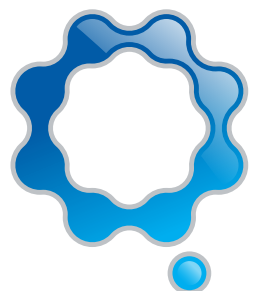


Genos

PE PIPELINE CONDITION ASSESSMENT

Genos | Ingenious Transformations



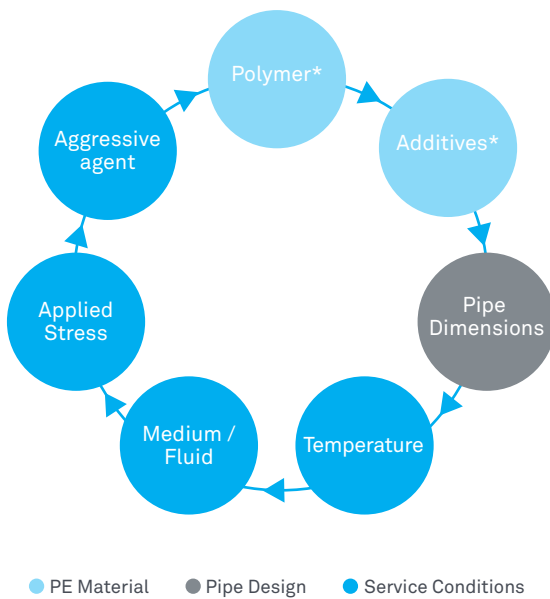
PE PIPELINE CONDITION ASSESSMENT

- Asset owners need to be able to assess the residual lifetime of the pipelines
- There is a requirement to monitor the condition of PE pipelines in long term pressure applications
- Pipeline condition assessment requires an understanding of the pipe history and assessment of future conditions
- As Australia's exclusive manufacturer of PE100 pipe grades, Qenos has built up significant experience and expertise in assessing the condition of PE pipeline materials
- Qenos has the most advanced polyolefins laboratory in Australia



GET THE RIGHT INFORMATION

Service life depends on a number of factors as seen in the diagram below. These factors relate to pipe material, pipe quality and network design which need to be considered when performing a condition assessment.



*Pipe extrusion can impact these factors

Condition assessment of the PE pipeline requires retrieving the right information on each of these aspects. The pipe material testing required to make an assessment of the pipe condition requires in-depth polymer expertise.



THE RIGHT TOOLS, EXPERIENCE AND CAPABILITY

PIPE MATERIAL ANALYSIS

To ensure that the pipe properties remain as intended for the whole of the designed service-life it is necessary that pipe resin be protected from oxidative degradation. PE100 pipe resins are highly engineered and formulated with antioxidant packages to protect the polymer and therefore the pipe properties against degradation. Highly technical equipment is utilised to assess the antioxidant package.

- **Oxidative Induction Time (OIT)** is a method used to determine the residual thermal stability of the pipe material.
- **Fourier Transform Infrared (FTIR)** is a method used to assess the extent of oxidation, if any, that has already occurred.

This data is backed up by a more detailed materials analysis of the pipe. In addition to information on the history of the pipe service conditions and expected future service conditions, the results of these tests are then used by the asset owner to develop an estimate of expected residual lifetime of the pipeline.



QENOS EXPERIENCE AND TECHNICAL CAPABILITY

High quality data and critical interpretation of the pipeline history and material analysis is fundamental to developing an accurate and reliable assessment of the PE pipeline condition. Pipeline material condition assessment is a complicated exercise entailing consideration of a range of factors and requires significant experience and expertise in pipe material analysis.

Qenos has extensive experience in testing and analysing PE pipes from the field to provide support in pipeline condition assessment. The Technical Service team have significant experience and expertise and is able to utilise the world class Technical Centre at the Qenos Altona site which houses state of the art physical and analytical equipment to support customers and their clients.

Photography (front page)

1. Microscopic analysis of pipe materials and surfaces.
2. OIT – Oxidative Induction Time Analysis.
3. OIT – Oxidative Induction Time Analysis in the Qenos Technical Centre Analytical Laboratory.
4. FTIR – Infrared Analysis of pipe surface oxidation.
5. The Anton Paar rheometer is the latest technology in dynamic rotational rheology, enabling a broad spectrum of rheological measurements which give fine insight into the resin's macromolecular structure.
6. Pipe extrusion in the Qenos Technical Centre Process Hall.