

Effect of Different Contact Rollers on the Surface Texture during the Belt Grinding Process

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Abstract : During abrasive machining of hard steels by belt grinding, the finished surface texture is influenced by the pressure between the abrasive belt and the workpiece; this pressure is the force applied by the contact roller on the workpiece. Therefore, the contact roller has an important role and has a direct impact on process efficiency. The objective of this article is to study and compare the influence of different contact rollers on the belt ground surface texture. The quality of the surface texture is characterized by eight roughness parameters (Ra, Rz, Rp, Rv, Rsk, Rku, Rsm, and Rdq) and five parameters of the bearing area curve (Rpk, Rk, Rvk, Mr1, and Mr2). The results of the experimental tests indicate a better surface texture obtained by the PA 6 polyamide roller (hardness 60 Shore D) compared to that obtained with other rollers of the same hardness or of different hardness. Simultaneously, optimum medium pressure between the belt and the workpiece allows chip removal without fracturing the abrasive grains. This generates a good surface texture.

Keywords : belt grinding, contact roller, pressure, abrasive belt, surface texture

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