

Duration: 3 Days

Fees: 26,000 Baht/ Person*

Training Sessions: 21 – 23 March 2018 (Bangkok)
24 – 26 October 2018 (Bangkok)

Suitable for:

Engineers, Technicians and Welding Inspectors.

Objectives:

At the end of the training course, you will be able:

- To interpret a material certification sheet
- To understand the implications and conditions of performance of the main mechanical tests
- To evaluate the effects of cold and hot forming processes
- To define the extent of the different heat treatments and evaluate their implications of their in-service applications
- To establish a dialogue with a metallurgist to optimize the manufacturing process or verify the in-service properties
- To access a specialized training in metallurgy

Content:**STRUCTURE OF METAL**

- Atomic bonding
- Crystal structures
- Crystal imperfection
- Thermal vibration – propagation
- Solid solutions - define compounds

IRON-CARBON PHASE DIAGRAMS

- Single solid solution
- Reaction in diagrams
- Lever arm rules
- Phase transformation
- Influence of the composition on the phase transformation

MACRO AND MICROGRAPHIC STRUCTURES

- Structure of solidification
- Hot working and cold working
- Grain structure
- Influence of the shape and size of the grains
- Study of the micrographic structure in relation with the equilibrium diagrams

INTRODUCTION TO HEAT TREATMENT

- Annealing and hot working
- Normalizing
- Quenching & Tempering
- Surface Hardening

CONSEQUENCES OF STRAIN

- Hardening, Recovery, Re-crystallization, and Grain growth

MECHANICAL PROPERTIES

- Ductility – Brittleness
- Tensile test
- Impact test
- Bending test
- Hardness test
- Rupture

METAL WEAR AND CORROSION

- Types of wear and mechanism
- Protection against wear
- Corrosion phenomena
- Control and protection against corrosion
- Stress corrosion cracking
- Hydrogen damage embrittlement

STUDY OF IRON-CARBON ALLOYS

- Chemical composition of carbon steel and low alloy steel
- Influence of chemical elements
- Effects of alloying elements in tempering and heat treatment process
- Presentation of the main steel grades

STUDY OF HIGH ALLOY STAINLESS STEEL (OPTION 1)

- Composition of stainless steels
- Effect of alloying elements
- Martensitic stainless steels
- Ferritic stainless steels
- Austenitic stainless steels

STUDY OF CAST IRON (OPTION 2)

- Grey cast iron
- White cast iron
- Malleable cast iron
- Nodular cast iron
- Special cast iron

* Excluding VAT - Published prices and schedules are subject to change without advance notification

* Registration fees are inclusive of lunch and coffee breaks