

Bob Willis Lead-Free Training Products

Bob Willis provides lead-free training and consultancy services to the electronics industry. In addition to training courses, engineering support and environmental testing of materials a number of training aids in the form of videos, posters CD-ROMs and quality manuals are available on lead-free production. If you need some specific training material send us an email as we may be working on it now.

Hand Soldering & De-Soldering Lead-Free Interactive CD-ROM

This is the first in a series of interactive CD-ROMs developed by Soldertec Global to assist engineers with the practical introduction of lead-free materials and processes. The other two CD-ROM cover wave and reflow soldering. Introduced by **Kay Nimmo, Technical Director**, Tin Technology, the CD provides a step-by-step guide to materials, soldering steps, inspection and common defects which may be seen in manufacture. The CD also features an interactive quiz on hand, reflow and wave soldering to help assess staff's knowledge on the use of lead-free materials. Two additional CD-ROMs will be released shortly covering the use of wave and reflow soldering with lead-free alloys and the changes necessary in manufacture to meet the deadline of July 2006.

Cost is £99 plus VAT

The Lead-Free Soldering "Cook Book 3" Interactive CD-ROM

The NPL interactive "Lead-Free Assembly and Soldering Cook Book 3" CD-ROM just got bigger, so much so its now on two CD-ROMs. To include even more international views on lead-free we have had to put the nine new interviews onto a second CD-ROM making a total of 21. The latest views on lead free come from the likes of Dieter Bergman-IPC, Jennie Hwang, Phil Zarrow-ITM and Bill Kenyon all from the USA giving their prospective on issues faced by the industry. This was the World's First training and interactive resource on lead-free soldering technology produced jointly by The National Physical Laboratory and Bob Willis in 1999 to address the following aspects of the technology: It remains the first ever produced and now its on version 3.

Design Rules, PCB Solderable Finishes, Component Terminations, Impact on Process Conditions, Impact on Existing Equipment, Hand Soldering, Screen Printing, Reflow Soldering, Wave Soldering, Cleaning, Rework, Visual Inspection, Joint Reliability, In Circuit Test

Additional Features will include:

Lead-free Interactive Test Module

Reference Specification documents

Company Implementation Case Studies

A total of 21 video interviews

Interactive Defect Guide, including BGA, PIHR, CSP and through hole

Reference Bibliography

Whether a large OEM or a small CEM, a supplier or user, this project brings together all you ever wanted to know about Lead-Free assembly technology.

Cost is £99 plus VAT

Wave Soldering Process Introduction and Defect Guide 2

This CD ROM provides a guide to all aspects of wave soldering with all the common process defects and lead-free. Each stage of the process including fluxing, pre heat, solder wave and conveyors are explained. The defect guide also includes defects specifically on printed boards and components which can cause soldering problems.

At the first screen you can select the soldering process, equipment set-up, quality control, defect guide and CD ROM operation. Selecting the process you want to view takes you to each section, here you have access to a large manual on wave soldering including change for lead-free. As an example in the fluxing section details of foam, spray, wave and dip fluxing systems are explained along with video clips and still photographs.

Also included on the CD ROM are procedures for Parts Per Million Monitoring, process control procedures and set-up methods. A spread sheet is provided which may be used for defect monitoring using the PPM procedure. The defect guide browser provides examples of defects rather than defect categories which makes it easy to compare process problems with the disk content. Clicking on the photograph provides a full screen view with an explanation of the possible causes. Each process stage is described in detail with suggested modification to the process for lead-free alloy introduction.

