

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



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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

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Topics

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

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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

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SPC Outline

- Thinking Statistically
- Analysis of Measurement Systems
- SPC
- Capability analysis

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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

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DFM Workshop Objectives

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



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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

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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

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