TRAINING COURSES 2024

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Our expertise is focused on different areas, such as quality systems and continuous improvement. Our customers in America, Mexico and Latin America guarantee our services.

Our seminars are designed by professional subject experts and taught by the most capable instructors.

All our consultants have gone through a rigorous validation process to become part of SPC Consulting Group. All of them are qualified professionals, we assure that they are tool practitioners before trainers. All of them have great and vast field expertise.

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011 52 811 477 7475, 011 52 811 477 7476,
011 52 442 258 1587
info@spcgroup.com.mx

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QUALITY ASSURANCE

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TRAINING COURSES CATALOG

INTERNAL AUDITOR

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ISO 9001:2015
INTERNAL AUDITOR

Objective:
At the end of the course the participant will acquire the theoretical concepts required to audit the automotive quality management system ISO 9001:2015, will understand the importance of preparation previous to the audit and will be able to write effective audit reports.

Prerequisites:
- Basic knowledge of ISO9001:2015 (desirable)
- Knowledge of the internal audits process in your organization (desirable)

Duration:
16 hours

Day 1 - ISO 9001:2015 Overview

Introduction to Quality Management System
- Terms and definitions
- Quality management principles
- Process approach
- Risk-based thinking

Interpretative Review ISO 9001:2015
- Interpretative exercises
- Application exercises
- Documentary audit

Competencies for Internal Auditor
- Knowledge required
- Skills required

Day 2 - Auditing Management Systems
- Terms and definitions
- Principles of auditing
- Audit program
  + Risks and opportunities
  + Roles and responsibilities
- Preparing audit activities
- Audit plan
- Opening meeting
- Audit implementation
- Audit methods
- Audit findings
- Audit report
- Closing meeting
- Auditor competence

INTERNAL AUDITOR

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IATF 16949:2016

INTERNAL AUDITOR

Objective:
At the end of the course the participant will acquire the theoretical concepts required to audit the automotive quality management system IATF 16949:2016, will understand the importance of preparation previous to the audit and will be able to write effective audit reports.

Prerequisites:
- Basic knowledge of IATF16949:2016 (desirable)
- Knowledge of the internal audits process in your organization (desirable)

Duration:
16 hours

Day 1 - IATF 16949:2016 Overview

Introduction to Quality Management System
- Terms and definitions
- Quality management principles
- Process approach
- Risk-based thinking

Interpretative review IATF 16949:2016
- Interpretative exercises
- Application exercises
- Documentary audit

Competencies for Internal Auditor
- Knowledge required
- Skills required

Sector and Customer Specific Requirements
- AIAG handbook
- IATF website
- Customer handbook

Day 2 - ISO 19011:2018 Guidelines for Auditing Management System
- Terms and definitions
- Principles of auditing
- Audit programme
  + Risks and opportunities
  + Roles and responsibilities
- Audit preparation
- Audit plan
- Opening meeting
- Audit Implementation
- Audit methods
- Audit findings
- Audit report
- Closing meeting
- Internal auditor competence

AWARENESS

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IATF 16949:2016

AWARENESS REQUIREMENTS

Objective:
The participant will know the relevant new IATF 16949:2016 requirements, will identify new required roles and responsibilities, and will understand the importance of top management's leadership and commitment.

Prerequisites:
- Familiar with the ISO / TS 16949 requirements (desirable)
- Working experience on the organization

Duration:
8 hours

IATF 16949:2016 Overview
- What is quality?
- Why the change?
- IATF 16949:2016 objectives

Systemic Changes
- High-level structure
- Process map

High Impact Changes
4.1 Context of the organization
+ SWOT analysis
4.2 Interested parties
4.4 Process approach
5.0 Leadership
+ Commitment
+ Environmental policy
+ Roles, responsibilities and authorities
6.1 Risk-based thinking
7.5 Documented information

Normative changes
7.0 Support processes
8.0 Operation
9.0 Performance evaluation
10.0 Improvement

RISK MANAGEMENT

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IATF 16949:2016

RISK MANAGEMENT

Objective:
The participant will be able to identify the risks present in any process, use basic risk analysis tools to determine the best control strategy and will understand the importance of integrating controls as part of the quality management system.

Prerequisites:
- Basic knowledge of IATF 16949:2016 (desirable)
- Knowledge of the processes in your organization (desirable)

Duration:
16 hours

Risk Mangement Introduction
- Terms and definitions
- ISO 31000 Standards
- Risk management principles

Framework
- Leadership and commitment
- Integration
- Design
  + Understanding organization
  + Risk management commitment
  + Roles, authorities, responsibilities and obligations
  + Allocation of resources
  + Communication and consultation
- Implementation
- Assessment
- Improvement
  + Adaptation
  + Continuous improvement

Risk Management Process
- Communication and consultation
  + Pertinent interesed parties and requirements
- Scope, context and criteria
  + Scope definition
  + Internal and external context
    - SWOT Analysis
  + Risk criteria
    - Probability
    - Consecuences
    - Risk levels
- Risk evaluation
  + Risk identification
    - Process approach diagram
  + Risk analysis
    - Ishikawa diagram
    - 5 Why
    - What if?
    - Risk levels
  + Valuation risk
- Risk treatment
  + Risk treatment options
  + Risk treatment plans
- Monitoring and revision
- Record and report

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ISO 14001:2015 ENVIRONMENTAL MANAGEMENT SYSTEMS

INTERNAL AUDITOR

Objective:
At the end of the course the participant will acquire the theoretical concepts required to audit the environmental management system ISO 14001:2015, will understand the importance of previous preparation and will be able to write effective audit reports.

Prerequisites:
- Basic knowledge of ISO 14001:2015 (desirable)
- Knowledge of the internal audits process in your organization (desirable)

