

Driving change with powerful variable-speed drive systems Increased productivity with high pressure grinding rolls



High pressure grinding rolls (HPGRs) have seen an increased global popularity over the past decade, due to the development of more powerful variable-speed drive (VSD) systems. ABB's VSD solution plays an integral role in providing high-throughput and energy efficient grinding – making HPGRs a competitive alternative to SAG mills.

FEATURE MOTORS & DRIVES



The Boddington HPGR, courtesy Polysius and Boddington.

Driving change

ABB has increased the global popularity of a processing technology through the development of powerful, variable-speed drives. By **Tess Ingram**

High-pressure grinding rolls (HPGRs) have become increasingly important in hard-rock processing.

However, a number of application challenges had prevented them from gaining greater popularity.

The optimum point of operation for HPGRs varies according to the material property and the rate it is fed through the hopper at, creating the need for a drive that can adjust accordingly.

ABB said that its variable-speed drive (VSD) systems played an integral role in the technology becoming a high-throughput and energy-efficient grinding process, and a competitive alternative to SAG mills throughout the past decade.

ABB has worked consistently to raise the power rating record for HPGR drive systems from two, one megawatt drives for the São Luis iron ore pelletising plant in Brazil in 2002, to two 2.5MW for the Cerro Verde copper mine in Peru in 2006.

Most recently, the company provided a record two 2.8MW drives for Newmont's Boddington gold mine in Western Australia.

And according to ABB's global product manager for drive systems Venkat Nadipuram, the company has designs in place to increase this even further to 10MW, using twin or quad drive configurations.

"As major OEMs are gearing up for larger and larger sizes, ABB has in place plans on how to achieve this," he told *Australia's Mining Monthly*.

HPGRs consist of two counter-rotating rolls, one fixed and the other floating. The ore is fed from a hopper into the gap between the rolls for crushing at high pressure.

ABB variable-speed drive systems enable the grinding rolls to operate at optimal speed and provide accurate load sharing between the two rolls.

The two drives provided for Boddington encompass a medium-voltage circuit breaker, converter transformer, motors and frequency converters. According to the company, they enable the HPGRs to always operate optimally, whatever the grinding conditions."

"For a mine like Boddington with four HPGRs running 24 hours a day, 360 days a year, this can significantly improve the operating margins of the mine," said a spokesman for ABB.

ABB adapted the drives to meet Australian electrical and safety standards, as well as providing transformers manufactured at an ABB Australia transformer factory to meet a request from the Newmont for locally produced equipment.

Nadipuram said that the success of the Boddington HPGRs had generated interest in the company's VSD systems and provided the market with the confidence it needed to accept HPGR technology.

He added: "Good execution, optimised system solution and best-in-class service at Boddington has instilled solid confidence in ABB as a proven and expert partner for high-power HPGRs."

tess.ingram@aspermont.com



Courtesy Polysius and Boddington.

Contact us

Global Competence and Execution Center for grinding solutions

ABB Switzerland Ltd.

Segelhofstrasse 9P
5405 Baden 5 Dättwil
Switzerland
Phone: +41 58 586 84 44
E-mail: minerals@ch.abb.com

ABB's Mining business is represented in the following countries:
Australia, Brazil, Canada, Chile, China, Germany, Peru, South Africa,
Sweden and Switzerland.

For contact details, please visit our website:

www.abb.com/mining