

SHEAR PLATE BUCKLING OF AN ALUMINUM PELLET CAR

PURPOSE: Structural buckling analysis of an aluminum pellet car shear plate

HLA conducted a series of analyses for the buckling behavior of the shear plate of an aluminum plastic pellet car. The original car and several reinforcement modifications were studied and compared. A MARC FEA model was used for the analyses. A 2,000,000 lbs. end squeeze load was applied to the empty car and buckling performance of the shear plate was compared for each modification. The analyses were conducted with large displacement and material plasticity. The studies showed that while some modifications did not make a significant improvement, other modifications showed dramatic improvements in the buckling load carrying capacity of the shear plate. For each modification, the displacements and stresses were checked.

