Helping Rio Tinto Decarbonise with Solar Energy Storage

Client: Rio Tinto

Location: Gladstone, QLD

System Supplied: Pre-engineered ModX 300W Solar Storage System

Project Overview

Rio Tinto is one of Australia's biggest mining operators with sites throughout WA, NT and the eastern states as well as internationally. Producing materials and minerals that are essential for the country's low-carbon transition, Rio Tinto is continually working to develop innovative solutions that will facilitate the shift to a renewable energy future.

Rio Tinto chose Valen as a renewable energy storage partner to help deliver a solution for one of their remote sites in Gladstone. A successful outcome for the mining giant would see site access gates reliably controlled by off-grid power storage, significantly reducing the complexity of maintaining site safety in a remote location.

Valen worked with Rio Tinto's project team to design and manufacture an off-grid power storage solution based on our ModX system. The resulting battery energy storage solution offered robust, reliable performance even in the harsh Gladstone environment, guaranteeing site access control without cumbersome permanent electricity infrastructure.

The Challenge

Rio Tinto's Yarwun Alumina Refinery featured site access gates that required power to operate. The default option to power these gates involved excavating long trenches to run power lines which would connect the gates to the grid, however this brought substantial cost and complexity to a relatively simple piece of site infrastructure.

Rio Tinto's engineering team sought out an alternative option that could solve the challenges of providing remote power without the hassle and expense of extensive earthworks. Due to the remoteness of the site location, the solution also needed to include remote monitoring to alert operations teams of issues such as smoke, intruders, theft and tampering.

And, with summer temperatures soaring beyond 40 degrees, providing shade and weather protection was also a must to limit any potential overheating issues of electrical components.

Co-creating a Solution

The Valen engineering team worked with the maintenance and operations crew at Rio Tinto to design a solution that was secure, reliable, fit for purpose, and able to stand up to the challenging environment.

Using our versatile ModX4 system as a starting point, our engineers designed a customised package that was fully pre-engineered in our facility, allowing fast and simple on site installation. The ModX4 solar energy storage system comes complete and fully wired, reducing the time spent on site commissioning the system.

The Valen team used a selection of in-stock components, quickly creating a tailored kit that met the constraints of the project. Housing twelve Valen Endurogel 155Ah front terminal batteries, the secure locking outdoor cabinet was sheltered by Valen 300W solar panels, delivering 1.8kW of consistent, reliable power to ensure the site gates functioned perfectly every time.

An Enetek solar controller ETS+3248 rounded out the system, providing the main command team with remote oversight of solar energy generation and system function, ensuring site access could be monitored 24/7.

Outcome

The ModX package enabled Rio Tinto to power remote site assets without the need for extensive groundworks, and because this system is completely customisable, it was straightforward to include extra specifications such as door locks, smoke alarms and shade screens.

The pre-engineered, extremely low-maintenance solution was shipped ready to install, and the standalone package can also be easily disassembled and reassembled, allowing it to be utilised in different locations in future without issue – a feature that complements the temporary nature of many mine sites.

The Rio Tinto project team is now enjoying free solar power with no ongoing electricity bills and is one step closer to their decarbonisation goals. The use of renewable green energy provides both environmental benefits and practical advantages to the mining operator, who can confidently manage and monitor their site access gates remotely, ensuring ongoing safety and security.

Technical Specifications

Custom Designed ModX4 Solar Modular Unit, including:

- Valen EnduroGel 12V 155Ah batteries
- Valen 300W solar panels
- Enetek ETS+3248 solar controller
- Heavy-duty lockable outdoor cabinet
- Built-in carbon monoxide detector
- Pre-engineered shade screen structure