

LW Finder Use Cases

Strain Gauge Placement Software
By LW Engineering Software AB

Find the Best Locations to Attach Strain Gauges on a Casted Part

Challenge

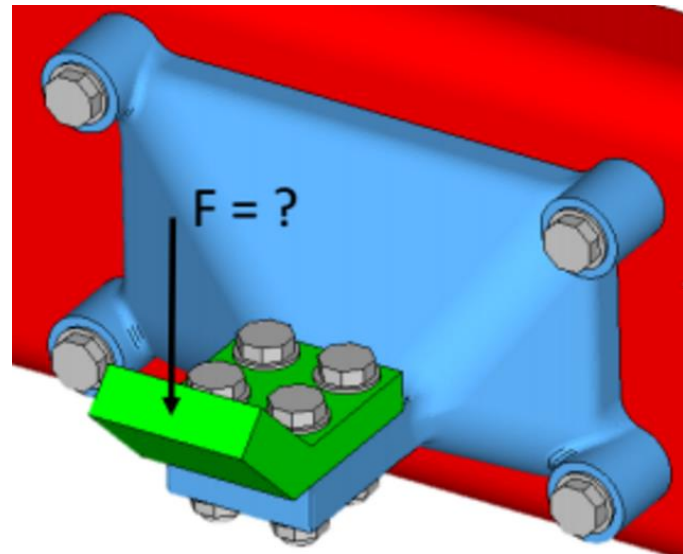
- A component is subjected to several load cases when in service
- Load measurement using strain gauges is difficult because each gauge experiences some strain regardless of which load case is applied
- The load cases are of differing importance. E.g. one case will be the one which dimensions the part

Solutions

- Perform a static analysis of each load case in OptiStruct
- Import results to LW Finder and set prioritization of load cases
- LW Finder will identify the locations which minimize error

Benefits

- More accurate load data
- Fewer repeated physical tests



Strain Gauge Placement When Load-Strain Behavior is Non-Linear

Challenge

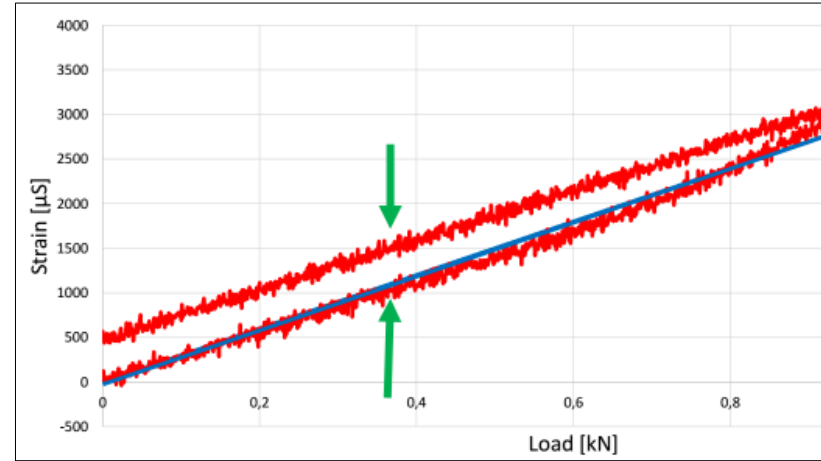
- A bolted structure is subjected to several load cases when in service
- Some of those loads cause bolted joints to slip
- Using strain gauges to measure the load is usually not possible due to large error caused by non-linear behavior between load and strain

Solutions

- Simulate the strain caused by slipping in the bolted joints
- LW Finder will locate strain gauge positions that reduce non-linearity

Benefits

- More accurate data
- Possible to measure structures which were previously not possible to measure



Predict Error in Order to Improve the Test

Challenge

- A component is very stiff, there is a risk that it will not produce large enough strains to give reliable results

Solutions

- Use LW Finder to predict the error before the test is performed
- If the error is too large, weaken the part (e.g. by drilling holes) in order to increase the strain
- Simulate the modified part and re-run LW Finder to see if the error has improved sufficiently

Benefits

- Accurate load measurements in parts which were previously very difficult to measure
- Fewer surprises from inaccurate data

