ATSM-1290: SHEET METAL D9 1

Cuyahoga Community College

Viewing: ATSM-1290 : Sheet Metal D9 1

Academic Term:
Fall 2020

Subject Code
ATSM - Applied Ind Tech- Sheetmetal

Course Number:
1290

Title:
Sheet Metal D9 1

Catalog Description:
Certification course covering the procedures required by the American Welding Society and in conjunction with testing parameters as prescribed by the Welding Procedures Specifications for completing the sheet metal workers welding test. Course includes a complete review of metal inert gas (MIG) welding and a comprehensive study of the certification process.

Credit Hour(s):
1

Lecture Hour(s):
1

Requisites

Prerequisite and Corequisite
Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

Outcomes

Course Outcome(s):
Discuss the procedure required by the American Welding Society to receive certification for the D. 9.1 welding code for Sheet Metal workers including testing parameter as prescribed by the Welding Procedures Specifications (WPS).

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):
1. List and define the term related to the D.9.1 certification code
2. Review the welding procedures followed for proper welding including distance, angle, speed, and heat in standard welding processes.
3. Identify the hold points as prescribed by the AWS for code certification.
4. Discuss the individual hold points and explain the requirements of each
5. List the special tools and equipment used in certification of the D.9.1 code test and explain the use of each.
6. Demonstrate the ability to pass the D.9.1 AWS code certification test including welding process and written examination.

Methods of Evaluation:
1. Class participation
2. Quizzes
3. Test
4. Projects

Course Content Outline:

1. D.9.1 certification
    a. Terminology
        i. DASH
        ii. Hold points
        iii. WPS
        iv. D.9.1
        v. Certification
        vi. Re-certification
        vii. Overhead position
        viii. Fit-up
        ix. Tack
        x. ER 70 series
        xi. ER 72.5 shielding gas
    b. Procedures
        i. Distance
            1. Contact tip to work
            2. Varies
                a. Stick out
                b. Procedure
        ii. Angle
            1. Lead angle
                a. 5 degrees to f15 degrees
                b. Excess porosity
                c. Too little: excessive reinforcement
            2. Critical
            3. Visual advantage
        iii. Speed
            1. Penetration
            2. Excess: lack of penetration
            3. Too little: too much penetration
            4. Certification
                a. Pass
                b. Fail
        iv. Heat
            1. Proper weld reinforcement
            2. Full penetration
            3. Lack of penetration
            4. Proper amperage
            5. Proper voltage
            6. Wire speed
    c. AWS hold point
        i. Hold point #1
            1. Equipment
            2. Tools
                a. Wire brush
                b. Welpers
                c. Trimmers
            3. Consumable
                a. Wire
                b. Gases
            4. Machine set-up
                a. Voltage
                b. Amperage
                c. Wire speed
            5. Coupon identification
                a. Name
                b. International association number
                c. Welding process

ii. Hold point #2 machine set-up
    1. WPS procedure
        a. Current range
        b. Voltage range
        c. Speed of travel
iii. Hold point #3 fit-up (visual)
    1. Tightly butt joint
    2. Flush ends
    3. Planer surfaces
iv. Hold point #4 tacking
    1. Three tacks
    2. Evenly spaced
    3. Zero root opening
v. Hold point #5 weld pass
    1. Welding operator process
    2. Inspector verification
vi. Hold point #6 final visual
    1. Weld penetration
    2. Reinforcement height
        a. Side 1
        b. Side 2

1. D.9.1 Inspection tools and equipment
    a. Tools
        i. V-WAC gauge
            1. Height of reinforcement
            2. Hand held device
        ii. Six inch pocket rule
    b. Equipment
        i. Gas metal arc welding welder
        ii. Shielding gas cylinders
        iii. Certification process
2. Certification process
    a. Routing sheet
    b. Welding process review
    c. Testing procedure
        i. Hold points
        ii. Visual inspection
        iii. Written test

Resources

International Training Institute. *Welding 1-4* . 2014 edition. International Training Institute;Fairfax, Virginia, 2014.

American welding society education department. *Welding Inspection Technology*. Fifth edition . Miami Florida 33126 American welding society, 2008. 2008.

AWS . *Sheet Metal Welding Code Book* . Doral Florida , 2009. 2009.

Resources Other

Additional Resource

http://www.weldersuniverse.com/welding_symbols.html

ttp://www.metallicfusion.com/symbols_and_definitions.htm

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