



2KG TRAINING

2KG TRAINING

ASME CODE, SECTION IX: Welding and Brazing Qualifications

Presenter: Walt Sperko

ABOUT THE PRESENTER: WALT SPERKO



Walter J. Sperko, P.E. is President of Sperko Engineering Services, Inc, a consulting firm specializing in metal fabrication technology, including material selection, welding, heat treating, inspection, quality assurance and failure analysis. He has particular experience in piping and pressure vessel fabrication, installation, maintenance and repair. Previously, he was Quality Control Manager for RECO North Carolina, and he provided technical support in welding, metallurgy and fabrication for the parent company, Richmond Engineering Company. He was also employed by ITT Grinnell Industrial Piping, Inc. where he was responsible for technical interface between piping system designers and the fabrication shop, including all aspects of welding, fabrication and Code interpretation. He also worked for EBASCO Services, Inc in the Materials Engineering and Quality Compliance Department.

Mr. Sperko is a Chairman of the ASME BPV Committee IX *Welding and Brazing Qualifications* and a member of several of its subgroups. He is a member of ASME BPV Committee III, *Nuclear Components*, Past-chairman of ASME B31.9, *Building Services Piping*, member of B31 Standards Committee, member of AWS Committee D10 on Pipe and Tube, and Chairman of AWS International Standards Activities Committee and US representative to ISO TC 44.

He received his BA and BS in Metallurgical Engineering from the University of Notre Dame. He is a registered Professional Engineer in several states, and he holds five US patents. He is a Fellow of the ASME and a Counselor of the AWS.

Number of days: 4

Cost: \$2950

WHY YOU CANNOT MISS THIS COURSE

This course illuminates the structure of Section IX and illustrates its requirements. Upon completion of the course, participants will be able to:

- Learn how to achieve economical compliance with ASME Section IX requirements
- Gain experience to interpret, understand and comply with ASME Section IX
- Understand welding processes /variables and basic welding metallurgy
- Review the recent changes to Section IX

This is a basic four-day course with workshop which will train the participants to comply with the requirements of ASME Section IX, *Welding and Brazing Qualifications*. Participants will gain a working knowledge of ASME Section IX. A review of the welding processes and variables, and a review of basic welding metallurgy will be conducted in order to provide all participants with sufficient background in welding technology to interpret and understand Section IX. The mechanics of using Section IX and how to address its requirements will be explained in a simple, straightforward manner. Emphasis will be placed on writing welding procedures so that they contribute positively to the manufacturing process and on qualifying procedures in a cost-effective manner. The requirements for welders, brazers and operators will be examined with particular emphasis on minimizing the cost and maximizing the usefulness of qualifications. The fourth day will be a workshop where students will have exercises in reviewing WPSs, writing WPSs and preliminary PQRs for specific applications, reviewing welder qualification records and selection of test coupons suitable for specific jobs. Time will be provided to address individual participant's problems

WHO MUST ATTEND

Welding Engineers, quality assurance personnel, auditors, testing laboratory personnel, maintenance personnel and jurisdictional inspection personnel will find this course interesting, exciting and beneficial.

This course is intended for people involved in qualifying welders, brazers and operators; anyone who is involved in writing and qualifying welding and brazing procedure specifications; those responsible for reviewing supplier procedures, auditing or reviewing in-house procedures and qualifications; those professional who estimate jobs which impose the requirements of Section IX; qualifying welders, brazers and operators.

COURSE OUTLINE

DAY 1

History and Structure

Historical Development of Section IX
Relationship of Section IX to Other Codes
Organization and Structure
Mechanics of Using Section IX - Essential, Nonessential and Supplemental Essential Variables

Review of Welding Processes and Variables

Fuel Gas Welding
Shielded Metal Arc Welding
Gas Tungsten Arc Welding
Gas Metal Arc Welding
Submerged Arc Welding
F-Numbers, A-Numbers, SFA Specifications, non-SFA
Filler Metals

Steel Welding Metallurgy

Effects of Alloying, Transformations, Hardening, Preheating, Postweld Heat treating, Sensitization

DAY 2

Selecting and Preparing the Test Coupon

Obtaining Maximum Cost-effectiveness from Test Coupons
Preparation and Welding of the Test Coupon recording both Necessary and Worthwhile Data
Demonstrating Code Compliance

Writing the Welding Procedure Specification

Meeting Code Requirements
Addressing Customer Requirements
Providing Direction to the Welder
Sources of Information for Preparing Intelligent and Meaningful Welding Procedure Specifications

Practical Session

Writing the Welding Procedure Specification
Use of Section IX Form; Other Formats
Procedure Qualification Record Forms
Revisions to Records and Procedures

DAY 3

Supplemental Variables - Special Considerations for Notch-Toughness

How Welding Influences Toughness
Measuring and Recording Heat Input Data
Translating Heat Input Data into Useful Directions for a Welder
Typical Construction Code Requirements (Section VIII as example)

Welder and Welding Operator Qualifications

Selection of Test Coupons to Minimize Testing Costs and Simplify Record Keeping
Conducting Performance Tests
Organizational Responsibility and Ownership of Test Records
Testing of Coupons and Recording of Test Data
Maintaining Continuity of Qualification

Brazing

Brazing Technology
Comparison of Brazing Rules to Welding Rules
Review of Brazing Variables

DAY 4

Workshop on welding procedures

Review WPSs and PQRs for compliance with Section IX
Review WPSs for suitability to fabricate a vessel
Develop a WPS qualification plan to build a vessel.
Develop preliminary WPSs and PQRs to build that vessel

Workshop on welder and operator qualification

Review various welder and welding operator qualification records for conformance to Section IX.
Select test coupons for various production welds.
Develop welder qualification records for each weld and weld type.

Final Quiz

Review WPSs, PQRs and welder qualification record for code compliance and appropriateness for building a vessel.