

# AGEING PIPELINES – CONDITION ASSESSMENT



## Advanced Engineering Solutions Limited specialise in pipeline condition assessment

Pipeline operators manage pipelines with variable maintenance and performance histories. The performance of pipeline construction materials including steel, iron and concrete depends on the loading regimes and structural strength. Stress levels can increase due to deteriorating pipe wall condition and changes in loading regimes. Therefore pipe wall condition and applied stress levels must be understood to allow performance to be predicted.



## Pipeline Performance

Pipeline stress levels result from internal pressure and external loading regimes. This loading is variable along the length of the pipeline. Local pipe wall corrosion resulting from inadequate protection and adverse soil conditions can reduce pipe strength. Performance prediction requires an understanding of:-

- loading regimes,
- failure mechanisms,
- construction techniques
- pipewall condition,
- corrosion rates.



## Condition Assessment

AESL apply pipe wall inspection techniques, together with statistical and structural analysis to determine failure risk. Pipeline performance, and maintenance requirements can then be defined.

Pipe wall inspection is carried out using local, external NDT, coupon or dowel removal and assessment, or internal inspection using pig mounted systems. Inspection systems meeting specific pipe wall condition assessment requirements have been developed. The condition assessment procedure involves:

- Definition of possible failure criteria,
- Assessment of loading regimes,
- Structural analysis to define high stress positions,
- Statistical analysis to define inspection and sampling criteria,
- Focussed sampling or inspection of the pipe system,
- Final structural analysis.

This approach allows assessment of the operational capability, and pipeline life prediction together with an estimate of the accuracy of the analysis.

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