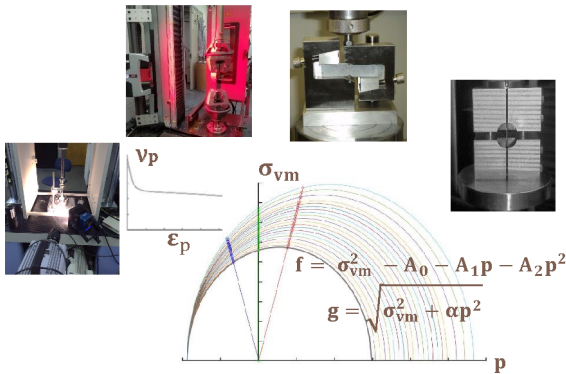


Advanced Material Models for Automotive Full-Vehicle Crash Simulations



Applus+ DatapointLabs and Applus+ IDIADA have worked together to develop advanced testing protocols and forefront CAE analysis to expand the understanding of material plasticity and fracture, and its consistent virtual implementation approach.

Classic plasticity is applied for metals, while advanced pressure sensitive plasticity is utilized for thermoplastics. Material fracture is characterized using the LS-DYNA GISSMO model for reduced and fully integrated shell elements (ELFORM 2 and 16). The main drivers of the material fracture characterization are the accurate measurement in the lab of the actual material behavior, and the generation of the CAE material card, which captures the material plastic and fracture performance, thus ensuring a robust and reliable response when used in automotive full vehicle CAE models.

Test data and simulation results are provided to clients on the CAETestBench cloud; this allows clients to use a number of evaluation tools in our software, including curve variability, to examine the variation between test and simulation.