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Simulating Drilling Using a CAD System

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Abstract : Nowadays, the rapid development of CAD systems' programming environments results in the creation of multiple downstream applications, which are developed and becoming increasingly available. CAD based manufacturing simulations is gradually following the same trend. Drilling is the most popular hole-making process used in a variety of industries. A specially built piece of software that deals with the drilling kinematics is presented. The cutting forces are calculated based on the tool geometry, the cutting conditions and the tool/work piece materials. The results are verified by experimental work. Finally, the response surface methodology (RSM) is applied and mathematical models of the total thrust force and the thrust force developed because of the main cutting edges are proposed.

Keywords : CAD, application programming interface, response surface methodology, drilling, RSM
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