Course ID
CPSPY
Course Duration
3 days

Course Title
Creative Problem Solving with Poka-Yoke

Related Courses

- Root Cause Failure Analysis and Experiment Design (RCFA3D, 3 days)
- Poka-Yoke (POKAYOKE, 2 days)
- Unleashing Engineering Creativity - Comprehensive (ENG-CREATE3, 3 days)

Aimed At

This course is aimed at manufacturing organizations and others responsible for identifying and preventing defects, solving problems, and improving creativity in developing nonconformance-prevention-oriented processes.

Group Size

5-25

Prerequisites

While there are no formal prerequisites, the course assumes an industrial or manufacturing background.

Course in a Nutshell

This intense 3-day program will turbo-charge your process for avoiding and discovering product and process defects by leveraging Problem Solving, Failure Analysis, Poka-Yoke, and Creativity Stimulations techniques.

Defect prevention is key to profitable manufacturing processes that reliably meet and exceed customer expectations. In this course, we will learn powerful problem-solving techniques for identifying recurring sources of customer dissatisfaction and in-house manufacturing rejections and how to apply preventive and corrective actions effectively.

Poka-Yoke is an analysis tool that helps mistake-proof designs and processes, preventing or greatly reducing product and process errors. Those who are developing corrective and preventive actions using Poka-Yoke can benefit greatly from the creativity boost provided by the proven creativity enhancement techniques, also the focus of this course.

We will utilize real-life case studies to help you apply the toolkit acquired in class effectively on your job. We will include case studies specific to your organization's products and processes. Organizations identify key points for mistake-proofing their designs and processes as an integral part of this training experience.

Customize It!

Whatever the nature of your system and objective, whether failure prevention or cause determination, we will customize the course to meet your specific needs and concerns. Here are some of the ways in which we can tailor the course to help you get more out of it:

- *Pre-Course Visit to Your Operations* to facilitate greater customization to your products or processes.
- *Staggered Presentations* over several weeks in half- or all-day sessions for more in-depth in-house applications, reporting, and consultant support.
- *Additional Post-Training Workshop Days* to allow participants to work together to solve problems and creatively develop Poka-Yoke devices specific to your organization under an experienced practitioner's guidance. The workshop day can be scheduled a few weeks after the course to allow time for applying the technologies presented in class.
- *Follow-Up Consultation* to help with continuing in-house implementation.

Learn How To

Solve problems, develop and implement Poka-Yoke devices, and improve your creativity in finding effective corrective and preventive actions.

Course Outline

Day 1: Problem Solving and Root Cause Analysis

- *Introduction to Problem Solving*. Problem-solving philosophy. The four-step problem solving approach. Using failure analysis as a preventive measure. The value of a priori problem cause identification. Recurring versus production-stopper problems.

  Group activity: Discussion of client-specific problems.

- *Identifying Problems*. Rejected items. In-house quality assurance data. Customer complaints. Warranty returns. The scrap material area. Management by wandering around. Discussions with team members. Brainstorming.

  Group activity: Client-specific problem identification and improvement opportunities.

- *Problem Solving Methodologies*. Brainstorming, mind-mapping, 5-Whys, flowcharting, Ishikawa diagrams, and fault tree analysis.

  Case studies.

  Group activity. Selection and application of different problem solving methodologies to your recurring problems.

- *Managing Problem Solving Efforts*. The problem solving team. Using the Failure Mode Assessment and Assignment (FMA&A) matrix to manage the effort. Maintaining objectivity. Problem solving meetings. Developing and meeting a realistic improvement schedule.

  Group activity: Developing FMA&A plans for your organization.

- *Corrective and Preventive Action*. The corrective and preventive action order of precedence. Corrective and preventive action approaches. Design modification, process modification, requirements relaxation, and introductory Poka-Yoke approaches. Evaluating corrective and preventive action efficacy.

  Group activity: Client-specific corrective and preventive actions for workshop problems.

- *Day 1 Conclusions*. Topic review. Questions and answers.

  Homework assignment.

Day 2: Poka-Yoke

- *Poka-Yoke History and Philosophy*. Shideo Shingo and the Toyota Production System. Mistake proofing. Design and process mistakes. Zero defects quality approaches. Inspection shortfalls and the need for mistake proofing. Customer defect discovery disadvantages.

  Group activity: Client-specific Poka-Yoke opportunities discussion.

- *Types of Mistakes*. Mistake categories, including forgetfulness, misunderstanding, incorrect identification, lack of experience, willful mistakes due to ignoring rules or procedures, inadvertent errors, slovenliness, lack of standardization, surprises due to unexpected operation and other factors, and intentional mistakes.

  Case studies.

  Group activity: Client-specific mistakes discussion.

- *Poka-Yoke Opportunity Selection*. Identifying and prioritizing Poka-Yoke opportunities. Using simulations. Eliminating causes at the source. Using next workstations as Poka-Yoke points. Controlling versus preventing or eliminating causes.

  Group activity: Client-specific Poka-Yoke opportunities.

- *Poka-Yoke Devices*. Poka-Yoke approaches, including guide pins,

appropriate design margins, optical magnification, colored tags, listboxes, spell checks, counters, asymmetric and symmetric designs, error checking logic, parts count approaches, blinking lights and alarms, limit and proximity switches, counters, and checklists. Considering elimination, replacement, facilitation, detection, and mitigation.

Group activity: Client-specific Poka-Yoke design exercises.

Poka-Yoke Implementation. Viewing the next workstation as the user. Continuous flow as a Poke-Yoke tool. In-house training approaches. Common implementation issues. Implementation risks and risk avoidance strategies. Post-implementation effectiveness evaluation.
Group activity: Client-specific Poka-Yoke implementation.

- *Day 2 Conclusions*. Topic review. Questions and answers.
  Homework assignment.

Day 3: Creativity

- *Unleashing Your Creativity*. Creativity definitions, stages, and obstacles, including fear of the unknown, fear of failure, reluctance to exert influence, frustration avoidance, resource myopia, participation reluctance, over-certainty, and structured thinking patterns.
  Group activity: A creativity test.

- *Brainstorming and Painstorming*. Brainstorming approaches. Brainstorming rules. Identifying areas of customer dissatisfaction. Sources of customer product satisfaction information.
  Group activity: Client-specific Poka-Yoke approach brainstorming.

- *Biomimicry*. Definitions. Seeking solutions by emulating nature. Finding appropriate emulation targets. Reducing cost and waste.
  Case studies.
  Group activity: Applications of biomimicry to your corrective and preventive actions.

- *TRIZ*. TRIZ background and development history. The theory of inventive problem solving. Using the TRIZ matrix and the 40 design solutions. Analogical thinking.
  Case studies.
  Group activity: Client-specific TRIZ Poka-Yoke application.

- *Lateral Benchmarking*. Finding best practices. Looking outside your industry for best practices. Strategies for identifying lateral industries. Not knowing what can't be done.

  Case studies.

  Group activity: Identifying your lateral industries.

- *Nine Windows*. The nine windows grid. Considering innovation from the perspectives of time (past, current, future) and space (super-system, system, sub-system).

  Case studies.

  Group activity: Client-specific nine windows application.

- *Concept Fans*. Discovering alternative solutions. Graphical presentations. Taking steps back to gain a broader perspective. Similarities to mind mapping.

  Case study.

  Group activity: Client-specific applications.

- *Course Wrap-Up*. Course review. Questions and answers. Plans for future actions. Course critique.

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