



Background

Situated halfway between Middelburg and Belfast in Mpumalanga, exactly 35km from both, the Alzu Petroport is a convenient stop-over for road travelers, a comfortable rest-haven for tourists and a trucker's dream-stop, between Gauteng and the Lowveld.

The Petroport overlooks a game enclosure containing rhinos, buffalos, a herd of eland, blesbok, ostriches and emus. While many know the popular Alzu Petroport, there is also the Alzu farming business, that farms various feeds, eggs and beef nearby.

With the Alzu petroport providing an experience that immerses one visually into agricultural life, it was important that the solar plant be visible. Additionally, Alzu wanted to implement a highly efficient system that would make maximum use of space and showcase new technology available so as to lead by example in the area.

Objectives

Alzu approached New Southern Energy with their goal of incorporating solar energy into their energy mix. As a business that places great value on the environment and conservation, this would help fulfill their aim of becoming more independent and operating in a more sustainable way.

While all solar systems are built with efficiency in mind, the objective with this system was to maximize both efficiency and space. The long-term objective of the property is ultimately to reach a position of using 100% renewable energy.

Showcasing the performance of the system to customers was also a key objective of this site. A solution was needed so that customers could see how much power it produces.

Quality management

Generally, a solar panel system with a single-axis solar tracker will deliver a performance gain of 25 to 35% regarding its efficiency. This system is therefore well placed to deliver on the site's efficiency objective.

The solar distribution board and inverters are housed in a centralized cage located to the west of the system. These are readily accessible when engineers need to work on the inverters.

To meet the visibility requirement, two television screens were installed (by client) in the shop with a live feed provided from NSE's monitoring platform. In this way, customers have a live view of the system's output data.



↑ Single axis trackers

Solar solution

New Southern Energy designed and built a sophisticated 348.48 kWp solar tracking system for Alzu. In this system, a set of trackers direct the solar panels toward the sun. These devices change their orientation throughout the day to follow the sun's path from east to west, enabling the solar panels to capture as much solar energy as possible.

This ground mounted tracking system is made up of 968 Canadian Solar panels, 4 inverters, 484 optimizers, 11 PiA Solar single-axis trackers and one tie in point to the site's low voltage network and control and monitoring system. There are 11 rows of solar panels, that are approximately 90 metres each.

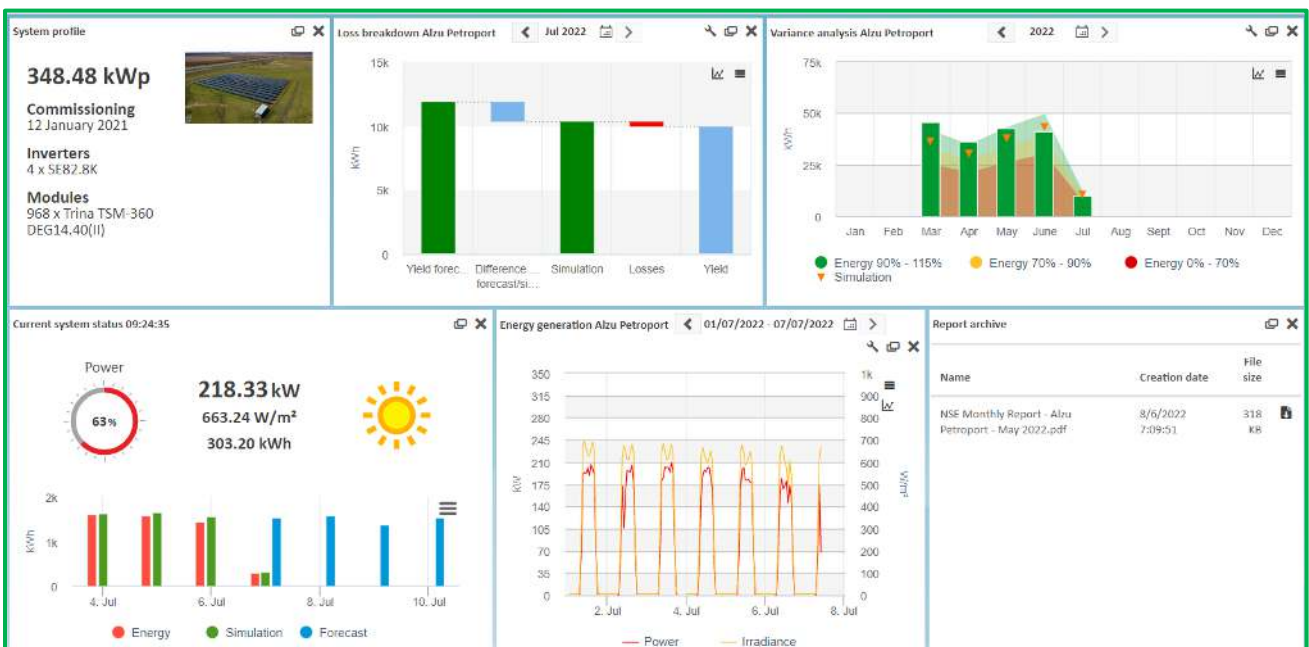
This solar system is also grid-tied, meaning that it is connected to the national electricity grid.



↑ Screens in shop to show solar plant production

System performance

The site was commissioned early in 2021. The system currently generates 100% of the site's energy daytime supply and 40% of its annual requirement. The system will generate an expected 733 270 kWh in its first year of operation, saving the company an estimated R 600 000 in its first year. Further savings are anticipated should the planned approval to export back into the grid go ahead. This solar plant has an estimated lifespan of 25 years.



The plant is currently delivering in line with the simulated value. Inverter production is consistent on a clear day.



Operations and Maintenance

New Southern Energy manages the operations and maintenance of this solar plant. The system's performance is monitored daily and should any faults occur, technicians are dispatched to rectify it swiftly. The panels are kept clean at all times to ensure optimal performance.

← Solar plant walkways for cleaners and technicians.