CONCEPT DEVELOPMENT FOR ROUGH MILLING OF FREE FORM SURFACES

Goran M. Mladenovic[1*], Marko J. Milovanovic[2] ,Ljubodrag M. Tanovic[1], Radovan M. Puzovic[1], Milos D. Pjevic[1], Mihajlo D. Popovic[1]

[1]University of Belgrade, Faculty of Mechanical Engineering, Department of Production Engineering, 11000 Belgrade, Serbia

[2]CERN - European Organization for Nuclear Research, CH-1211 Geneva, Switzerland

*Corresponding author e-mail: _gmladenovic@mas.bg.ac.rs_

Abstract

A new research was made in the field of free form surfaces machining at the Faculty of Mechanical Engineering in Belgrade, focused this time on rough machining of free form surfaces. This paper describes the development of this concept which is used when machining is not possible to be performed in one pass with ball end cutter. Based on a loaded CAD model of the workpiece and part, the developed system makes a machining simulation for ball end mill in one pass. In certain cases, when removing material in one pass is not possible, the system will provide two options for rough machining. The first option obtains an approximate shape of the free form surface for machining with end mill cutter in case the generated stock allowed parameter has an appropriate value for machining in one pass with a ball end cutter. The second option for rough machining with ball end mill performs two or more passes, maintaining the maximum allowed cut depth for the chosen tool in every single pass. After the final pass, the tool would be moved to next leading plane. The decision which option to choose out of these two depends heavily on the machining time generated by the machining simulation, which is supported by the developed system. By default, the system generates NC code for the strategy providing shortest possible machining time.

Keywords

CAD/CAM systems, Free form surfaces, Rough machining

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