LIST OF SYMBOLS AND ABBREVIATIONS

SYMBOLS

\( T \)  
Tool life in min

\( V_c \)  
Cutting velocity

\( \mu \)  
Coefficient of friction along the tool flank face

\( V_b \)  
Flank wear length (wear land width)

\( P_r \)  
Main cutting force (N)

\( P_x \)  
Feed force (N)

\( P_y \)  
Transverse component of the cutting force

\( t \)  
Undeformed chip thickness

\( d \)  
Depth of cut in mm

\( D_t \)  
Diameter in mm

\( f_r \)  
Feed (mm/rev)

\( L_n \)  
Length of the work-piece in mm

\( n \)  
Tool life exponent

\( \Gamma \)  
Feed rate

\( R_t \)  
Surface roughness (\( \mu m \))

\( R_a \)  
Roughness height (\( \mu m \))

\( \tau_v \)  
Dynamic yield shear strength of the work material

\( \gamma_c \)  
effective rake angle

\( \xi \)  
Chip reduction coefficient

\( \Phi \)  
Principle cutting edge angle

\( 'r' \)  
is the nose radius of the cutting tool

\( K \)  
Thermal conductivity

\( \rho \)  
Density

\( c \)  
Specific heat

ABBREVIATIONS

ANOVA  Analysis of variance

DOC  Depth of cut

SR  Surface roughness

FEM  Finite Element Methods

BC  Boundary condition

SPRCT  Self propelled rotary circular tool

SS  Sum of square

SS\(_T\)  Total sum of square

SS\(_E\)  Error sum of square

ART  Adaptive resonance theory

AE  Acoustic emission

CPI  Cutting parameter index

SEM  Scanning Electron Microscope

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