Duration:
16 hours

Day 1

- ISO 14001:2015 Overview

Introduction to Environmental Management System

- Terms and definitions
- Process approach
- Risk-based thinking

Interpretative Review ISO 14001:2015

- Interpretative exercises
- Application exercises
- Documentary audit

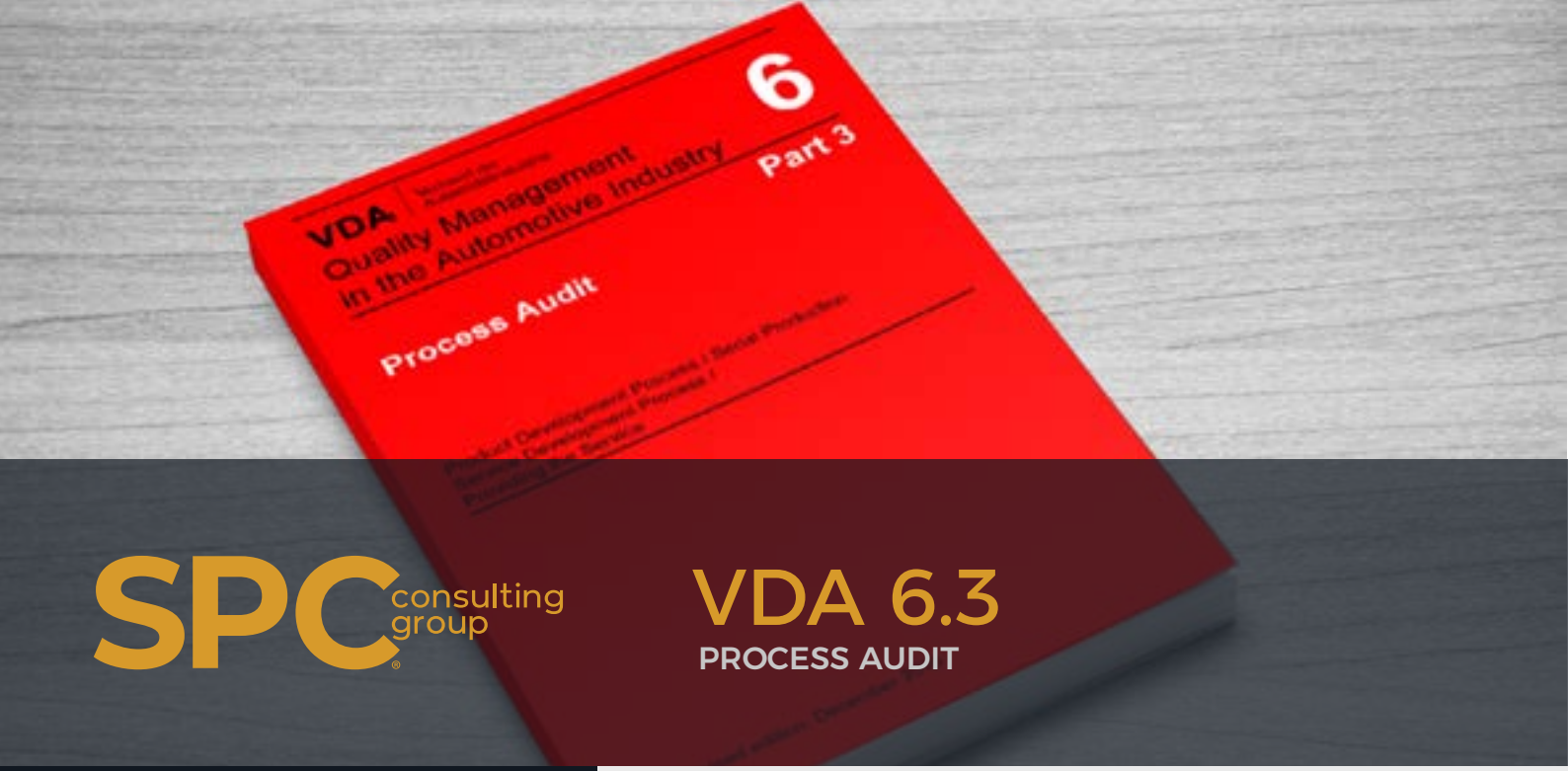
Competencies for Internal Auditor

- Knowledge required
- Skills required

Day 2

Auditing Management Systems

- Terms and definitions
- Principles of auditing
- Audit program
  + Risks and opportunities
  + Roles and responsibilities
- Preparing audit activities
- Audit plan
- Opening meeting
- Audit implementation
- Audit methods
- Audit findings
- Audit report
- Closing meeting
- Auditor performance



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VDA 6.3

PROCESS AUDIT

Objective:
At the end of the course the participant will acquire the theoretical concepts required to audit the process according to standard VDA 6.3, will understand the importance of the previous preparation to the audit and will be able to write effective audit reports.

Prerequisites:
- Familiar with ISO 9001:2015 concepts (desirable)
- Familiar with IATF 16949:2016 (desirable)
- Working experience at a production company

Duration:
24 hours

Introduction
- VDA
- Terms and definitions
- VDA 6.X regulations
- Other VDA regulations
- Process approach
- Risk based thinking

VDA 6.3 Requirements
- Product / Process design and development
- Supplier management
- Serial production
- Customer support, customer satisfaction, service
- Customer service, after sales

Audit Process
- Planning
- Preparation
- Execution
- Assessment
- Presentation of results
- Final evaluation and closure

Assessment
- Assessing the potential analysis
- Assessing a process audit for material products

Using the questionnaire
- Questionnaire overview
- Project management (P2)
- Planning the product & process development (P3)
- Carrying out the product & process development (P4)
- Supplier management (P5)
- Serial production (P6)
- Customer support, customer satisfaction, service (P7)
- Services (PD)

Assessment forms & overviews
- Assessment elements
- Mean value
- Process stage
- Generic baseline
- Achievement level

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VDA 6.5
PRODUCT AUDIT

Objective:
At the end of the course the participant will acquire the theoretical concepts required to audit the process according to standard VDA 6.5, will understand the importance of the previous preparation to the audit and will be able to write effective audit reports.

Prerequisites:
- Familiar with ISO 9001:2015 concepts (desirable)
- Familiar with IATF 16949:2016 (desirable)
- Working experience at a production company

Duration:
8 hours

Content

1. Introduction
2. Definitions and Purpose of a Product Audit
3. Product Audit at Car Manufacturers and Suppliers
4. Preparation and Planning of Product Audits
5. Product Audit Questionnaire
6. Performing a Product Audit
7. Analysis of the Data and Investigation of Causes of Nonconformities
8. Evaluation of the Product Audit Results
9. Product Audit Report
10. Corrective Actions Resulting from the Production Audit

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011 52 442 258 1587
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AUTOMOTIVE TOOLS

MINITAB REQUIRED

AIAG VDA

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CORE TOOLS

APQP+PFMEA+SPC+MSA+CP+PPAP

Objective:
The participant will understand the fundamentals of the automotive Core Tools and will be able to apply them through practical examples following the AIAG latest guidelines.

