Influence of the Thermodynamic Phenomena on the Optimum Cutting Parameters in Grinding

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The quantitative and qualitative results of the technological process are mostly determined by the level of finishing operations, which include particularly the grinding. It is characterized by high precision, the accuracy of geometric shape and generally a very good quality of surface. One of the factors to achieve the desired quality of the finished surfaces is in particular the knowledge of the effect of temperature of the contact surface of the grinding wheel and the ground piece. The article specifies the methodology of quantification of the impact of cutting parameters on the temperature of the grinding. Another requirement is the proper choice of other cutting parameters to guarantee the achievement of the required accuracy of dimensions and shape, increased performance and reduction of the contact temperature between the ground surface and the grinding wheel.

Keywords: energy characteristics, cutting parameters, surface integrity, residual stress, quantification of heat and temperature

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