

**Modification of Tool-Workpiece Interaction  
Principles in the Cutting Process**

**by**

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## **Introduction**

The recently used theory of metalworking is based on the experience of that technology obtained in the period of formation of high-speed steel (Taylor [37], Time [38]). Its characteristics are preferring linear dependencies among the technological conditions and results of metalworking. These have been obtained by an insufficient number of experiments. Over the last decades, there has been a significant change in the cutting materials being machined. At present, the high-strength, so-called difficult-to-machine materials, are preferred. Now, in the range of cutting materials, the high-speed steel is only little applied. The proportion of sintered carbides is significant, preferably wear-resistant coatings are used [18],[23],[25], in selected cases the cutting ceramics materials and cermets are applied. The mentioned facts significantly affect the interaction of the cutting tool and workpiece material, as well as the machining results [3], [21]. The coating became another feature in the cutting zone influencing the cutting tool-workpiece interaction.

The development of cutting and machined materials, the application of highly stiff and strength metals, have required to considerably modify all the attributes of metalworking theories. Let us try to define essential changes of approaches to the new evaluation of metalworking principles.