Workshop on Tolerance Stack-up Analysis

Course Contents

❖ **Introduction to Stack-up Methodology (Session : 1)**
- Importance of Tolerance Stack-up Analysis: What, Why, When & How
- Quick review of Basics of GD&T
- Introduction to Tolerance Stack-up Analysis:
    - Coordinate Dimensioning and Tolerancing Stacks
    - GD&T Stacks
- Understanding Tolerance Stack-up and Tolerance Allocation Difference
- Considerations of Process Capable Tolerances

❖ **Steps for Stack-up Analysis (Session : 2)**
- 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)
    - Converting dimensions to equal bilateral tolerances
    - Drawing improvements to reduce Tolerance Stack-up

❖ **Part Level Stack-up Analysis (Session : 3)**
- 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 Tolerances (Planar & RFS Datums)
- Part stacks using Position with Bonus Tolerance
- Part stacks using Combined Geometric Tolerances

❖ **Assembly Level Stack-up Analysis (Session : 4)**
- 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)

Framework Engineering, Pune

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Note :

- ✓ Exercises throughout the workshop.
- ✓ Final tests on proficiency and application of Stack-up methodology.

- ✓ **Duration** : 2 Days (8 Hrs./Day)
- ✓ **Pre-requisite :** Basics of GD&T

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