Prerequisites:
- Basic knowledge of IATF 16949:2016 (desirable)
- Basic statistics
- Experience in manufacturing environments

Duration:
24 hours

APQP – Advanced Product Quality Planning 2nd Edition, 2008

- Introduction to APQP
- PDCA vs APQP
- Product quality planning cycle
  + Phase 1. Planning and program definition
  + Phase 2. Product design and development
  + Phase 3. Process design and development
  + Phase 4.Product and process validation
  + Phase 5. Feedback, assessment and corrective action
- Feasibility commitment
- Detailed View of Activities by Phase
- Deliverables by Phase

FMEA – Failure Mode and Effects Analysis 1st Edition, 2019

- Purpose and Description
- Objective and limits
- Integration of FMEA in the company
- Project Planning
- PFMEA Methodology
- 1st STEP: Planning and Preparation
- 2nd STEP: Structure Analysis
- 3rd STEP: Functional Analysis
- 4th STEP: Failure Analysis
- 5th STEP: Risk Analysis
- 6th STEP: Optimization
- 7th STEP: Results Documentation
- Practice – Conducting a PFMEA

Control Plan 2nd Edition, 2008

- Introduction to Control Plan
- Controlling vs monitoring
- Special product characteristics
- Special process characteristics
- Evaluation technique
- Sample size and frequency
- Control method
- Reaction plan

SPC – Statistical Process Control 2nd Edition, 2005

- Introduction to SPC
- Measure of dispersion
- Process variation analysis
- Elements of control chart
- Common and special causes
- Statistical stability
- Control limits
- Sample size and frequency
- Variable control charts
  + X-R Chart
  + I-MR Chart
- Attributes control charts
  + p Chart
  + u Chart
- Process capability and performance (Cp, Cpk, Pp, Ppk)
- Sixpack – Capability analysis with Minitab

MSA – Measurement Systems Analysis 4th Edition, 2010

- Introduction to MSA
- Elements of a measurement system
- Resolution, bias, stability, linearity
- Repeatability and reproducibility
- Gage R&R study - Guidelines
- Range method vs ANOVA method
- ANOVA method
- Gage R&R practice
- Gage R&R results interpretation
- Attribute measurement system

PPAP – Production Part Approval Process 4th Edition, 2006

- Introduction to PPAP
- PPAP emission
- Responsibilities and authorities
- Significant production run
- 18 PPAP requirements
- PPAP levels
- PSW – Part Submission Warrant
- Customer notification
- Record retention

MINITAB REQUIRED

AIAG VDA

SPC consulting group

INCLUDES NEW FMEA AIAG-VDA

CORE TOOLS

APQP+PFMEA+SPC+MSA+CP+PPAP

Objective:
The participants will learn how to apply the Core Tools within real situations in their organizations. They will be able to understand the importance of advance planning in product quality and regulation compliance.

Requirements:
- Basic knowledge of IATF 16949:2016 (preferred)
- Working experience in manufacturing environments
- Basic knowledge of statistics
- Laptop with Minitab software (required)

Duration:
40 hours

Day 1: APQP – Advanced Product Quality Planning 2nd Edition, 2008

- Introduction to APQP
- APQP tool correlation with IATF 16949:2016
- PDCA vs APQP cycle
- Quality Planning Cycle Product
  + Phase 1: Planning and defining the product
  + Phase 2: Design and development of the product
  + Phase 3: Design and development of the process
  + Phase 4: Product and process
  + Phase 5: Feedback, evaluation and corrective actions
- Feasibility commitment
- Detailed review of phase activities
- Phase by phase deliverables

Day 2: PFMEA AIAG-VDA 2019 1st Edition, 2019

- Introduction to FMEA 2019 (AIAG-VDA)
- FMEA tool correlation with IATF 16949:2016
- Purpose and description
- Objective and limits
- Integration of FMEA in the company
- Project Planning
- PFMEA Methodology
- 1st STEP: Planning and Preparation
- 2nd STEP: Structure Analysis
- 3rd STEP: Functional Analysis
- 4th STEP: Failure Analysis
- 5th STEP: Risk Analysis
- 6th STEP: Optimization
- 7th STEP: Results Documentation
- Practice – Conducting a PFMEA

Day 3: SPC – Statistical Process Control 2nd Edition, 2005

- Introduction to Statistical Control
- SPC tool correlation with IATF 16949:2016
- Dispersion Measurement Exercises
- Process Variation Analysis
- Control Chart Elements
- Normal and Special Causes
- Statistical stability
- Calculation of Control Limits
- Sample Size and Frequency
- Variable Data Control Graphs
  + X-R Graphic – Case Study
  + I-MR Chart – Case Study
- Attribute Control Charts
  + Graph p – Case Study
  + Graphic u – Case Study
- Capability Analysis (Cp, Cpk, Pp, Ppk)
- Preliminary study vs full study
- Sixpack – Capability Analysis in Minitab

MINITAB REQUIRED

AIAG VDA

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INCLUDES NEW FMEA AIAG-VDA

CORE TOOLS

APQP+PFMEA+SPC+MSA+CP+PPAP

Day 4: MSA – Measurement Systems Analysis 4th Edition, 2010

- Introduction to measurement systems
- MSA tool correlation with IATF 16949:2016
- Elements of a measurement system
- Resolution, bias, stability, linearity
- Repeatability and Reproducibility
- Studio of Gage R&R - Design and execution
- Range Method vs ANOVA Method
- Gage R&R case study with Minitab
- Interpretation of Gage R&R results
- Attribute measurement systems
- Index calculation case study Kappa
- Attribute Agreement Analysis in Minitab
- Interpretation of analysis by attributes

Day 5: Control Plan 2nd Edition, 2008

- Introduction to the Control Plan
- Control Plan tool correlation with IATF 16949:2016
- Control vs Measurement
- Critical Product Features
- Critical Process Features
- Evaluation techniques
- Sample Size and Frequency
- Control Methods
- Reaction Plan

Day 5: PPAP – Production Part Approval Process 4th Edition, 2006

- Introduction to PPAP
- PPAP tool correlation with IATF 16949:2016
- Issuance of a PPAP
- Responsibilities and authorities
- Significant production run
- The 18 requirements of the PPAP in detail
- PPAP levels
- PSW – Part Submission Warrant
- Customer notifications
- Records retention

AIAG

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APQP

ADVANCED PRODUCT QUALITY PLANNING

Objective:
The participant will know the different requirements for each phase of the APQP, will understand the importance of the advanced planning for failure prevention and will be able to create a basic plan that suits the needs of your organization.

