

# Fitness for service and remaining life assessment for pressure vessels

## SRJ CONSULTING CASE STUDY



### PROBLEM

A recent inspection campaign had identified concerns on the dished ends of five pressure vessels. The inspection contractor reported a reduction of 1.1 mm in wall thickness from the initial baseline inspection. Based on measurements the contractor predicted remaining lives for three vessels of less than one year.

The operator wanted the information reassessed and needed to know whether it was safe to carry on operating, and if so what additional precautions should be taken.

### SRJ SOLUTION

SRJ performed a fitness for service and remnant life assessment for the five pressure vessels. As part of this assessment corrosion prediction models were used to determine the likely wall thinning based on provided process data cover normal and upset plant conditions.

Corrosion rates based on the provided process data were low (0.025 mm/yr), which cast doubt over the accuracy of the inspection data. The suspicion was that the baseline measurements were taken on the vessel shell only and did not cover the dished end. Due to the forming process the wall thickness of vessel dished ends is generally lower than the cylindrical shell of the vessel.

Based on the allowable wall thicknesses and the predicted corrosion rates the vessels were all predicted to have remnant lives in excess of 30 years.

To provide confidence in the predicted corrosion rates an inspection after 6 months was recommended. The wall thickness data from this inspection showed no further measurable reduction in wall thickness.



### DELIVERED VALUE



#### IMPROVED INTEGRITY MANAGEMENT

By fully assessing the likely corrosion rates, there was sufficient evidence to dispute the findings of the inspection contractor.



#### COST SAVING

The assessment saved the operator from unnecessary and costly replacement or repair of the vessels.

*SRJ provides specialised consultancy services.  
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