



## Root Cause Analysis of Black Powder in Gas Pipeline Network



### Challenge:

- Persistent issue of black powder accumulation in extensive natural gas pipelines, particularly affecting 24-inch and 32-inch pipelines spanning approximately 340 km in the southern region.
- Significant negative impacts on gas transportation efficiency, operational safety, and reliability.



### Objective:

- Conduct root cause analysis to determine origins and factors behind black powder buildup.
- Recommend practical measures to eliminate or reduce the issue.
- Explore updates to pipeline engineering standards and promote knowledge sharing.



### Insights:

- Carried out field investigations, lab analysis, site visits, and joint technical meetings.
- Identified areas for improved pipeline design and maintenance practices.



### Impact:

- Provided groundwork for scalable solutions and best practices in pipeline operations.
- Strengthened collaboration between academia and industry for regional pipeline improvements.



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