

Stacker/Reclaimers

Benefits

Your mine is unique. Rockwell Automation consultants can take your specific concerns and provide an engineered solution to optimize your mining operations. Our stacker/reclaimer solution benefits include:

- Achieve your operational targets with the architecture of a [Connected Mine](#)
- Quickly diagnose and fix issues with remote communication from a central location or across your entire enterprise
- Anticipate future issues and achieve accountability by using historical data and improved diagnostics
- Meet safety requirements by adopting an [Integrated Architecture](#) with programmable event-based alarming to support safe automated operations
- Standardize your control systems and benefit from improved energy efficiency, monitoring and maintenance of your machinery



Discover stacker/reclaimer solutions for the modern mine.

Stacker/Reclaimer Solutions for a Connected Mine

From extraction, processing and transportation to bulk material storage and shipping, mining operations teams face many challenges to minimize unplanned downtime while maximizing productivity and maintaining safety. Our stacker/reclaimer solutions are designed with your specific application and operational goals in mind while meeting your technical requirements. They are part of a more comprehensive Rockwell Automation Mining Solution (RAMS).

With decades of experience in the mining industry across all major mining operations around the world, Rockwell Automation supports every step of your operations to help achieve production targets.

Our stacker/reclaimer solutions:

- Hold up to harsh environments for long lasting, uninterrupted service using the most advanced and reliable Allen-Bradley® technology
- Improve your uptime by fully integrating power and automation components with built-in device level diagnostics and remote wireless communications
- Strengthen operational safety challenges with E-stop/Fast Stop, Missing Bucket Detection, Brake Control and Torque Limiting functions

The cornerstone of our solution is utilizing a [distributed control system](#) that is scalable to your needs. It can run process, discrete, power monitoring, drives, and safety applications within the same control visualization environment to provide a unified system across your entire mine.



LISTEN.
THINK.
SOLVE.®

Maximize Productivity Across Mining Operations

Precision Control

Are you constantly faced with reducing your stacking and reclaiming times and effectively meeting your targets? A seamless integration between a Global Positioning System (GPS), modern instrumentation and a robust drive system allows high precision operations at the fastest rates. Our solution helps you meet stacking and reclaiming targets with dynamic control. Also, reclaiming parameters like penetration, depth, slewing speed, rotation speed and height of the cut are continuously calculated by the system.

Drive Coordination

Variable frequency drives are used extensively in stacker/reclaimer machines to provide adjustable speed and torque-controlled operation of travel, slewing, hoisting, bucket wheel and cable reel drives. Updating your drive coordination can benefit stacker/reclaimer operations in the following ways:

- Ensure tighter control and decrease machine cycle times
- Minimize mechanical wear with smoother acceleration and deceleration, ultimately lowering maintenance costs and prolonging the lifetime of your system
- React to varying conditions quickly with optimized production and higher throughput data

Anti-Collision and Safety

Our anti-collision solution uses GPS, which provides a highly accurate position determination between the stacker/reclaimer and other moving equipment or fixed obstacles. Built-in alarms allow for early problem detection and reduce the risk of operator error, preventing a loss in production and minimizing safety issues.

To address your overall safety concerns, a complete system can be engineered with a **ControlLogix®** control system utilizing CIP Safety protocol and EtherNet/IP, providing a secure and consistent network and meeting safety function SIL requirements. Fail-safe operational features include E-stop/fast stop, travel drive skew limiting, brake control, torque limiting and missing bucket detection.



Motor Control

Knowing that most mining operations teams are concerned with reducing energy consumption as well, coordinating your precision control, drive control and motor control systems ultimately leads to increased energy efficiency. Replacing traditional full-voltage starting with **PowerFlex variable speed drives** can help significantly reduce energy consumption. Our analytic tools can gather energy data from your machines, monitor real-time consumption and report it through your Logix-based control system to provide coupled process and power information. You can make instantaneous production decisions regarding energy usage. This improved visibility is an important step toward smarter stockyard operations and helps enable you to meet productivity goals while reducing energy consumption.

Condition Monitoring

Detect potential equipment failures or vibration inconsistencies in real-time on bucket wheels, long travel, slewing arms, motors and gearboxes with a condition monitoring solution that can be incorporated into your existing systems. **Our Dynamix™ 1444 Integrated Condition Monitoring System** coordinates machine protection with your standard control system.

