BASIC METALLURGY FOR NON-METALLURGISTS

COURSE OUTLINE

Metals continue to dominate the material world, even though, a number of newer non-metals are being used for many applications in industries. The usage of metals and alloys covers many industries and applications and many have been developed specifically to suit certain service requirements. A separate branch of engineering called Metallurgy exists which deals with this subject. However the selection, usage of metals and alloys is not left to Metallurgists alone and in many instances personnel related other fields may have to perform these functions. It is in this context this program assumes industrial importance. While a metallurgist's knowledge may still be required for special and specific applications, for all other routine requirements, the other plant personnel should have working knowledge of relevant metallurgical aspects.

This program is designed to give a basic knowledge in many metallurgical aspects, with particular reference to steels, relevant to day-to-day working of plant personnel. The one day program will touch up on metals, alloys, the metallurgy of carbon and alloy steels, iron-carbon diagram, TTT, CCT diagrams, metallurgical phases, heat treatment, mechanical properties, properties and usage of common steels, alloy steels, stainless steels, duplex stainless steels etc. As it can be observed the program deals only with steels which is the most is the most popular material used in the industry.

WHO SHOULD ATTEND

All plant personnel connected with materials in some way or other like purchase, stores, QA, QC, Design, Planning, and Maintenance etc. Desired qualification will be graduate, diploma and degree holders in any branch of engineering.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.

REPAIR AND MAINTENANCE WELDING

COURSE OUTLINE

Welding is being used extensively not only for fabrication of new components but also for repair and reclamation of old components to enhance their life. This field of activity popularly known as Maintenance welding, requires special considerations in selection of consumables, process and procedures which are quite different from the original manufacturing.

This one day program has been designed to make the participant aware of the considerations involved in selecting the process, consumables, procedures, heat treatments etc. and also concepts like dilution, buffer layers etc. The program mainly concentrates on the commonly used industrial materials like carbon, alloy steels, stainless steels, cast irons, dissimilar metals and applications like hardfacing, joining, overlaying, surfacing etc. and covers applications in many industries

WHO SHOULD ATTEND

Primarily meant for those involved in repair and maintenance welding but can also be useful for plant engineers.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.

Selection of welding consumables for C-Mn steels

COURSE OUTLINE

A large percentage of welding is done using welding consumables. Welding electrodes, wires, fluxes, gases etc. are often used to achieve the desired weld. Many of the consumables become the weld metal and are exposed to service. So the performance of the weld depends not only on the correct selection of welding consumable but also on the correct handling, usage etc. A wide range of welding consumables are available today to suit the material, process and other requirements. A good understanding of the consumables is necessary for its proper selection and usage.

This one day program aims at educating the participants on range of welding consumables, particularly for C-Mn steels, their characteristics, identification, storage, handling, productive use etc. so that efficient use of consumables can be made on the shop floor.

WHO SHOULD ATTEND

Ideal for all engineers who are managing the welding operations, inspection and quality control.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.

TWI (India) Private Limited, Old No.85, New No.60, Ellaiamman Colony, Vellala Teynampet, Chennai-600086, India
www.twitraining.com Tel: +91 44-43189691 E-mail: enquiries@twiindia.com

WELDING COSTS AND ECONOMICS

COURSE OUTLINE

Welding is an important step in any fabrication and it involves cost and time. Wrong practices can escalate the cost and time. Therefore to control the costs within the estimates, a good understanding of the various factors that contribute to the welding costs is required and how the welding costs can be calculated and controlled.

This one day program aims at educating the participants on cost calculations involved in welding and the various factors influencing them like deposition efficiency, deposition rate, operating ratio, joint design etc.

WHO SHOULD ATTEND

Ideal for all engineers who are managing the costs, who are controlling the costs, who are monitoring the costs, who are preparing the estimates for quotations etc.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.

Welding Defects and Remedies

COURSE OUTLINE

Achieving defect free weld is the ultimate aim of all welding personnel. During welding a number of defects are produced depending on many factors like wrong practices, consumables, techniques etc. to name a few. In order to produce a defect free weld, a good knowledge of the reasons for their occurrence is very important and by knowing them one can adopt good welding practices to avoid defects. Apart from the knowledge of the reasons for the defects, it is also necessary to know as to how a defect can be rectified.

This one day program aims at educating the participants on various welding defects, their appearance, identification, reasons for their occurrence and the probable methods, practices to avoid them.

WHO SHOULD ATTEND

Ideal for all engineers who are managing the welding activities, inspection, quality functions in fabrication, maintenance shops.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.

WELDING FOR NON-WELDING PERSONNEL

COURSE OUTLINE

Welding is used today in most of the industries for fabrication, repair and maintenance applications. There is hardly any industry in which welding is not used. The service performance of the component after welding depends on the quality of welds to a large extent. To achieve the desired quality, a number of aspects, parameters require monitoring and control before, during and after welding. This requires the involvement of not only welding personnel but also personnel from other related functions. A working of knowledge of this field therefore becomes important for all personnel in the shop floor so that many aspects related to weld quality, cost, economics and safety can be controlled to achieve the optimum results.

This one day course has been designed to give an insight in to the various important aspects of welding technology which should be understood by everyone and it outlines these aspects in a very simple manner for their day-to-day usage. This will help them to apply the technology in the correct manner which should help in achieving the above objectives. The entire course designed in easily understandable PowerPoint slides and consists of short lectures covering common welding processes, consumables, materials, procedural techniques, defects and various testing methods.

WHO SHOULD ATTEND

All plant personnel connected with welding in some way or other like purchase, stores, QA, QC, HR, Design, Planning, and Maintenance etc. Desired qualification will be graduate, diploma and degree holders in any branch of engineering.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.