Prerequisites:
- Basic knowledge of IATF16949:2016 (desirable)
- Experience in manufacturing environments
- Knowledge of new products introduction in your organization

Duration:
8 hours

APQP - Advanced Product Quality Planning 2nd Edition)

Introduction
- Importance of APQP
- Relation to IATF 16949:2016
- PDCA cycle vs APQP
- Gantt Chart / Timing Chart

Phase 1 - Plan and define program
- Voice of the customer (VOC)
- Business plan
- Benchmark
- Product / Process assumptions
- Design goals
- Quality goals
- Reliability goals

Phase 2 - Product design and development
- Design FMEA
- IMDS - International Material Data System
- Design for Manufacturability and Assembly
- Prototype build
- DVP&R - Design Verification Plan & Report
- Design review
- Special product characteristics
- Technical specification
- Feasibility commitment

Phase 3 - Process design and development
- Packaging standards and specifications
- Product / Process quality system
- Process flow diagram
- Process FMEA
- Pre-launch Control Plan
- Process definition
- Process instructions
- Measurement systems definition
- Attribute master samples
- Checking aids

Phase 4 - Product and process validation
- Significant production run
- MSA - Measurement System Analysis
- Dimensional results
- Records of material / performance test results
- Initial process capability study (Cp, Cpk, Pp, Ppk)
- Production Control Plan
- Qualified laboratory documentation
- Appearance Approval Report (AAR)
- Sample production parts
- Customer specific requirements
- PSW – Part Submission Warrant

Phase 5 - Feedback, Assessment and Corrective Action
- Improved customer satisfaction
- Improved delivery and service
- Lessons learned

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PPAP

PRODUCTION PART APPROVAL PROCESS

Objective:
The participant will know in detail the 18 requirements of a PPAP, will understand which changes should be notified to the client and will be able to identify when a PPAP is complete and meets the AIAG guidelines.

Prerequisites:
- Basic knowledge of IATF 16949:2016 (desirable)
- Experience in manufacturing environments
- Knowledge of the production approval process

Duration:
8 hours

PPAP - Production Part Approval Process (4th Edition)

Introduction
- Importance of PPAP
- Relation to IATF 16949:2016
- When a PPAP is required?
- Who is responsible for PPAP?

18 PPAP Requirements
- Significant production run
- Design records
  + IMDS – International Material Data System
  + Marking of polymeric parts
- Authorized engineering change documents
- Customer engineering approval
- Design FMEA
- Process flow diagram
- Process FMEA
- Control Plan
- MSA – Measurement System Analysis
- Dimensional results
- Records of material / performance test results
- Initial process studies (Cp, Cpk, Pp, Ppk)
- Qualified laboratory documentation
- Appearance Approval Report (AAR)
- Sample production parts
- Master sample
- Checking aids
- CSR – Customer Specific Requirements
- PSW – Part Submission Warrant

Customer notification

PPAP submission levels

PPAP disposition

Record retention

AIAG

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PFMEA AIAG-VDA

PROCESS FAILURE MODE AND EFFECTS ANALYSIS

Objective:
To understand how to use and develop the FMEA process in order to identify and reduce risks in products and processes.

Prerequisites:
• Basic knowledge of the process of product design and/or manufacturing processes

Duration:
16 hours

Introduction
- Purpose and Description
- Objective and limits
- Integration of FMEA in the company
- Project Planning
- PFMEA Methodology

Execution of the Process FMEA (PFMEA)
- 1st STEP: Planning and Preparation
  + Project Identification and Boundaries
  + Project plan
  + Process FMEA Header
- 2nd STEP: Structure Analysis
  + Process Flow Diagram
  + Structure Tree
- 3rd STEP: Functional Analysis
  + Function
  + Requirement(s) (characteristics)
  + Visualization of functional relationships
- 4th STEP: Failure Analysis
  + Failure
  + The Failure Chain
  + Failure Effects
  + Failure Mode
  + Failure Cause
  + Failure Analysis
  + Relationship DFMEA – PFMEA
- 5th STEP: Risk Analysis
  + Current Prevention / Detection Controls
  + Evaluations
  + Severity
  + Occurrence
  + Detection
  + Action Priority (AP)
- 6th STEP: Optimization
  + Purpose
  + Assignment of Responsibilities
  + Status of Actions
  + Assessment of action Effectiveness
  + Continual Improvement
- 7th STEP: Results Documentation
  + Purpose
  + PFMEA Report

Sample FMEA Form Sheets
- Standard PFMEA Form
- Alternative Forms D / E / F / G

Practice – Conducting a PFMEA

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MSA

MEASUREMENT SYSTEM ANALYSIS

Objective:
The participant will know the different studies carried out on variable data and attribute data measurement systems, will be able to apply statistical methods for its analysis and interpretation, and will recognize the importance of having reliable measurement systems.

Prerequisites:
- Basic knowledge of IATF 16949:2016 (desirable)
- Experience in manufacturing environments
- Knowledge of the products and processes in your organization
- Laptop with Minitab software

Duration:
16 hours

MSA – Measurement System Analysis (4th Edition)

Introduction
- Importance of MSA
- Relation to IATF 16949:2016
- When MSA is required?
- Who is responsible for MSA?

Concepts and definitions

Basics Statistics
- Central tendency measures
- Measures of dispersion

Resolution
- Required resolution calculation
- Selection of the measuring instrument

Variation in measuremnt systems
- Effects on the measurement of products
- Effects on the measuremnts of processes

Accuracy vs Precision

Bias Study
- Practical exercise
- Minitab – BIAS Study
- Causes of excessive bias

Linearity Study
- Practical exercise
- Minitab – Linearity Study
- Causes for linearity error

Stability Study
- Practical exercise
- Minitab – Control Charts
- Causes of instability

Gage R&R Study - Repeatability and Reproducibility
- Practical exercise
- Average and range method
- ANOVA method
- Minitab – Crossed Gage R&R
- Results interpretation
- NDC – Number of Distinct Characteristics
- Corrective actions

Attribute Measurement Systems Study
- Practical exercise
- Kappa index
- Crosstabulation
- Effectiveness of the measurement system
- Miss rate, false alarm date
- Minitab - Attribute agreement analysis
- Corrective actions

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SPC
STATISTICAL PROCESS CONTROL

Objective:
The participant will understand the statistical principles necessary for process control, will be able to interpret any control chart and capacity study (Cp, Cpk), and will understand the importance of decision making based on data.

Prerequisites
- Basic knowledge of IATF 16949:2016 (desirable)
- Experience in manufacturing environments
- Knowledge of the products and processes in your organization
- Laptop with Minitab software

Duration:
8 hours

SPC – Statistical Process Control (2nd Edition)

Introduction
- Importance of SPC
- Relation to IATF 16949:2016
- When SPC is required?

