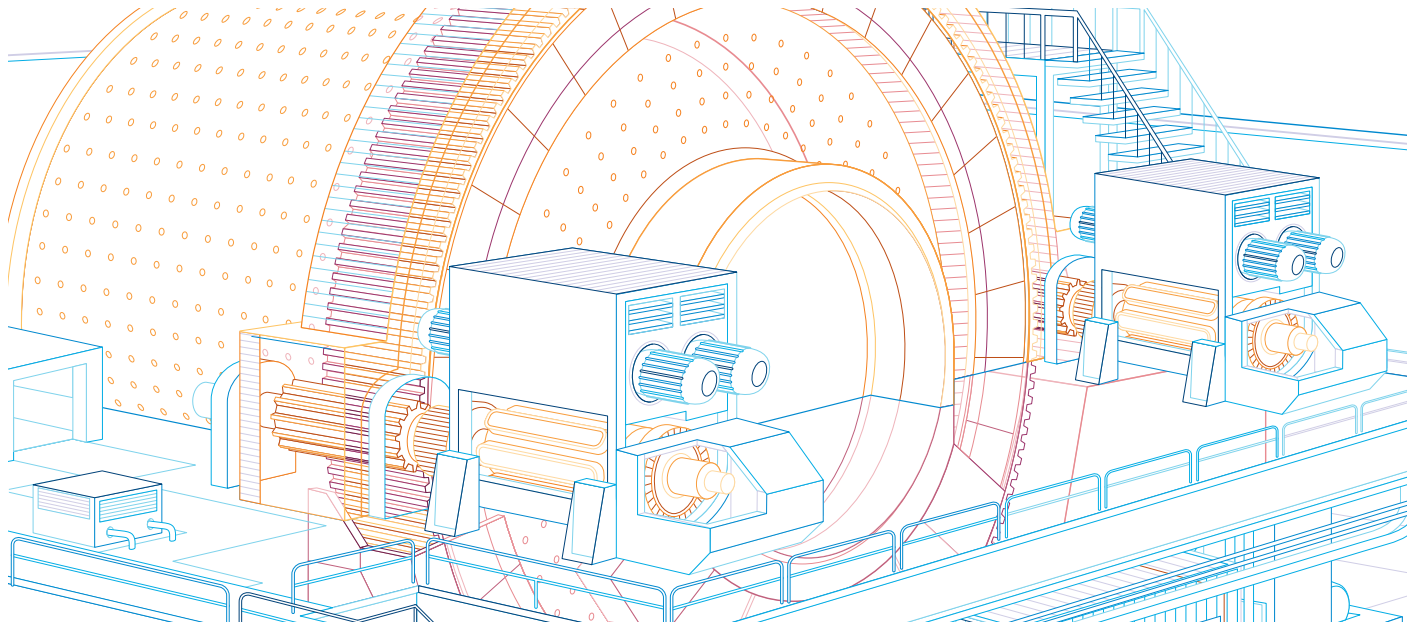


## Ring-gearred mill drives solution family Engineered to fit your needs



Our ring-gearred mill drives portfolio offers the right solution for your technical requirements and budget constraints. Regardless of your mill configuration, single or dual pinion, high- or low-speed, we can provide the best solution to fit your needs.