Welding of C-Mn steels

COURSE OUTLINE

C-Mn steels are probably the most used material in the fabrication industry to make a number of fabricated components and equipment. Though a simple material and has a good weldability, this material still requires careful attention to many aspects during welding in order to achieve a defect free weld which will perform well in service.

This one day program aims at educating the participants on the C-Mn steels, their composition, properties, weldability, welding parameters, techniques, procedures etc. and a knowledge of these aspects will help the welding personnel to adopt correct practices, thus avoiding repairs.

WHO SHOULD ATTEND

Ideal for all engineers who are managing the welding activities, inspection, quality functions in fabrication, maintenance shops.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.

WELDING OF STEEL CASTINGS

COURSE OUTLINE

Castings are used widely in industries in many equipment and components. Most of the castings show some defects which require rectification by welding before they can be put to use. Welding of these castings require special attention particularly with respect to selection of process, consumable, welding procedure including preheat and post weld heat treatment. All these factors if selected wrongly can produce unsatisfactory results.

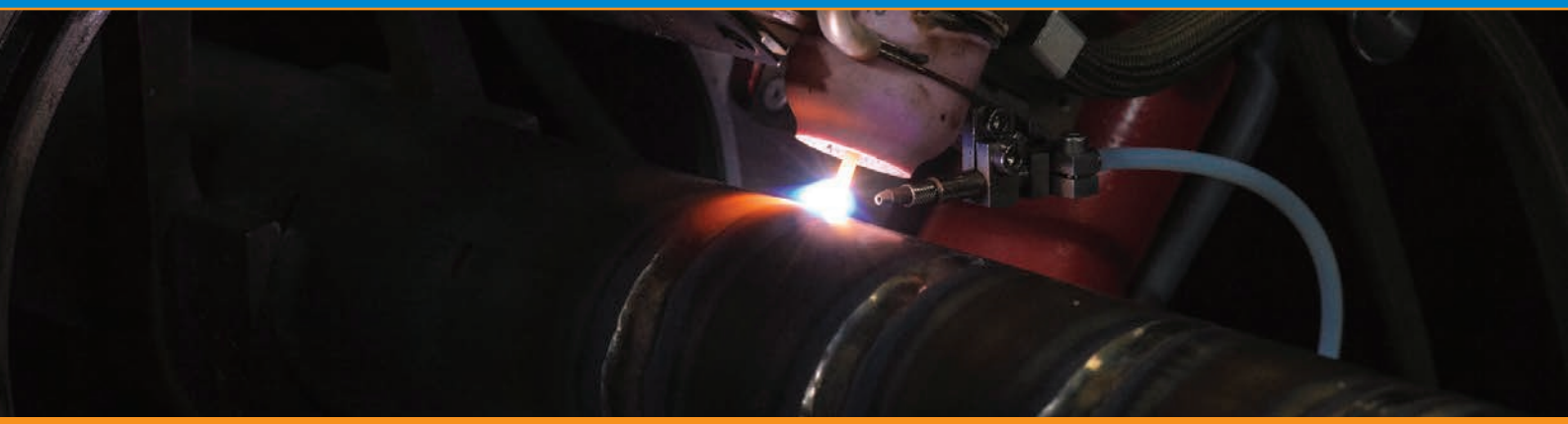
This one day program aims at educating the participants on the range of castings normally used, their properties, and welding considerations for them, code requirements etc. so that a clear understanding of this subject can be obtained and the knowledge gained will be useful for shop floor applications.

WHO SHOULD ATTEND

Ideal for all engineers who are involved welding in casting industries, fabrication industries, inspection personnel, quality personnel.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.



Welding of Stainless steels

COURSE OUTLINE

Stainless steels are popular materials in the industry to resist various corrosive media. Depending on the media and the type of corrosion, different stainless steels are employed in the industries. In welding stainless steels one of the most important requirement is that there should not be any deterioration in the corrosion resistance of the material. So a careful welding practice is required to achieve this.

This one day program aims at educating the participants on various types of stainless steels, their properties, weldability, consumables, best practices for welding etc. which should give a good shop floor guidance for the practicing engineers to achieve defect free welds.

WHO SHOULD ATTEND

Ideal for all engineers who are managing the welding activities, inspection, quality functions in fabrication, maintenance shops.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.

TWI (India) Private Limited, Old No.85, New No.60, Ellaiamman Colony, Vellala Teynampet, Chennai-600086, India
www.twitraining.com Tel: +91 44-43189691 E-mail: enquiries@twiindia.com

WELDING TECHNOLOGY FOR CODED FABRICATIONS

COURSE OUTLINE

Welding is a critical activity and the weld quality determines the economical, satisfactory and safe operation of the equipment. Therefore to achieve this purpose several codes and standards have been established and today many fabrications are done following them. Though these codes differ in many ways, the underlying principle remains the same and adopting them is mandatory in many fabrications for achieving the desired quality consistently. Code conformance requires a good understanding of the code requirements and ensuring that they are met at each and every step of fabrication activity.

This one day program has been designed to give a good knowledge on the code requirements related to welding with particular reference to ASME B & PV code. The program will highlight important aspects like WPS-PQR-WQ, testing, variables etc. to ensure the participants gain a working knowledge in these areas which should help them handle coded jobs with reasonable ease.

Candidates will have to bring their own copy of ASME Sec IX for reference and use in the class.

WHO SHOULD ATTEND

Graduate and Diploma engineers working in the fabrication shops undertaking or going to undertake coded jobs.

COURSE TIMINGS

From 0900 -1630 hours with suitable tea and lunch breaks.

TWI (India) Private Limited, Old No.85, New No.60, Ellaiamman Colony, Vellala Teynampet, Chennai-600086, India
www.twitraining.com Tel: +91 44-43189691 E-mail: enquiries@twiindia.com