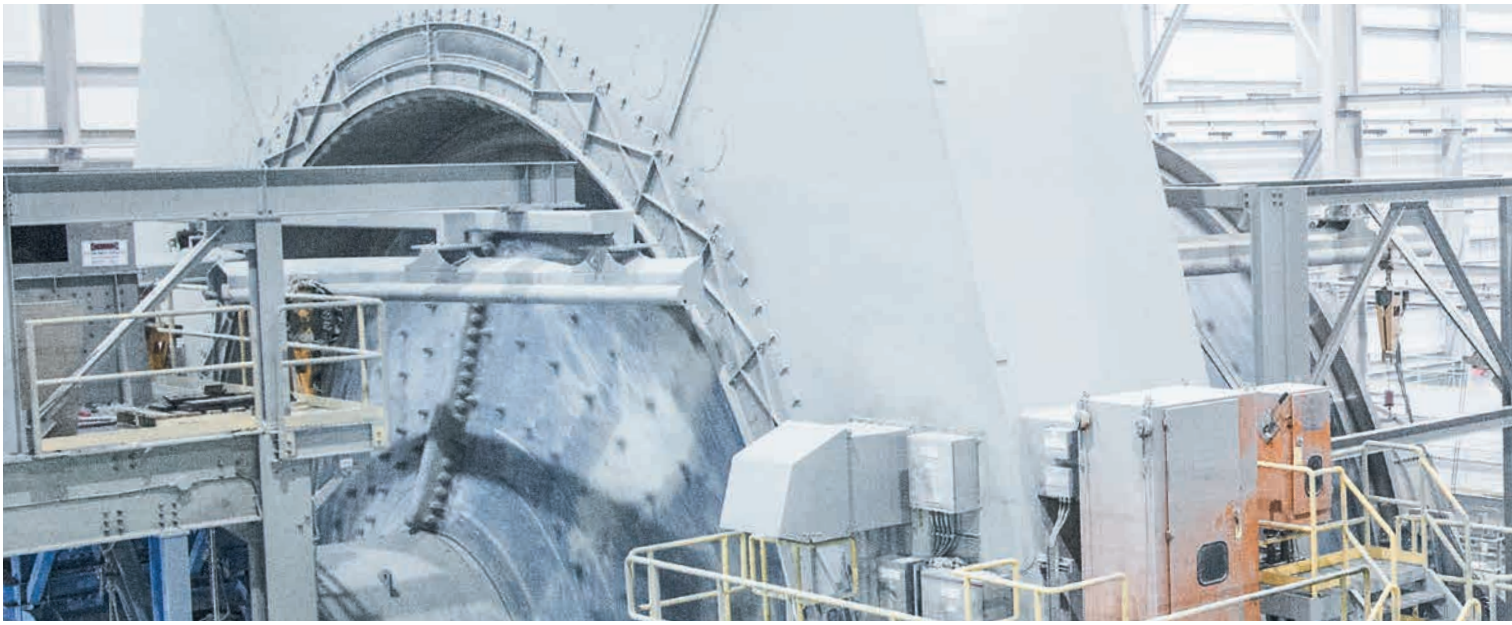
Grinding systems product

SmartMill™
Exceeding your performance limits

Increasing demand for higher productivity and energy efficiency in comminution requires constant innovation to provide solutions for reliable and sustainable grinding operations. With over four decades of in-depth process and drive system know-how, ABB's dedicated mining experts developed SmartMill™ — an embedded solution that combines the state-of-the-art and fully variable-speed mill drive system with advanced process control. Based on proven ABB technology and best-in-class application engineering, SmartMill™ simplifies your operator tasks and provides support to deal with multiple variables at once, helping you achieve maximum grinding efficiency for your mills. Don't wait to exceed your limits — partner with us for smarter grinding!

Power and productivity
for a better world™

SmartMill™
A simple and robust solution for maximum control



Improved mill efficiency and stability, process control, operator efficiency, and extended lifetime of your mill are just a few advantages of applying our SmartMill™ solution to your grinding mills.

