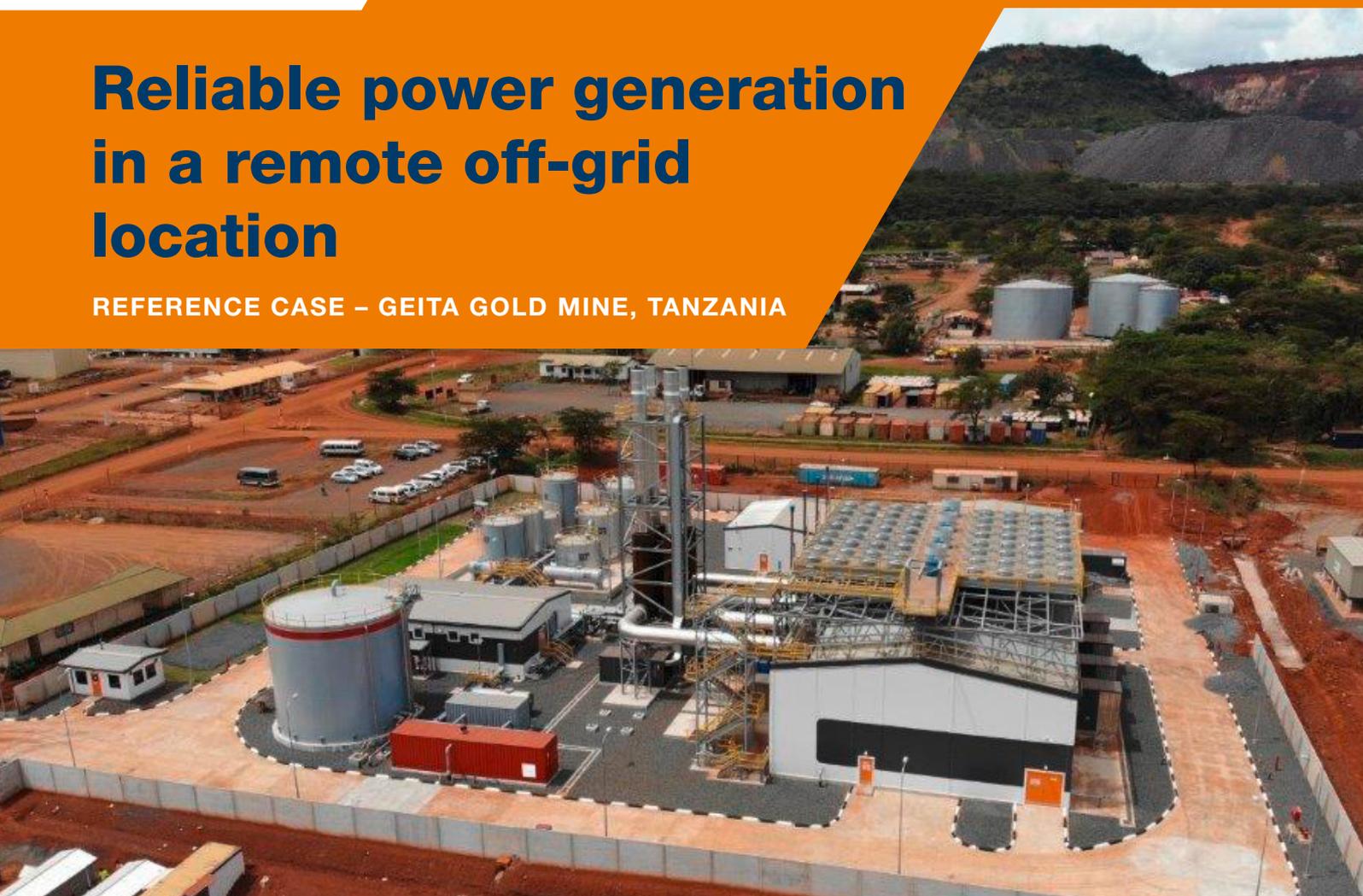


Reliable power generation in a remote off-grid location

REFERENCE CASE – GEITA GOLD MINE, TANZANIA



When Geita Gold Mine required a highly reliable power generation solution to support its growing operations, Wärtsilä provided a turnkey engineering, procurement and construction (EPC) solution and will take care of ongoing operation and maintenance (O&M). This integrated service ensures an uninterrupted off-grid power supply, eliminating revenue losses from power shortages.

Geita Gold Mine, situated in the Lake Victoria gold fields of north-western Tanzania, is a flagship mine of AngloGold Ashanti, the world's third-largest gold mining company based on production. To support its growing operations as it transitioned from an open-pit setup to underground mining and avoid revenue losses from production interruption, the mine needed a reliable power source that would remain available around the clock.

