Investigation of roughing machining simulation by using visual basic programming in NX CAM system

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ABSTRACT
This paper outlines a simulation study to investigate the characteristic of roughing machining simulation in 4th axis milling processes by utilizing visual basic programming in NX CAM systems. The selection and optimization of cutting orientation in rough milling operation is critical in 4th axis machining. The main purpose of roughing operation is to approximately shape the machined parts into finished form by removing the bulk of material from workpieces. In this paper, the simulations are executed by manipulating a set of different cutting orientation to generate estimated volume removed from the machine parts. The cutting orientation with high volume removal is denoted as an optimum value and chosen to execute a roughing operation. In order to run the simulation, customized software is developed to assist the routines. Operations build-up instructions in NX CAM interface are translated into programming codes via advanced tool available in the Visual Basic Studio. The codes is customized and equipped with decision making tools to run and control the simulations. It permits the integration with any independent program files to execute specific operations. This paper aims to discuss about the simulation program and identifies optimum cutting orientations for roughing processes. The output of this study will broaden up the simulation routines performed in NX CAM systems.