



DRIVING WORLDWIDE BUSINESS EXCELLENCE

Geometric Dimensioning & Tolerancing – GD&T



Training Duration : 2 days

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Seminar Content

This seminar explains the basic concepts of GD&T for manufacturing industry of North America as per ASME Y14.5M-2009. The seminar combines abundant real examples of automotive industry to help the understanding and implementation of GD&T on design, production and inspection. GD&T is widely used on design, production and quality area, including blue print reading, meaning and understanding. GD&T is the important tool of product realization process, it's also the professional international language to understand the requirements of customer, especially automotive OEMs.

Includes case studies of automotive industry as well as provided specific cases from the trainee, explain in details of the content and requirements of GD&T and implementation on design, production and inspection.

Who Should Attend

Design Engineer, Quality Engineer, Process Engineer, Manufacturing Engineering, Gage Engineer, APQP team member, and Inspector.

Seminar Materials

Omnex Training Material with case studies as well as exercises.

Prerequisites

Basic knowledge of mechanical blue print reading and implementation. Production process experience is preferable. Following attendee are recommended: Design Engineer, Quality Engineer, Product Engineer, Manufacturing Engineer, Process Engineer, Inspector, etc.

Training Goals

- ❖ Understand the requirements of GD&T, reduce the leadtime of design, reduce the engineering change, improve the design quality.
- ❖ Learn how to apply GD&T to understand the design purpose of the customer, improve the reliability of product design and process design.
- ❖ Emphasize the understanding principles of verifying GD&T
- ❖ Learn the concept of MMC, LMC and RFS
- ❖ Use GD&T to improve the dimension verification and inspection, understand the ASME Y14.5M-2009 requirements, such as geometric tolerance, symbols, terms, rules and application

Course Outline

GD&T Introduction, Symbols and Terms

- ❖ History, Purpose, Scope
- ❖ Engineering Drawing
- ❖ Dimensioning Standard
- ❖ Material Condition
- ❖ Tolerance Modifier
- ❖ Difference between GD&T and Coordinate System
- ❖ GD&T Hierarchy
- ❖ Radius and Controlled Radius
- ❖ Tolerancing Introduction

Rules and Concept

- ❖ Rule #1, #2
- ❖ Basic Dimension
- ❖ Virtual Condition
- ❖ MMC/LMC/RFS
- ❖ Bonus Tolerance

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Datum

- ❖ Definition and Datum Feature
- ❖ Datum Simulator
- ❖ Symbol Placement
- ❖ Datum Target
- ❖ Datum Guide line
- ❖ Free State
- ❖ Datum Shift
- ❖ RFS (FOS Datum: RFS)
- ❖ MMC (FOS Datum: MMC)

Form

- ❖ Flatness
- ❖ Straightness
- Straightness : Surface
- Straightness: Center Surface
- ❖ Roundness
- ❖ Cylindricity

Orientation

- ❖ Perpendicularity
- ❖ Parallelism
- ❖ Angularity

Position (TOP)

- ❖ TOP Definition
- ❖ TOP Theories
- ❖ TOP Application: RFS (TOP: RFS)
- ❖ TOP Application: MMC (TOP: MMC)
- ❖ TOP Calculation)
- ❖ Composite Position
- ❖ Fixed Fasteners
- ❖ Floating Fasteners

Profile

- ❖ Surface Profile
- ❖ Line Profile

Concentricity/Symmetry

- ❖ Concentricity
- ❖ Symmetry Control

Runout

- ❖ Circular Runout
- ❖ Total Runout

Case Study, Exercise and Test included

On-site consulting available, include production, measurement, Gage and CMM

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