

## عنوان مقاله:

Computer aided modeling and simulation of hydroforming on tubular engineering products

## محل انتشار:

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## خلاصه مقاله:

Hydroforming processes have been widely applied in many different industrial fields including aerospace, automotive, and modern plastics for weight-reduction and strength enhancement. Hydroforming on tubular products is better than the process of welding tubular assemblies from stampings including increased strength, reduction of work applied to the unit weight, decreased processing and tool costs, improved structural stability, less secondary operation, enhanced stiffness, and more uniform in product thickness. Although the hydroforming becomes popular manufacturing methodology, few researches have been done to study the hydroforming mechanism through computational modeling and simulation. This paper focuses on the study of hydroforming process and mechanism based on computer-aided modeling (FEA) and prototype testing to determine the material behaviors in hydroforming process. The objective of this research is to verify the effects of major manufacturing parameters on hydroforming processes. The computational analysis and prototype testing indicate that some factors including applied internal pressure path and compressive axial loading play important roles in hydroforming deformation. Both computer-aided modeling and prototyping experiment show close results which verifies the credibility of this research and analytic methodology.

## کلمات کلیدی:

Computer-aided modeling , Stress analysis , Hydroforming , Structural stability , Material stiffness , Cost-effective

## لینک ثابت مقاله در پایگاه سیویلیکا:

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