

STATCOM case study

Musselwhite gold mine

Voltage support solution for expansion project

A significant mine expansion meant increased power requirements for Goldcorp's Musselwhite facility in Canada. A study determined that a STATCOM hybrid solution would manage facility power quality resulting in high operational reliability as well as power factor compliance.

Goldcorp's Musselwhite mining facility in Opapamiskan Lake, Ontario planned expansion of operations, which meant modifying an existing load supply point through a transmission line serving the current facility. The total combined load was expected to increase to 20 MVA, with 8 MVA located at the new substation. A system impact study assessed the expansion's impact on the grid. Excessive bus voltage fluctuations were identified at the substation during operation of a large hoist motor, and voltage criteria issues at the mine point of connection.

The hybrid solution was a 5 MVar ABB STATCOM and a 5 MVar capacitor bank, which allowed the mine expansion project to operate at full 18 MW load while meeting voltage criteria. The container included an integrated transformer in the design to reduce footprint and installation cost. The STATCOM provides dynamic reactive power support to limit voltage sags caused by operation of the 4,600 HP (3,400 kW) skip hoist motor. Increased network stability, transmission capacity and grid compliance ensures facility and grid power quality.



Key project data

Scope of supply	5 MVar ABB STATCOM and a 5 MVar capacitor bank hybrid solution, system studies, on-site commissioning and spare parts
Power demand	25 MW load connected to 115 kV
Requirements	Meet IESO requirements for transmission line
	Regulate voltage on 115 kV line

Mining operation benefits

Increased delivery capacity of the existing power system
Avoided major infrastructure re-investment
Compliance with utility power factor requirements, decreasing penalties
Increased production capacity and continuity
Increased performance and life expectancy of facility equipment
Reduction in system losses



ABB's containerized STATCOM solution, with integrated transformer, installed in Ontario, Canada.

What is a STATCOM?

A STATCOM (or Static Synchronous Compensator) is a voltage regulating device. It is based on a power electronics voltage-source converter and can act as either a source or sink of reactive AC power. It is a member of the Flexible AC transmission system (FACTS) family which detects and instantly compensates for voltage fluctuations or flicker, as well as controls power factor. As a fully controllable power electronic device, the STATCOM is capable of providing both capacitive and inductive VARs.

About Goldcorp

Goldcorp is one of the world's fastest growing senior gold producers, with operations and development projects located in safe jurisdictions throughout the Americas. A Canadian company headquartered in Vancouver, British Columbia, Goldcorp employs more than 19,000 people worldwide. The Company is committed to responsible mining practices and is well positioned to deliver sustained, industry-leading growth and performance.

STATCOM Features

- Power factor control
- Voltage regulation
- Independent phase control
- Multiple system parallel control
- Modular inverter blocks for easy maintenance
- Flexible transformer integration for optimal footprint and low installation costs
- Optional overload capacity from 200-300 percent

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