

Session Code:
IJM02
Manufacturing
Improvement
Training Program

2-day Technical Training Course

Program: MANUFACTURING INSIGHTS SKILLS (MIS)

Session Topic: Injection Moulding Defects, Causes & Solutions

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 course provides a detailed discussion of the injection moulding defects and troubleshooting methods used to achieve the ultimate goal – a perfect molded part at a reasonable cost.

Producing a good injection molded part requires consideration of many parameters: part design, mold design, material consideration, field condition, manufacturing operations, machine setup, and ambient conditions (temperature, humidity and airborne particles). Participants will learn a lot of this useful technical information and practical knowledge by attending this program. There will be classroom problems and exercises to maximize the learning process. Plan to participate if you are involved in process improvement, reject reduction and increase productivity or solving of process variation problems.



Benefits

1. Understand the influencing factors for good moulding practices.
2. Learn a systematic, practical approach to troubleshooting.
3. Study how to identify & solve a moulding defect.
4. Reduce rejects in your operation.



Course Contents

1. **SHRINKAGE:** Why plastic shrink? The impact of shrinkage; Shrinkage factor; Linear shrinkage; Area shrinkage; Volume shrinkage; Shrinkage measuring; Mould size & shrinkage; Mould performance & shrinkage; Process cycle & shrinkage; Temperature & shrinkage; Pressure & shrinkage; Size & shrinkage; Cooling rate & shrinkage; Crystallinity & shrinkage; Glass reinforcement & shrinkage; Orientation & shrinkage; Directional shrinkage; Isotropic shrinkage & Anisotropic shrinkage; Materials viscosity & shrinkage; Shrinkage compensation.
2. **SINK MARKS:** Surface contraction; Internal contraction; Design & warpage; The benefit of excessive shrinkage; Sink marks at thick spots; Sink marks at end of flow; Sink marks near gate.
3. **WARPAGE:** Influencing factors; Cavity pressure & warpage; Product design & warpage; Gate location & warpage; Orientation & warpage; Packing factor & warpage; Twist or Dome warpage; Corner warpage.
4. **WELD LINES:** Forming of weld lines; Weld line improvement; Mould design & weld line; Gate location & weld line; Product design & weld line.
5. **VISUAL DEFECTS:** Flash, Flow Lines, Gross Differences, Dull Finish, Ejector Marks, Jetting, Short Fill, Moisture Streaks, Heat Streaks, Colored Streaks, Glass Fiber Streaks, Black Specks, Blister, Burn Marks, Cold Slug.



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

This course is recommended for those who want to improve their problem solving skills. Molder who want to learn new troubleshooting techniques, improve their troubleshooting approach, learn long term methods for reducing rejects will also benefit from this course. Job titles may include molding engineers, product designers, mold designers, process engineers, project engineers, manufacturing engineers, mold makers and production engineers or anyone involved with plastic injection parts should gain a lot from this 2-day industry skills learning short course.

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)

(Registered Training Provider under PSMB: LLP0003449-LGN)

Tel: 03-80751529 Fax: Go Green; Avoid Fax

Email: training@metalloy.com.my Website: www.metalloy.com.my

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