

# CASE STUDY

## Controlling and monitoring Kesses solar power plant

**Alten Energías Renovables uses Netcontrol's automation solutions at the 40 MW Kesses solar farm in Kenya**



The large-scale Kesses solar plant lies close to Eldoret in western Kenya and covers an area of 100 hectares. It is expected to produce about 124 GWh of clean electricity per annum – enough to serve the needs of approximately 820,000 houses.

The solar park is owned by Alten Energías Renovables, who have two other large solar parks in Kenya. The power will be sold directly to Kenya Power on a 20-year take-or-pay purchase agreement.

A number of voltage levels are employed across the site. The farm will be connected to a 230 kV transmission line between the Turkwel hydroelectric plant and the Lessos substation.

The electrical construction was undertaken by Voltalia along with the Portuguese electrical engineering company, Efacec. Netcontrol provided Efacec with a SCADA gateway and a local HMI for the solar plant. With support from Netcontrol, Efacec undertook the installation along with the screen builds and the associated databases.

Efacec had already successfully installed Netcontrol's SCADA gateway, control and monitoring equipment for wind and solar farms in other

locations across Portugal and Africa, so it was an obvious choice to use the same equipment at the Kesses site.

To control and monitor the on-site electrical substation, the solar farm is equipped with the Netcon GW502-iM substation gateway and the Netcon 500 OP substation HMI. Connection to the substation bay controllers and protection devices is by means of the IEC 61850 protocol. Further information from power meters and other devices is conveyed with Modbus and IEC 60870-5-101. The gateway uses IEC 60870-5-104 to communicate with the grid dispatching centre.





The GW502-iM was supplied with an SMS option, which alerts technical staff via a GSM modem when there are anomalies with the plant. The delivery also included optional GPS, which enables NTP time synchronisation with the SCADA HMI equipment to accurately timestamp events.

Cyber security, firewalls, port hardening and VPNs are built into the GW502-iM gateway, making it an ideal choice for modern substation automation.

Efacec have installed the GW502-iM SCADA gateway and the Netcon 500 OP HMI at a number of other substation across Portugal, including:

- Marvila II 20 MVA wind farm
- Ourika 40 MVA solar farm
- Moimenta substation and associated 170 MVA wind farm.



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