



## Background

Wilfay Flowers is a family-owned company established in 1992, that specializes in the growing of high-quality summer flowers in Kenya. The (over) 40-hectare farm is situated along the equator in the Rift Valley, 2,200 meters above sea level. It enjoys conducive climatic conditions for production of some of the highest quality summer flowers & herbs.

Energy is needed mainly for water pumping as well as for cooling facilities at the farm. New Southern Energy was contracted by GridX, to build a solar plant to enable this business to benefit from renewable energy and to work towards energy independence.

NSE's solutions included development and construction. NSE is also contracted for the operations and maintenance of this site going forward.

## Objectives

While the overall objective was to install a high-quality solar system, there were certain requirements that needed to be incorporated into the development, as well as some challenges to address.

The farm has three electricity tie-in points so the solar system needed to be planned accordingly. The absence of one consolidated network added complexity to the design.

After NSE's structural engineer assessed the capacity of one of the roofs that was available for solar panels it was determined that the wooden structural loading was insufficient to support solar panels.

Fortunately, the electricity grid is relatively stable in this area which meant that a grid-tied system without batteries could be implemented.

## Quality management

The NSE team managed the reinforcement of the one roof that was not strong enough to hold solar panels. Following our engineers' recommendations, the structure of the existing IBR trapezoidal roof was reinforced.

The solar panels were neatly mounted in three sections: two on roof tops and one on an open section of land. This meant that the three sections could contribute to the total power production.

In this way, the system is split and the power generated is allocated to various transformers to accommodate their network tap in requirements.



↑ 39.24 kWp Ground mounted section

## Solar solution

In order for the Wilfay Flower Farm to reduce its reliance on traditional electricity, and benefit from the long term savings of solar energy, an grid-tied renewable energy system was designed. The system now supplies the farm with 55 % of its energy with the least possible impact on the environment. The ingenious design not only accommodates the complexities of the network tie in points, but also makes clever usages of existing roof structures and land available.

The 142.79 kWp system consists of 262 x JA Solar 545 Wp panels which convert sun radiation into electrical energy, as well as 4 x Huawei Sun2000-30KTL, 30 kW inverters. The system is expected to save Wilfay Flowers an estimated \$244,719 in its 20-year lifespan.

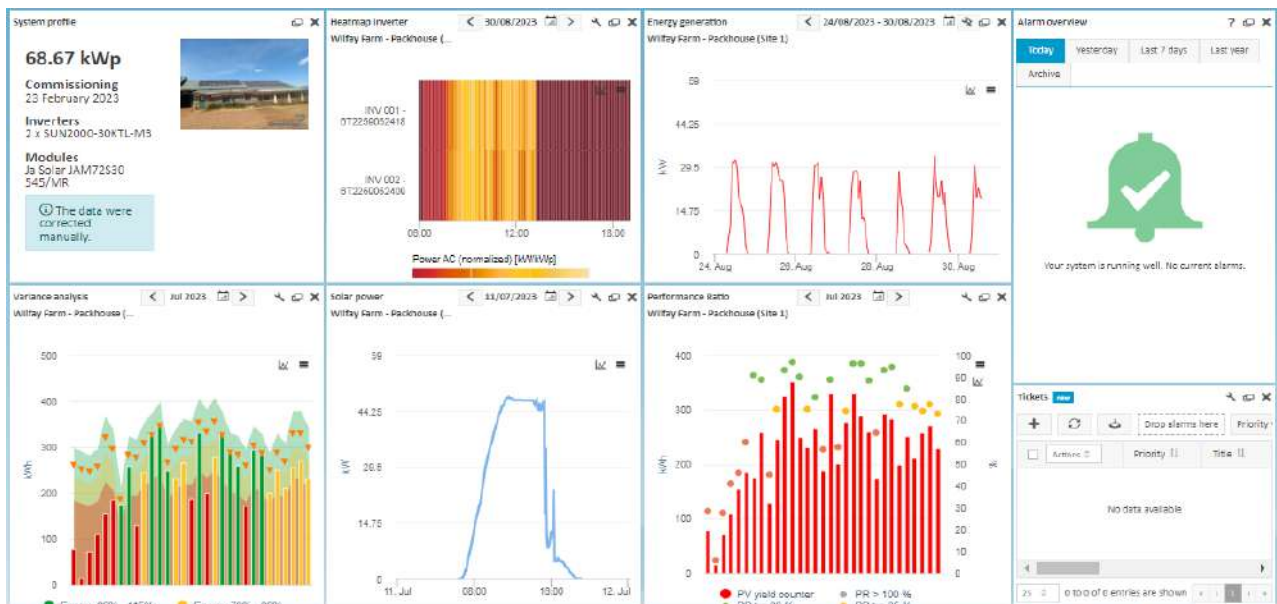


↑ 34.88 kWp Rooftop Installation

## System performance

The site was completed in April-23. The system is forecasted to save the site 210,500 kWh in its first year of operation. Similar savings are expected annually in future.

The system's performance is monitored and controlled through a master controller, which can also communicate with the inverters. All of the data is logged and saved in cloud-based storage. Furthermore, the performance can be monitored in real time via a smart phone app.



The plant is currently meeting its performance target when compared to its simulated value.



← Rooftop solar installations, invisible from land

## 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.