

CASE STUDY

Sadiola, Mali



KEY STATISTICS

Customer: Anglo GOLD Ashanti

Turbine Type: Compact Single Jet Turgo

Number of Turbines: 1

Power (kW): 154

Net Head: 120 m

Flow: 158 l/s

Runner Dia: 12"

Speed: 1500 rpm

SCOPE OF SUPPLY

Gilkes 12" Single Jet Turgo Impulse Turbine

Set of Inlet Pipework

Main Inlet Valve (Manual gate valve)

Induction Generator

Control & Switchgear Panel

Resistor Bank Panel

Head Level Sensor

Installation & Commissioning

In 2013 CEMS Consult assisted Anglo Gold Ashanti in defining opportunities for alternative, green energy to offset energy costs at the Sadiola mine. Wind, solar and hydro were all critically scrutinized; for their energy yield primarily, but also the ability to introduce the technology with minimal disruption to the mining plant and surrounding environment. Maintenance and longevity were also key factors; due to the geographic and economic challenges of running a mine in remote areas.

A containerised Gilkes Turgo turbine was initially put forward as the hydro option, and its inherent strengths in this scenario made it a clear winner.

ENERGY RECOVERY

The Turgo turbine replaces the function of a pressure reducing valve; extracting energy from the raw water supplied to the mine and village. The compact footprint enabled it to be integrated within a shipping container, allowing significant pre-site construction and therefore reducing on site installation time.

Reducing energy costs is a key player in extending the economic life of existing plant infrastructure and energy recovery is a high yield option. Replacing or running in parallel with PRV's is a proven method of doing this. This, coupled with the advanced control features Gilkes were able to offer, enables a Gilkes turbine to directly replace the function and duty of a PRV with zero downtime on plant operations.

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CONTROL & AUTOMATION

As with all Gilkes controls packages, the system at Sadiola is a tailored solution using proven control/automation hardware and software. The turbine discharges into a storage lagoon, which then feeds the mine equipment, the turbine is therefore required to provide sufficient flow to maintain this water supply.

To remove the requirement for in line flow metering, the system uses a fixed size tailrace channel and level sensor to measure the flow through the machine. This level (and therefore flow) is automatically controlled using an operator set point, in any case of plant failure a bypass valve is automatically opened to maintain the flow into the lagoon. Due to the flexibility of the control system, the Gilkes commissioning engineers were able to ensure the exact needs of the on-site engineers were met while still providing a robust and reliable system.



Containerised Powerhouse



Containerised Control Panels



Tailrace & Lagoon



Training the local operators