Nomenclature

$B_i$ Control Points for NURBS Curve

$C/C_0$ Global Coordinate system

$C_1$ Local Coordinate system 1

$C_2$ Local Coordinate system 2

$D_1$ Diameter of Hub1

$D_2$ Diameter of Hub2

$D_c$ Cutter Diameter of End Mill

$D_e, D_{Re}, D_{Le}$ Outer Circle Diameter at the Centre, Right End and Left End of the MPFM Cutter respectively

$D_i$ Outer Circle Diameter of Insert Seat

$D_r$ Root Circle Diameter of Insert Seat

$D_s$ Shank Diameter of End Mill

$F_r, F_t, F_a$ Cutting Forces in Radial, Tangential and Axial Directions

$F_x, F_y, F_z$ Cutting Forces in Directions along $X, Y$ and $Z$ axis

$L_c, L_{r1}, L_{r2}$ Length of the Rake Face at the Centre, Right End and Left End of the MPFM Cutter respectively
Nomenclature

\( L_1 \) Length of the Fluted Shank for Flat End Mill
\( L_2 \) Length of the End Mill
\( N \) Number of Flutes / Inserts / Insert Seats
\( P \) Pitch of the Helix
\( R \) Radii of Fillet
\( [R] \) Rotation Matrix
\( R_{f}, r_{rf}, r_{lf} \) Fillet Radius at the Centre, Right End and Left End of the MPFM Cutter respectively
\( [T] \) Translation Matrix
\( V_i \) Arbitrary point on Composite Sectional curve
\( W \) Width of the Cutter Insert / Insert Seat
\( W_1/W_2 \) Widths of Peripheral land along the Body of Cutter Tooth
\( W_b \) Width of the Cutter Body
\( a \) Width of the Keyway
\( b \) Depth of the Keyway
\( d \) Diameter of Bore
\( d_{c}, d_{Re}, d_{Le} \) Root Circle Diameter at the Centre, Right End and Left End of the MPFM Cutter respectively
\( d_{i,j} \) Displacement of \( i^{th} \) plane along \( j^{th} \) direction (1(x), 2(y), 3(z) axis)
\( f \) Number of Flank Faces
\( h_i \) Weights of the NURBS curve
\( l \) Number of Peripheral Land Surfaces
\( l_1 \) Widths of Face Land
\( l_2 \) Widths of Peripheral Land
\( l_3 \) Widths of Heel or Secondary Land
\( p_i \) Vertex on the Surface \( \Sigma_i \)
\( r_2 \) Radii of Back of Tooth
\( r_3 \) Radius of Blending Surface
Nomenclature

- $\Sigma_i$ Surface Patch
- $\alpha_{iR}$ Radial Clearance Angle
- $\alpha_A$ Axial Relief Angle
- $\alpha_i, \beta_i, \gamma_i$ Rotational Angle for Surface Patch $\Sigma_i$ about X, Y, Z axis respectively
- $\alpha_R$ Radial Relief Angle
- $\gamma_R$ Radial Rake Angle
- $\theta$ Cutter Angle Rotation
- $\sigma_{i,j}$ Chamfer between Surface Patch $\Sigma_i$ and $\Sigma_j$
- $\phi_e$ End Cutting Edge Angle
- $\phi$ Helix Angle
- $\psi$ Circumferential Pitch Angle