

Training Title: 2-Day “Tolerance Stack-up Analysis”

(Pre-requisite: Basics of GD&T is a MUST)

COURSE CONTENTS

- **Introduction to Stack-up methodology:**
 - Quick review of Basics of GD&T (~ 1 hour)
 - Importance of Tolerance Stack-up Analysis: Why, when and how
 - Introduction to Tolerance Stack-up Analysis:
 - Coordinate dimensioning and tolerancing stacks
 - GD&T stacks
 - Statistical tolerancing stacks: RSS and MRSS
 - Methodical steps involved in any stack-up analysis
 - Loop diagram creation
 - Universal sign language of tolerance stack-up analysis
 - identification of correct dimensional contributors (vectors)
 - Drawing improvements to reduce tolerance stack-up
 - Understanding Tolerance Stack-up and Tolerance allocation difference
 - Considerations of process capable tolerances
- **Part Level Stack-up Analysis:**
 - Part stacks using coordinate dimensioning and tolerancing
 - Part stacks using position
 - Review of Virtual Condition (VC) Boundary & Resultant Condition (RC) Boundary concepts
 - IB (inner boundary) and OB (outer boundary) calculations
 - Part stacks using profile
 - Part stacks using runout
 - Part stacks using bonus (planar & RFS datums)
 - Part stacks using position with bonus tolerance
 - Part stacks using combined geometric tolerances
- **Assembly Level Stack-up Analysis:**
 - Assembly stacks using coordinate dimensioning and tolerancing
 - Assembly stacks using position:
 - Floating fastener assembly stack-up
 - Fixed fastener assembly stack-up
 - Floating and Fixed fastener formulas
 - Assembly stacks using profile
 - Assembly stacks using runout
 - Assembly stacks using combined geometric tolerances
 - Stacks using form controls applied to a feature
 - Stacks using orientation controls applied to a feature without size
 - Stacks using orientation controls applied to a feature of size (FOS)
 - Introduction to Statistical Tolerancing:

- RSS (Root Sum Square) Stacks
- MRSS (Modified Root Sum Square) Stacks
- Comparison between Worst-case method, RSS & MRSS methods
- Live demo of Stack-up analysis using Excel sheet templates:
 - Don's and Don'ts of Excel sheet stack-up analysis

Contact:

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