



CASE STUDY

HyperForm Sheet Metal Forming Enables Die Validation of Fuel Tank

Overview

Using Altair HyperForm, Supreme Group was able to predict the high non-linear material flow for fuel tank accurately and thereby optimize the blank as well as minimize die tryouts.

Business Profile

Supreme Group of Industries (www.spplindia.com) having three plants in India, is a leading Manufacturer and Exporter of Sheet Metal Stamping Parts, Auto assemblies, Sub assemblies, Auto parts catering to Automotive and Original Equipment Manufacturers (OEM) and suppliers. Established in 1992, the company is backed with latest automated design capabilities for tooling, a state of art press shop and a dedicated workforce.

Challenge

Sheet metal forming is a manufacturing process where the metal is subjected to highly non-linear flow which is difficult to predict. Engineers at the Supreme Group determined that their traditional die design and validation process was more time consuming and tedious than the state of the art simulation driven manufacturing process. The entire die design process at Supreme Group had to be improved by incorporating simulation driven die development processes which help design a tool that is reliable and cost effective in the shortest time possible. Being an industry leading forming simulation software, Altair HyperForm was used to optimize the tool geometry and process parameters to reduce the time from design to tryout. Since the raw material for the blank was expensive, the reduction in the blank size can save costs to meet OEM/performance expectation.



Figure 1
Component

"HyperForm is an effective forming simulation software and has helped us immensely in our die design providing accurate prediction of the formability and thinning plots".

Suhas Gokhale
DGM-Development
Supreme Group of Industries



Solution

HyperForm simulation solution helped Supreme Group to predict the metal flow accurately which enabled to optimize the blank on the existing tool. The HyperMorph feature helped to change the die entry radius quickly which made the simulation process faster. With the analytical draw beads feature in Altair HyperForm, arriving at the optimum draw bead parameters also became very easy. The blank optimizer feature really helped to optimize the blank for this expensive material. Supreme Group successfully applied Altair HyperForm that helped to reduce the time taken for arriving at a design with an optimum blank.

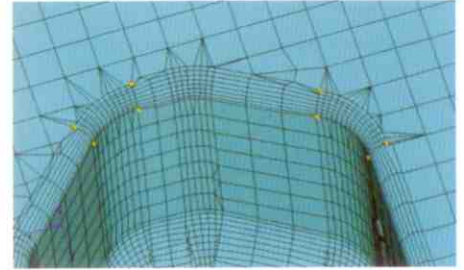


Figure 2
Die Entry Radius Morphed

Results

HyperForm simulation solution was used to minimize the die tryout and optimize the blank which is a very expensive material. By using simulation, Supreme Group was able to develop a die design with optimum process parameters and an optimum blank.

Benefits

HyperForm solution helped Supreme Group to reduce their lead time and physical tryouts drastically. The accurate prediction of the formability and thinning plots, helped deliver a robust solution, while reducing tool validation design cycle times.



Figure 3
Formability Plot



Figure 4
Final Component

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