

## Study on Multi-Point Stretch Forming Process for Double Curved Surface

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**Abstract :** Multi-Point Stretch Forming (MPSF) process is suitable for flexible manufacturing, and it has several advantages including that it could be applied to various forming such as sheet metal forming, single curved surface forming and double curved one. In this study, a systematic numerical simulation was carried out for atypical double curved surface forming using the multiple die stretch forming process. In this simulation, urethane pads were defined based on hyper-elastic material model as a cushion for the smooth forming surface. The deformation behaviour on elastic recovery was also investigated to consider the exact result after the last forming process, and then the experiment was also carried out to confirm the formability of this forming process. By comparing the simulation and experiment results, the suitability of the multiple die stretch forming process for the atypical double curved surface was verified. Consequently, it is confirmed that the multi-point stretch forming process has the capability and feasibility of being used to manufacture the double curved surfaces of sheet metal.

**Keywords :** multi-point stretch forming, double curved surface, numerical simulation, manufacturing

**Conference Title :** ICMSEM 2014 : International Conference on Materials Science, Engineering and Manufacturing

**Conference Location :** Singapore, SG

**Conference Dates :** March 30-31, 2014