Implementation of Studded Roll Bodies for Raw Material HPGR Grinding System

Samira Rashidi
Process Engineer
thyssenkrupp Industrial Solutions
180 Interstate N Parkway, Ste. 300
Atlanta, GA 30328, USA
samira.rashidi@thyssenkrupp.com

Stefan Diedenhofen
Senior Project Manager
thyssenkrupp Industrial Solutions
Graf-Galen-Str.17
59269 Beckum, Germany
stefan.diedenhofen@thyssenkrupp.com

Alan Simmons
Chief Electrical Engineer
CalPortland Company
2025 E Financial Way
Glendora, CA 91741, USA
asimmons@calportland.com

Abstract -- High Pressure Grinding Rolls (HPGR) are widely known for their high energy efficiency. This is due to the direct transfer of energy to particles via two counter-rotating rolls. Hence, the wear protection of HPGR roll bodies are not only significant in terms of maintenance requirements and operational costs, they also affect the efficiency of the process. In this regard, the original HPGR OEM collaborated with a cement producer (here referred to as "owner") to modify the wear protection of their HPGR roll bodies.

This HPGR is employed in the raw material grinding system together with a static dryer and a dynamic high-efficiency separator. In 2018, the roll bodies were upgraded from standard wear material to a studded design, which has a long-standing history in minerals and mining applications but has not been explored well enough in the cement industry. Since the commissioning, the studded wear protection has shown increased system reliability and availability, enhanced performance, and reduced maintenance. Visual and quantitative wear evaluation has shown very little wear on the rolls. Since the startup, roll surface has required little maintenance when compared with the old rolls. Instances of unscheduled maintenance around the raw grinding system has notably decreased.

This paper will review the project implementation and discuss operational advances, maintenance improvements, and rolls wear life.

Index Terms -- High pressure grinding rolls, Raw material grinding, Studded roll bodies, Wear protection