

Abstract of doctorate thesis

Title: *Analysis of the influence of geometrical and material parameters of dies used in the KOBO extrusion process on the effects of plastic deformation of Al and Mg alloys*

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Abstract: The dissertation deals with the problem of determining the influence of the characteristic features of the geometry of dies used for extrusion by the KOBO method of products from feedstock materials with different internal structures, aluminum and magnesium alloys and sandwich composites. The analysis of the state of art showed a lack of studies on the design and manufacture of KOBO dies, which justifies the undertaking of the research. The feedstock materials with different internal structures used in the extrusion research program allowed verification of the use of the developed dies in the KOBO process. Experimental studies of extrusion by the KOBO method in the process carried out in the cold using dies with the developed geometry of the front part were divided into two stages: preliminary research and systematic research. As a result of the research and analysis of the results, it was shown that the specified modification of the die face part has a beneficial effect on the final product effect and the process execution. The process carried out with tools of modified geometry was characterized by a lower maximum extrusion force. The product obtained as a result of extrusion is characterized by equal strength and structural properties along its entire length, in contrast to the extrusion obtained by the conventional process.