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A Method to Determine Cutting Force Coefficients in Turning Using Mechanistic Approach

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Abstract : During performing turning operation, cutting force plays a significant role in metal cutting process affecting tool-work piece deflection, vibration and eventually part quality. The present research work aims to develop a mechanistic cutting force model and to study the mechanistic constants used in the force model in case of turning operation. The proposed model can be used for the reliable and accurate estimation of the cutting forces establishing relationship of various force components (cutting force and feed force) with uncut chip thickness. The accurate estimation of cutting force is required to improve thin-walled part accuracy by controlling the tool-work piece deflection induced surface errors and tool-work piece vibration.

Keywords : turning, cutting forces, cutting constants, uncut chip thickness
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