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Understanding NACE MR0175 / ISO 15156 Petroleum and Natural Gas Industries – Materials for use in H₂S-containing Environments in Oil and Gas Production

Date: As published on website Venue: As published on website

Course Overview

The 4th edition (November 2020) of BS EN ISO 15156 (also known as ANSI/NACE MR0175) - "Petroleum and natural gas industries—Materials for use in H₂S-containing environments in oil and gas production" is the latest standard that updates the 3rd edition released in 2015. The 2020 edition gives requirements and recommendations for the selection and qualification of cast irons, carbon steels, low-alloy steels, stainless steels, and other corrosion-resistant alloys for service in equipment used in oil and natural gas production and natural gas treatment plants in H₂S-containing environments. The failure of these equipment could pose a potential risk to the health and safety of the public and personnel or to the environment. The selection of crack-resistant materials for use in H₂S-containing environments has had a significant impact on various aspects of the oil and gas industry worldwide.

This 3-day course aims to help participants understand the various requirements and to provide guidance and assistance on how to comply to the BS EN ISO 15156 (ANSI/NACE MR0175) standard. Case studies will be presented for group exercise and discussions.

Who Should Attend

Designers and engineers who are involved in the selection and evaluation of materials for use in H₂S-containing environments in oil and gas production.

Course Outline

- 1 Objective
- 2 Background and Structure of BS EN ISO 15156: 2020
- 3 BS EN ISO 15156 /NACE MR0175 Interpretation and Maintenance
- 4 What's New in the 4th Edition (November 2020) of BS EN ISO 15156 / NACE MR0175
- 5 Understanding BS EN ISO 15156:2020 / NACE MR0175
 - 5.1 ISO 15156-1:2020 Part 1 - General Principles for Selection of Cracking-Resistant Materials



- 5.1.1 Scope
- 5.1.2 Normative references
- 5.1.3 Terms and definitions
- 5.1.4 Abbreviated terms
- 5.1.5 General principles
- 5.1.6 Evaluation and definition of service conditions to enable material selection
- 5.1.7 Selection of materials resistant to SSC/SCC in the presence of sulfides
- 5.1.8 Qualification of materials for H₂S service
 - 5.1.8.1 Material description and documentation
 - 5.1.8.2 Qualification based upon field experience
 - 5.1.8.3 Qualification based upon laboratory testing
 - 5.1.8.3.1 General
 - 5.1.8.3.2 Sampling of materials for laboratory testing
 - 5.1.8.3.3 Selection of laboratory test methods
 - 5.1.8.3.4 Conditions to be applied during testing
 - 5.1.8.3.5 Acceptance criteria
 - 5.1.9 Report of the method of selection or Qualification
- 5.2 ISO 15156-2 Part 2: Cracking-resistant carbon and low alloy steels, and the use of cast irons

