World Academy of Science, Engineering and Technology
International Journal of Mechanical and Industrial Engineering
Vol:9, No:05, 2015

Effect of Post Hardening on PVD Coated Tools

Authors : Manjinder Bajwa, Mahipal Singh, Ashish Tulli

Abstract : In the research, the effect of varying cutting parameters, design parameters and heat treatment processes were studied on the cutting performance (Tool life) of a PVD coated tool. Thus, in a quest for these phenomenon comparison, a single coated tool and a multicoated tool were analyzed after suitable heat treatment process. TNMG shaped insert with single coating of TiCN and multi-coating of TiAlN/TiN were developed on tungsten carbide substrate. These coated inserts were then successfully annealed and normalized for a temperature of 350°C for 30 minutes and their cutting performance was evaluated as per the flank wear obtained after turning of mild steel. The results showed that heat treatment had a suitable impact on the tool life of the coated insert and also led to increase in the micro-hardness of the tool coatings and decrease in the wear rate.

Keywords : PVD coatings, flank wear, micro-hardness, annealing, normalizing
Conference Title : ICME 2015 : International Conference on Mechanical Engineering
Conference Location : Montreal, Canada
Conference Dates : May 11-12, 2015