Simulation and Experimental Research on Pocketing Operation for Toolpath Optimization in CNC Milling

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Abstract : Nowadays, manufacturing industries augment their production lines with modern machining centers backed by CAM software. Several attempts are being made to cut down the programming time for machining complex geometries. Special programs/software have been developed to generate the digital numerical data and to prepare NC programs by using suitable post-processors for different machines. By selecting the tools and manufacturing process then applying tool paths and NC program are generated. More and more complex mechanical parts that earlier were being cast and assembled/manufactured by other processes are now being machined. Majority of these parts require lots of pocketing operations and find their applications in die and mold, turbo machinery, aircraft, nuclear, defense etc. Pocketing operations involve removal of large quantity of material from the metal surface. The modeling of warm cast and clamping a piece of food processing parts which the used of Pro-E and MasterCAM^{®} software. Pocketing operation has been specifically chosen for toolpath optimization. Then after apply Pocketing toolpath, Multi Tool Selection and Reduce Air Time give the results of software simulation time and experimental machining time.

Keywords : toolpath, part program, optimization, pocket