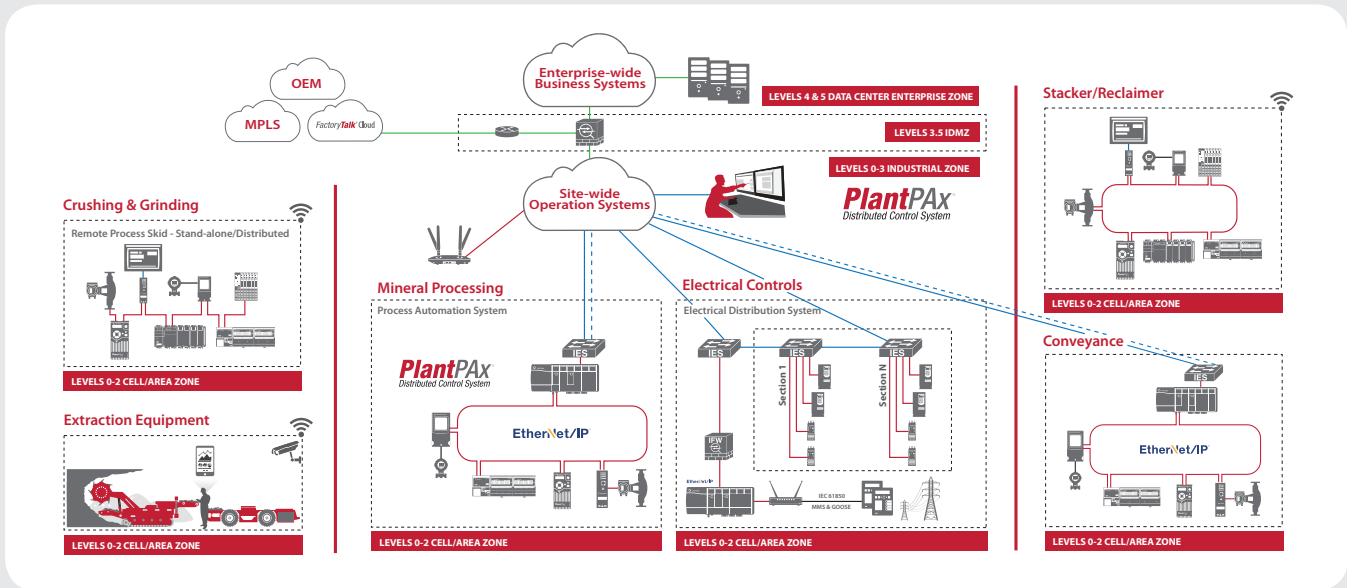
Operations Integration

Our stacker/reclaimer solution is part of the **Rockwell Automation Mining Solution** suite. Our solutions are based on decades of mining domain expertise, application-specific issue resolution and global field support that enables the connected mine. The network architecture is designed by Rockwell Automation and our Strategic Partner, Cisco, specifically for the mining industry to reduce start uptime and lifecycle cost. It is built on a **PlantPAX® distributed control system** that allows seamless machine level integration and site wide operational intelligence data.



The stacker/reclaimer dashboard clearly shows real-time production data.

Architecture of a Connected Mine Using the Rockwell Automation Mining Solution



Benefits of a Connected Mine

A connected mine reaches farther than just extraction and processing – it’s a true pit-to-port solution that extends across your entire mining operation. A connected mine is transformative, but it does not need to be a complete overhaul of your existing infrastructure. Much of the data that is sought exists within your company’s systems – it just lacks a means of being collected, analyzed and shared. Taking the necessary steps to modernize control systems and pull together historically disparate systems creates the foundation to mine this data. Once the data is extracted, it can help reduce safety risks and achieve a new level of operational intelligence to improve productivity and global competitiveness. A Rockwell Automation Mining Solution can help you achieve these goals resulting in a connected mine.

Visualization and Monitoring

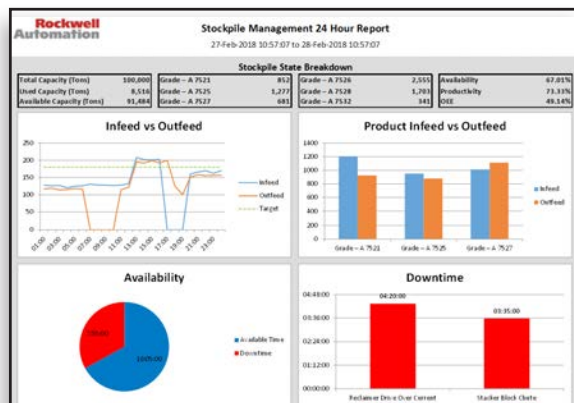
The operation of the stacker/reclaimer requires visualization data to be fed to the operator, along with real-time video feeds and the ability to communicate via voice. This feature can be in the operator cabin or the Remote Operating Center (ROC). Automation, video and voice/IP are on one network architecture. The integration provides ease of communication between the ROC and personnel via a standard Ethernet connection.

Visibility to real-time data helps optimize your production performance by seeing feed and processing rates, identifying chokepoints, anticipating equipment failures and realizing conditional monitoring. Ultimately, gaining this type of operational intelligence can have a significant impact on your business and with the implementation of our Mining Solution you can easily achieve this.

Remote Operation

Connecting your assets on an enterprise level empowers people to make smarter and more informed decisions. Your executive or office personnel see the same information that your on-site production management and equipment operators see. If you have multiple remote mines, this gives you the ability to trouble shoot more quickly and reduce and/or prevent unplanned downtime, keeping your mining operation at its optimum.

Remote monitoring is secure and supports future planning as you expand your mining operations. From your extraction site to your production facility, you can optimize your operations, improve employee effectiveness, increase productivity and reduce safety risks by adopting a connected mine. You can run everything from a central location, but also monitor specific processes such as stacker/reclaimer operation and performance.



The stockpile management screen reflects the last 24 hours of data.

Lifecycle Services

Your challenge may be looking for an end-to-end system modernization or a specific performance issue that requires integration of multiple hardware and software assets. For stacker/reclaimer machines, there are some proven engineered solutions for your specific mining environment.

A [modernization strategy](#) does not always mean 'rip and replace,' but rather proactively creating a roadmap that addresses all aspects of the operation, including people, process and technology. By modernizing, you can future-proof your operations and tap into the value at stake in the market today.

Successful modernization efforts can radically change business models and build new revenue streams, driving people, machine and process optimization and leveraging contemporary technologies, including:

- [Mobility and visualization](#)
- [Information management and analytics](#)
- [Scalable architecture](#)
- [Multi-discipline control](#)
- [Secure network infrastructure](#)
- [Virtualization](#)

Throughout the lifecycle of your system, we have worldwide talent with local expertise, mining industry proficiency and certified project managers to assist you in finding and maintaining the right solution for your connected mine.

Additional Information

To learn more, contact your local Rockwell Automation distributor or Rockwell Automation sales office.

You can also visit the [Rockwell Automation Mining, Metals and Cement web page](#)

To learn about mining customer successes, [check out mining, mineral and cement case studies](#)

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