Fixtures Design for Increasing of Quality Production of Cast Workpiece with Weld Deposit

Peter Pavol Monka[1, 3], Jaromír Markovič [2], Katarina Monkova[1], Jan Řehoř [3, 4], Slavomír Hric[1], Dušan Manduľák[5]
[1]Technical University of Košice, Faculty of Manufacturing Technologies with seat in Prešov, Bayerova 1, 080 01 Prešov, Slovakia. E-mail: peter.monka@tuke.sk, katarina.monkova@tuke.sk, slavomirhric@gmail.com
[2]Slovak Metrological Society, Hviezdoslavova 1124/31, 97401 Banská Bystrica, Slovakia. E-mail: slm@slm.sk
[3]Regional Technological Institute, University of West Bohemia, Univerzitní 8, 306 14 Pilsen, Czech Republic. E-mail: monka@rti.zcu.cz, rehor4@rti.zcu.cz
[4]Department of Machining Technology, University of West Bohemia, Univerzitní 22, 306 14 Pilsen, Czech Republic. E-mail: rehor4@kto.zcu.cz
[5]1. Prešovská nástrojáreň, Ltd., Ľubochnianska 2407/2, 080 06 Prešov, E-mail: mandulak@1pn.sk

The article deals with the principles of fixtures design and their application at machining of armature DM 100, PN 25/40-RF. It is bulky component that is produced by casting technology. Surfaces near the hole of valve are hard machinable due to weld deposit. Considering elimination of clamping device weaknesses that could originate due to unsuitable design and production, it is advantageous to use a virtual model along with simulation and analysis in CAD/CAM system. Nowadays technologists have strong tools in their hands that increase efficiency of solution not only conventional, but also specific, problems. On the other hand, they have to know to solve some difficulties in their mind, such are, for example, the differences in specifications of coordinate systems used for virtual model in CAD/CAM system and coordinate systems used in real production. The problems can arise in case of cutting tool definition according to the tool-in-hand or tool-in-use systems. Based on theoretical know-how two fixtures were designed for manufacturing of two sets of surfaces that are normal each other, so after inovation manufacturing operations were realized in vertical and in horizontal position of workpiece axes. Using new approach, the production efficiency and production rate have increased twice and no failure product has been made.

Keywords: Design Principles, Jig and Fixture, Hard-Machinable Surface, Virtual Model, Cutting Tool, Coordinate System

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