GD&T Inspection

Section 1: Course Introduction

Course overview, goals, and course objectives.

Section 2: Metrology Equipment

Understanding & uses for common hand-tools, gaging, and an introduction to CMMs and other digital equipment.

Section 3: Inspection Mindset

Considerations for measurement uncertainty and the decision process for specification conformance.

Section 4: Measuring Size and Rule #1

How to use hand tools to inspect local sizes and translating to CMM inspections for sizes and envelopes.

Section 5: Datum Simulation

Review of datums, and how to set up datums for both manual and CMM use.

Section 6: Datum Reference Frames

Review of DRFs and the set up requirements for the DRF of an entire part.

Section 7: Feature Inspection Framework

3 step, easy to follow process for inspecting any feature control frame.

Section 8: Position Control

Setup, inspection and reporting of cylindrical features, width features, bolt hole patterns, coaxial diameters, & tapped holes.

Section 9: Material Modifiers

Determine conformance with bonus tolerance from MMC modifier & LMC modifier.

Section 10: Profile Controls

Setup, inspection and reporting of all different types of surfaces and how to correctly report profile measurement.

Section 11: Orientation Controls

Set up, inspection, and reporting of perpendicularity, parallelism, and angularity for surfaces and FOS.

Section 12: Form Controls

Set up, inspection, and reporting for flatness, straightness, circularity and cylindricity.

Section 13: Runout Controls

Set up, inspection, and reporting for circular runout and total runout.

Section 14: Concentricity and Symmetry

Set up, inspection, and reporting for concentricity and symmetry.

Section 15: Full Inspection Example

- Discuss considerations for inspection plans.
- Applying characteristic identifiers to a drawing (balloons).
- Creating inspection report for drawing based on inspection plan.
- Inspect & report values for FOS with rule #1.
- Inspect datum features with geometric controls.
- Set up, inspect, and report position, profile of a surface & various controls.

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