

# 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

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**INTERACTIVE CD-ROMs include video, text and illustrations - £99 each + VAT**

Conformal Coating Application & Quality Guide	<b>New</b>	Package on Package Assembly & Defects	<b>New</b>
Soldertec Lead-Free Hand Soldering/De-Soldering		NPL Lead-Free Soldering "Cook Book 3"	
Soldertec Lead-Free Reflow Soldering		Wave Soldering Introduction & Defect Guide 2	
Soldertec Lead-Free Wave Soldering		PCB Design & Lead-Free Defect Guide 2	
Reflow Soldering & Temperature Profiling Guide 2		SMT Component Recognition	
Pin in Hole/Intrusive Reflow & Defect Guide 2		Surface Mount Process Quiz	
BGA Assembly Inspection & Defect Guide		SMT & Conventional Assembly Animations	
Surface Mount Process Defects 2		0201 Design, Assembly & Soldering	
BGA Inspection & Lead-Free Defect Guide 2		Simultaneous Double Sided Reflow Soldering	
SMT/Conventional Inspection & Quality Control		Rework & Repair of Conventional & SMT 2	
Lead-Free Inspection & Quality Control wall charts (not interactive-CD containing 6 sets - £150+VAT)		QFN/LGA Assembly, Rework & Defects (PowerPoint presentation - not Interactive)	

**PHOTO ALBUM .tif/.jpeg IMAGE LIBRARY on CD-ROM - £99 each + VAT**

Conformal Coating Inspection & Defects	<b>New</b>	QFN/LGA Assembly & Soldering	<b>New</b>
Package on Package (PoP) Assembly	<b>New</b>	PCB Design Defects	
Surface Mount Assembly & Soldering		Pin in Hole/Intrusive Reflow Assembly	
Ball Grid Array & Assembly & Soldering		PCB Manufacturing Defects	
Conventional Assembly & Soldering		SMT & Conventional Illustrations	
SMT & Conventional Components		Solder Paste Inspection & Printing Defects	
X-Ray Inspection Images		Flip Chip Assembly & Soldering	
0201 Design, Assembly & Soldering		Lead-Free Assembly & Soldering	
Wire Preparation & Crimping			

**VHS videos or Video CD-ROM (please specify format) - £45 each + VAT**

	video	VCD		video	VCD
Pin in Hole/Intrusive Reflow Assembly			De-Soldering Conventional Components		
Introduction to Wave Soldering			Conventional & SMT Hand Soldering		
Introduction to Solderable Finishes			Wave Solder Machine Maintenance		
SMT & Conventional PCB Design			PCB Outgassing Test Kit		
Introduction to BGA Technology			Reflow Soldering & Temperature Profiling		
Wave Soldering Process Control			European Inspection & Quality Standards		
Guide to Solder Paste & Screen Printing			Introduction to SMT Assembly		
Introduction to Inert Soldering			Introduction to Conventional Assembly		
Wave Solder Defect Monitoring			Guide to Basic PCB Manufacture		
Introduction to Contamination Testing			Static Control in Electronics		
Surface Mount Rework & Repair			Solderability Testing SMT Components		
Ball Grid Array Rework & Repair			Introduction to X-Ray Inspection		

**Quality Control wall charts - £45 each + VAT (supplied as .pdf files for printing)**

Conformal Coating Inspection Guide	<b>New</b>	PoP Assembly Soldering & Inspection	<b>New</b>
Counterfeit Component Testing & Inspection	<b>New</b>	PCB Solder Finish Reference Guide	<b>New</b>
Surface Mount Placement & Soldering Standards		BGA Optical Inspection & Defect Guide	
Conventional Assembly & Soldering Standards		PCB Manufacturing Defects	
Wave Soldering Defect Guide		Surface Mount Component Recognition	
Surface Mount Assembly Defect Guide		BGA X-ray Inspection & Defect Guide	
Conventional Wire Termination Standards		Hand Soldering & De-Soldering Guide	
Basic PCB Manufacture Process Guide		Static Control Awareness	
Pin in Hole/Intrusive Reflow Assembly Standards		Through Hole Component Recognition	
Lead-Free Solder Paste Printing & Control		Surface Mount Component Solderability Testing	
Lead-Free Reflow & Profiling Guide		Lead-Free PPM Monitoring Assembly Process	
Lead-Free Solder Joint Inspection & Defect Guide		PCB Microsection Reference Guide	
Lead-Free MSL Component Handling		SMT Rework & Repair	
LGA/QFN Assembly & Soldering			

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