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Abstract Details

Title: Recent developments in surface coating technologies for cutting tools: a review

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Abstract: Coated Cutting Tool Plays A Vital Role In High Speed Machining Of Hard Materials And Super Alloys. In Global And Competitive World Coated Cemented Carbide Tools Are Frequently Accepted. Surfaces Coating Increases The Mechanical And Thermo-Physical Properties Of Cutting Tools. Coated Tools Can Experience Fundamentally Higher Cutting Speed And Feed Which Reduces Machining Time And Expenses. The Extraordinary Wear Resistance Property Broadens Tool Life Which Can Fulfill The Need Of Machining Industry. Anisotropic Properties Of The Tool Materials Influence Tool Life And Depend Upon The Working Conditions Of The Tool. Preconditioning Of The Tool Surface, And Coating Are Critical To Control Wear And Fatigue .The Present Work Shows The Developments Of Coating Technologies Like PVD, CVD, PACVD, Arc Evaporation And Sputtering. Some Recently Developed Technologies Are Scalable Pulsed Power Plasma (S3P), Pulsed Enhanced Electron Emission (P3E). Coating Technologies Can Controlled The Coating Properties Precisely Such As Hardness, Structure, Chemical And Temperature, Resistance, Etc. In This Thesis, I Also Focus On Coating Materials Which Are Broadly Classified In Two Types Monolayer Coating (Tic, Tin,Tialn, Ticn, Crn, Zrn, And More) And Multilayer Coating (Ti-Tin-(Ticral)N, Zr-Zrn-(Zrcral)N, Tialn/Crn , Tialn-Zrnbn-Crn And More). This Thesis Gives Detail Overview On The Coating Materials With Their Properties And Technologies For The Film Coating With The Goal To Provide A Reference For Further Research.

Keywords:: Coating Technologies, PVD, CVD, Monolayer Coating, Multilayer Coating, Pre And Post-Treatment, Coating Inspection.