

Hybridising existing mine's power delivers big on carbon, fuel and financial savings

CUSTOMER

Batutua Tembaga Raya (BTR)
copper mine

LOCATION

Wetar Island, Indonesia

SECTOR

Mining

APPLICATION

Plant Optimisation & Hybridisation

KEY FACTS

222 kWp

Mobile solar PV

1MW/30 min

Y.cube Battery Energy Storage
System (BESS)

4.6 million

Litres fuel saved

12,340 tonnes

Carbon saved in 5 years

\$3.7 million

Saved in 5 years



THE CHALLENGE

Remote mine with decarbonisation goal and reliable power need

Situated in a remote Indonesian island, BTR's copper mine's power requirements were currently solely met by thermal diesel power generation. Being their trusted power partner since 2015, Aggreko well understood their requirements.

Reliable and consistent power is crucial for this mine to ensure

operational efficiency is fully maximised. Knowing that the Indonesian government was also pushing its mining industry to focus on the energy transition and the decarbonisation agenda, we spotted an opportunity to hybridize their current thermal power generation and facilitate the mine with decarbonisation while not sacrificing their operational productivity.

THE SOLUTION

Hybrid power package introduced to maximise efficiency

To push their decarbonisation while ensuring the reliability of power would not be compromised, we introduced two renewable technologies to hybridise their current power set up - introducing mobile Solar PV panels with a Battery Energy Storage System (BESS) while also upgrading their diesel power generation to a higher efficiency technology. The implementation of their new hybrid solution was done through a zero-CAPEX model.

Mobile Solar PV Panels were integrated into the hybrid solution as they could be dismantled within 30 minutes. This made it suitable for cyclonic areas such as Wetar Island which is prone to typhoons. The BESS serves as spinning reserve

displacement which is conventionally supported by integrating extra power generators in the total generation mix, serving as redundancy. The BESS not only removes the need for fossil fuel-based generators to be running constantly to provide resilience, it means that the other generators in the system, which no longer require the extra headroom of spinning reserve, can be utilised more efficiently, increasing their average load. This results in lower fuel consumption & costs, lower operations costs, lower emissions, and an increased lifespan for the thermal generators on the grid.

Thanks to our ongoing engineering developments, we proposed a shift in the Diesel technology from G3 to G16 to maximise operational efficiency

for the mine. This upgrade gave them an efficiency improvement of 0.285ltr/kwh to 0.266ltr/kwh in terms of specific fuel consumption (SPC) rates with utilisation of B30 biodiesel fuel. Utilizing pure High Speed Diesel (HSD) fuel would lower the SPC even further to 0.266 ltr/kWH.

Supported by Aggreko's proprietary Smart Energy Management System, the mobile hybrid solution will provide round-the-clock power supply to the mine. Developed in-house, the innovative software is optimised for weak and off-grid energy applications to ensure maximum reliability and power quality. Power efficiency is further supported by the solution's resilient design in a location prone to typhoons.



THE AGGREKO DIFFERENCE

Aggreko constantly improves and re-engineers our power system on site to provide more efficient solutions to our client

THE IMPACT

Significant carbon, fuel and financial savings and a 10-year mine lifecycle extension

As a result, the mine has been able to benefit from the latest technological upgrades and meet its sustainability objectives through their OPEX expenditure and without significant financial outlay.

Over the five-year contract duration, the mine will save up to 4.6 million litres of fuel, as well as reduce emissions by 12,340 tonnes of carbon, and reduced their overall cost by more than US\$3.7 million. This is expected to extend the mine economic viability for an estimated

additional 10 years. These significant savings not only benefit the environment, but ensures profitability of the mine's continued operations and helps retain regulator and government support.

As power technologies continue to evolve, Aggreko's energy as a service approach and ongoing investment in research and development gives the Wetar copper mine increased flexibility that will enable it to upgrade its power assets as new technologies become available.