

SAFT

Decarbonizing Australia's first wind powered gold mine with Li-ion energy storage

A remote Australian mine operated by Gold Fields is being powered by energy from 50-60 percent from renewable sources with help from a Saft lithium-ion (Li-ion) energy storage system (ESS).

Overview

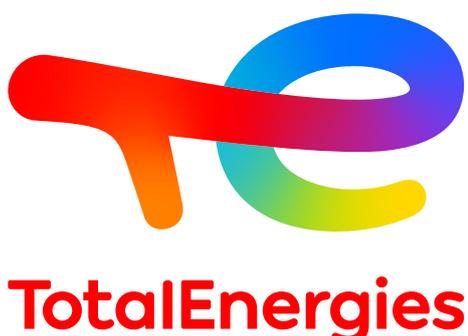
In operation since May 2020, this is the largest renewable microgrid in the

country and it is helping to increase the penetration of renewable energy, decarbonize the mine and protect energy security.

Like many deep mine operators, Gold Fields faces the challenge of ensuring reliable power for safe, continuous operation while responding to climate change. It has ambitious targets for energy security, energy saving and carbon dioxide emissions.

The operator turned to global energy company EDL to deliver an A\$112 million microgrid at its Agnew mine in Western Australia with A\$13.5 million support from the Australian Renewable Energy Agency (ARENA) under a 10-year agreement.

The Agnew Hybrid Renewable Power Station is Australia's largest hybrid renewable energy microgrid and the first to incorporate wind energy at a mining site on a large scale. It has total generating capacity of 56 MW,



with a 4 MW solar farm, 21 MW thermal (diesel and gas powered generators) and five wind turbines with a total of 18 MW capacity. The Saft ESS is helping to overcome natural variation in wind and solar energy and is reducing reliance on fossil fuel.

The challenge

Gold Fields wanted to meet at least 50 percent of the mine's electricity demand from renewable energy without compromising power quality or reliability.

To achieve this, EDL specified an ESS capable of delivering short bursts of high power that has proven reliability in temperatures up to 48°C. The battery function is critical to the system's stability and resilience. High reliability is therefore important as an outage could potentially impact safety of the mining site.

Objectives

- Maximize penetration of renewable energy
- Reduce fossil fuel consumption
- Strengthen security of supply
- Provide high reliability in an extremely remote location
- Create a technology blueprint for other mines

The solution

EDL engaged Saft to deliver a fully engineered system package, with Li-ion energy storage in the form of a Saft Intensium® Max+ 20M ESS in six 20-foot containers, plus a power conversion system (PCS), transformer and medium voltage switchgear in three 40-foot containers.

The rugged design of Saft's ESS technology meant that no modifications were required for the hot, dusty and sandy desert conditions. In addition, Saft is supporting uptime and availability with a service contract covering remote monitoring and annual onsite maintenance.

Other important factors for EDL were Saft's technical engagement and its ability to overcome the logistical challenge of delivering the solution to the extremely remote Agnew mine site.

Features

- 13 MW/4 MWh energy storage system with power conversion package
- Configuration optimized for the Agnew mine
- Delivered in standard shipping containers ready to plug and play

- Commissioned within 8 months of contract signing
- Known carbon footprint thanks to Life Cycle Analysis
- 10-year Saft Service for Storage Systems (4S) contract

ESS benefits

The ESS is helping EDL to manage short-term variability of wind and solar power and therefore is supporting grid stability, preventing outages and reducing idle running or inefficient ramping up and down of diesel gensets.

The installation can provide a stack of multiple ESS functions at once, including load following and smoothing, as well as diesel bridging and spinning reserves, which traditionally required keeping a thermal power plant spinning and ready to inject power at a moment's notice.

- Daily average renewable share 50-60%
- Stable and reliable grid with up to 85% renewable penetration in favorable weather conditions
- Annual saving of 46,400 tonnes of CO2
- Equivalent to removing 12,700 cars from the road

« The Agnew hybrid renewable microgrid was completed on 1 May 2020 and has proven to be a great success — under the right weather conditions, the microgrid has delivered up to 85 percent of the site's power requirements with renewable energy. The battery energy storage system is critical to this success. That's why we selected Saft's Li-ion technology — it offered a complete solution with a proven track record. We'd be happy to work with Saft again. »

James Harman
EDL Chief Executive Officer

SAFT

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