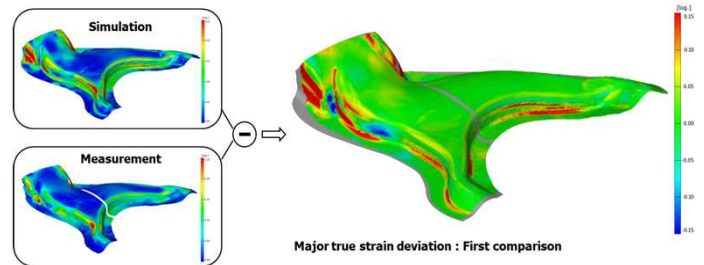


Problem overview

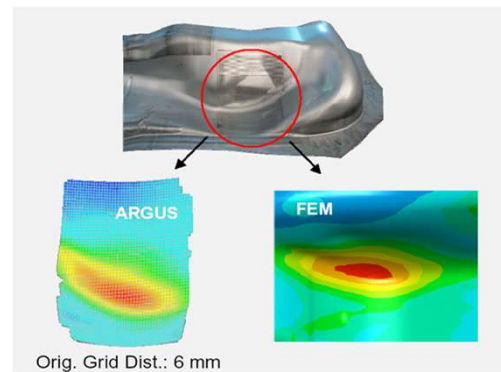
FEA Models are currently being used as the theoretical standard for tool deployment. This method is time and data intensive and does not capture the actual response involved with the complexities of the formability process. Utilizing an Optical metrology solution, such as the ARGUS formability tool, will be shown to demonstrate its effectiveness to precisely pinpoint areas of concern and directly compare to current models for smarter model construction.

Test setup



Notes

A stamping plant was experiencing part failures as evidenced by the forming limit diagram. According to the finite element model the part should have been defect free. In order to determine the root cause of the issue, the ARGUS formability tool was implemented and data was collected throughout every phase of the build cycle. The information was used to discern which station was causing the failure in the process. The station was quickly identified and data from ARGUS was fed upstream to the simulation team, where the model was adjusted. The high resolution 3D mesh rendered during the ARGUS method allowed for a direct FEA comparison where the differences between the simulation and the real data were extracted in order to expedite the buyoff process. A distinctive feature of the software permits for time history comparisons allowing for health monitoring of the tool as well as a diagnosing effectiveness of tooling maintenance.



Conclusion

Typically, plants that implement the ARGUS solution experience an uptick of productivity of 69% resulting in thousands of man hours saved per year. Since the ARGUS data allows for a time history of the part throughout the build process allowing for major reductions in die buyoff time.

For more information on this application, please contact Trilion Quality Systems, world leader in custom optical metrology application development.

Keywords: ARGUS, FEA validation, Optical Metrology, Forming Limit Diagram, Formability, Build Cycle, Time History, Die Buyoff, High Resolution