3D Roughness Parameters of Surfaces Face Milled by Special Tools

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At design of cutting tools the positioning of cutting edges and geometry of cutting inserts are becoming increasingly diversified with the development of cutting procedures. As a result, the generated tool marks on cut surfaces also can take many forms. Roughness values in face milling can change both in planes parallel with the feed direction and in planes at angle to it, therefore it is particularly important to be able to plan the roughness characteristics of surfaces. A new method is introduced in the paper for planning the roughness characteristics of cut surfaces that can be used to determine theoretical values of roughness characteristics of surfaces generated by tools having defined edge geometry. It is based on CAD modelling of the theoretical cut surface; practically any complex tool geometry can be modelled and 3D roughness parameters determined. In application of rotating tools a variety of tool designs and setting accuracy were taken into consideration during the determination of theoretical values for the simultaneous cutting of more than one edge. An example is shown for two different insert geometries.

Keywords: Roughness, Milling, Tool geometry

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