

Course Objective

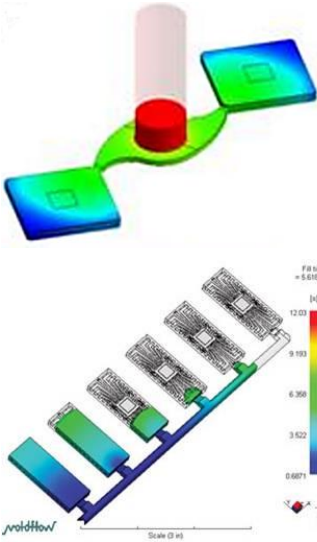
The objective of this patented MIS program is to raise technical competency of technical employees from local manufacturing industry for product quality & productivity improvement through understanding of vital manufacturing variables. At the end of the MIS training, participants will realize the importance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

Session Overview

Transfer moulding with epoxy moulding compound (EMC) is a standard semiconductor assembly process for reliable chip encapsulation since decades. The process is often the culprit in assembly problems that occur downstream of moulding. Examples of this coupling is in the trim and form operation, code marking and testing, as well as overall perception of quality, depend on precisely moulded packages. The two critical steps in producing high quality plastic packaging devices are (1) selection of the moulding material and (2) control of the moulding process itself.

Epoxy moulding compound is by far the most commercially important material used for microelectronic packaging. The formulation of most EMCs consists of a complicated and often proprietary mixture of ingredients which can affect the filling characteristics during encapsulation moulding as well as the integrity of moulded body. In addition, controlling time, temperature, pressure, velocity and flow rate are critical issues in the moulding process. Improper moulding parameters can cause severe device failures such as wire sweeping, paddle shift, delamination, incomplete filling, cracking, mould voiding, blistering, and flashing.

This course is designed to provide the insights of moulding compound for the improved understanding of encapsulant materials and the process characteristics of transfer moulding for plastic packaging of microelectronic devices. Both practical and fundamental concepts are explained to improve plastic package moulding productivity, yield and ultimate product reliability.



Benefits

1. Get to know the many additives found in moulding compound & understand their roles & functions.
2. Determine the suitability of materials for the package design, manufacturing & applications.
3. Gain an insight of the transfer moulding process & determine what combination of process variables must be changed to resolve moulding defects.
4. Establish process window & optimizing the parameters settings for quality & productivity improvement in microelectronic packaging process.

Course Contents

1. Moulding Compound Understanding

The role of encapsulation, Thermoset & thermoplastic, Resin types & structures, Hardener, Accelerators, Fillers, Coupling agents, Stress-relief additives, Colouring agents, Ion-trapping agents, Mould release agents, Flame retardants, Green compound.

2. Encapsulant Properties & Encapsulation Requirement

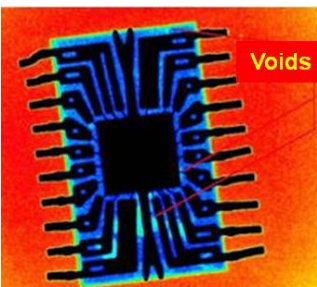
Electrical performance, Processing consideration, Spiral flow length, Gel time, Rheological study, Curing control, Thermal properties, T_g Point, Moisture & gas diffusion, Adhesion.

3. Transfer Moulding Process

Encapsulation & moulding techniques, Transfer moulding cycle, Conventional & automatic transfer moulding process, Preform handling & conditioning, Machine role, Scheduled fill and pack, Flow behaviour, Process window, Encapsulation defects.

4. Moulding Compound & Process Optimization

Encapsulation variables, Materials optimization, Minimizing flow-induced stresses, Tooling optimization, Factors for voids occurrence, Optimizing polymerization and mould temperature, Ejection time & flashing.



Course Instructor



William Lee - Malaysian, Materials Engineer with an honorable Bachelor Degree awarded by The Engineering Council of London (EC, UK). He has over 28 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.

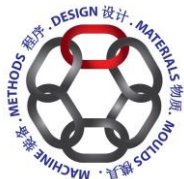
Over the years, he has developed a series of patented Manufacturing Insights Skills (MIS) Training programs for various manufacturing industries. He is now a full time contract speaker for a few training organizers as well as professional associations in ASEAN & Australia. William will bring a wealth 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

The training will prove invaluable technical information to non-specialists and managers as well as engineers and technicians working in the materials purchasing, production, process and quality control & maintenance of microelectronic package encapsulation process & moulding tools. Course attendees will profit from this systematic training on achieving high yields & reliability of microelectronic packaging products.

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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