



## Industrial Member Report Summary – Key Findings for Industry

### Fatigue Reassessment of Ageing Pressure Vessels: Life Extension and Change of Use

#### TWI Core Research Programme

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#### Industrial need

Many ageing pressure vessels were designed with a notional 25 year design life using standards such as BS 1515, which did not require fatigue assessment. This means that the fatigue lives of these vessels have never been calculated. Offshore operators seek a methodology for justifying life extension for vessels designed to older codes through fatigue assessment and a campaign of risk based inspection. Therefore, fatigue assessment is a critical part of the life extension process.

The report outlines the principles for fatigue reassessment of long service pressure vessels and demonstrates these principles by means of a case study on a vessel that has been in service since the 1970s.

#### Key Findings

The case study demonstrated the principle of reassessment based on detailed modelling and inspection of an example vessel. Five necessary phases are:

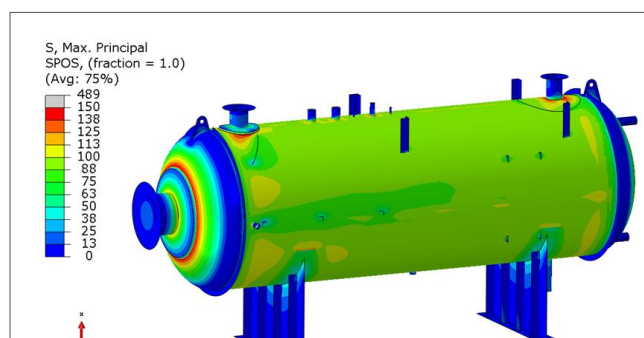
- Examination of benchmark vessel;
- Compliance with standards, including analysis of fatigue loading;
- Commonality between vessels;
- Engineering critical assessment (if necessary);
- Inspection plan.



Condensate flash separator vessel used for the case study

#### How to benefit from this work:

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Maximum principal stress on external surfaces under internal pressure loading: global shell model