

Study of Friction and Temperatures During Modulation Assisted Machining

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Friction causes tool wear and increases redundant work during the deformation processing of metals and alloys. A technique involving the application of a controlled vibration on the tool or the work material has been found successful in machining operations. A setup for utilizing modulation to evaluate the frictional phenomena in a turning process has been designed and is being developed. The setup will be used to apply a controlled vibration (modulation) of low frequency on the tool during turning. The effects of this modulation on friction will be observed indirectly through force measurements, characterization of microstructural flow patterns and temperature measurements. The aim of the experiment is to show that modulation enhances lubricant penetration into the tool-work material interface, thereby reducing the severity of the friction arising during the turning operation and reducing temperature.