Concepts and definitions

Basics Statistics
- Central tendency measures
- Measures of dispersion

Variation
- Variation sources
- Common and special causes
- Local actions vs System actions
- Continuous variable vs Attributes

Control Charts
- How do they work and what are they for?
- Elements of Control Charts
- Control limits vs Spec limits
- Strategy implementation
  + Rational subgrouping
  + Sampling plan
- Interpretation and reaction plan
- Control process vs Control specifications
- Rules to identify special causes

Variables Control Charts
- Variables for sugroups
  + X-R Chart - practical exercise
  + X-S Chart - practical exercise
  + Solving with Minitab
  + X-R Chart - practical exercise
  + Control Charts Variables for Subgroups
- Variables individuals
  + I-MR - practical exercise
  + Solving with Minitab
  + Control Charts Variables for Individuals

Attributes Control Charts
- Attributes for Nonconforming
  + p Chart - practical exercise
  + np Charts - practical exercise
  + Solving with Minitab
  + Attributes Charts
- Attributes for Nonconformities
  + u Charts - practical exercise
  + c Charts - practical exercise
  + Solving with Minitab
  + Attributes Charts

Process Capability
- Stability and Normality
- What is Process Capability?
- Calculation and interpretation of Cp, Cpk, Pp y Ppk
  + Preliminar Study - 30 consecutive parts
  + Complete study - 25 subgroups, sample size: 5
- Minitab
  + Quality tools
  + Capability analysis
- Minitab
  + Quality tools
  + Capability sixpack

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PCP

PROCESS CONTROL PLAN

Objective:
The participant will get familiar with the main components in a Process Control Plan. Also, participants will learn to develop and audit the process plus the correct document interpretation.

Prerequisites:
- Knowledge of the product process and/or manufacturing processes

Duration:
8 hours

Control Plan 2nd edition

Introduction
- Explain the intent of a Control Plan
- Understand the evolution of Control Plans during the life cycle of a product
- Relation to IATF 16949:2016
- PFD – PFMEA - PCP
- Who is responsible for PCP?

Process Control Plan Components
- Types of Control Plans
- Part Identification
- Process Identification
- Equipment Identification
- Product Features
- Process Characteristics
- Special / Critical Characteristics
- Product / Process Specifications
- Technique / Evaluation Method
- Sample Size / Frequency
- Control method
- Reaction plan

Key concepts
- Multidisciplinary Approach
- Evaluation of the Control Plan
- Improvement of the Control Plan
- Dominant factors
- Formats

Process Control Plan workshop

MATERIAL DATA SYSTEM

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IMDS R 13.2

BEGINNER LEVEL

Objective:
The participant will be able to manage the Material Data Sheet (MDS) creation, submission, version control and how to use the main functions in the International Material Data System (IMDS). Also, will understand the importance of conducting data collection efforts on those products and materials most likely to contain conflict minerals.

Prerequisites:
- Knowledge of the process of product and/or manufacturing processes
- Being familiar with the current supplier management system in their organization
- An individual laptop and IMDS user/password to login in the webpage

Duration:
16 hours

IMDS Introduction
- Main changes on IMDS R 13.2
- Terms and definitions
- Relation between IMDS and the PPAP
- GADSL – Global Automotive Declarable Substance List

Material Data Sheet (MDS) Introduction
- What is an MDS?
- Version control
- Tree-like Structure
- Updating MDSs
- Rules and guidelines
- Homogeneous materials

Creating a Material Data Sheet (MDS)
- Searching a MDS
- Own MDS / accepted / issued
- Creating a material MDS
- Creating a semi component MDS
- Creating a component MDS
- Creating an assembly MDS
- Legislative flags
- Main icons
- MDS analysis
- Filter function
- Accepting / Rejecting criteria
- Application code where-used analysis
- Contained recyclate where-used analysis
- Polymeric parts marking
- Error messages

MDSs management
- Creating a new MDS
- Versioning an MDS
- Internal release / Send / Propose / Publish
- Accepting / Rejecting a MDS
- IMDS – Outbox and inbox
- Status
- MDS correction
- MDS report

User
- User profile
- Create a user
- Deactivating a user
- Resetting a password

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CQI-8 LAYERED PROCESS AUDITS

2ND VERSION, JANUARY 2014

Objective:
At the end of the course the participant will know how to implement Layered Process Audits (LPA) to improve product quality and customer satisfaction.

Prerequisites:
- Basic knowledge of the process of product

Duration:
8 hours

Introduction
- LPA definition and purpose
- LPA benefits

Top Management Planning
- LPA process owner
- LPA planning team
- LPA scope
- Customer specific requirements
- Process prioritization
- Audit layers
- Developing templates for auditing and reports
- LPA procedure
- Stakeholder buy-in

Deployment
- LPA Implementation team
- Train the auditors
- Communicate the LPA rollout to the process area

Conducting the Audit
- Conducting the audit
- Recording the findings
- Observations
- Verify corrective actions

Top Management Review and Continuous Improvement of LPAs

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CQI-14

AUTOMOTIVE WARRANTY MANAGEMENT GUIDELINE, 4TH VERSION, APRIL 2022

Objective:
The participant will understand the intent of the automotive industry expectations for warranty management.
Also, the participant will become familiar with the phases for implementing a comprehensive warranty management system.

Prerequisites:
- Basic knowledge of the product process and/or manufacturing processes
- Awareness of the current warranty management system in their organization

Duration:
16 hours

Introduction
- What is a warranty?
- Behaviors involved in warranty management
- Defining strategies and best practices to properly manage a warranty

Phase 1: Establishing the baseline

Phase 2: Consumer event and leadership activities

Phase 3: Proactive prevention

Phase 4: Implementing lessons learned

Phase 5: Containing warranty issues

Phase 6: Preventing future warranty events

Phase 7: Continual improvement

Phase 8: Automotive warranty management assessment

Appendix A: Warranty claims process flow diagram

Appendix B: Glossary of definitions and acronyms

Warranty management guideline workshop
- Fill the assessment based in the guidelines

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CQI-19

UNDERSTANDING AIAG SUB-TIER SUPPLIER MANAGEMENT

Objective:
The participant will become familiar with the phases and associated elements of the sub-tier supplier management process defined in CQI-19. Also, participants will understand the differences between their current business process and the sub-tier management process defined in CQI-19.

Prerequisites:
- Basic knowledge of the product process and/or manufacturing processes
- Awareness of the current supplier management system in their organization

Duration:
16 hours

Introduction
- Terms
- CQI-19 process

Phase 1: Supplier pre-selection
- Effective relationship fundaments
- Win-win negotiation
- Suppliers selection process
- Key project documentation

Phase 2: Supplier selection
- KPI's
- Corrective actions
- Technical capacity

Phase 3: APQP/PPAP

Phase 4: Performance monitoring, development, and/or escalation

Core Tools overview to supplier management process

Supplier management best practices

Workshop

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CQI-27 CASTING SPECIAL PROCESS

2ND EDITION, MARCH 2018

Objective:
Analyze the casting processes to promote continuous improvement, the component manufacturing automakers with such processes with a focus preventive and complementary to the requirements of the product and customers, with the purpose of measuring organizational skills for compliance with its internal and external requirements.

