	Supervise the installation of shallow impressed current anode groundbeds	No	Yes	Yes	Yes
15	Supervise the installation of isolation devices	No	Yes	Yes	Yes
16	Supervise the installation of reference electrodes (including calibration) and coupons	No	Yes	Yes	Yes

Table 5 — Specific tasks for reinforced concrete structures application sector

Task number	Description of task	Level 1	Level 2	Level 3	Level 4
1	Test electrical continuity of reinforcement to allow accurate potential measurements	No	Yes	Yes	Yes
2	Measure steel to concrete natural potential in concrete	Yes	Yes	Yes	Yes
3	Measure "Half Cell Potential Survey" (close interval survey natural potential)	Yes	Yes	Yes	Yes
4	Process potential data for mapping	No	No	Yes	Yes
5	Locate reinforcement with cover meter	Yes	Yes	Yes	Yes
6	Measure cover to reinforcement with cover meter	No	Yes	Yes	Yes
7	Supervise or undertake the collection of concrete drilling dust or core samples for chloride testing	No	Yes	Yes	Yes
8	Interpret chloride analysis results	No	No	Yes	Yes
9	Test carbonation to broken or cored concrete	No	Yes	Yes	Yes
10	Measure concrete resistivity (two pin or four pin)	No	No	Yes	Yes
11	Inspect surface of reinforcement when exposed for corrosion or physical damage	No	No	Yes	Yes
12	Measure pit depth with suitable gauge	No	No	Yes	Yes
13	Inspect surface of pre-stressing steel when exposed for corrosion or physical damage	No	No	Yes	Yes
14	Design CP system and other electrochemical treatments	No	No	No	Yes
15	Measure reinforcement electrical continuity (resistance and potential techniques)	No	Yes	Yes	Yes
16	Supervise reinforcement electrical continuity bonding and retest	No	Yes	Yes	Yes
17	Supervise installation of cable connection to reinforcement or embedded/surface mounted metallic items: mechanical	No	Yes	Yes	Yes
18	Supervise installation of cable connection to reinforcement or embedded/surface mounted metallic items: exothermic/welded/pin brazed	No	Yes	Yes	Yes
19	Supervise installation of cable connection to pre-stressing steel	No	No	No	Yes
20	Supervise installation of anode systems: galvanic and impressed current	No	No	Yes	Yes
21	Supervise connections of cables to anodes and (if applicable to anode system) primary anode system installation into secondary anode system	No	Yes	Yes	Yes
22	Supervise installation of reference electrodes, sensors and coupons	No	No	Yes	Yes
23	Supervise installation of DC power supplies and monitoring system (electrical input AC excluded due to regulations/safety)	No	No	Yes	Yes
24	Measure anode to reinforcement isolation (resistance and potential techniques)	No	Yes	Yes	Yes

6.5 Specific tasks for marine metallic structures application sector for Levels 1 to 4

Table 4 details the specific tasks for each competence level from 1 to 5 in the marine metallic structures application sector.

Table 4 — Specific tasks for marine metallic structures application sector

Task number	Description of task	Level 1	Level 2	Level 3	Level 4
1	Design simple CP systems (as defined in 3.10) Examples are systems for buoys, small boats	No	No	Yes	Yes
2	Design non-simple CP systems (simple CP systems are defined in 3.10) Examples are systems for coastal, offshore and submarine facilities, floating production and storage structures, ships	No	No	No	Yes
3	Supervise installation of galvanic or impressed current anodes and monitoring systems	No	Yes	Yes	Yes
4	Supervise installation of DC power sources (AC power supply excluded)	No	Yes	Yes	Yes
5	Supervise installation of isolation devices	No	Yes	Yes	Yes
6	Verify the electrical continuity of all parts of the structure to be protected	No	Yes	Yes	Yes
7	Measure structure to electrolyte potential in seawater from surface with portable reference electrode	Yes	Yes	Yes	Yes

Table 6 details specific tasks for each competence level from 1 to 4 in the inner surfaces of metallic structures application sector.

Table 6 — Specific tasks for inner surfaces of metallic structures application sector

Task number	Description of task	Level 1	Level 2	Level 3	Level 4
1	Measure resistivity of electrolyte: soil box	No	Yes	Yes	Yes
2	Measure resistivity of electrolyte: conductivity meter	Yes	Yes	Yes	Yes
3	Design simple CP system, e.g. a small, plane surface, open tank containing sea water with regular but slow water replenishment (as defined in 3.10)	No	No	Yes	Yes
4	Design a non-simple CP system (simple systems are defined in 3.10)	No	No	No	Yes
5	Design CP taking into account impact on CP performance and safety implications of anodic and cathodic reactions, producing gasses (notably hydrogen and chlorine) and changing pH	No	No	No	Yes
6	Supervise installation of galvanic anodes	No	Yes	Yes	Yes
7	Supervise installation of impressed current anodes and reference electrodes	No	Yes	Yes	Yes
8	Supervise installation of DC power supply (electrical AC supply excluded)	No	Yes	Yes	Yes
9	Supervise installation of isolation devices	No	Yes	Yes	Yes
10	Verify the electrical continuity of all parts of the structure to be protected	No	Yes	Yes	Yes
11	Supervise and verify cable connections	No	Yes	Yes	Yes
12	Inspect and measure isolation devices	No	Yes	Yes	Yes
13	Measure metal to electrolyte natural potential	Yes	Yes	Yes	Yes