

Effectiveness Evaluation of a Machine Design Process Based on the Computation of the Specific Output

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Abstract : In this paper, effectiveness of a machine design process is evaluated on the basis of the specific output calculus. Concretely, a screw-worm gear mechanical transmission is designed by using the classical and the 3D-CAD methods. Strength analysis and drawing of the designed parts is substantially aided by employing the SolidWorks software. Quality of the design process is assessed by manufacturing (printing) the parts, and by computing the efficiency, specific load, as well as the specific output (work) of the mechanical transmission. Influence of the stroke, travelling velocity and load on the mechanical output, is emphasized. Optimal design of the mechanical transmission becomes possible by the appropriate usage of the acquired results.

Keywords : mechanical transmission, design, screw, worm-gear, efficiency, specific output, 3D-printing

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