NOMENCLATURE

[B] - Shape function derivative function
[C_G] - Global capacitance matrix
[C_pe] - Element capacitance matrix
[C_p] - Specific heat (J/ Kg K)
[E_0] - Energy density (W/m^2)
[E_r] - Young’s modulus of elasticity in r – direction (N/m^2)
[EWR_{op}] - Optimum value of EWR
[E_z] - Young’s modulus of elasticity in Z – direction (N/m^2)
[E_0] - Young’s modulus of elasticity in θ – direction (N/m^2)
{F} - Acceleration force vector
[F_c] - Tangential force (N)
[f_r] - Thermal stress in r – direction (N/m^2)
[f_z] - Thermal stress in z – direction (N/m^2)
[f_θ] - Thermal stress in θ – direction (N/m^2)
[G_z] - Shear modulus in the rθ- plane
[h] - Coefficient of heat transfer (W/ m^2K)
[J_e] - Element stiffness matrix
[K] - Conductivity matrix
[K^{dl_e}] - Elemental diffusion conductivity matrix
[K_G] - Global conductivity matrix
[K] - Thermal conductivity (W/ mK)
[L_{HB}] - Taguchi loss function (higher is better)
[L_{LB}] - Taguchi loss function (Lower is better)
[MRR_{opt}] - Optimum value of MRR
[M_e] - Element mass matrix
[M_G] - Global mass matrix
{N} - Element shape function vector
{P} - Applied pressure vector
[Q_r] - Heat flux in radial direction (W/ m^2)
Heat flux \( q_{wg} \) - Heat flux

Heat flux in axial direction \( Q_z \) (W/ m\(^2\))

Heat flux in circumferential direction \( Q_\theta \) (W/ m\(^2\))

Element mass flux matrix \( \{ Q_e \} \)

Heat flux vector \( \{ Q_w \} \)

Discharge radius (m) \( R \)

Stress vector \( \{ S \} \)

Signal to noise ratio \( S/N \)

Equivalent stress \( S_{eq} \)

Optimum value of SR \( SR_{opt} \)

Global temperature vector \( [T_G] \)

Element’s nodal temperature vector \( \{ T_e \} \)

Thermal load vector \( \{ T_{He} \} \)

Global thermal load vector \( \{ T_{Hg} \} \)

Vector of displacement \( \{ W \} \)

Boiling point \( T_b \)

Temperature due to EDM (K) \( T_{EDM} \)

Ambient temperature (K) \( T_o \)

Pulse Off time (\( \mu \)s) \( T_{off} \)

Pulse On time (\( \mu \)s) \( T_{on} \)

Temperature due to surface grinding (K) \( T_{SG} \)

Specific grinding energy of work material (j/m\(^3\)) \( U_g \)

Volume of element \( V \)

Grinding speed (mm/s) \( V_s \)

Measured value of electrode wear rate \( Y_{EWR} \)

Measured value of material removal rate \( Y_{MRR} \)

Measured value of surface roughness \( Y_{SR} \)

**Greek symbols**

Strain vector \( \{ \varepsilon \} \)

Density of material (Kg/ mm\(^3\)) \( \rho \)

Thermal diffusivity (m\(^2\)/s) \( \alpha \)

Duty factor \( \tau \)