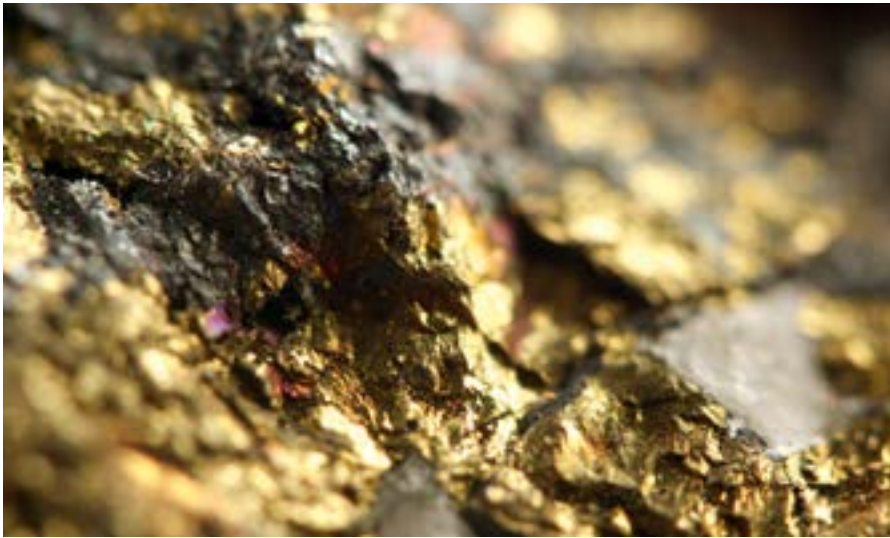


PRECIOUS RESOURCES

TESVOLT
Free to go green.

Lithium-ion battery storage system eases search for gold



PROFILE

Client:

Gold Road Resources Ltd.

Industry:

Mining

Special characteristics:

Movable energy system

Region, country:

Yamarna, Western Australia

THE BACKGROUND

1,200 kilometres east of Perth, in the middle of the Australian outback, lies the Gibson Desert. The region is very sparsely populated, but is one of the hotspots of the Australian gold mining sector. Although little of the gold rush fever of the late 19th century remains today, the precious metal remains commercially attractive thanks to improved extraction technologies. Australia is the second-largest gold producer in the world. At the Yamarna exploration camp, Australian gold producer Gold Road is searching for this valuable material and mining it.



THE CHALLENGE

The exploration of gold mines is a sophisticated and complex undertaking. It requires considerable time and financial resources as well as in-depth technical expertise in geography, geology and chemistry. At lower than 1%, the probability that a discovery will lead to the development of a mine is low indeed. For this reason, the explorations themselves must be kept as cost-effective as possible.

In remote locations such as the Australian outback, in the past electricity was generated almost exclusively by diesel generators. Electricity is required for drilling, sampling, crushing and testing facilities, as well as air conditioning, kitchens and laundry. Beyond the use of fossil fuels, diesel generators also have another disadvantage. Due to the requisite warm-up times, diesel generators often have to run longer than power needs would require. As a result, they operate at low efficiency levels. Moreover, the maintenance costs of generators are enormous and the regular transportation of diesel they require drives up costs even further.

Thanks to the numerous hours of sunlight, a photovoltaic installation is a useful addition in Yamarna. A storage system is also required so that the solar power can be used at night and the diesel generators' running times are optimised.

The requirements for a storage solution:

- Extreme robustness and long-term viability with many guaranteed cycles
- Movable system that can be relocated easily upon completion of the project
- Uncomplicated installation and synergy with the generator and photovoltaic system in the microgrid



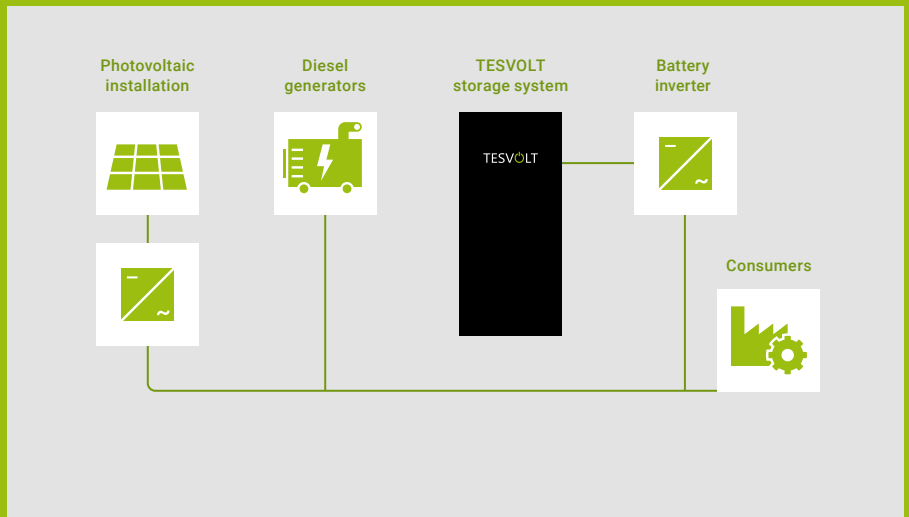
OFF-GRID



PV-DIESEL-HYBRID
OPTIMISATION

THE SOLUTION

To assess the consumption situation at the Yamarna camp, Gold Road commissioned the energy specialists from Unlimited Energy Australia (UEA) to conduct a study. Based on the results, the company from Perth designed a custom hybrid solution. The solution consists of a movable 187 kWp photovoltaic installation, a diesel generator and a 408 kWh lithium-ion battery storage system from TESVOLT. The logistically complex setup of the system was also handled entirely by UEA.



“The minimal impact on the environment, the modular construction, the possibility of relocation, the economic efficiency and the expandability of the system were the main advantages that led Gold Road to install this renewable energy solution from Unlimited Energy Australia.”

Sharon Goddard, General Manager, Gold Road Resources

“For us TESVOLT is the obvious choice – technologically advanced, robust and proven in such extreme conditions as the Australian outback – plus a long-term performance guarantee and reliability.”

Torsten Ketelsen, Managing Director, Unlimited Energy Australia

THE ADVANTAGES

- Generator running time reduced by up to 90%
- Amortisation period of less than five years
- Easy to install at the next exploration site and therefore a low investment risk
- **Safe and long-lasting**
The system boasts an above-average lifespan of up to 30 years thanks to extremely robust Samsung battery cells and a one-of-a-kind battery management system. This optimises cells not only within a single module but also between modules within a cabinet.
- **Expandable**
TESVOLT systems can be expanded or exchanged at any time – not just after the first few months of operation but even many years later.
- **Powerful and responsive**
Thanks to the battery management system, TESVOLT storage systems make the energy they accumulate fully available. TESVOLT storage systems are 1C-capable, meaning they can be fully charged or discharged in one hour with the proper configuration. As a result, even high-performance consumers can be kept running at times when the sun isn't providing enough power.

PROJECT: FACTS AND FIGURES

Storage system	TS 48 V
Energy content	408 kWh
Discharging power	126 kW
Cell	Lithium NMC prismatic (Samsung SDI)
Efficiency (battery)	Up to 98%
Cycles	6,000–8,000 (0.5C to 1C cycles, at 23°C +/-5°C with 100% depth of discharge)
Operating temperature	-10°C to 50°C
Battery inverter	SMA Sunny Island
Installer	Unlimited Energy Australia

TESVOLT AG
Am Heideberg 31 | 06886 Lutherstadt Wittenberg
Deutschland | Germany
Tel. +49 (0) 3491 8797 100
info@tesvolt.com | www.tesvolt.com

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Free to go green.