Session Code: **DC02**

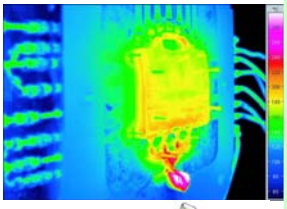
Manufacturing Improvement Training Program

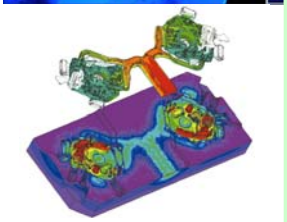
2-day Technical Training Course

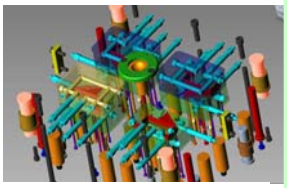
Program: MANUFACTURING INSIGHTS SKILLS (MIS)

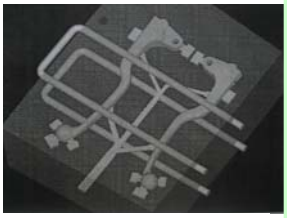
Session Topic: Thermal Control for Quality Die Casting

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

Waterlines cooling & die spray are two important thermal management activities used to remove heat from the die and maintain the earlier pre-set die temperature for achieving consistent casting quality & ensuring a reasonable die life performance. A too low die temperature cools the metal flow and increases the percent of solidified metal in the melt stream which can easily cause surface defect problems while too hot a die will subject the expensive tooling to thermal damages such as heat checking, soldering & erosion or hot wear attack.

The training will highlight the importance of doing thermal analysis in the thermal design phase, and engineer the cooling so as to obtain consistent die operating temperatures. The major die temperature controlling factors such as melt temperature, die preheating, water cooling, die spray & cycle time will be reviewed in this 2-day technical program. Course participants will learn & appreciate this up-front engineering effort which will put die thermal conditions in a more robust operating window for a profitable die casting operation.

Benefits

1. Learn how improper die cooling system and die spray application could affect some of the common die casting defects.
2. Study proper thermal analysis to design waterline cooling system.
3. Know the correct way of applying die spray during die casting process.
4. Understand the logical impact /effect of the many thermal controlling parameters & the variability of these parameters & how they interact with each other.

Course Contents

1. The Basic of Thermal Design

Casting defects and die temperature; die surface temperature; temperature measurement; temperature manipulation; heating & cooling cycle in die casting; thermal barrier; thermal conductivity; heat transfer; specific heat & latent heat.

2. Water-Line Cooling Design

Heat source & removal; cooling medium & control, thermal balancing & cooling design; heat flow pattern; waterlines dimensioning & locating.

3. Die Spray & Control

Die spray & die stresses, cooling & lubrication effectiveness from die spray; temperature, flow rate & target control; die spray maintenance.

4. Case Study & Thermal Design Issues

Thermal design for a heat sink.

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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