COURSE TABLE OF CONTENTS

ISO Geometrical Product Specifications (GPS)

OEM: ISO • Duration: 3 Days (24 hrs)

COURSE MODULES & TOPICS

Module 1: Introduction to ISO GPS

- What is GPS? Why use GPS?
- How does GPS work?
- Comparison with Coordinate Dimensioning and Tolerancing

Module 2: Part Features and Feature Types

- What are Part Features?
- Features of Size
- Non-Size Features

Module 3: Maximum Material Virtual Condition (MMVC)

- Importance of MMVC in product and gauge design
- MMVC calculations
- Using MMVC for mating parts and fixed gauges
- 100% interchangeability and MMVC
- Classroom exercise for MMVC

Module 4: Datums and Datum Systems

- What is a datum?
- Six Degrees of Freedom
- Datum System (Cartesian coordinate system)
- Datum feature selection and functional hierarchy
- Datum feature identification and interpretation
- Datum plane, axis, and median plane
- Physical datum feature simulators
- 3-2-1 principle
- Datum feature qualification
- Importance of datum precedence
- Selecting datum features by design intent

Module 5: Geometrical Specifications and Symbols

- Tolerance indicator (Frame) and placement
- Reading tolerance indicators
- Modifier symbols: MMR, LMR, RFS
- Applications of MMR, LMR, RFS modifiers
- Bonus tolerance calculations
- Independency Principle (Default)
- Envelope principle

Module 6: Form Specifications

- Flatness specification
- Straightness specification

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- Roundness specification
- Cylindricity specification
- CZ Modifier on flatness
- Envelope principle and form specifications
- Inspection methods for form specifications
- Design recommendations for form specifications

Module 7: Profile Specifications

- How profile specifications work and application
- Line profile specification
- Surface profile specification
- Profile tolerance zones: Symmetrical and Offset (UZ Modifier)
- SZ, CZ, UF Modifiers
- Controlling extent of profile specification
- All-around profile specification
- Inspection methods for profile specifications
- Classroom exercise for profile

Module 8: Position Specification

- How position specification works and application
- Tolerance zone shapes
- Position for cylindrical features: MMR, LMR, RFS
- Table calculations for position: MMR, LMR, RFS
- CZ and SZ Modifiers
- Position on boundary basis for slots
- Position for nominally flat or planar surfaces
- Inspection methods for position specification
- Classroom exercise for position

Module 9: Coaxiality, Concentricity, and Symmetry

- How these specifications work and application
- Coaxiality specification
- Concentricity specification
- Symmetry specification
- Inspection methods for concentricity and symmetry

Module 10: Orientation Specifications

- How orientation specifications work and application
- Perpendicularity specification
- Parallelism specification
- Angularity specification
- Application to planar features
- Application to features of size
- Inspection methods for orientation
- Classroom exercise for orientation

Module 11: Run-out Specifications

- How run-out specifications work and application
- Circular run-out specification - Radial
- Total run-out specification - Radial

- Inspection methods for run-out specifications