SmartMill™ combines a variable-speed drive system with advanced process control to provide maximum mill control. It can be applied to new or existing semi-autogenous (SAG), autogenous (AG) and ball mills, powered by either ring-geared mill drive systems (RMD) or gearless mill drive systems (GMD).

SmartMill™ is designed to control, stabilize and optimize mill operation. The technology supporting this solution enables the accurate, consistent and tireless application of your optimal control strategy at all times. Similar to an auto-pilot, SmartMill™ automatically regulates mill speed and feed based on the multiple available variables that may influence throughput and ore quality. As a result, your mill runs at optimal speed with optimized cascading, leading to increased throughput and reduced energy consumption.

Optimized grinding at your fingertips

Stable mill load — higher efficiency
By keeping the mill at optimal point of operation, SmartMill™ increases energy efficiency. No constraint violation occurs in respect to load, torque and power consumption and any deviations in mill load can be decreased dramatically.

Energy savings
Plant management can set active demands for energy consumption. When an insufficient or lower mill load is detected, mill speed will be reduced automatically and energy savings are achieved.

Mill lifetime
The SmartMill™ control concept pursues the optimum cascading angle at all times, thus reducing wear on mill liners and increasing availability.

Optimum operator efficiency
With the automatic selection of optimal grinding mill set points, operators can now change their focus to other important tasks, increasing overall operator efficiency.

Optimum particle size
With SmartMill™, particle size can be better influenced to fit your needs. Therefore, standard deviations can also be significantly decreased.

Flexible solution for new or existing mills

The grade and hardness of the ore supplied to the mill often vary considerably. This makes it difficult for a fixed-speed mill to operate efficiently. It is also one of the reasons why SmartMill™ is indicated not only for new mills, but also as a revamp solution for existing fixed-speed mills.

The concept combines ABB's current RMD and GMD solutions with advanced process control. Therefore, all control application features that help to protect the mill and the network from electrical and mechanical damage and support the operation and maintenance procedures, are part of the solution.

These features (such as automatic mill positioning) come integrated in an application controller which is placed inside the frequency converter panel, now being used to run the advanced control algorithms required by SmartMill™.

With SmartMill™, we ensure that your mill runs smoothly at its optimum speed and feed, while maintaining all protection functions (e.g. frozen charge protection) that prevent unexpected downtime.

SmartMill™ — expert system for optimized grinding

Your challenges

- Sustain skilled human resources
- Limited time to perform optimizations
- Lack control over the process
- Instrumentation reliability
- Too high feed rate can cause overload on the mill
- Difficult to adjust the feed rates
- Variability in the size of the crushed ore

Our solution

Actively use variable speed on the mill based on real time data from the process and a holistic approach to control the mill taking into account multiple system variables.

Features

Packaged solution including variable-speed drive system with embedded advanced process control and mill application control features ideal for retrofits.

Benefits

- Increased efficiency and throughput
- Stabilized mill load
- Reduced energy consumption
- Extended mill lifetime
- Improved operator productivity
- Better control over optimum particle size
- Easy-to-maintain system
- Reduced stresses on mill components

SmartMill™
How to start optimizing your mill?

By partnering with ABB you get both advanced process control for mill operation with all its elements, and the special mill application features.

Hardware: No additional hardware is required for the SmartMill™ control itself, as ABB utilizes the same embedded controller in the RMD and GMD for the mill application features as well as the advanced control.

Software: If you are buying a new mill, engineering optimization costs do not apply right away. Only a software license is required to ensure that the controller already comes with the appropriate algorithms. Project engineering and field services can be contracted after start-up, thus allowing for a much faster return on investment.

Revamp solution: Choose SmartMill™ to upgrade your existing fixed-speed mill to an advanced variable-speed system for maximum return on investment from your assets.

Your road map to a successful implementation

1. **FingerPrint** — We collect information on site to establish the process details that will enable precise pre-configuration of your control strategies.
2. **Pre-configuration** — We tailor the application to your exact site requirements based on the information collected during the FingerPrint visit.
3. **Primary commissioning** — We tune your control strategies to optimize performance of your SmartMill™.
4. **Secondary commissioning** — We adjust your control strategies according to the experience made during the first three to six months of operation.

For further information please contact:

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