Essakane Solar SAS Burkina Faso

CASE STUDY

Solar power is golden

The Essakane gold mine in Burkina Faso receives its needed power from Africa's largest engine-solar PV hybrid power plant delivered by Wärtsilä. Benefits for the mine include reduced fuel costs and a smaller carbon footprint. The capability to control and optimise the usage of the solar PV power and engines enables the gold mine to reduce its fuel consumption by an estimated 6 million litres per year and its annual CO2 emissions by 18,500 tons.

"This project represents a major breakthrough in the industry. Hybrid solar PV-engine solutions will allow energy intensive industries to enter an era of more climate-friendly operations, improve business and increase resilience to oil price variations. EREN chose Wärtsilä for its outstanding track record in EPC projects in Africa and the company's commitment to design, deliver and support a reliable hybrid solution like this."

Christophe Fleurence,
Vice President, Business Development for Africa,
EREN Renewable Energy

Wärtsilä has delivered a 15 MWp solar photovoltaic (PV) power plant to the independent power producer (IPP) Essakane Solar SAS in Burkina Faso. The solar PV plant was constructed next to a 55 MW Wärtsilä power plant running on heavy fuel oil. The engine power plant provides backup, while the solar farm produces energy during the day. The solar PV plant and the engine power plant are controlled and operated in synchronisation, making it the largest engine-solar PV hybrid power plant in Africa.

Vital power for off-grid gold mine

IAMGOLD Essakane SA is the largest privately held business in Burkina Faso. The off-grid gold mine is located 330 kilometres northeast of the capital city, Ouagadougou, and 42 kilometres east of the nearest large town. In 2015, the annual gold production was 400,000 ounces (approximately 12,000 kg). Because of the isolated location of the gold mine, reliable and sustainable around-the-clock energy is vital.

EREN Renewable Energy (EREN) and its partner African Energy Management Platform (AEMP) signed a 15-year power purchase agreement (PPA) with IAMGOLD Essakane SA. The PPA is is jointly owned with (90%/10%) Essakane Solar SAS, who operates the solar PV plant and sells the energy to IAMGOLD's Essakane Mine.

Significant fuel cost savings

Wärtsilä's engine-solar hybrids save fuel, which results in cost savings and environmental benefits. The entire scope delivered covers the full engineering, procurement & construction (EPC) of the solar PV power plant, including inverters and switchgear, in addition to almost 130,000 photovoltaic panels. Last but not least, there is the control system - a crucial component of the hybrid plant - which is also included.

Competitive and carbon-free electricity

Essakane Solar's engine-solar PV hybrid power plant, supplied by Wärtsilä, is one of the largest of its kind in the world. The plant is a breakthrough for industries relying on expensive carbon-intensive diesel power, which until now has been their only reliable energy source.

For large isolated industries such as mining companies, which operate around the clock, hybridisation can be the answer, especially as the energy costs typically represent up to 30% of the operating expenses. Connecting a renewable energy source such as solar power to a Smart Power Generation plant reduces energy costs, improves the carbon as well as the social footprint, and hedges against oil price unpredictability.

CHALLENGE	WÄRTSILÄ'S SOLUTION	BENEFIT
Reducing fuel costs significantly	Delivery of a 15 MWp solar photovoltaic (PV) power plant in hybrid operation with an existing thermal plant	Reduced fuel consumption by approximately 6 million litres per year resulting in substantial savings
Sustainable energy production for an off-grid gold mine.	Full EPC solar plant delivery including inverters, switchgear and control system	Environmental benefit through a reduced annual carbon footprint of 18,500 tons (CO2)

KEY DATA

CUSTOMER
Essakane Solar SAS

TYPE
Wärtsilä engine-solar PV hybrid power plant

OPERATING MODE
Solar power, with engines for backup run in island mode for gold mine.

PV-PANELS
Approximately 130,000 photovoltaic panels

TOTAL OUTPUT
15MWp or 12MWac solar PV

FUEL
Solar PV power

SCOPE
Full EPC for the solar PV power plant

DELIVERY
Operational end of 2017

KEY DATA FOR ENGINE PLANT

CUSTOMER
IAMGOLD Essakane SA

PLANT TYPE
Wärtsilä 32 based power plant

OPERATING MODE
Baseload generation for gold mine.

GENSETS
5 X Wärtsilä 12V32 engines

TOTAL OUTPUT
55MW

FUEL
Heavy fuel oil (HFO)

SCOPE
EEQ (engineered equipment delivery)

DELIVERY
Operational since 2010

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