

Improving productivity and power quality at a gold mine with Merus™ STATCOM solution

Challenge

The mine is powered by a combination of diesel and hydropower. In addition to this, there are several VSDs and a large DC winder which generate harmonics in the system. Transfer of power is a problem due to the losses in the long transmission lines from the hydropower station.

Furthermore, there is a large DC rock winder controlled by a 12-pulse rectifier which draws large amounts of reactive power, resulting in severe voltage fluctuations due to the relatively weak power supply.

Solution

Merus Power along with its regional engineering partner provided a complete turnkey solution for the gold mine. Merus™ STATCOM was incorporated in the total solution offered to the end customer which includes several harmonic filter banks together with a Merus™ STATCOM to improve the power factor, reduce harmonics and voltage fluctuations in the system. The equipment comprised the following:

- 4 x 11kV 4MVar C-type 5th harmonic filters
- 2 x 11kV 4MVar 3rd harmonic filters
- 1 x 10.4MVar containerized Merus™ STATCOM system

Result

The harmonic filter banks offered necessary reactive power compensation in order to maintain the unity power factor (PF) throughout the load cycle of the mine. In addition, they also provided harmonic filtering, ensuring a reduction of harmonics in the network.

Thanks to the effective and fast response time of Merus™ STATCOM the winder's reactive power absorption and voltage drop were reduced, ensuring stable system voltages. Production downtime thus has been significantly reduced. Now, fewer generators are required to support the fluctuating load which has resulted in significant savings.

"With the power quality issues at stake, the overall performance of the system has been improved considerably. Performance of the Merus™ STATCOM has met our expectations."

Mr. Elco Grobler
Project engineer, DRA



Application:
Mining Industry

Power quality issues:

- Harmonics
- Reactive power
- Voltage fluctuations

Merus™ Solution:
10.4 MVar containerized
Merus™ STATCOM system



Customer Benefits:

- Improved Power Factor
- Reduced Harmonics
- Longer service life of equipment
- Optimized plant operation
- Reduced plant downtime
- Improved voltage regulation
- Generator fuel savings