Abstract

This work aims at the study of surface integrity on machined surfaces at high cutting speeds of the 40XHMA steel. The experiments were performed in a turning process with cutting schemes corresponding to polishing: Once machined, the specimens were subjected to different types of analysis: surface roughness, residual stresses, micro Vickers hardness and analysis of surface deformation. As a result it was shown that the variation of cutting speed had no significant effect on surface roughness values, showing a slight tendency to decrease it. In the tested samples zones of surface plastic-deformation were not observed. Nonetheless the micro Vickers hardness showed an increment in the machined surface and a decrease in residual stress with increasing cutting speeds was observed as well as.

Keywords

Surface integrity, high-speed cutting. 40XHMA steel, 4340 steel.