Cost is £99 plus VAT

Soldertec Lead-Free Reflow Soldering Interactive CD-ROM

This is the second in a series of interactive CD-ROMs developed by ***Soldertec Global*** to assist engineers with the practical introduction of lead-free materials and processes. Introduced by ***Kay Nimmo, Technical Director, Tin Technology***, the CD provides a step-by-step guide to solder paste materials, convection and vapour phase soldering steps, lead-free inspection and common reflow defects which may be seen in manufacture. The process stages and defects are illustrated with video clips. The CD also features an interactive quiz on hand, reflow and wave soldering to help assess staff's knowledge on the use of lead-free materials. Additional CD-ROMs will be released shortly covering other aspects of lead-free alloys and the changes necessary in manufacture to meet the deadline of July 2006.

Cost is £99 plus VAT

Lead-Free Visual Inspection Reference & Defect Guide Colour Wall Charts

Each poster shows three examples of satisfactory joints with different lead-free alloys, including Tin/Silver/Copper, Tin/Copper/Nickel and Tin/Bismuth for wave soldered terminations. Reflow and wave soldered terminations are shown for each of the most common terminations along with common process issues and lead-free defects on wave and reflow soldering. Examples of different lead-free joints are also provided by x-ray images. The 12 posters are provided as a pdf file and can be printed as A4 or A3 charts in colour for display on your own company site.

Cost is £45 plus VAT

Conventional/ Surface Mount & Lead-Free Process Animations

If you are using PowerPoint for training or sales presentations and need to illustrate the conventional and surface mount assembly process stages we have a new CD-ROM for you. The CD features two presentations one on conventional through hole assembly, the second features surface mount and mixed technology assembly process stages. A third animation of surface mount and mixed technology assembly updates the process stages for lead-free requirements.

Stages included in Surface Mount include:

- Screen printing
- Component Placement
- Reflow Soldering
- Adhesive Application
- Wave Soldering
- Cleaning
- Rework

Conventional Assembly includes

- Through hole insertion
- Hand soldering
- Fluxing
- Preheat
- Wave soldering
- Cleaning
- Inspection
- Rework
- Test

Each stage of the process is illustrated with animations and commentary, each slide describes the basic process stages. The PowerPoint format makes it ideal to edit each presentation, leave out or add additional photographs, text depending on your requirement.

To complement these PowerPoint files we also have 10 Photo CD-ROMs with hundreds of pictures which can be used to enhance your training and sales presentations, these include surface mount, BGA, printed boards, flip chip, lead-free, wire termination and crimping and more. The animations can also be used in other PowerPoint presentations royalty free provided they are not resold or used as a commercial product. The material in the Photo Albums can also be used royalty free provide the images are not resold.

Cost is £99 plus VAT

Lead-Free Assembly and Soldering Photo CD-ROM

This CD-ROM provides the process or quality engineer with a source of photographs of process examples which may be used in company inspection document or presentations. The photographs can also be used in marketing and advertising material or in technical articles. They may be simply pasted into any Word or PowerPoint document for in house company use. Photographs are provided in .Tiff or .jpg file format. The photographs are either, conventional photographs, x-rays and microsections for surface mount or conventional joints as well as solder paste print, components and solder joints. There are over 350 images covering both satisfactory and reject joints and other process defect examples.

Cost is £99 plus VAT

Soldertec Lead-Free Wave Soldering Interactive CD-ROM

Third in a series of interactive CD-ROMs developed by ***Soldertec Global*** to assist engineers with the practical introduction of lead-free materials and processes. Introduced by ***Kay Nimmo, Technical Director, Tin Technology***, the CD provides a step-by-step guide to wave soldering, wetting, fluxing, process control, inspection. Process animations explain the wave soldering process options and video is used to further enhance the process stages. Inspection criteria for wave solder joints are illustrated for different alloys. Common wave soldering defects are included which may be seen in manufacture, reasons and possible corrective action is provided. The CD also features an interactive quiz on wave, reflow and hand soldering to help assess staff's knowledge on the use of lead-free materials.

