In the mining industry, underperforming equipment and downtime can reduce your competitive advantage. A better solution relies on smart equipment. Smart Allen-Bradley® variable frequency drives (VFDs) deliver real-time data to help increase your productivity and uptime, plus reduce energy and maintenance costs.

**PowerFlex drives with TotalFORCE technology** are a more dependable solution for the mining industry. These drives can be used in multiple areas and stages across the entire production process. From the mine to conveyors and crushers to the smelter or refinery, including the plant concentrator and shipping.

### Functionality for the mining industry

Whether you are managing legacy equipment or designing a new plant, smart PowerFlex drives can help achieve your production goals.

**PowerFlex drives with TotalFORCE technology provide:**
- Real-time operational intelligence
- Adaptive control
- Predictive maintenance
- Automated commissioning and optimization

**The results can include:**
- Increasing uptime and production throughput
- Extending drive and machinery life
- Reducing maintenance and operating costs
- Delivering better energy efficiency

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<tr>
<th>Anti-Pendulum / Anti-Sway</th>
<th>TorqProve™ Control</th>
<th>Predictive Maintenance</th>
<th>Load Observer and Adaptive Tuning</th>
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<td>With drive firmware, you can minimize the pendulum swing at the end of the horizontal movements of an overhead crane or bridge crane. This functionality reduces the mechanical stress and minimizes maneuvering time – increasing productivity.</td>
<td>TorqueProve control is used in any application where coordination between the drive and the mechanical brake is required. With the drive controlling braking, it can reduce wear on the mechanical brake. Convenient set-up only requires a few parameters and allows smooth operation.</td>
<td>PowerFlex drives take a proactive approach to minimize downtime. They provide diagnostic data and perform continuous monitoring of the health of the drive and components. Real-time alerts are sent when components must be replaced, reducing maintenance and spare inventory cost and downtime. Plus, corrosive-gas-resistant XT drive components help increase uptime.</td>
<td>Adaptive control combines Adaptive Tuning, Load Observer and Bus Observer, working together to reduce commissioning time and monitor machine characteristics. As machine operating characteristics change, drives automatically adjust to compensate and maintain productivity. This action helps reduce mechanical wear and keeps operations running at optimal production.</td>
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The modular design of PowerFlex drives uses common spare parts, it has less need for specialized tools and does not require labor from specialized technicians. With this functional design, it can take as little as 15 minutes to replace machinery components.

With Active Front End Technology (AFE), the excess energy is no longer lost; it recovers. The braking capacity of regenerative PowerFlex drives minimizes the use of braking resistors and cooling equipment. Plus, drives with AFE technology feed energy back to the network, reducing energy consumption.

In a common DC bus system, a common bus rectifier can supply power to the DC bus lineup. Power sharing makes it possible for monitoring inverters to consume power from generating inverters. This feature offers less wiring, fewer components and fewer spare parts.

The bandwidth of the differentiated engine helps increase the speed regulators and current. Likewise, it facilitates rapid rejection of disturbances. This action translates into higher speeds of production lines with torque accuracy and great dynamic response.

Results with PowerFlex drives and TotalFORCE technology

INCREASE PRODUCTION BY 10%
A PowerFlex drive was an ideal solution to the challenges of a leading European cement and mining material handling and processing company. The company needed a VFD to apply in a vertical mill, which is standalone (AC IP54) and has fully integrated protection devices. In addition, it had to integrate with current control systems.

The customer chose the PowerFlex drive for its energy efficiency and process control optimization. In addition, the drive has monitoring of its fully integrated components. Other differentiating characteristics were key to the final decision, including:
- Adaptive control
- Predictive maintenance
- Design for functional maintenance

Together, the company projected to increase production by 10...20% in various applications.

THE BEST DRIVES FOR WINCH
An American company needed to improve the electrical system of its double drum winch. The advantages of the PowerFlex drive’s competitive ratings made it the preferred choice for this challenge. Predictive maintenance delivers minimal risks and downtime, while the TorqProve™ feature enables smooth operation with reduced stress on the machine. Plus, with regenerative braking, the drive helps minimize the use of braking resistors and cooling equipment, delivering over 30% operational energy savings.

REDUCED FUEL CONSUMPTION 77% AT ONE OF THE WORLD’S LARGEST IRON ORE MINES
By developing new production architectures and deploying an 18-mile conveyor system with mobile crushers, the company nearly eliminated their fleet of 100 off-highway trucks and their associated costs.

The solution included process control and premier integration for medium and low voltage PowerFlex drives with TotalFORCE technology. Plus, FactoryTalk® Analytics™ software and FactoryTalk® InnovationSuite with a converged plantwide Ethernet architecture.
Applications where PowerFlex drives with TotalFORCE technology help deliver added value

Turn manufacturing into a strategic advantage

Leverage PowerFlex drives to help reach your energy savings and sustainability goals. These solutions are designed to maximize motor efficiency, reduce energy use and improve application performance.

For information about PowerFlex 755TS, 755TL, 755TR, 755TM and 6000T drives with TotalFORCE technology, speak with your local Rockwell Automation sales representative or click to connect or learn more.