**Finite Element Analysis of Two-Stage Super Plastic Forming in Aluminum coated Magnesium Alloys**

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**Abstract**

Gas forming is an advanced method for producing complex thin-walled parts shapes in automotive industries. To increase the hot forming ability with improved mechanical properties the utilization of super plasticity effect is required. The thickness distribution in the product and the forming time are of the utmost industrial importance. Finite element simulations are performed on Aluminum coated Magnesium alloys. Super plastic forming of single stage and double stage super plastic forming process is performed at different L/D ratios for circular sheet. The Thickness Distribution is observed to be better in Two-Stage super plastic forming over Single-Stage super plastic forming due to thickness preservations in critical points. Analysis on the forming time and the influence of friction coefficients are investigated in single and double stage super plastic forming process.

**Keywords**: FEA, Single Stage, Double Stage, Superplastic forming, Aluminum coated Magnesium Alloys