Course Outline

- 5.2.1 Scope
- 5.2.2 Normative references
- 5.2.3 Terms and definitions
- 5.2.4 Symbols and abbreviated terms
- 5.2.5 Purchasing information
- 5.2.6 Factors affecting the behaviour of carbon and low alloy steels in H₂S-containing environments
- 5.2.7 Qualification and selection of carbon and low-alloy steels with resistance to SSC, SOHIC and SZC
 - 5.2.7.1 Option 1 — Selection of SSC-resistant steels (and cast irons) using A.2
 - 5.2.7.1.1 For $pH_2S < 0.3$ kPa (0.05 psi)
 - 5.2.7.1.2 For $pH_2S \geq 0.3$ kPa (0.05 psi)
 - 5.2.7.2 Option 2 — Selection of steels for specific sour-service applications or for ranges of sour service
 - 5.2.7.2.1 Sulfide stress-cracking
 - 5.2.7.2.2 SOHIC and SZC
 - 5.2.7.3 Hardness requirements
 - 5.2.7.3.1 General
 - 5.2.7.3.2 Parent metals
 - 5.2.7.3.3 Welds
 - 5.2.7.4 Other fabrication methods
- 5.2.8 Evaluation of carbon and low alloy steels for their resistance to HIC/SWC
- 5.2.9 Marking, labelling, and documentation
 - Annex A (normative) SSC-resistant carbon and low alloy steels (and requirements and recommendations for the use of cast irons)
 - Annex B (normative) Qualification of carbon and low-alloy steels for H₂S service by laboratory testing
 - Annex C (informative) Determination of H₂S partial pressure and use of alternative parameters
 - Annex D (informative) Recommendations for determining pH
 - Annex E (informative) Information that should be supplied for material purchasing
- 5.3 ISO 15156-3:2020 Part 3: Cracking-resistant CRAs (corrosion-resistant alloys) and other alloys
 - 5.3.1 Scope
 - 5.3.2 Normative references
 - 5.3.3 Terms and definitions
 - 5.3.4 Symbols and abbreviated terms
 - 5.3.5 Factors affecting the cracking-resistance of CRAs and other alloys in H₂S-containing environments
 - 5.3.6 Qualification and selection of CRAs and other alloys with respect to SSC, SCC, and GHSC in H₂S-containing environments
 - 5.3.6.1 General
 - 5.3.6.2 Evaluation of materials properties
 - 5.3.6.2.1 Hardness of parent metals
 - 5.3.6.2.2 Cracking-resistance properties of welds
 - 5.3.6.2.3 Cracking-resistance properties associated with other fabrication methods
 - 5.3.6.3 PREN
 - 5.3.7 Purchasing information and marking
 - 5.3.7.1 Information that should be supplied for material purchasing
 - 5.3.7.2 Marking, labelling, and documentation
- Annex A (normative) Environmental cracking-resistant CRAs and other alloys (including Table A.1 — Guidance on the use of the materials selection tables)
- Annex B (normative) Qualification of CRAs for H₂S-service by laboratory testing
- Annex C (informative) Information that should be supplied for material purchasing
- Annex D (informative) Nominated sets of test Conditions
- 6 End User's Application Guideline for MR0175/ISO 15156
- 7 Exercises and Case Studies
- 8 End-of-Course Examination



Course Registration

Please register online at www.corrosionclinic.com
Or use the form below (photocopies of this form may be used for multiple bookings).

Dr/Mr/Ms _____

Organization _____

Contact Person _____

Contact Dept _____

Telephone _____ Fax _____

Email _____

Payment should be made by TT or online banking. Currencies in Australian Dollar, Canadian Dollar, US Dollar, Euro and Sterling Pound can be transferred directly without conversion. Our bank details can be found at the link below:

<https://www.corrosionclinic.com/payment.html>

Course Fee and Discount

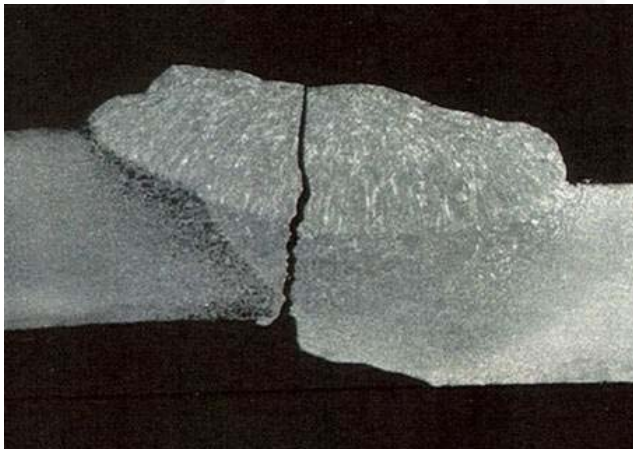
Standard: \$3,500 **Discount:** \$3,150

The fee includes a hardcopy of course note, certificate, light lunch, coffee breaks each day during the course.

Discount applies to a group of 3 or more persons from the same organization registering at the same time, or early-birds making payment at least 8 weeks before the course commencing date.

Cancellation and Refunds

Cancellation or replacement should be conveyed to WebCorr in writing (email or fax). An administration charge of 50% of the course fee will be levied if the cancellation notice is received from 14 to 7 days before the course commencing date. No refund will be made for cancellation notice received 6 days and less. No refunds will be given for no-shows. Should WebCorr find it necessary to cancel a course, paid registrants will receive full refund. Refund of fees is the full extent of WebCorr's liability in these circumstances.



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