

## **Convergence of finite element model for crushing of a conical thin-walled tube**

### **Abstract**

In this paper, a convergence of finite element model using different types and sizes of mesh modes has been conducted. A thin-walled conical tube was modeled using plane shell element in LS-DYNA software under dynamic axial impact. The energy absorption and peak load of thin-walled tube by using various converged mesh sizes and mesh modes were analyzed. The importance in conducting a mesh convergence study was shown in this paper since choosing a wrong mesh size will result in major error in the findings. However, using different types of mesh mode under the same mesh size was found insignificant to the result. The converged group of meshing sizes was further studied using various parameters such as element formulation and number of through thickness integration point. It was found that the differences in the results are insignificant among the converged meshing sizes used.

### **Keywords**

Energy absorption; Finite element analysis; Impact; Introduction; Mesh convergence study; Thin-walled tubes