STATCOM case study
Young-Davidson gold mine
A power quality solution for full site reliability

Mining operations require large amounts of clean electric power to produce valuable minerals reliably and efficiently without disrupting the grid. ABB's STATCOM solution was chosen to maintain voltage stability and a high power factor to meet heavy process power needs.

AuRico Gold is a leading Canadian gold producer with one of it's a major operations at the Young-Davidson gold mine in Matachewan, Ontario. The Young-Davidson site began production in 2012, with development attention given to ensuring facility-wide power quality. AMEC, a global engineering and project management company, worked with ABB to study and implement the power quality solution. The Young-Davidson mine forecasts a 15-year mine life with an average annual production of 180,000 ounces of gold.

Mines rely on a significant amount of electrical power with large continuous processes, and therefore need to lower energy costs while managing power quality across the site. The Young-Davidson facility boasts high power electrical machines fed over very long cable lengths. ABB installed a total of six 4.5 MVAr STATCOM containerized units with transformers, inverter racks and controls, all inside the 40 foot container. The STATCOM technology is used to regulate voltage by providing reactive power to the grid in either capacitive or inductive VAr sourcing. This ensures fast response times with redundancy to maintain power performance requirements, lower energy costs and longer lives for the motors and process equipment.

Key project data	
Scope of supply	Six 4.5 MVAr STATCOM systems, a 9 MVA power transformer, system studies, on-site commissioning and spare parts
Connection	Load connected to 115 kV circuit
Requirements	Regulate the mine 115 kV bus voltage
	Nominal slope adjustable in steps no greater than 0.5% between 2% and 10%
	Response time 0-90% rise time of the VAr output in less than 100 ms
	System voltage maintained during motor operation
	Redundancy to maintain performance during loss of device
	Robust solution for harsh environmental conditions

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 STATCOMs in operation during Matachewan's winter months.

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, as well as correcting power factor. As a fully controllable power electronic device, the STATCOM is capable of providing both capacitive and inductive VARs.

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

About AuRico Gold

AuRico Gold is a leading Canadian gold producer with mines and projects in North America that have solid production growth and exploration potential. The Company is focused on its core operations including the Young - Davidson gold mine in northern Ontario and the El Chanate mine in Sonora State, Mexico.

About AMEC

AMEC is a focused supplier of consultancy, engineering and project management services to its customers in the world's oil and gas, mining, clean energy, environment and infrastructure markets. AMEC designs, delivers and maintains strategic and complex assets and employs about 27,000 people in around 40 countries worldwide.

ABB Inc.
Power Converter Systems
16250 W. Glendale Drive
New Berlin, WI 53151
Tel: 262-785-3200
E-Mail: pes@us.abb.com

www.abb.com/converters-inverters

Power and productivity
for a better world™