

Product Code: **ME01**

Manufacturing
Improvement
Training Program

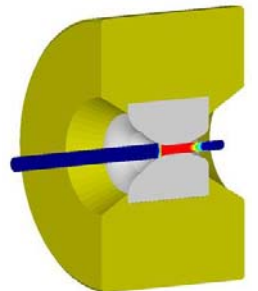
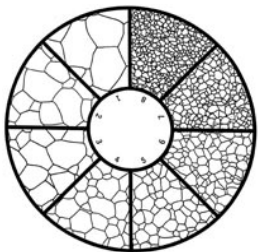
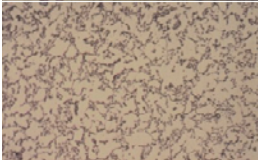
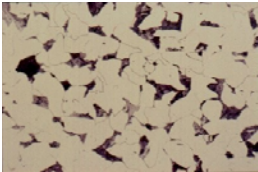
2-day Technical Training Course

Program: MANUFACTURING INSIGHTS SKILLS (MIS)

Session Topic: Metallurgy of Iron & Steel

By: William Lee

SBL TRAINING PROGRAM



Course Objective

The objective of this patented MIS program is to raise technical competency of technical employees from local manufacturing industry for product quality & productivity improvement through understanding of vital manufacturing variables. At the end of the MIS training, participants will realize the importance of technical details study & the introduction of science & engineering procedures to their existing practices for a profitable manufacturing operation.

Session Overview

This is a fundamental metallurgy course especially for non-metallurgist. The 2 days program supplies an introduction to the metallurgical aspects of ferrous materials. It covers information on the building & refining of iron and steel products, its strengthening mechanisms, effects of cooling speed, roles of alloying elements for heat treating & properties enhancement, various thermal & mechanical processing applied on iron & steel, microstructure analysis, grain size effects and microscopic specimen preparation. Participants will gain a greater level of confidence by understanding the metallurgy of materials as they make recommendations and decisions with customers or suppliers, and evaluate material problems related to metallurgical quality.

Benefits

1. Review the effect of metallurgy on ferrous metals.
2. Examine the microstructure and metallurgical properties of iron & steel
3. Learn different strengthening methods for iron & steel
4. Explore the various industrial heat treating processes on ferrous metals

Course Content

1. Fundamental Concepts – *The Building Blocks for Iron & Steel*

Atom, Space Lattice, Grain Boundary, Crystal Defects.

2. Microstructure of Iron & Steel – *The Insight View of Iron & Steel*

Allotropy of Iron & Steel, Ferrite, Pearlite, Cementite, Austenite, Bainite, Martensite, Microcracks, Grain Pattern, Porosity, Nonmetallic Inclusions, Heat Treated Structures, Microscopic Test & Procedures.

3. Refining of Ferrous Materials – *From Iron Ore to Useful Articles*

Iron & Steel making, Chemistry Refining, Ingot Defects, Alloying.

4. Thermal Mechanical Processing of Steel – *Tailoring The Properties*

Solution Hardening, Work Hardening, Precipitation Hardening, Recrystallization, Stress Relief, Spheroidizing, Full Annealing, Isothermal Annealing, Normalizing, Stress Tempering.

Course Instructor



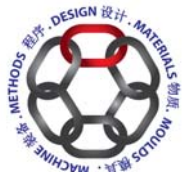
William Lee - Malaysian, Materials Engineer with an honorable Bachelor Degree awarded by The Engineering Council of London (EC, UK). He has over 25 years working & teaching experience in manufacturing industry. William possesses strong fundamentals knowledge in technical science & has special talent to communicate and explain to others the principles involved in various engineering fields. His ability to present and link the various engineering disciplines with real industrial use has made many of his course participants to appreciate the significant of technical details study for manufacturing improvement. Over the years, he has developed a series of patented Manufacturing Insights Skills (MIS) Training programs for various manufacturing industries. He is now a full time contract speaker for a few training organizers as well as professional associations in ASEAN & Australia. William will bring a wealth of teaching experience to this program along with his strong industrial background as a former engineering practitioner in tooling, materials, heat treatment, moulding & metal forming divisions. In addition, William is a versatile trilingual instructor who can instruct technical courses in English, Bahasa Malaysia or Mandarin (or a combination of the languages) to ensure full understanding of his presentation by his trainees from all levels.

Target Participants

Participating companies are from steel manufacturing & fabricating industries. Target audience can be those involved in activities related to steel parts, products or tooling maintenance, usage and production such as technical group personnel, production & maintenance staff, managers, supervisors, engineers, engineering specialists, quality controllers and R&D researchers, designers, machinists, technicians and heat treaters.

Administrative Details

1. Should public training not be scheduled for this program we will consider opening an ad hoc public training class if you've minimum guaranteed participants to attend this program.
2. We can bring this program to your premises as in-house training event for your in-house employees only. Interested participating company may contact us for an in-house training proposal.
3. In-house training can be conducted on weekdays or weekends (including public holidays) to meet the scheduling needs of your targeted staff.
4. For in-house training, a list of participants complete with their full name & designation must be presented to training provider one week prior commencement of each program. The total no. of training manual is supplied to the actual no. of turned out attendees only.
5. Substitute is allowed to replace the earlier registered person if he / she is unable to attend the training program (both public and in-house training). Participating company must inform us the details of replacement person.
6. All programs are of SBL (Skim Bantuan Latihan) type. Eligible company (Human Resources Development Fund contributor) must apply through themselves for the rebate of any eligible expenses (including training fees) from Human Resources Development Council. Training provider bears no responsibility for the approval of training grants or any form of rebates between participating company and HRDC.



Organized by:

METALLOY CONSULTANT SERVICES PLT

(Registered Training Provider under Ministry of Finance: 357-02128315)

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◆ **Developing K-Workers; Promoting Scientific Manufacturing** ◆