COURSE FAB3070: PIPE & TUBULAR WELDING

Level: Advanced

Theme: Fabrication Processes

Prerequisite: FAB3170 Gas Metal Arc Welding 2

Description: Students develop specific skills related to pipe layout, preparation of pipe/tube joints and welding techniques.

Parameters: Access to a welding facility complete with welding equipment and supplies and to instruction from an individual with welding trade qualifications.

Supporting Courses: FAB2040 Thermal Cutting
FAB2060 Arc Welding 2
FAB3050 Arc Welding 3

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify health and safety hazards associated with pipe and enclosed vessel welding, and take preventive measures to avoid accident and personal injury to self and others	• observed performance related to: – appropriate selection and use of personal protective equipment – preparation and selection of equipment and supplies – measures taken to ensure the safety of others	10
• describe the advances made in pipe welding, and identify common types of joints and welding procedures	• identification and description of common pipe joints, welding procedures and advantages of welded joints over other forms of joining pipe together	20
• demonstrate basic pipe/tube preparation and welding competencies	• accurate lay out, preparation and completion of a butt, tee and lateral pipe/tubular weld joint using roll and/or positional welding techniques. *Assessment Tool* *Fabrication Process: Joint Preparation and Welding, FAB3070-1* *Standard* *Performance rating of 3 for each applicable task.*	70

COURSE FAB3070: PIPE & TUBULAR WELDING (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate basic competencies.	*Assessment of student achievement should be based on:* • observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Outcomes	Notes
Orientation • Pipe and Tube Welding	*The student should:* • list the advantages of welding over other forms of joining pipe related to: – strength – required maintenance – flow of liquids and gases – weight of joint • identify the standards of certification required for welding: – low pressure water lines or light structural application – medium pressure residential gas lines – high pressure gas lines, motor cycle and aircraft frames.	
Planning and Management • Health and Safety	• identify the precautions that must be taken prior to cutting or welding pipe or other enclosed vessel – review a safety plan in case of accident	Stress the importance of knowing what a pipe/vessel has been used for prior to welding.

COURSE FAB3070: PIPE & TUBULAR WELDING (continued)

Concept	Specific Outcomes	Notes
• Pipe/Tube Preparation	*The student should:* • calculate the cut angle for a butt joint in relation to the wall thickness and intended application • prepare a template for one or more of the following joints: – 90° two-piece turn – full T-joint – full lateral joint – butt joint.	Explain the need for multiple passes when wall thickness exceeds 5 mm (3/16"). Discuss methods used to fabricate T, K and Y tubular joints.
Implementation • Welding Process	• perform a vee groove weld using roll and position pipe welding techniques • prepare and perform: – full T-joint – full lateral joint tube and pipe weld.	Explain the advantage of roll over positioned welding techniques. Discuss procedures to restart and end a weld.
Assessment • Quality Control • Career Preparation	• apply suitable destructive and non-destructive tests to ensure weld quality • prepare a record of completed activities within a portfolio.	