



## **219 - Machine Process and Troubleshooting Workshop – Onsite Onsite – 5 Days, 8 Hours/day – Optimum class size, 6 - 8 students**

### **Training Description:**

High process variability operations can be difficult to run at the desired performance levels resulting in higher costs and lower production rates. Machine operators will be taught a technical depth of the equipment and the process knowledge to manage the equipment. Increased operator capability will result in the reduction of nonconforming product. This workshop is designed to provide the participants with the basic skills and tools to understand the machine and process variables for maximum performance, and to successfully troubleshoot machine problems that arise.

### **Training Objective:**

The objective of this training will consist of:

- Defining high level machine and process variables (inputs and outputs) and understanding the relationships between these variables.
- Creating a machine and process control diagram – visual representation of critical machine and process areas.
- Identify the machine and process variables set points; determine which are “fixed” and which can be adjusted.
- Troubleshooting machine and process problems – methods and tools to analyze, measure, and communicate
- Developing training documents that capture important steps, key points, and reasons why.

### **Skill Attainment:**

#### **Students will learn:**

Improved operator technical knowledge of equipment, process and controls will improve the process resulting in improved product quality and equipment productivity

Participants will enhance their thinking skills including: problem solving, decision making, critical thinking, job task planning and organization. They will learn to define high level machine and process variables (inputs and outputs) and understanding the relationships between these

These skills are transferable within the company, industry and are highly desirable by any manufacturer.



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### Training Agenda:

#### Day 1

##### Morning Training:

- Introduction to the Scientific method (2 hours)
- Toyota Kata – Hands on exercise to develop teamwork and demonstrate experimentation (2 hours)

##### Afternoon Training:

- Introduction to Process Stability (2 hours)
  - Cause & Effect diagram
  - Defining the current state using Value Stream Mapping
- Define the Current State (2 hours) – How to:
  - Identify the material with the highest scrap rate
  - Identify the production line by shift with the highest reported issue
  - Identify the cost of quality for the above
  - Decide on the focus of the study based on the above data

#### Day 2

##### Morning Training:

- Introduction to Process Capability (2 hours) – How to:
  - Document settings
  - Machine parameters
  - Collection of on and off line data
- Team structure and development of a Mandate (2 hours)
  - Selecting a team and assignments
  - Goals and objectives
  - How to focus study based on available data
- Perform a Process capability study on a selected machine (4 hours)
  - How to calculate the process capability index or process capability ratio.
  - The ability of a process to produce output within specification limits.
  - Determine how much "natural variation" a process experiences relative to its specification limits and allows different processes to be compared with respect to how well an organization controls them.
  - Gather data and calculate the CPk for the selected process and equipment.



## Day 3

### Morning and Afternoon training

- Process study (8 hours) – Team based in classroom and on floor at machine
  - Classroom training on the 10 Step Kaizen Process
  - Develop/Review Capability Mandate or Problem Statement
  - Analyze and document the current situation
  - Determine Target Measurements
  - Brainstorm improvement ideas
  - Implement solution(s)
  - Test solution and record results

## Day 4

### Morning and Afternoon training

- Process study Second Experiment (8 hours) – Team based in classroom and on floor at machine
  - Classroom training on the 10 Step Kaizen Process - Review
  - Develop/Review Capability Mandate or Problem Statement
  - Analyze and document the current situation
  - Determine Target Measurements
  - Brainstorm improvement ideas
  - Implement solution(s)
  - Test solution and record results

## Day 5

### Morning Training

- Job Instruction, teach employees how to correctly, safely and conscientiously perform the tasks developed during the training.
  - Learn the four steps; Preparation, Presentation, Application and Verification.
  - The basis for Standard work
  - Train in a structured fashion to foster process stability.
  - Create implementation plan
  - Develop skills that will be used to properly prepare employees for training Afternoon Training or Deliver an effective training plan to the organization
- Brief management on results.
- Present implementation plan