SMTA Green Belt Certification

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Dr. Ron Lasky: World’s Strongest Senior Archer

• Native of Binghamton
• Graduate of BCC, Cornell, BU, Cornell
  - PhD in materials science
• NYS Professional Engineer
• More than 20 years in electronic and optoelectronic packaging at IBM, Universal Instruments, Cookson
• Author of 5 books
• Recently Published in Scientific American
• Currently a Senior Technologist for Indium and a Instructional Professor at Dartmouth College
What is Six Sigma?

- Started with statistical process control
  - Really 4.5 sigma
- Is now more a continuous improvement plan
  - Assess
  - Measure
  - Develop Plan to Improve
  - Execute Plan
  - Evaluate Results
- Uses statistical tools such as SPC and DOE
- Up to “Master Black Belts” awarded in Six Sigma Certifications

Topics

- Statistics and Statistical Thinking
- SPC
- DOE
- Brief Review of Lean
- DFM
  - Continuous Improvement
- The Exam
SPC for SMT Objectives

- To refresh your understanding of SPC for SMT
- To learn to use statistical software (Minitab14) to solve SPC problems
- To refresh your understanding of and apply capability analysis

SPC Outline

- Thinking Statistically
- Analysis of Measurement Systems
- SPC
- Capability analysis
DOE Workshop Objectives

• To refresh your understanding of basic DOE
• To enable you to plan & perform simple DOEs
  – Using Minitab 15
• To develop an appreciation for DOEs and the understanding to work synergistically with a DOE professional

DFM Workshop Objectives

• To enable the participants to develop a comprehensive DFM methodology to
  – Minimize defects
  – Maximize profits and productivity
• The establish a continuous improvement plan (CIP) and mindset
• To introduce the necessary tools to accomplish the above
Outline

• Defining DFM
• The Foundations of DFM
  – Product Design Ground Rules
  – Who are the Participants and their responsibilities?
  – Concurrent Engineering
  – Defining the Product Process
  – Implementing DFM
• The SMT Process
  – An SMT Process Line
  – Process Mapping
  – Process Variation and Statistical Thinking

Outline (Con’t)

  – SPC
  – DOE
  – PARETO

• Some software Tools to Help: SolderPro™
• Ex: Establishing an Assembly Process for a New High Tech Product
• Establishing a Continuous Improvement Plan (CIP)
  – Six Sigma by Another Name