The simulation is conducted in two steps:

- First a static loading is run, when the model is loaded with the maximum load of the fatigue spectrum and the corresponding moment.
- Second, the fatigue calculations are made based on the full loading spectrum and strain based approach.









Fatigue calculations are made in Ansys Workbench, using the entire loading spectrum, strain life approach and Smith-Watson-Topper theory for the mean stress effect.





It seems that a first failure will initiate after 1584 repetitions, at the weld toe and is propagated along the weld toe.

If the fatigue loading is treated as a time series, it appear that the trend is responsible for the 62.5% of the fatigue life given by the loading spectrum.

