
PREFACE

Flow forming is an incremental cold/hot forming process in which a ductile material is plastically displaced axially along a given mandrel, while the internal diameter remains constant and fixed with the mandrel. It is bulk plastic deformation under a compressive stress of rollers without fracture.

This dissertation comprises seven chapters. The layout of the dissertation is as follows: Chapter 1 presents the brief definition of the flow forming process and a literature review of the research that has been conducted on different aspects of flow forming. Chapter 2 presents a generalized mathematical model for calculating flow forming forces. Chapter 4 presents the experimental setup that was used to perform the flow forming process. Chapter 5 presents the experimental results where the results of in-situ measurement of forces are presented. The results of microhardness of the flow formed samples, tensile test results, XRD results, residual stress, and EBSD results have been presented and Chapter 6 presents the discussion of the results. Conclusion and future scope of work are discussed in chapter 7.