

Carbon & Alloy Steel Metallurgy



A one day technical course on fundamental principles and modern practices in Carbon & Alloy Steel Metallurgy & Processing.

Course aims

This one day course has been developed for people with technical and engineering backgrounds working in or with the steel industry to help them gain an understanding of the metallurgy & processing of Carbon & Alloy Steels. The course focuses on basic metallurgical principles, primary & secondary steel making processes, how steels are specified & evaluated and matching grades to applications.

Who should attend

New or experienced personnel in technical and engineering occupations, who would benefit from an understanding of steel processing, products & properties. Attendees could be production or process engineers, quality and inspection personnel and could be at supervisory, managerial or professional engineering level.

“Exactly what I required. Everything was explained very well and my questions were answered fully. The course fully met my expectations - please send me the next course date!”

Ian Haggan, Tecvac Ltd

“The presenter was very knowledgeable and showed they had a wealth of practical experience in the area they were teaching.”

Anna Watson, Perkins CAT

Find out more: For further information please contact

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Introduction to Ferrous Metallurgy

- The periodic table of elements
- Atomic structures
- Interstitial and substitutional elements
- Equilibrium phase diagrams
- How materials deform

Primary and secondary Steel making

- Blast furnace
- BOS steel making
- Electric arc furnaces
- Secondary refining processes
- Continuous casting
- Ingot casting

Alloying elements and what they do

- Carbon
- Manganese
- Silicon
- Aluminium
- Titanium, Vanadium and Niobium
- Boron
- Nitrogen
- Sulphur and phosphorous

Steel processes

- Strip manufacturing
- Plate manufacturing
- Sections
- Rod and wire
- Tube – seamless and welded
- Welding

Material testing and chemical analysis

- Chemical analysis – cast / heat and product analysis
- Tensile testing
- Impact testing
- Creep testing
- Fatigue
- Brittle and plastic failure
- Introduction to corrosion

Steel Grades & Applications

- Grades, specifications & mill certificates
- Oil & gas applications
- Automotive applications
- Structural applications
- Aerospace applications

LEARNING OUTCOMES

- Appreciate the fundamental principles of steel metallurgy
- Understand how steel is made and processed
- How steel grades are specified and matched with a range of applications