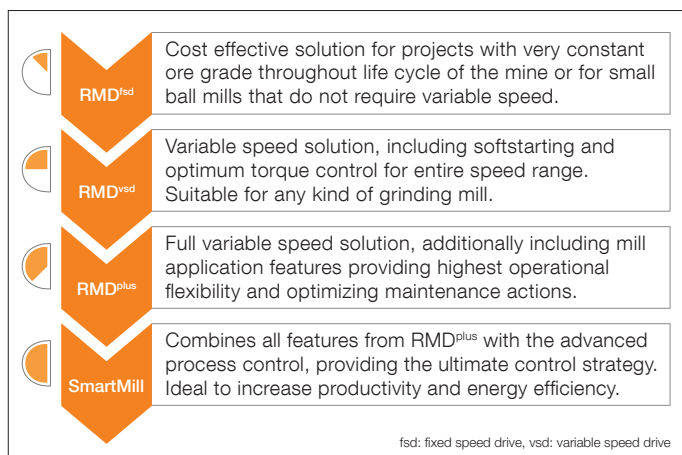
Decreasing global mineral resources and the exploitation of low-grade deposits, led to the development of new technologies able to cope with larger equipment that can generate higher throughput, reliably and with the potential to decrease CAPEX. If in the past single pinion mills were enough to process all material, today dual pinion or gearless driven mills are necessary. Not only the mill equipment was adapted to exceed its technical and performance limits. Also, the drive solution experienced continuous developments, influenced by the newest trends that permit reaching new grinding frontiers. Nowadays more and more mills are fed by frequency converter systems, allowing for higher performance and flexibility of operation.

ABB continuously extends the technical and performance frontiers of its ring-gearred mill drive (RMD) technology to fit

your site requirements. We provide optimized mill drive solutions for all types of ring-gearred mills: low and high speed, single and dual pinion, with and without a gearbox — all designed for reliable, long-life and low-maintenance operation.

### RMD solution family for simplified product selection and implementation

ABB offers the exact RMD solution that fits your needs; we have shaped our portfolio in a way that best matches your technical and financial requirements.



**RMD<sup>fsd</sup>:** Standard products like wound rotor induction motors and liquid resistor starters are used in order to smoothly ramp-up the mill and run it at constant speed throughout the entire operation.

**RMD<sup>vsd</sup>:** Comprises of synchronous or induction motors fed by frequency converters that allow speed variation and soft control during starting, operation and stopping of the mill.

**RMD<sup>plus</sup>:** Incorporates an overriding application controller in the frequency converter panel that takes care of multiple operation, maintenance and protection features, allowing remarkable savings to operations.

**SmartMill:** Extends the RMD<sup>plus</sup> to the next level by actively controlling the speed of the mill based on real-time data from the process with the support from the advanced process control technology.

Add-on Solution	Mill application features											
	Protection			Operation					Maintenance		Advanced control	
	Frozen charge protection	Coupling supervision	Stand still detection	Softstarting	Frozen charge remover	Mill load sharing	Controlled rollback	Mill power ride through	Over-duty cycle	Oscillation damping	Creeping	Predictive control
RMD <sup>fsd</sup>				■								
RMD <sup>vsd</sup>				■								
RMD <sup>plus</sup>	■	■	■	■	■	■	■	■	■	■	■	
RMD SmartMill™	■	■	■	■	■	■	■	■	■	■	■	■

## Benefits of varying the speed on grinding mills

ABB's variable-speed RMD<sup>vsd</sup>, RMD<sup>plus</sup> and SmartMill solutions offer the ability to minimize the wear of mechanical components of the mill.

### Operational advantages

- Operator can rapidly react to changes in ore characteristics due to variable-speed
- Process optimization leads to a more efficient use of grinding power, resulting in significant energy savings
- Fine-tuning of the speed in ball mills increases metals recovery
- Dedicated mill controller performs critical monitoring, protecting the mill
- Frozen charge protection for safe operation

### Mechanical benefits

- High starting torque availability
- Reduced mechanical stress on the ring gear, gearboxes and pinions
- Smooth starting and precise torque control due to DTC technology, even at low speed
- Load sharing between pinions is controlled actively and accurately

### Electrical benefits

- Suited for weak networks, due to system's low starting current
- Power factor >0.95, even leading as an option
- Resilient to voltage dips very common in remote mines

### Maintenance benefits

- Easy maintenance and direct communication with drive via mill local control panel (MLCP)
- Reduced maintenance time and no need for auxiliary motor due to creeping and automatic positioning modes
- Quick return to operation with frozen charge remover
- Fast and easy technical support via remote supervision and diagnostic options

## Contact us

### Global Competence and Execution Center for grinding solutions

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[www.abb.com/mining](http://www.abb.com/mining)