Prerequisites:
- Quality systems (desirable)
- Thinking based on risks (desirable)
- IATF Internal Auditor 16949:2016 (desirable)
- Work experience in your organization in processes related to castings

Duration:
16 hours

Introduction

- What is CQI-27?
- Definition of CQI-27 and its purpose
- Benefits of the application planning
- Introduction to the process
- Qualities of the evaluator
- Evaluation of casting
- Requirements and guidance for the evaluation process
- Identify the purpose of each objective
- For what? described with strategy numbers
- Evaluation process of casting systems
- Objectives of the system process casting system
- Requirements to apply CSA (“Casting System Assessment”)
- Carrying out the Casting Process Assessment

CQI-27 Casting System Assessment Process Tables

- Process Table A
  + Sand Castings (Iron/Steel)
- Process Table B
  + Centrifugal Castings
- Process Table C
  + Centrifugal Liners
- Process Table D
  + Investment Castings (Iron/Steel)
- Process Table E
  + Aluminium Semi-Permanent Mold Cylinder Heads
- Process Table F
  + Aluminium Sand Castings
- Process Table G
  + Aluminium Metal Mold
- Process Table H
  + Aluminum High Pressure Die Cast
- Process Table I
  + Magnesium High Pressure Die Cast
- Process Table J
  + Zinc High Pressure Die Cast

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PROBLEM SOLVING

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8 DISCIPLINES

PROBLEM SOLVING METHODOLOGY

Objective:
The participant will master the methodology of 8 Disciplines for effective problem solving, will be able to design the best control strategy to avoid recurrence understanding the importance of documentation and standardization of solutions.

Prerequisites:
• Knowledge of the problem solving process in your organization (desirable)

Duration:
16 hours

Introduction
- Definitions
- Problem solving methods
- ISO 9001 / IATF 16949 requirements

Behaviors and values
- Business value
- Executive leadership
- Problem owners
- Problem solvers
- Customers
- Suppliers

8 Disciplines methodology

D0: Preparation
- Customer complaint
- Symptoms description
- Emerging response action
  + Check Sheet (tool)
  + Stratification (tool)

D1: Establish work team
- Team leader
- Champion
- Technical experts
- Members
- Responsibilities

D2: Problem description
- Problem selection
- Problem description
- Lessons learned
  + Pareto (tool)
  + Is / Is not (tool)

D3: Containment actions
- Containment actions
- Locations, quantities and products
- Customer notification

D4: Root cause identification
- Process analysis
- Controllable cause
- Root cause verification
  + 5 Why (tool)
  + Ishikawa diagram (tool)

D5: Permanent corrective actions
- Control strategy
- Focus on prevention
  + FMEA Model (tool)
  + Decision matrix (tool)

D6: Implementation and validation of corrective actions
- Measurement of results
- Needed resources
- Responsibilities
  + Implementation plan (tool)
  + Gantt chart (tool)

D7: Recurrence prevention
- Sharing lessons learned
- Preventive actions sources

D8: Recognize the team
- Customer response
- Recognition
- Individual contributions

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MEASUREMENT SYSTEMS

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GD&T

GEOMETRIC, DIMENSIONING & TOLERANCING

Objective:
The participant will learn the symbols and basic rules used in GD&T, the correct interpretation of engineering drawings and recognizing the importance of communication between customers and suppliers through a standardized framework.

Prerequisites
- Geometry basics

Duration:
16 hours

Introduction

Basic Concepts
- Introduction
- Definitions
- Basic rules
- Units of measure

General Tolerancing
- Basic tolerances
- General Tolerances
- Modifiers
- Feature Control Frame
- Maximum & Less Material Conditions

Datums
- Degrees of freedom
- Reference frames
- Order of preference
- Establishing Datums
- Multiple datums
- Specific datums

Tolerances of Form
- Straightness
- Flatness
- Circularity
- Cilindricity

Tolerances of Orientation
- Angularity
- Parallelism
- Perpendicularity

Tolerances of Location
- Position
- Concentricity
- Symmetry
- MMC, RFC, LMC

Tolerances of Profile
- Profile of a line
- Profile of a surface

Tolerances of Runout
- Circular runout
- Total runout

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ENGINEERING DRAWINGS READING

Objective:
At the end of the course the participant will be able to interpret engineering drawings and drawings specifications in the manufacturing industry within the environment of IATF 16949 or a quality management system equivalent.

Prerequisites:
- Basic knowledge of the process of product

Duration:
16 hours

Introduction

Engineering drawings reading
- Introduction
- Projection systems
- Rules on the representation of drawings
- Blueprints standard sizes
- Views and sections
- Scales

Metric and Imperial systems
- Introduction to tolerances
- Dimensional tolerances
- “Ballooning” and dimensioning in drawings

Surface Finishes
- Introduction
- Nomenclature
- Roughness values
- Roughness and processes

ISO Dimensional Fits and Tolerances
- Symbology and adjustments
- ISO Tolerances for Holes
- ISO Tolerances for Shafts

ANSI-ASME Y14.5 Standard for the Interpretation of Engineering Drawings
- Background
- Definitions
- Introduction to GD&T “Geometric Dimensioning and Tolerancing”

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METROLOGY FUNDAMENTALS

MEASUREMENT SYSTEMS

Objective:
At the end of the course the participant will be able to understand concepts and techniques used to evaluate the measurement systems and the fundamentals of metrology required in the environment of IATF 16949 or a quality management system equivalent.

