Quality LearningHub & Consultancy Singapore
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BASICS OF GEOMETRIC DIMENSIONING & TOLERANCING

Introduction:

Geometric Dimensioning and Tolerancing (GD&T) is an essential tool for communicating design intent and an essential language to mechanical designers and engineering personnel.

Misinterpretation of the drawings or customers' specifications will often result in high wastage and costs. Therefore, it is very important to train the participants on the correct language and interpretation of the drawings. By providing uniformity in drawing specifications and interpretation, GD&T can yield many advantages:

- Standardized, international system
- Improve quality and lowering costs
- More flexibility, particularly for complex shapes
- Allows cylindrical tolerance zones
- Datums are clearly defined
- Based on the fit and function of a part or assembly
- Allows for more tolerance

Course Objectives:

- How to read, specify and interpret GD&T symbols
- Evaluate tolerances for size, form, orientation and location
- Interpret feature control frames for each GD&T symbol
- The concept of datums and proper datuming
- How to establish the correct datums
- Profile and positional tolerance
- Apply geometric tolerances to drawings
- Gain a thorough understanding of the fundamental concepts of GD&T ensuring participant have a solid foundation for understanding more advanced topics

This training sessions is in accordance with the national standard ASME Y14.5 standard and is developed to suit technical, design and engineering professionals and also for those whom have had some or non-exposure to geometric dimensioning and tolerancing.

Course Contents:

1. **Introduction**
   1.1 Introduction to GD&T
   1.2 Benefits of GD&T

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2. GD&T Symbols, Rules, Features & Principles
- 2.1 Dimensioning & Tolerancing Fundamentals
- 2.2 Symbols, Terms and Rules

3. The Material Condition of Feature of Size
- 3.1 Limit of Size
- 3.2 Virtual Condition
- 3.3 Mating Size
- 3.4 Fit of Mating Parts

4 Tolerance Stack-Up Analysis

5 The Concept of Datums
- 5.1 The Datum Reference Frame
- 5.2 The Datum Feature Symbol
- 5.3 Datum Targets

6 The Feature Control Frame
- 6.1 Tolerance Zone Shape
- 6.2 Datum Indication
- 6.3 Material Condition Modifier

7 Form and Orientation Tolerance
- 7.1 Straightness,Flatness,Circularity and Cylindricity
- 7.2 Angularity, Parallelism and Perpendicularity

8 Profile and Runout Tolerance
- 8.1 Line profile and Surface profile
- 8.2 Circular runnout and Total runout

9 Location Tolerance
- 9.1 Position, Concentricity and Symmetry

10 Revision - Discussion and Clarifications

Who Should Attend:

This course is beneficial for Manufacturing, Mechanical, Production, Design, Quality, Reliability, and Engineers and Technicians who need to specify, interpret and apply geometric tolerancing.

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Learning Methodology

Discussions and class exercises will be used to reinforce participants' understanding of each topic.

Award of Certificate:

Participants will be issued with a Certificate of Successful Completion upon meeting 75% of the required course attendance.

Duration:

2 days (14 hours)

Course Fee:

$550 nett per trainee (GST is not applicable).

(Course fee is inclusive of all training materials and light refreshments.)