



PIPELINE REHABILITATION & INSPECTION SERVICES

Mining, Oil & Gas Services International (MOGSiL) offers highly specialised pipeline rehabilitation services and innovative pipeline inspection technology.

In-situ Internal Cleaning and Coating of Pipelines

MOGSiL internal in-situ cleaning and coating process will maintain the integrity of your pipelines by means of a continuous internal protective epoxy coating which forms a permanent barrier to internal pipeline corrosion.

The in-situ coating will prevent any further corrosion from taking place within the pipeline at a fraction of the cost of pipeline replacement.

The MOGSiL in-situ cleaning and coating process is able to operate within steel pipeline diameters from 4" to 36". The coating system prevents corrosion in hydrocarbon, gas, and water injection steel pipelines.

MOGSiL appreciates that every pipeline onshore and offshore has unique characteristics. We therefore plan every pipeline cleaning and coating project with precision to ensure clients' demands and applications are met.

The Benefits

It is a fact of life in the pipeline industry that hydrocarbons, their by-products and liquids cause corrosive damage to the pipelines carrying those products. Inevitably this corrosion will lead to pipeline failure and escalating costs due to maintenance expenses and loss of flow efficiency.

The way to ensure your pipeline is permanently protected from the ravages of corrosion is to apply MOGSiL's internal pipe coating system, which will form a permanent and continuous epoxy barrier to corrosion throughout the entire length of your internal pipeline wall without excavation.

The MOGSiL In-situ cleaning and coating process has proven itself as a proven cost saving tool, including:

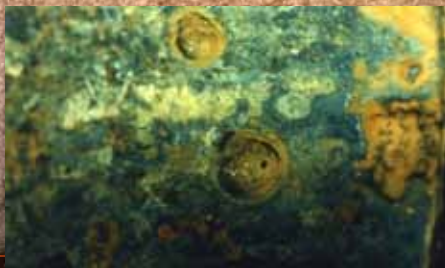
- Increased pipeline life due to the prevention of corrosion
- Reduced friction, increasing flow efficiency
- Product purity delivery is maintained
- Reduction in pipeline maintenance
- Savings on corrosion inhibitor costs

The Process

Pipeline Evaluation: The pipeline specifications, application, cleaning regime and corrosion history determines which coating will be selected. MOGSiL personnel will follow up with a site evaluation & inspection to determine the equipment requirements and the generated effluent handling and disposal methods. All generated effluents are handled and disposed of according to regional governmental laws and regulations.

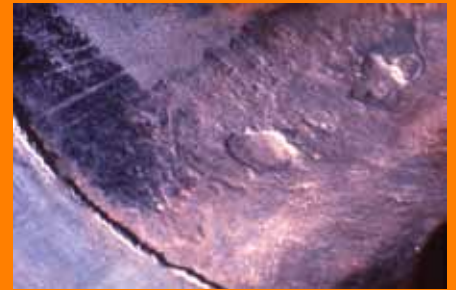
Preparation Internal Pipe Wall: Preparing the Internal pipeline wall surface for the epoxy coating application is the single most important process. The pipe wall preparation is performed through a controlled multi stage cleaning regimen. The full internal pipe wall is cleaned along its entire length to a near white finish (NACE 2). The epoxy coating will then be applied through a multi coat process over the full internal pipe length. Correct wall preparation ensures proper epoxy adhesion to the pipe wall and total corrosion protection.

In-Situ Mechanical Cleaning: This multi stage process begins the removal of residual hydrocarbons or product from the pipeline. Progressive pipe scrapers start removing corroded scale from the wall. Specially developed brush pipe scrapers progressively remove the heavy scale within the pipeline. This cleaning process is closely monitored and controlled by means of batch sample testing. Each batch run is sampled and tested to determine the solids content. Mechanical cleaning will continue until the desired cleanliness is achieved.





In-Situ Chemical Cleaning: The inhibited acid batches are designed to remove any leftover wall corrosion and will leave the internal pipe wall with a near white metal finish (NACE 2). This multi stage process is controlled with all batches being tested for solids quantity and titration. A specialized un-tethered camera scraper is available as a further inspection tool, which is able to provide 360 degrees high resolution digital video and photo of the full internal length of the pipeline.



Wall Passivation and Drying: The metal surface then undergoes passivation to stop any new oxidation. Inhibited water batches achieve the desired pipe wall pH, and prevent any flash rust blooming on the pipe wall prior to coating. A solvent is then run between two special pipeline scrapers, removing all moisture content from the internal wall. The internal pipeline wall is then dried further with dehydrated air ensuring a dry and clean surface prior to the coating application.

The MOGSiL In-Situ Coating Process: The epoxy coating is selected for its capabilities and service in its specific pipeline operation. The epoxy coating is a combination base and hardener that is prepared and mixed before loading between two modified polyurethane scrapers. The desired film thickness is achieved by ensuring a predetermined drive pressure and velocity throughout the pipeline. The coating is applied to the inside of the pipeline wall by means of extrusion. The coating application specification calls for a minimum of three coating runs to reach the desired dry film thickness. In between each coating run, dry particulate free air is pumped through the pipeline to ensure solvent evaporation. The drying period between the coating batches is circa 16 hours. The inspection of the dry film thickness (DFT) is taken at pre-determined points along the pipeline.



Pipeline Inspection Solutions

We are in a position to offer the following inspection solutions.

Traditional ILI:

- MFL
- Caliper
- Inertial Mapping
- UT
- Direct Assessment

Specialist Solutions:

- External Pipeline MFL (GIP)
- High Resolution Calliper (Porcupine)

Petronas License

We are duly licensed by PETRONAS for the following services:

- SP1020300 : Pipeline Coating
- SP1040101 : Pipeline Internal Inspection
- SP1040102 : Pipeline Internal Cleaning
- SP1040103 : Onshore Pipeline Inspection & Repair
- SP1040105 : Offshore Pipeline Inspection & Repair

- 30 year track record
- 165 pipelines coated to date in excess of 25M ft²
- 54% of historical work undertaken in an offshore environment
- Lines still in operation after 30 years with no known pipelines decommissioned due to coating failure.

The image shows a document titled 'PETRONAS' with a logo. It contains technical specifications and terms of service for pipeline inspection and coating services. The document is in English and includes sections for 'GENERAL CONDITIONS', 'SPECIAL CONDITIONS', and 'TECHNICAL SPECIFICATIONS'. It also lists various services and their corresponding license numbers.

CLIENTS