Prerequisites:
• Knowledge of basic mathematics and MSA concepts

Duration:
16 hours

Introduction
- Quality Management System Requirements
- Background
- The measuring instrument and the environment

Terms
- Accuracy
- Precision
- Repeatability
- Reproducibility
- Bias
- Calibration
- Traceability
- Master gauge or calibrator
- Resolution
- Stability
- Bias
- Linearity

Measurement process
- The measurement process
- Characteristics of the measurements
- Types of Uncertainty
- Statistical properties
- Variation in the measurement process
- Complexity, scope and objective of the measurement
- Elements for the design and development of the measurement system

R&R studies
- R&R methodology
- R&R range method
- R&R mean and range method
- R&R ANOVA method
- R&R by attributes

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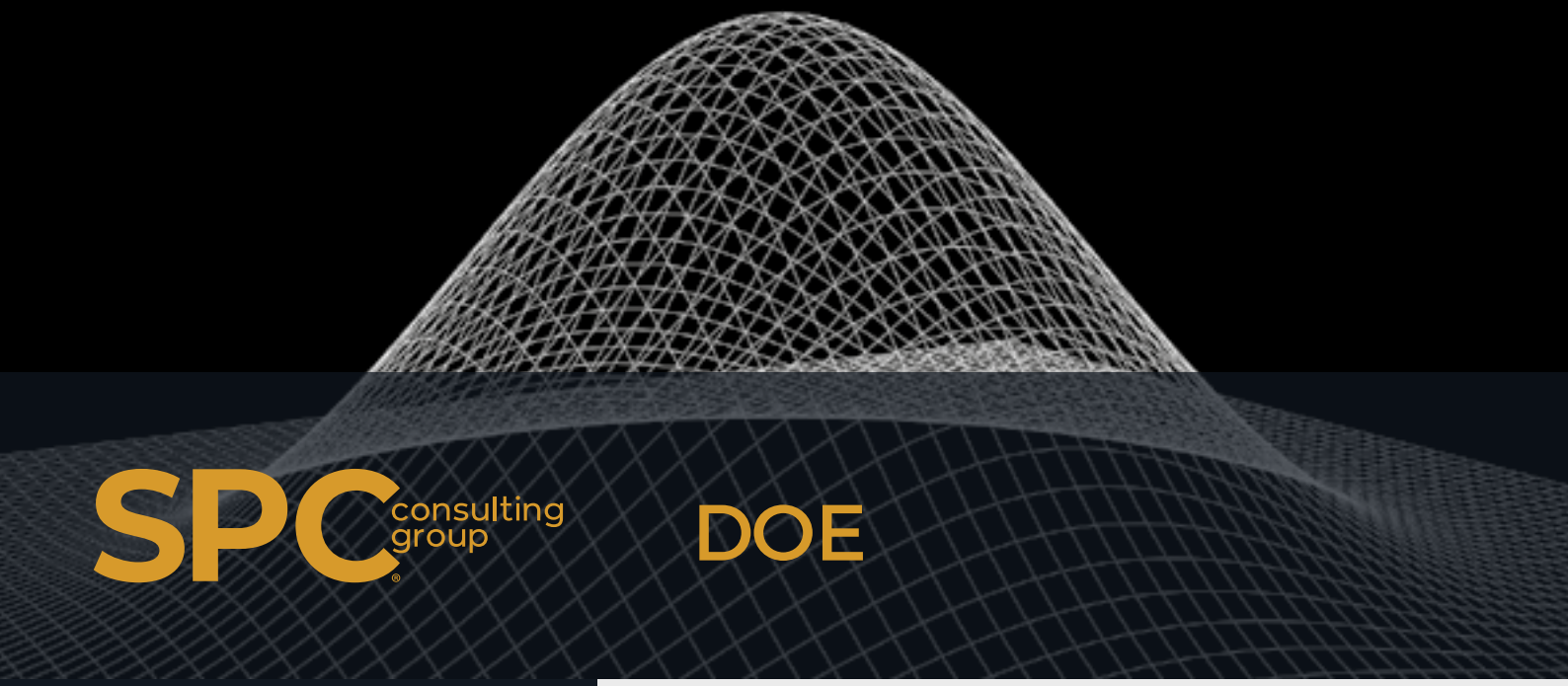
STATISTICS



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DOE

Objective:
The participant will understand the theory for a factorial design to study the relationship between multiple input variables, or factors, on key output variables, or responses
The participants will use the software Minitab statistic for optimize the process output.

Prerequisites:
- Knowledge of the product process and/or manufacturing processes
- A computer with Minitab

Duration:
16 hours

Introduction
- Basic concepts
- Importance of experiments
- How do we plan an experiment?
- Descriptive statistics
- Hypothesis testing
- Analysis of variance of 1 and 2 factors
- Linear regression
- Types of Experimental Designs

Full Factorial Design
- Selection of factors and response variable
- Full factorial model
- 2-factors factorial design
- Balanced matrix
- Randomness
- Interactions
- Replication and repetitions
- Main effects and interactions
- Factors coding
- 3-factors factorial design

Minitab for Design of Experiments
- Creation of a factorial design
- Analysis of a factorial design
- Transfer function
- Factorial plots
  + Main effects plot
  + Interaction plot
  + Cube plot
- Response Optimizer

Fractional Factorial Design
- Fractional factors
- Selection of factors
- Aliasing
- Resolution

Results analysis
- From the mathematical model to the real world
- Decision making

6 Sigma Certification

Yellow Belt

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YELLOW BELT

SIX SIGMA BASICS

Objective:
The participant will become familiar with the basic statistic concepts and data analysis.
Also participants will understand the DMAIC methodology in order to identify and reduce the process variation and they will use the software Minitab statistic to optimize the process output.

Prerequisites:
- Basic knowledge of the process of product and/or manufacturing processes
- A computer with Minitab

Duration:
24 hours

Introduction

Define
- Basic concepts
- Descriptive statistics
- Analysis of variance of 1 and 2 factors
- Project charter

Measure
- Process Mapping
- Cause and Effect Analysis
- Measurement System Analysis
- PFMEA
- Process Capability Analysis
- Confirm the project baseline

Analyze
- Graphical analysis
- Confidence interval for a mean
- Hypothesis testing

Improve
- Intro to DOE
  + Full factorial model
  + 2-factors factorial design

Control
- X-R control chart
- Attribute control charts
- Mistake proofing

6 Sigma Certification

Green Belt

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GREEN BELT

SIX SIGMA

Objective:
The participant will develop continuous improvement projects based on six sigma to reduce a process variability.

Prerequisites:
- Basic experience in Project Management
- Product manufacturing knowledge, operational floor experience and product handling

Duration:
80 hours + 8 hours for project follow up

Definition
- Six Sigma definition
- Project definition
- Minitab intro
- Basic statistics

Measurement
- Process map
- Cause and effect
- Process statistics
- MSA (Measurement System Analysis)
- Capability analysis

Analysis
- Graphical methods
- Process FMEA
- Confidence intervals
- Testing hypothesis
- Analysis of means
- One way ANOVA

Improvement
- DOE introduction
- Full factorial testing
- Fractional factorial testing 2k

Control
- Introduction
- Control methods
- SPC intro
- SPC variable control charts
- Project closure

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PRODUCTIVITY

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TIME & MOTION STUDY

IMPROVING PRODUCTIVITY

Objective:
The participant will develop the skill to evaluate and analyze processes to make the best improvement efforts. At the end of the course, the participant will know that improving productivity is often about reducing wasted movement and time.

