Investigation of the Influence of PVD Coatings Deposited on HSS Milling Cutter

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This article deals with the benefits of PVD coatings ((Al,Ti)N; (Al,Ti,Cr)N and nanocomposite coating nACo®) applied to HSS three edges end milling cutters (producer ZPS – Frezovaci nastroje, Zlin, CZ). The coatings were synthesized by a cathodic-arc deposition process (producer Liss, Roznov pod Radhostem, CZ). Machining was carried out on the vertical milling machine FB 32V with using process liquid. Set up cutting conditions were constant throughout the machining. The aim of this experiment was to compare coated and uncoated HSS end milling cutters and find out the benefits of three kinds of PVD coatings. The monitored parameters were force loading and flank wear. Piezoelectrical dynamometer Kistler 9257B was used for measuring force loading and workshop optical microscope was used for measuring flank wear (criterion VB). The construction steel C45E (1.1191; CSN 41 2050) was used as workpiece material. Best results were achieved by tool with PVD coating (Al,TiCr)N.

Keywords: PVD coating, High-speed steel, milling, force loading, flank wear

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References