Welding Metallurgy Course

COURSE OVERVIEW

Welding Metallurgy forms an integral part of any business operating in the fabrication and welding environments which sometimes unfortunately commonly become contentious between contracting parties. The implementation of effective welding inspection as a quality control system, can significantly reduce this impact resulting in substantial savings to companies whilst improving customer relations and reducing the impact on the profitability of any business.

This interactive training program will provide

course members with comprehensive knowledge and skills on the application of quality control and welding inspection involved in the fabrication industry, as well as provide them with the concepts and principals of the welding technology that surrounds welding inspection and quality control.

Upon completion of the training course, attendees will have received a thorough insight into the entire process of welding inspection as a quality control function and how best to manage these processes. They will have gained a good understanding of the interactions between welding inspection, welding technology, quality control and visual inspection of welded joints to be able to bring significant

benefits to the individual and their company alike.

WHO SHOULD ATTEND?

- Welding design engineers
- Welding engineers/ supervisors
- Quality control/ inspection engineers

- Metallurgical / inspection engineers
- Non Destructive engineers/Technician
- Mechanical /Maintenance engineers
- Sales/Purchase engineers who deal with weld and welding

COURSE OUTCOMES

After the course you will be able to:

- Understand the terminology used in welded fabrication.
- Understand the arc welding processes and their applications.
- Understand the selection of consumables for arc welding process
- Understand the structure of a pure metal.
- Understand the objectives of alloy and phase diagrams.
- Understand the properties of a welded joint and common destructive testing.
- Understand the types of corrosion in service..
- Understand the weldability of ferrous and non ferrous materials.
- .Understand the weldability problems when joining dissimilar materials
- Understand the weldability problems when welding clad materials.
- Understand the important of QA/QC in welded fabrications
- Understand the objectives of welding procedure approval
- Understand the .objectives of welder and welding operator approval
- Understand the ITP,weld map and doc pack
- Appreciate the methodology of welding symbols and how to interpret an engineering drawing.
- Understand health and safety requirements related to welding.

Course Outline

- Terms, definitions, abbreviations and acronyms
- Structure of pure metal
- Alloy and phase diagrams.
- Structure of welded joint
- Materials testing
- Heat treatment
- The arc physics and heat flow in welding
- Welding processes and control – fusion and pressure welding
- Welding and joining metallurgy
- Weldability of carbon steel
- Weldability of High Strength Low Alloy steel (HSLA).
- Weldability of Creep resisting steel.
- Weldability of Cryogenic steel
- Weldability of Stainless Steel
- Weldability of Aluminium and its alloy
- Weldability of Titanium and its alloy
- Weldability of Nickel and its alloy
- Weldability of cast iron
- Weldability of copper and its alloy
- Weldability of dissimilar joint
- Weldability of clad materials
- Weld joint design
- Quality assurance and control in welded fabrications
- Residual stresses and distortion
- Welding symbols

- Welding economics
- Welding procedure and welder approval.
- Application of non destructive testing, survey of methods and their applications.

About the Course Instructor

Mohd Faisal Yusof joined TWI in 2001 after spending 17 years in the welding and gas industry and 2 years in teaching in technical subject in University of Kuala Lumpur. Originally trained as a welding instructor and lecturer, Faisal gained training in European Welding Engineer, technologist and specialist at TWI UK .His early experience was spent on the development and maintaining quality of welding machines and gases in Oil and Gas industries and development of welding procedure and customer services.

He is a Fellow member of Welding Institute of Malaysia and Welding Joining Society (WJS TWI UK). He has gained the qualification of European Welding Specialist and Technologist (TWI U.K) and Engineer from The Welding Institute, European Welding Federation and International Institute of Welding. He also very familiar with BS, ASME, AWS, API 510,570, DNV, NACE, PTS ISO 9000 and ABS procedures, codes & standards.

Educational and Professional Qualifications:

- Diploma in Welding Engineer (TWI/IIW U.K)
- Diploma in welding Technology (TWI/IIW U.K)
- Diploma in Welding Specialist (European Welding Federation)
- Diploma in International Welding Specialist (International Institute of Welding)
- Diploma in Welding (TWI U.K.)
- Diploma in European Inspection Specialist (European Welding Federation)
- Diploma in European Inspection practitioner (European Welding Federation)
- Registered Senior Welding Inspector.
- CSWIP Senior Welding Inspector 3.2
- Registered Welding Inspector.
- CSWIP Welding Inspector 3.1.

- CSWIP Welding Inspector 3.0
- CSWIP Radiographic Interpreter 3.4 (A and B group)
- Certificate in Electrical Engineering (Industrial Training Institute)

Special Skills and Knowledge:- Welding Processes, Material and Behaviour, Design and Construction, Welding Inspection, Welding Technology, Fabrication and Application, Electrical Engineering, and Non Destructive Testing.