> Solution for mining

Phosphate mining in Togo

Togolese phosphate producer rolls out far-reaching power substation upgrade

Background

The Togolese government is rolling out a far-reaching power substation upgrade at national phosphate producer SNPT (Société Nouvelle des Phosphates du Togo). Schneider Electric was selected to deliver three power substations to power two excavators and one 4.8-km ore conveyor. The equipment had to ensure reliable operation in extreme conditions: temperatures of 40°C and 100 % humidity during the rainy season.

The customer

Phosphate production at SNPT (Société Nouvelle des Phosphates du Togo) is one of the main drivers of Togo's burgeoning economy. Togo has taken on an ambitious project to modernize the state-owned phosphate mining company. The upgrade will help establish SNPT as Africa's phosphate-market leader, with activities spanning mining, refining, and sales.

The first step of the project will involve retrofitting existing plants to jump-start production and ramp up capacity from 750,000 metric tons per year to 1.3 million metric tons per year. Next, the government will bring production up to 3 million metric tons per year by replacing obsolete machines and acquiring carbonated phosphate processing equipment.

Schneider Electric

The request

> Mobile substations
- Frequent moves to new dig sites along the phosphate seam

> Robust substations
- Extreme environmental conditions: dust, humidity, and mud
- Demanding operating conditions: heavy vehicle traffic over cables and regular relocation over difficult terrain resulting in shocks and vibrations

> Reliable substations offering optimal performance

Operator benefits

> Safe, available, reliable power from interchangeable substations
> Robust substations that withstand extreme environmental conditions and require little maintenance
> Substations delivered ready to hook up to the grid
> Optimized turnaround time with delivery in just three months
> End-to-end service including commissioning and operator training

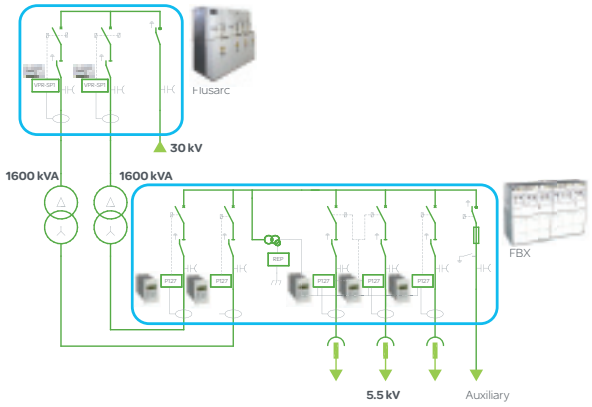
Customer testimonial

Affo Kodjo Oniankitan, SNPT head of maintenance for the mines' electrical installations

"I went to Fabrègues for the final round of substation testing. For us, this was a crucial part of our contract with Schneider Electric—not only to verify that everything met our specifications, but also to be trained on the equipment, so that I could in turn train our operators. A team of French technicians came down to Togo to hook up the substations and ensure that they functioned properly. They also helped our operators become familiar with the equipment, teaching them how to use the substations according to manufacturer recommendations and how to reconfigure them if necessary."

Schneider Electric's solution

Skid-mounted Clipper M substations assembled, preconnected, and tested at Schneider Electric's plant in Fabrègues, France, and delivered to Togo ready to hook up to the grid.



• A novel solution using gas-insulated switchgear (GIS) technology

GIS technology is used in mining for stationary facilities, but very rarely is it used for mobile substations. Flusarc and FBX units with gas-insulated switchgears work effectively in humid, dusty conditions.

• A customized system backed by Schneider Electric's quality guarantee

Schneider Electric engineers had to meet some unique technical specifications. The mine is powered by a 30 kV overhead supply but the conveyors run on a 5.5 kV power supply. Schneider Electric developed a design that incorporates 30 kV and 5.5 kV circuit breakers and the associated transformers into a single substation on a single frame. Each substation has redundant equipment, with two 1.6 MVA transformers protected by 30 kV circuit breakers that power 5.5 kV feeders with a MiCOM P127 protection relay. They come complete with an effective ventilation system, IP 23 protection for the transformers, and IP 54 protection for the medium-voltage component. The outlet cables can be plugged into IP 68 connectors. And as an added bonus, each substation is equipped with a permanent insulation monitor that prevents the circuit breakers from going off at the slightest anomaly, such as a heavy vehicle driving over a cable. The monitor would interpret this type of incident as an isolated occurrence, and would not trip the circuit breakers or disrupt operations.

Schneider Electric Industries SAS
35 rue Joseph Monier
92506 Rueil-Malmaison Cedex-France
Tél. +33 (0)1 41 20 70 00
www.schneider-electric.com
NRJED112375EN

Design: pemaco