

## Electronics Manufacturing Training Videos

All video tapes are in PAL VHS format. The videos are also available at the same cost produced on VCD, video CD format allows them to be played on modern DVD players or PC with a DVD drive and DVD player software. You must specify video of VCD when placing an order. All titles are available to order from the Bob Willis web site at [www.bobwillis.co.uk/6/6.htm](http://www.bobwillis.co.uk/6/6.htm)

Introduction to BGA Technology

Duration: 55 minutes

Component types

Design requirements

Screen print and reflow process

Inspection and quality control

Rework and repair

Process problems and solutions

SMT/Conventional Design for Manufacture

Duration: 55 minutes

Component selection

Component packaging

Solder resist types and solderable finishes

Hole sizes and pad sizes

Component positioning

Break out points

Fiducial marks and tooling

Laminate materials

Stencil requirements

Pin In Hole/Intrusive Reflow Assembly

Duration: 50 minutes

Design and Component Requirements

PIHR Advantages and Disadvantages

Paste Application by:

Stencil Printing

Double Stencil Print

Paste Dispensing

Stencil Aperture Calculations

Reflow Soldering Profiles

Inspection Requirements

Process Defects

Wave Soldering Process Control

Duration: 28 minutes

Wave soldering process  
Soldering materials  
Process parameters  
Setting process parameters  
Quality control checks  
Common soldering defects

Guide to Solder Paste  
& Screen Printing  
Duration: 55 minutes

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

Wave Solder Defect Monitoring  
Duration: 25 mins + spreadsheet

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

Wave Solder Machine Operation/Maintenance  
Duration: 45 minutes

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

Surface Mount Rework & Repair  
Duration: 37 minutes

Removal/replacement of components  
Adhesive removal  
Solder short removal

Fine pitch repair  
Common repair defects  
Health & safety

Solderability Testing  
SMT Components  
Duration: 26 minutes

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

De-Soldering Conventional Components  
Duration: 24 minutes

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

PCB Outgassing Test Kit  
Duration: 10 mins + test procedures

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

Reflow Soldering &  
Temperature Profiling  
Duration: 30 minutes

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

Introduction to Conventional Assembly

Duration: 40 minutes

Design Rules  
Components  
Printed Boards  
Component Pre Forming  
Manual Assembly  
Automatic Assembly  
Static Control  
Hand Soldering  
Wave Soldering  
Cleaning  
Inspection  
Rework  
Soldering Defects

European Inspection  
& Quality Standards  
Duration: 30 minutes

Criteria for:  
screen printing  
component placement  
conventional solder joints  
chip components  
J-leads  
gull wing terminations  
wire terminations  
Common SMT soldering defects

Guide to Basic PCB Manufacture  
Duration: 22 minutes

Laminates  
Drilling operations  
Plating  
Solder resists  
Solder finishes  
Panel routing  
Microsection examples

Static Control in Electronics  
Duration: 30 minutes

Static generation  
Component damage  
Use of:

wrist straps  
heel straps  
conductive bags  
work benches  
work coats  
trap testers  
Static control standards

Introduction to Inert Soldering  
Duration: 45 minutes

modern assembly processes  
inert gas advantages  
benefits of nitrogen soldering  
inert reflow/wave soldering  
nitrogen gas supply  
cost justification  
Colin Lea/Chris Tanner interviews

Introduction to Contamination Testing  
Duration: 40 minutes

Modern assembly techniques  
International specifications  
Printed circuit board failures  
Ionic contamination measurement  
Surface insulation resistance measurement

Introduction to X-Ray Inspection  
of BGA and Fine Pitch Joints  
Duration: 35 minutes

Criteria for:  
component placement  
BGA joints  
chip components  
J-leads  
gull wing terminations  
Common SMT soldering defects  
Test sheets for operator assessment

Introduction to Surface Mount Technology  
Duration: 45 minutes

Component types  
Component packaging  
Design rules

Solder paste printing  
Adhesive application  
Reflow/wave soldering  
Inspection  
Rework and repair  
Cleaning  
Soldering defects

The cost of each video tape or video CD is £45 + VAT in Europe