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BEST SOLDERING PRACTICES AND ACCEPTABILITY CRITERIA AS PER ELECTRONIC ASSEMBLIES IPC–A-610F

OBJECTIVE:

Today the word “QUALITY” is used everywhere and is expected in each and every aspect. As soldering is one of the main process in any Electronic Industry, the Quality and Reliability of any Electronic component or Equipment is totally depends upon the Quality of Soldering of the Electronic components. Hence this program focuses on the Best Soldering practices to be adopted during the Soldering process.

INTRODUCTION:

This program is designed to fulfill the above objective by the following

- Introducing Soldering process.
- Types of soldering
- Method of selecting Solder tips with respect to the job.
- Maintaining the solder tips
- Awareness to ESD/EOS and method of protecting the Electronic Assemblies
- Interpreting and explaining the Acceptability Criteria of Electronic Assemblies as per IPC-A-610E (on certain selected processes or conditions which are mostly used or come across in an industry)

CONTENTS

1.0 Introduction

- 1.1. What is Soldering
- 1.2. Difference between Welding, Brazing, and Soldering
- 1.3. Through hole technology
- 1.4. Soldering methods
- 1.5. Hand Soldering
- 1.6. Machine Soldering
- 1.7. Basic process steps involved in the manufacture of SMD boards

2.0 Basics of Soldering and its Methodology

- 2.1. Soldering Process
- 2.2. Properties of Solder
- 2.3. Wetting Action
- 2.4. Flux
- 2.5. Soldering irons – Selection and Maintaining them
- 2.6. Controlling Heat
- 2.7. Thermal Mass
- 2.8. Surface Condition

2.9. Thermal Linkage

- 2.10. Applying Solder
- 2.11. Post Solder Cleaning
- 2.12. Workmanship

3.0 Acceptability Criteria as per Electronic Assemblies as per IPC–A-610F

- 3.1. Terms & Definitions
- 3.2. Inspection methodology
- 3.3. Awareness to EOS/ESD and its prevention
- 3.4. Handling Considerations
- 3.5. Soldering Acceptability Requirements - Solder Anomalies
- 3.6. Lead Forming – Stress Relief
- 3.7. Terminals – Stress Relief Lead wire bends
- 3.8. Lead wire placement
- 3.9. Insulation
- 3.10. SMT
- 3.11. Cleanliness
- 3.12. Solderless wrap
- 3.13. Jump wires.



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METHODOLOGY (ADAPTED DURING THE PROGRAM):

1. Understand the knowledge level of the participants.
2. Basics of soldering will be introduced.
3. How the Solder balls are generated during a soldering process and how to avoid or minimize during the soldering process will be explained.
4. How other defects like Solder spike, splashes, dry solder, etc. are generated and how to avoid them will be explained.
5. Acceptability criteria referring to IPC standards will be given as awareness.
6. Participants may bring any live situations where they need guidance, for which appropriate advices will be given.
7. Based participant's input and support, the program will be made most appropriate and live to the participant's needs. (Tailor made program)

LANGUAGE : Study Material : English

Lecture : Tamil, Hindi & English (as desired by the audience)

EXPECTED RETURN ON INVESTMENT (ROI) :

(In condition that the suggested methods, recommended accessories & tools are used and followed religiously the way they are meant and advised):

1. Trends in rejections could come down and Productivity increases.
2. Quantum of Rework processes could come down.
3. Customer complaint could reduce and Customer Satisfaction increases.
4. Life of Soldering Equipment & accessories could be improved reducing operations cost.
5. Cost of Poor Quality could come down.

PROFILE OF THE TRAINER & CONSULTANT MR. V. RAMAVALLABHAN

Background:

➤ *Physics Graduate with Post Graduate Diploma in Master of Business Administration (PGDMBA), Diploma in Production Management (DPM).*

➤ *Certified Lead Auditor –*

1. *ISO 9001 (IRCA),*
2. *ISO 9001 (RABQSA),*
3. *ISO/TS 16949 (SMMT-IF, UK - IATF)*
4. *ISO/TS 16949 (AIAG, USA - IATF),*
5. *AS 9100C(RABQSA),*
6. *ISO 27001 (NABET)*
7. *ISO 14001(IEMA),*
8. *OHSAS 18001(IRCA)*
9. *ISO 50001 (BSI)*

➤ *VDA 6.3 Module E Process Auditor in the Product Life Cycle (VDA - QMC. Germany).*

➤ *Certificate of Lean Competency – Lean Manufacturing from QCI.*

➤ *Certified IPC Specialist : IPC/WHMA-A-620 Requirements and Acceptance for Cable and Wire Harness Assemblies.*



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Key Attributes:

- *Over 2 decades exposed to Multi Branches of industries namely **Electrical, Electronics, Mechanical, Plastics and sophisticated screen printing**, in the areas of **R & D, Manufacturing, Quality, Reliability, Supplier Development, Product Transfer, Agency Approvals, Customer Support, Process Engineering, Etc.***
- *Over a decade in Training and Consulting in the title JVR Consultants as a sole Trainer & Consultant.*
- *Traveled to countries like **Singapore, USA and Srilanka** for New Product development, Supplier development, Product Transfer, Training & Development of the employees.*
- *His excellence in man management during his corporate life has lifted him to great heights.*
- *His interpersonal relations and easy access among various levels of the organization he is working with is a great attraction and advantage.*
- *Presented papers in International seminar on various topics like **TQM, Global Warming**, etc.*
- *Currently since the year 2005 offers **Training (Technical & Soft skills)** and covered 1000s of participants.*
- *The training sessions are handled in 3 languages namely, **Tamil, Hindi and English**. Covered 1000s of participants. Though based in Chennai, travel throughout India and provide **Training and Consulting**. So far provided training in Uthanchal, Faridabad, Noida, Surat and Pune on various concepts in north. In south provided training and consulting in Tamilnadu, Andrapradesh, Karnataka and Kerala.*
- ***On Consulting**, completed and working on various **PROJECTS – CONSULTANCY** on Business Process Development, TQM, Quality Circle Consulting including preparing the team members for competition, Jury in Quality Circle Competition, Product Transfer, 5S, Waste Elimination, Kaizen, FMEA, PPAP Documentation, **Facilitate Documenting, Implementing and Certification of ISO 9001, ISO 14001, OHSAS 18001, ISO/TS 16949, ISO/TS 29001**, etc.*
- *The industries trained and undertook **PROJECTS – CONSULTANCY** include Automobile, Electronics, Electrical, Mechanical, Plastics, Casting, Forging, Printing, Cement, Sugar, Rubber, Chemical, Construction, Fabrication, Heavy Engineering, Shipping, Garments, FMCG, etc.*
- *His approach on implementing system will be **Simple, Practical, Cost effective** most importantly focusing on **most appropriateness that benefits the organization towards Return on Investments (ROI)**.*
- ***Awards:** Received Awards for best Soft Skills and Corporate Trainer.*

For more information (especially on Service record on Training and Projects – Consultancy, Clients, interesting Articles, etc.): Please visit: www.jvrconsultants.net
