

P R E S S R E L E A S E

FOR IMMEDIATE PUBLICATION

19th June 2009

Polysius Equipment at Voorspoed Diamond Mine Achieves first year of successful operation

Polysius, global leader in the supply of grinding and crushing equipment, manufactured, supplied and commissioned a Polycom (High Pressure Grinding Roll) for effective diamond liberation as well as a Scrubber for disagglomeration to Voorspoed Diamond Mine in the Free State.

“Developed shortly after the Anglo Boer War, Voorspoed was one of South Africa’s first diamond mines but was forced to close in 1912 when the extracted ore was too hard for the then mining equipment to handle”, explains Polysius’ Marketing Manager, Gerhard Sauermann. “New mining methods developed through the years and Voorspoed mine reopened in 2007. De Beers’ Metallurgists continued to research more cost and performance efficient methods for handling the exceptionally hard ore. Following extensive testing, Polysius’ advanced grinding and scrubbing technology offered the best results for improved efficiency and reliability and in 2006 Voorspoed appointed Polysius as supplier of choice. The equipment was commissioned in the beginning of 2008 and, according to Sauermann, is a first on this scale in a diamond treatment plant.

The Voorspoed comminution circuit features the new generation diamond flow sheet with combined tertiary (-60 mm feed size) and re-crush (-25 mm feed size) comminution in one machine. Only one Polycom machine is needed to achieve the required output of 1000 tons per hour for the combined crushing processes. “Similarly”, explains Sauermann, “the high capacity Scrubber combines scrubbing and screening into one Section. Both the Polycom and Scrubber reduce the number of plant Sections to two instead of four. This means a single machine, a small footprint, high volumes, and reduced cost”.

Sauermann discusses some of the unique benefits of the Polysius equipment in greater detail:

“The Polycom, also known in the industry as a High Pressure Roll Crusher (HPRC), not only offers an energy efficient process but also uses the energy appropriately”.

- The Polycom efficiently liberates diamonds from the host rock (kimberlite) through inter-particle crushing and a large working gap.
- The Polycom exposes ore particles to high pressures in the material bed between the two rolls, resulting in efficient inter-particle breakage; hence the Polycom is also referred to as an Interparticle Crusher (IPC). When the material is crushed, the ore breaks and the diamonds are liberated undamaged.
- The maintenance friendly Polycom features a patented studded roll wear protection that ensures long wear life and high machine availability.

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- The Polycom's progressive feed arrangement and product discharge boasts an efficient design that allows for a direct feed from the secondary crusher product stockpile by using a 60m variable speed driven conveyor. The material is moved into a 2.5 minute capacity feed chute which ensures constant choke feed in the Polycom. The feed arrangement also features a bypass chute that protects the Polycom against tramp metal. The unit's discharge design enables edge recycling of Polycom product directly back to the Polycom feed, providing flexibility in the liberation process.

The Polysius scrubber that de-agglomerates the HPGR product features the following:

- Shell supported with slide shoe white metal bearings which allows higher installed power and charge level.
- Shell support also allows design feed and discharge openings to suit material requirements and is not constrained by trunnion bearing size.

Polysius equipment is supported by a dedicated service department and the recently opened one stop Service Centre. According to Sauermann, the state-of-the-art Service Centre is a value proposition designed to meet essential requirements including refurbishments, maintenance, service and even machine manufacture. The Centre will constantly maintain, increase and continuously update a comprehensive stock of spares for Polycom equipment.

"Moreover" adds Sauermann, "our services are not limited to only Polycom technology, we are supporting other equipment as well. The new centre is the only one of its kind in Africa and part of the company's global service centre network in South America, Australia and Germany. In fact, Polysius is one of three German companies offering this technology and the only company equipped to provide comprehensive HPGR service packages supported by qualified engineers and technicians from well appointed and established Service Centres," concludes Sauermann.

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ISSUED ON BEHALF: POLYSIUS

Contact: Ralf Hesemann / Pia Guertler

Tel: 011 236 1218 / Fax: 011 236 1301

Email: ralf.hesemann@thyssenkrupp.com

pia.guertler@thyssenkrupp.com

www.polysius.com

By:

Sonia Laverick

Laverick Media Communications cc

Tel: 083 310 4491/ Fax: 086 671 6836

Email:

lavmedia@iafrica.com / www.laverickmedia.co.za