

# Bob Willis Practical Training Videos

## Pin In Hole/Intrusive Reflow

- \* PCB design and component requirements
- \* Possible assembly stages
- \* Paste application
- \* Solder pallet support
- \* Reflow soldering profiles
- \* Inspection requirements
- \* Evaluation results

## BGA Rework & Repair

- \* What is BGA?
- \* Removal and replacement process
- \* Temperature profiling
- \* Flattening pads
- \* Replacing solder balls

## Intro. to Solderable Finishes

- \* Assembly improvements
- \* Evaluation of copper, gold, silver etc.
- \* Company introduction
- \* Cost advantages
- \* Processing issues

## Introduction to BGA Technology

- \* Component types
- \* Design requirements
- \* Screen print and reflow process
- \* Inspection and quality control
- \* Rework and repair
- \* Process problems and solutions

## Solder Paste & Screen Printing

- \* Solder paste selection
- \* Screens and stencils
- \* Practical machine setting
- \* Solder paste thickness measurement
- \* Quality control standards
- \* Common screen printing defects

## Reflow Soldering & Temperature Profiling

- \* Surface mount assembly
- \* Reflow soldering theory
- \* Vapour phase
- \* Infra-red soldering
- \* Convection reflow
- \* Hands-on temp. profiling methods
- \* Common reflow soldering defects

## Guide to Basic PCB Manufacture

- \* Laminates
- \* Drilling operations/plating
- \* Solder resists and finishes
- \* Panel routing
- \* Legend application
- \* Microsection examples

## Wave Soldering Process Control

- \* Wave soldering process
- \* Soldering materials
- \* Process parameters and settings
- \* Quality control checks
- \* Common soldering defects

## Introduction to Wave Soldering

- \* Fluxing systems
- \* Pre-heating
- \* Solder wave types
- \* Design rules
- \* Material selection
- \* Process defects

## Wave Solder Defect Monitoring (+PPM spreadsheet on diskette)

- \* Wave solder introduction
- \* Solder yield calculation
- \* Manual & automatic charts
- \* Practical examples
- \* Wave solder defect types

## PCB Outgassing Test Kit

### *(+copy of test procedures)*

- \* Introduction to blow holes/pin holes
- \* Reliability of solder voids
- \* Non-destructive test method
- \* Practical testing procedure
- \* Accept and reject test examples

## Introduction to X-ray Inspection

### *(+photographic reference document)*

- \* Basic X-ray techniques
- \* Machine requirements
- \* Inspection criteria
- \* Process defects
- \* Assessment exercise

## Introduction to Inert Soldering

- \* Modern assembly processes
- \* Inert gas advantages
- \* Benefits of nitrogen soldering
- \* Inert reflow/wave soldering
- \* Nitrogen gas supply
- \* Cost justification
- \* Colin Lea/Chris Tanner interviews

## Intro. to Conventional Assembly

- \* Conventional design rules
- \* Conventional components
- \* Manual/automatic assembly
- \* Hand/wave soldering
- \* Cleaning
- \* Inspection and rework

## Static Control in Electronics

- \* Static generation
- \* Component damage
- \* Use of: wrist straps, heel straps, conductive bags, work benches, work coats, trap testers
- \* Static control standards

## Solderability Testing

### SMT Components

- \* Solderability theory and criteria
- \* Component storage conditions
- \* Manual and automatic testing
- \* Common solderability defects

## Hand Soldering Conventional/SMT

- \* Hand soldering tools
- \* Soldering theory
- \* Practical soldering
- \* Inspection standards
- \* Care of tools
- \* Practical demonstrations

## SMT & Conventional Design

- \* Introduction to assembly process
- \* Component selection and positioning
- \* Solder resist and solderable finishes
- \* Hole sizes and pad sizes
- \* Fiducial marks and tooling
- \* Solder paste stencil requirements

## Introduction to SMT Assembly

- \* Surface mount design rules
- \* SMT components and packaging
- \* Solder paste printing
- \* Reflow soldering
- \* Inspection and rework

## Intro. to Contamination Testing

- \* Modern assembly techniques
- \* International specifications
- \* Printed circuit board failures
- \* Ionic contamination measurement
- \* Surface insulation resistance testing
- \* Common cleaning defects

## European Inspection & Quality Standards

- \* Criteria for:
  - adhesive and paste printing
  - component placement
  - conventional solder joints
  - chip components
  - J-lead/gullwing/wire terminations
- \* Common SMT soldering defects

## Surface Mount Rework & Repair

- \* Removal/replacement of components
- \* Adhesive and solder short removal
- \* Fine pitch repair
- \* Common repair defects
- \* Health & safety

## De-Soldering Conventional Components

- \* De-Soldering theory
- \* Equipment operation
- \* Component removal and replacement
- \* Maintenance of equipment
- \* Hand soldering

## Wave Solder Machine Maintenance

- \* Guide to wave soldering
- \* Operation of equipment
- \* Maintenance of: fluxer, pre-heat, solder pumps, fingers, conveyor, solder wave
- \* Health & safety
- \* Maintenance procedures

*Videos available on VHS tape and on video CD-ROM*