IMPROVING THE QUALITY OF Al- ALLOYS HOT FORGING PARTS

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Summary: *Aluminium forgings provide the following advantages: high strength and low weight, good corrosion resistance (for most aluminium alloys), the fibre (grain) structure can be arranged to correspond to the main loading direction leading to high strength and fatigue properties. High precision forgings are designed keeping the following aspects in mind: increasing the accuracy of the component, increasing the fatigue strength, reducing the mass of the component, reducing the amount of machining and increasing the economy. This paper systematically discusses the parameters influencing the accuracy of forgings and forging tool life. Detailed characteristics of alloys AlZnMgCu1.5 (EN-AW 7075) for forging are described. By using the software Simufact. Forming for real part and production conditions, appropriate numerical modelling and recommendations for improved manufacturing have been made.*
Keywords: *Hot forging, Al-alloys, precision manufacturing*

1. INTRODUCTION

In research and development of forging processes the use of process simulation programs and physical modeling techniques is complementary. By using these tools the forging tool designer could decrease costs by improving achievable tolerances, increasing tool life, predicting and preventing flow defects, and predicting part properties. In most cases numerical models provide more flexibility in the analysis of the metal flow than physical models since they allow for quick changes in the tooling design and its motion. On the other hand, physical modeling helps the designer to visualize problems with the process and the tooling that may arise during the tryout of the actual tooling [1].

In general forging entails the sequential deformation of the workpiece material through a number of different processes. Furthermore, each forging operation comprises all the input variables such as billet material, dies, the conditions at the die-

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