

"GD&T Functional Gauge (Gage) Design"

Course Contents

Introduction to Gauging Tolerance Policies

- Absolute Tolerancing (Pessimistic Tolerancing)
- Optimistic Tolerancing
- Tolerant Tolerancing
- Practical Absolute Tolerancing

Gauge Design

- GO/NOGO Gauge Design principles
- Functional Gauge Design Principles
- Datum Feature Simulators :
 - Planar datum features
 - Cylindrical datum features
 - Rectangular datum feature
- Datum Target Configuration :
 - Datum Target Points
 - Datum Target Areas
 - Datum Target Lines
- Gauge Element Configuration
- Fixed Pins
- Pushpins

Material Condition and Material Boundary Conditions

- MMC & MMB
- Virtual Condition Boundary
- Importance of Virtual condition in functional gauge designs
- Virtual condition calculations on MMC basis

Gauging Policy

- Percent of part tolerance used by gauge (5% - 10% of part tolerances)
- Wear Allowance (5% additional tolerance)
- Measurement uncertainties
- Distribution of tolerances between size and geometrical tolerance

Gaugemakers Tolerance Classes

- Class ZM (or Z)
- Class YM (or Y)
- Class XM (or X)
- Class XXM (or XX)
- Class XXXM (or XXX)

Gaugemakers Tolerance Chart

- Class ZM (or Z)
- Class YM (or Y)
- Class XM (or X)
- Class XXM (or XX)
- Class XXXM (or XXX)

Various Examples of Functional Gauges for applicable Location and orientation tolerances

- Functional Gauging Advantages & Disadvantages
- Gauging Costs
- Basis for Decision to Gauge
- Materials for Functional Gauges
- Gaugemaker's Tolerance
- Wear Allowance
- Fixed versus Sliding Gauge Members
- Tolerances that cannot be gauged
- The Effect of Part Tolerances
- Part Versus Gauge Tolerances
- Functional Gauge Practice Problems
- Functional Gauges (Actual Examples)
- Alternatives to Functional Gauging
 - Open Setup
 - CMM
 - Graphical Inspection Analysis
- Functional Gauge Exercises

Contact

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Thank You !