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Machining Process Optimization of Connecting Rod Using the Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM)

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Abstract: At present the evolution of Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) have contributed to the development process of modeling machining parts with complex geometries, allowing the optimization of machining process by reducing time and errors during the process. This article describes the process of machining the connecting rod commonly manufactured from Ti6Al4V alloy. The design model and machining process simulation is constructed using Catia V5R21 software. The results of the research, through simulations, reflects the usefulness of the CAD / CAM systems. Their use results in a reduction of processing time to machine the connecting rod and decreases the number of lines of CNC code obtained from the different simulations of the machining process used in the methodology of Design of Experiments Taguchi. As part of the modeling and simulation of the connecting rod, a flowchart that reflects the steps for optimization of machining processes in the CAD / CAM systems was obtained.

Keywords: Computer Aided Design, Computer Aided Manufacturing, Machining, Design of Experiments, Taguchi