

## Delta Wave Solder Operation, Maintenance & Process Optimisation (DoE)

Course Number ETS0003

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### **Scope:**

The Aim of this training is to provide an understanding of the Delta Wave Solder Operation, Maintenance & Process with a practical investigation / improvement of existing product(s). We derive a DOE to test how well a process has been optimised and make improvements where necessary. Taguchi methods are used to arrive at results quickly in a controlled manor.

### **Target Audience:**

Technicians, Process Engineers, Quality personnel. The main beneficiary will be the person who sets up the wave solder machine. However, due to the process overview and then the statistical approach, it has proven to benefit quality personnel with no Wave Solder experience.

4 persons Max per course.

### **Duration:**

4 Day

### **Pre-Requisites:**

Trainees should have a basic Engineering understanding (including use of basic tools). Trainees should have at least a basic understanding of Electronics assembly processes. Awareness of local Health and Safety procedures is essential.

### **Equipment:**

Training will take place both on the Shopfloor and in a classroom environment. The classroom should have a projector or large monitor suitable to serve all trainees.

All maintenance tools and materials should be available.

Sufficient product should be available to make the training effective. Below shows a MINIMUM product quantity required for each stage:

*Initial Process Benchmark – 5 PCBs*  
*Taguchi Trials – 27 PCBs (or higher multiples of 9)*  
*Confirmation Run – 5 PCBs*

*Minimum Total 55 products (same type & batch)*

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### COURSE STRUCTURE

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#### Day 1

History of Wave Soldering (*Classroom*)

Process Overview (*Classroom*)

Machine Overview

- Conveyor
- Fluxer
- Pre Heat
- Solder Pot
- Wave Dynamics
- Back Flow
- Cooling

Current Defect Analysis

Initial Process Set Up

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#### Day 2

Full machine maintenance

DOE Experiment preparation

- DOE Overview (*Classroom*)
  - Brainstorm (*Classroom*)
  - DOE Design of Experiment (*Classroom*)
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#### Day 3

Practical DOE for Wave Solder Optimisation

- Test Runs – Adjusting and measuring Process as dictated by DOE.
  - Record Results
  - Result analysis (*Classroom*)
  - Define and execute confirmation run (*Classroom*)
  - Conclusion Report (*Classroom*)
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#### Day 4

Continuation of DOE.