

Session Code: **DC03**

**Manufacturing  
Improvement  
Training Program**

2-day Technical Training Course

**Program: MANUFACTURING INSIGHTS SKILLS (MIS)**

**Session Topic: Metal Flow Control for Quality Die Casting**

**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**

Control of the metal flow in the die cavity is a key factor in producing sound die castings. A proper feed system design must allow metal flow rapidly and uniformly into the die with minimum heat & pressure loss and at the same time avoiding sharp direction changes, turbulence, and entrapped air. Die casters, buyers and die makers must pay adequate attention during the initial phase of die design or and must provide a check on the feed system design to ensure consistency in the casting quality.

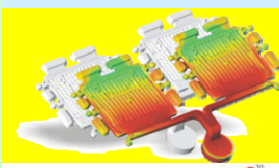


This 2-day intensive technical learning course is designed to be interactive and emphasizes a systematic, practical & hands on approach to die casting feed system design. Participants will learn how to develop & specify all the critical dimensions of the metal feed system to enable casting to be made with the desired characteristics.



**Benefits**

1. Relate how improper feed system and overflow & venting design could affect some of the common die casting defects.
2. Learn proper guidelines to construct & inspect the details of feed system design including gates, runners, vents & overflow.
3. Raise your die casting quality level by exposing to proper engineering concept of metal flow control in die casting process.



**Course Content**

**1. Die Casting Feed System & Casting Defects**

Reviewing casting defects; building blocks for feed system design; plunger speed; gate speed; Bernoulli's law; flow pattern; cavity type; runner geometry; runner efficiency; gate type; 3-plate die; nozzle details; sprue-less hot chamber casting.

**2. Gate & Runner Construction**

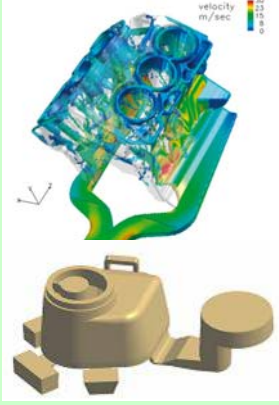
Designing procedures; gate location; tapered runner construction; shock absorber dimensioning; details of fan gate with linear width and linear depth; chisel gate design; flow angle; injection force; clamping force & machine size calculation, plunger size & speed selection; gate speed & area selection; volume flow rate; cavity fill time; shot fill ratio; shot sleeve & runner link.

**3. Overflow & Venting Design**

Basics of air vents, vents details & limitation. The role of overflows & its design.

**4. Case Studies & Designing Issues**

Multi-runner design; Designing for balance fill; Designing large casting in small machine.



## 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 will be of interest to practicing die casting staff, to designers, quality managers, controllers and production engineers & supervisors. Buyers and users of castings and industry executives would also gain a better understanding of the benefits and issues involved when designing die casting die to achieve quality die casting parts.

## 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:

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