

Computer and experimental modeling of flow forming process
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ABSTRACT

The growing demand for products with higher durability and quality of performance affects the need for new technology and to analyze the correctness of their performance at the design stage [1, 2]. Continuous progress in the field of rotary plastic forming affect the classification of technological processes. More and more often used technique in the forming of axisymmetric products is rotary forming which includes metal spinning and flow forming. The classification of rotary forming processes is one of the processes of stamping, however, the forces encountered during spinning and flow forming are much smaller due to the local contact tools with shaped material.

The use of modern computer technology has become an integral part of the development of innovative stamping, spinning and flow forming technologies. The use of software tools in the forming of numerical analysis systems based on the finite element method speeds up the design and optimization of processes. However, the use of computer simulation systems for analysis of a rotary forming process is not technically easy, mainly due to the lack of a dedicated software on the market with a graphical user interface for these processes.

The tests of the shaping of Hastelloy C-276 with the methods of stamping and flow forming were undertaken. The tests were aimed at determining the possibility and conditions of shaping the material with plastic forming processes. Hard-to-deform materials are increasingly being used in flow forming process, for example in aircraft industry [3].

This paper deals with the problem of forming of axisymmetric element. The first stage was the deep drawing process of metal blank using hydraulic press. Then the blanks were formed by the method of elongating flow forming. This article presents the results of numerical and experimental analyzes.

REFERENCES

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