

NICKEL MINING COMPANY SULPHUR PIPELINE PROJECT

PROJECT DETAILS

Client:	Indonesia (Nickel Mining and Processing Company)
Location:	Sorowako, Island of Sulawesi in Indonesia
Completion Date:	July 2016
Contract Scope:	Design, Engineering, Supply, Supervision, Testing / Commissioning / Training
Applications:	Sulphur Pipelines (2 x 3" x 745m) each
Technology:	Skin-Effect Trace-Heating System (STS) & Fiber Optic Distributed Temperature Sensing (DTS)



KEY CHALLENGES

- The unidirectional slope of the pipelines due to the Sulphur Pit at ground level and kiln at an 18 meter elevation, presents a serious issue should there be a power failure to the STS system and pumps. The pipeline would slowly drain by gravity which creates the potential for the Sulphur to solidify, which can result in catastrophic issues unless specially addressed during re-melt.
- Two parallel pipelines can be interchanged to the supply or delivery lines, creating a bi-directional flow scenario.
- STS system is designed to function in either a "long circulation mode" or "short circulation mode."
 - In "long circulation mode" both pipelines form a loop.
 - In "short circulation mode" a single pipeline operates to deliver Sulphur to the kiln area creating an unbalanced electrical heating load situation.

SOLUTION

- Fiber Optic Distributed Temperature Sensing (DTS) system was supplied to identify high or low temperature locations, so as to plan mitigating action.
- Drains were provided along the pipeline route so as to drain the Sulphur rapidly, and were installed with heavy thermal insulation to minimize heat loss.
- Any one pipeline can be operational, therefore the STS system was designed with a separate resistive load bank to avoid any unbalanced condition.



Pre-insulated Piping and Thermally Isolated Pipe Supports for the 2 Parallel Pipelines



STS Control and Monitoring Panel

PRODUCTS

- nVent RAYCHEM Skin-Effect Trace-Heating System (STS) with Fiber Optic Distributed Temperature Sensing (DTS) technology were provided to mitigate various operator issues and provide a safe and reliable electric heat-tracing solution.
- Pre-Fabricated and Pre-Insulated pipe spools were manufactured, supplied and installed for this critical Sulphur Pipeline.
- Engineered, thermally isolated pipe supports were provided to ensure uniform heat loss along the entire length of pipeline.

BENEFITS

- Uniform heat loss through Pre-Fabricated and Pre-Insulated Pipe spools.
- Reduction in the number of circuits compared to traditional heating technologies.
- Constant and uniform heat generation.
- Complete temperature profile visibility for both pipelines, end-to-end.
- Easy identification of weak spots in thermal insulation.
- Simple predictive and preventive maintenance capabilities.
- Robust temperature and monitoring technologies.
- 100% system redundancy and heat up capabilities.

CUSTOMER OVERVIEW

This Indonesia mining company is headquartered in Brazil and has operated open-pit nickel mines and a processing plant in Sorowako on the island of Sulawesi in Indonesia since 1968. They are the largest nickel producer in Indonesia and contribute 5% of the world's nickel supply. They mine laterite / saprolite nickel and produce nickel matte, an intermediate product mainly shipped to Japan.

Liquid Sulphur is a key catalyst in nickel production; hence the safe transportation of liquid Sulphur from the Sulphur pit to the kiln area is critical for this operation.

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