BGA Inspection and Lead-Free Defect Guide

Interactive CD-ROM covering optical and x-ray inspection of solder joints. It includes an introduction to the lead-free assembly process with specific attention to BGA and area array devices. It provides a step by step guide to the procedure of inspection for optical and x-ray showing you how to do it. Inspection criteria are included for x-ray and visual criteria on different lead-free terminations and pad surfaces. The CD also includes many defect examples and causes as well as illustrating the reflow of different terminations with Bob Willis's unique micro video clips.

CD-ROM Outline

Modern Lead-Free Assembly Processes
Lead-free Alloys - BGA – Area Array Reflow
Inspection Techniques
Inspection Procedures - Optical Inspection - X-Ray Inspection
Defect Guide
Inspection Criteria

Cost is £99 plus VAT

Printed Board Circuit Design & Lead-Free Defect Guide

Printed board design and layout is the key to Zero Defect Manufacture and particularly true for lead-free. Design and development engineers must convert their build of materials to make all components lead-free and process compatible. This CD-ROM provides a basic introduction to Conventional, Surface Mount, Ball Grid Array and Pin In Hole/Intrusive Reflow Assembly including changes for lead-free

The interactive CD-ROM contains the following guidelines:

- Conventional and surface mount layout
- Surface mount and Conventional footprints
- Resist, via hole, tracking and panel layout
- Solder paste stencil rules
- Printed Board Specifications
- PCB layout
- Design defects
- Lead-free process defects

A brief introduction to printed board manufacture is provided along with guidelines on the correct specification of printed boards for fine pitch surface mount applications. Reference is made to the change in substrates and the need to change the solderable finish for lead-free. This is ideal for engineers who need a basic introduction to circuit fabrication and those looking at finishes like gold, silver, copper OSP and tin.

The defect guide browser provides photographic examples of defects or poor design rather than defect categories which makes it easy to compare potential problems with the disk content. Clicking on the photograph provides a full screen view with an explanation of the possible causes. A similar section provides guidance to the most common lead-free defects.

Two full animations of the surface mount and conventional assembly processes are included on the disk which includes the BGA, double sided assembly and through hole/Intrusive reflow conventional assembly and wave soldering. This section features a commentary by Bob Willis one of the UK's leading process engineers or it can be viewed with just a text guide.

In addition there are technical papers on lead-free introduction, new product introduction and process costing.

Cost is £99 plus VAT

Ball Grid Array X-Ray Soldering & Defect Wall Charts

15 posters provided as a pdf file which can be printed as A4 or A3 charts in colour for onsite use. Examples includes X-Ray inspection guide of satisfactory BGA solder joints, flip chip, column grid array, CSP and ceramic ball grid array. Common area array process defects like popcorning, open circuits, voiding, ball damage, distorted columns are also included. (Available as a printable pdf file)

Cost is £45 plus VAT

BGA Optical Inspection Wall Charts

13 colour wall charts illustrating BGA inspection criteria and defects are available as a pdf. This allows a company to print A4 and A3 charts for use in their own factory to aid inspection. The set provides examples of tin/lead and lead-free joints on plastic ball grid array devices. Also included are examples of the Ceramic Ball Grid Array, Column Grid Array and many common process defects seen in manufacture. (Available as a printable pdf file)

Cost is £45 plus VAT

Lead-Free Solder Paste Printing – Wall Charts

7 colour wall charts covering the use and storage of lead-free solder paste, removal from the fridge, handling, placement on the stencils and paste reuse. Also included is checking stencils after cleaning and examples of satisfactory printing on BGA, through hole and fine pitch QFP. They are ideal for show floor use and are provided as a pdf file and can be printed as A4 or A3 wall charts in colour.

Lead-Free Shop Floor Solderability Testing

6 colour wall charts provide a simple guide to your initial solderability testing of components in production. Can easily be used in lead-free or tin/lead processes. The charts show step by step assessment using your own solder paste, stencil, components and reflow process. It allows you to demonstrate if the components or process are causing defects in your own production facility. Charts are provided as a pdf file and can be printed as A4 or A3 wall charts in colour.

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