For AngloGold Ashanti reliability, a solid track record in the industry and a low unit cost of production were the key criteria for

selecting a partner. Having had a positive experience with Wärtsilä's support services for the power plant at its Siguiri mine in Guinea, the company approached Wärtsilä to install an EPC solution featuring a 40 MW flexible power plant with four 32TS engine generating sets. Once the plant became operational, a 10-year agreement for O&M services was put in place to ensure optimal operation for its entire lifecycle. This integration of technology and lifecycle services ensures reliable, always-on power that allows the mine to focus on its core activity.

"When it came to building the new plant, establishing an O&M service package we could count on was integral to the solution's overall success. Wärtsilä's ability to provide reliable, cost-efficient power generation therefore makes them an important partner for us.

An outage of just a couple of minutes can lead to an hour of lost production – so far, we haven't suffered a single shutdown. Knowing that Wärtsilä is taking good care of our power needs means we have one less thing to worry about."

Oliver Milambo
Commodity Manager, AngloGold Ashanti

ALL PERFORMANCE TARGETS EXCEEDED

The power plant that the mine used before approaching Wärtsilä had experienced a number of reliability issues, with several breakdowns causing power shortages that led to the mine's operations being interrupted. The reliability of the 40 MW power plant installed by Wärtsilä helped to eradicate these issues, with the O&M agreement ensuring that maintenance schedules are optimised to minimise costs and maintain efficient power generation, and that any issues that may arise are immediately resolved thanks to the availability of spare parts and skilled service engineers.

Oliver Milambo, Commodity Manager for AngloGold Ashanti, highlights how the installation has supported the mine's financial performance. "All four of the plant's performance targets – availability, net heat rate, power capacity and specific lubricant consumption – have been exceeded, including 100% availability compared to a target of 98.7% and 0.31g lubricant per per kWh compared to 0.8g. In addition, our fuel efficiency has improved from 39% to around 43%, leading to approximately \$2 million USD of fuel savings in 2019." Under Wärtsilä's O&M agreement, local employees have also been recruited and trained to operate and maintain the power plant; developing their skills enables the Geita Gold Mine to add value to the local economy by creating employment opportunities in the area.

SNAG-FREE PROJECT EXECUTION

Mr. Milambo adds, "With our previous power plant coming to the end of its useful life, any further delays would have jeopardised our mining operations. The EPC contract was executed extremely professionally, overcoming logistical and geographical challenges to bring the engines onsite on schedule and with none of the major snags that we may have anticipated for such a project." Thanks to the flexibility of the installation, the plant can also be optimised during its lifecycle through upgrades, modernisation and fuel conversion, which may be required if a need arises to shift focus towards power sources such as gas or renewable energy.

GUARANTEED PERFORMANCE WITH O&M AGREEMENT

The Geita Gold Mine has benefited from an O&M service that is tailored to the mine's performance requirements, covering all tasks involved in the day-to-day operations, maintenance and administration needs of the plant. This is Wärtsilä's most comprehensive lifecycle solution, which maximises return on investment for the mine by guaranteeing the availability and reliability of the power generation equipment as well as providing guarantees for both asset performance and lifecycle costs.

Wärtsilä remotely monitors the plant's performance through an Expertise Centre, providing operational support, troubleshooting and improvement advice to ensure optimal performance. Preventive and predictive maintenance ensures that

any work is carried out as efficiently as possible and production interruptions are mitigated, allowing the business to continue its operations seamlessly. In the words of Mr. Milambo, "Wärtsilä's onsite maintenance is responsive and efficient, and their regional and global teams respond quickly and effectively to any issues that arise. We very much look forward to continuing to work with Wärtsilä over the plant's lifecycle."

KEY DATA

END CUSTOMER

AngloGold Ashanti

SOLUTION

Wärtsilä 40 MW power plant with a 10-year O&M agreement

OPERATING MODE

Baseload

GENSETS

4 x Wärtsilä 32TS

TOTAL OUTPUT

40 MW

FUEL

Light fuel oil (LFO)

DELIVERY

February 2018

THE CHALLENGE

- Reliable power generation in an off-grid location
- Minimise production losses caused by power shortages
- Minimise cost of inputs

WÄRTSILÄ'S SOLUTION

- On-schedule EPC plant delivery along with lifecycle solutions
- O&M agreement including immediate repairs in the case of breakdown
- 4 x Wärtsilä 32TS engine generating sets

BENEFITS

- Reliable power source and uninterrupted electrical supply
- Cost-effective power plant operations and minimised downtime of the mine, meaning no lost revenue caused by power outages
- Fuel efficiency improvement of around 4%, leading to approximately \$2 million USD of fuel savings in 2019

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