

Fatigue Analysis of a Frame-Tank Container

SA also has experience with data analysis projects. In one such project, SA was asked to make sense of the large volumes of test data collected during a series of over-the-road (OTR) tests of a Frame-tank container. The frame had been instrumented to collect strain data at critical locations on the tank frame, in order to determine why the frame was cracking in revenue service. SA went through the large volumes of data and performed a statistical analysis to determine critical locations/channels. This process also helped SA identify spurious/bad data among the various runs that were made. For the critical locations, data from the various valid runs were combined, after being normalized for miles traveled. The data was then converted to a form where it could be used in fatigue analysis (histograms & rainflow counts). Subsequently, SA developed a FORTRAN program in-house to evaluate fatigue damage based on British Standard (BS 5400) codes. Fatigue life was also evaluated using AAR specifications. Based on the results of these analyses, the customer was able to improve the design of the frame-tank. This project demonstrates SA's ability to evaluate large volumes of data, make sense of the same, and convert it to a useful format. It also underlines our fatigue analysis and programming capabilities.



Instrumented Frame-Tank