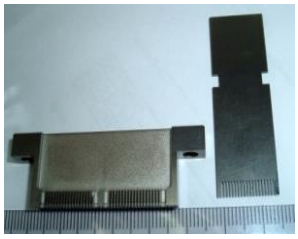
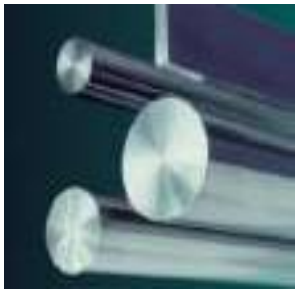
MANUFACTURING INSIGHTS SKILLS TRAINING

Program: Semiconductor Assembly Engineering Training Series

Session Topic: Semiconductor Tooling Quality & Performance

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

Despite the controlled environment, process and use of precision tools, a high number of semiconductor packages are rejected. A considerable amount of rejects are due to premature semiconductor tooling failures such as wear, dimensional changes, deformation, chipping & fracture. Analyzing tool failures and their causes require an understanding of all the variables in the tool making & maintenance process. Correcting for defects requires some processing control on these highly precision parts. This program provides understanding of how top-quality precision tools and long tool life can improve the package assembly quality & productivity. Participants will gain extensive understanding of various tool processing & their effects to the tooling materials properties and behavior so that proper pre-treatment, during treatment and post-treatment measures can be controlled correctly. This lead to reduce risk of premature tool failure during tool usage time and improve package productivity & yield.

Benefits

1. Study how tooling materials factor & tool making variables that could impact semiconductor tooling quality & its performance.
2. Analyzing tool failures & their causes.
3. Learn control of tool making & maintenance process for semiconductor tooling improvement.

Course Contents

1. Tooling Materials Understanding

Tool steels & carbide materials classifications, quality & properties control, tool materials manufacturing process & its refining techniques, directional properties, alloying function, tooling investment & iceberg theory of tooling economy.

2. Tool Making Process & Control

Tooling inspection, fatigue strength & degradation, waveform of punching force, surface finish terminology & symbols, grinding finish, designation of grinding wheel, grinding control & guidelines, grinding heat damage, EDM finish, control of EDM heat damage, corrosion of carbides, corrosion resistant carbide grades.

3. Encapsulation Mould Tool Quality & Performance

Abrasive wear & resistance, bulk & surface hardness, hardness & toughness, mould steel hardening, the danger of unstable microstructures, dimensional changes, mould strength and deflection, thermal damage, mould damage caused by uneven mould heating.

4. Trim & Form Tool Quality & Performance

Adhesive wear & resistance, binder & carbide characteristics, grain size & carbide characteristics, carbide replacement materials, effects of clearance on high speed stamping, clearance design & part quality, slug pull causes & solutions, surface coating characteristics, die entry control, stripper control, punch head breakage, residual stresses from tool processing and cutting stress control.

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

This course is specially designed for semiconductor industry. Target audience can be those involved in microelectronic package assembly process. Technical personnel such as production managers, process engineers, technicians, and specialists, supervisors, tooling engineers, tool makers, quality controllers, testing & reliability engineers and R&D researchers are encouraged to participate in this information packed technical event.

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 ◈