Prerequisites:
- Basic knowledge of the product manufacturing process

Directed to:
- To all those people who are related to process management

Duration:
16 hours

Introduction
- Elemental time study
  + Observating the operation
  + Drawing the layout
  + Group into basic motion elements
  + Comparing the elements to the steps of the work instruction
- Time measurement
- Reading the stop watch

Time and Motion Terms and Definitions
- Real time
- Standard time
- The westinghouse rating system
- Allowances

Predetermined Motion Time Standards
- Toyota methodology for time study
- Standard methodologies
- MOST (Maynard Operation Sequence Technique)

Workshop

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LEAN MANUFACTURING

TPS

Objective:
At the end of the course the participant will be able to interpret, homologate and standardize the bases and criteria that support to the Lean Manufacturing concepts. The participant will be familiar with some support methodologies like Cellular Manufacturing, Kanban and One Piece Flow in order to minimize WIP and increase the profitability of the organization.

Prerequisites:
- Basic knowledge of the process of product

Duration:
16 hours

Introduction
- Lean thinking intro

Lean Manufacturing Overview
- Lean history
- Terms and definitions
- Operating model
  + Customer centricity
  + Continuous flow
  + Thinking systems
  + Simplicity
- Value Stream Mapping
- Kaizen events

Factory Visual & 5S
- Concept
- Techniques and methods
- Barriers for the implementation
- On-site evaluation

Takt Time and Line Balancing
- One Piece Flow
- Takt Time concept
- Line balancing methodology

Cellular Manufacturing and Standard Work
- The Manufacturing Cell concept
- Types of cells
- Application methodology
- Understanding standard work
- On-site evaluation

KANBAN / HEIJUNKA
- Concept
- Techniques and methods

TPM & SMED
- Concept
- Techniques and methods
- Barriers for the implementation

Poka Yoke
- Concept
- Techniques and methods

Problem Solving
- Concept
- Techniques and methods

Kamishibai
- Concept
- Techniques and methods

Implementing Lean Manufacturing

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TPM

TOTAL PRODUCTIVE MAINTENANCE

Objective:
The participants will be able to standardize criteria according to TPM concepts and best practices.
Also, the participants will be able to explain how education and training supports the goals of TPM.

Prerequisites:
• A general knowledge of the manufacturing and maintenance processes

Duration:
16 hours

TPM Introduction
- JIPM (Japanese Institute of Plant Maintenance) concepts, bases and terminology

Lean manufacturing
- History
- Model
  + Correctly specify value for the customer
  + Identify the value stream and remove waste
  + Make the product flow, so the customer can pull
  + By striving towards perfection, simplicity
  + Kaizen

TPM
- History
- 8 pillars model
  + Education and training
  + Autonomous maintenance
  + Planned maintenance (TBM, CBM, inspection)
  + Focused improvement
  + Early/equipment management (RCM)
  + Quality management
  + Safety health environmental conditions
  + Administrative & office TPM

Understanding TPM KPI's
- OEE
- MTBF
- MTTR

TPM 12 step approach
- Preparation
  + Step 1 Declaration by management
  + Step 2 Introductory education and campaign
  + Step 3 TPM organization and pilot activity
  + Step 4 Setting basic policy and target
  + Step 5 Master plan for implementation
- Kick off
  + Step 6 Kick off
- Implementation
  + Step 7 Improving production efficiency
  + Step 8 Autonomous maintenance
  + Step 9 Planned maintenance
  + Step 10 Education and training
  + Step 11 Develop TPM program
- Steady application
  + Step 12 Total application of TPM

TPM support
- Problem solving
- Visual management
- Standardization
- Kamishibai

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PROJECT MANAGEMENT

Objective:
Study the topics and the proper sequence for conducting, planning and project management, considering the most important points of traceability and execution to accomplish the expected results through a practical and effective methodology.

Prerequisites:
- Knowledge on quality systems and process mapping development

Duration:
24 hours

Introduction

1. Define Project Opportunities
- Business Case
- Opportunity for improvement
- Scope and limitations
- Final goals and variables
- Team creation
- Change Management
- Communication plan and activities

2. Current Process Initial Map
- Suppliers, inputs, outputs, customer
- Identifying initial activities
- Main activities and critical path
- Ideal state and the current state variations
- The work breakdown structure (WBS Work Breakdown Structure)

3. Monitoring Plan Development
- Key indicators (quality testing)
- Operational indicators description
- Measuring and monitoring plan
- Roles and responsibilities
- Contingency plan
- Supplier development

4. Project Performance Analysis
- Formats
- Performance reports
- Costing and investments
- Containment plans
- Root cause
- Risk analysis
- Final solutions validation

5. Activities Implementation
- Critical path selection
- Main activities
- Times & stages review
- Results monitoring
- Implementation
- Delivery of supplies and resources
- Project documentation

6. Control Phase Preparation Team
- Review initial objectives
- Similar projects alternatives
- Final results confirmation
- Ideal state map
- Performance objectives
- Final tests
- Final customer feedback

7. Project Delivery
- Final stages acceptance
- Final project documentation
- Delivery format
- Continuous Improvement cycle
- Lessons learned documentation
- Project approval ending

8. Tools for Project Management
- MS Project Management
- Task management
- Design viewers

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SUPPLY CHAIN

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SUPPLY CHAIN MANAGEMENT

Objective:
The participants will be able to recognize the key strategic factors to improve their supply chain management.
Also, they will be able to standardize criteria, guidelines and mandatory practices to align resources of all the organization.

Prerequisites:
• A general knowledge of the basics of the Quality Management System used in the organization is recommended but also have had contact with the environment in the organization's supply chain, inventories and logistics issues.

Duration:
8 hours

Content

Supply Chain – General concepts
- The fundamentals of end-to-end Supply Chain Management
- Product, services, and information flow
- Supply Chain processes
- Global Supply Chains: End to end sourcing
- Process Integration in real-time needed on Supply Chains

Forrester effect (Bullwhip) on Supply Chains
- Reliable information for decision making
- Inventories roles on Supply Chain
- Beer game
- Supply Chain best practices

On-site Logistics
- On-site storage and warehousing – inbound and outbound
- Materials management
- INCOTERMS

Legal aspects
- Purchasing transactions – terms and conditions
- Legal aspects of contracts

The role of the supply chain analyst
- Supply Chain responsible functions and profile
- Customer service and operational excellence
- Collaboration as a tool to create and maintain chains of world-class supply

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