



ABB Ability™ MineOptimize

Transforming mining performance
through digitalization



- Secured and structured plant-wide system thanks to integrated mining solutions
- Visibility, agility and optimization across operations
- Increased plant efficiency, availability and reliability throughout mine lifecycle

More than ever, mining and mineral processing companies need to boost productivity, ensure plant and personnel safety and protect the environment. ABB is well positioned, globally and locally to meet these challenges.

What is ABB Ability™ MineOptimize?

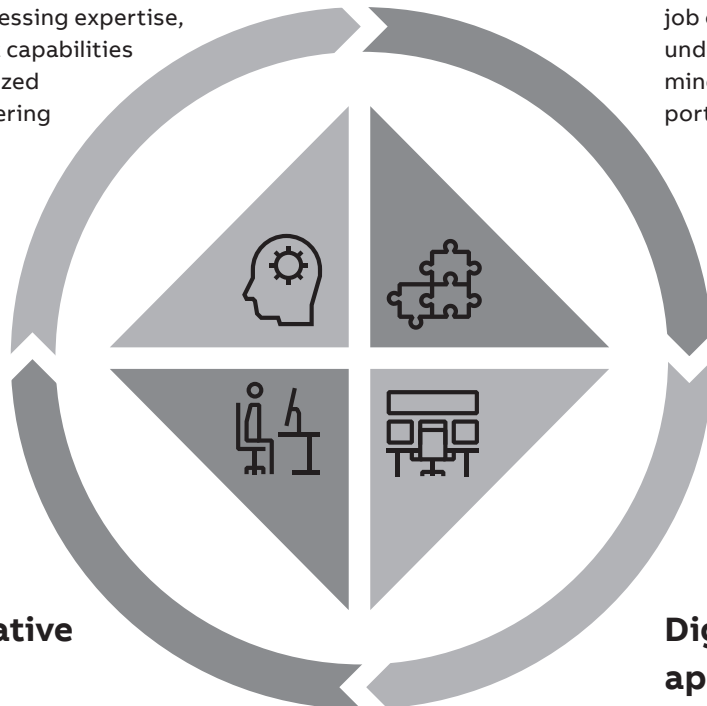
ABB's portfolio extends from electrification and automation solutions to digital technologies and advanced life cycle services. Yet at the heart of its offering lies decades building domain know-how and global experience with many of the world's mines and mineral processing plants. With a strong local and global engineering, manufacturing and service presence, ABB supports all aspects of mining processes, solutions, applications and services.

Optimized engineering

ABB engages as the electrical, control and instrumentation contractor with mine and minerals processing expertise, global project capabilities and standardized smart engineering tools.

Optimized solutions

ABB supplies and implements system solutions that fulfill the job of open-pit and underground mines, minerals processing and ports operations.



Collaborative services

ABB supplies services to keep production running and enables continuous improvement by connecting you with the appropriate technical support.

Digital applications

ABB supplies advanced libraries and software that enable modern mines to maximize visibility, reliability, productivity and energy efficiency.

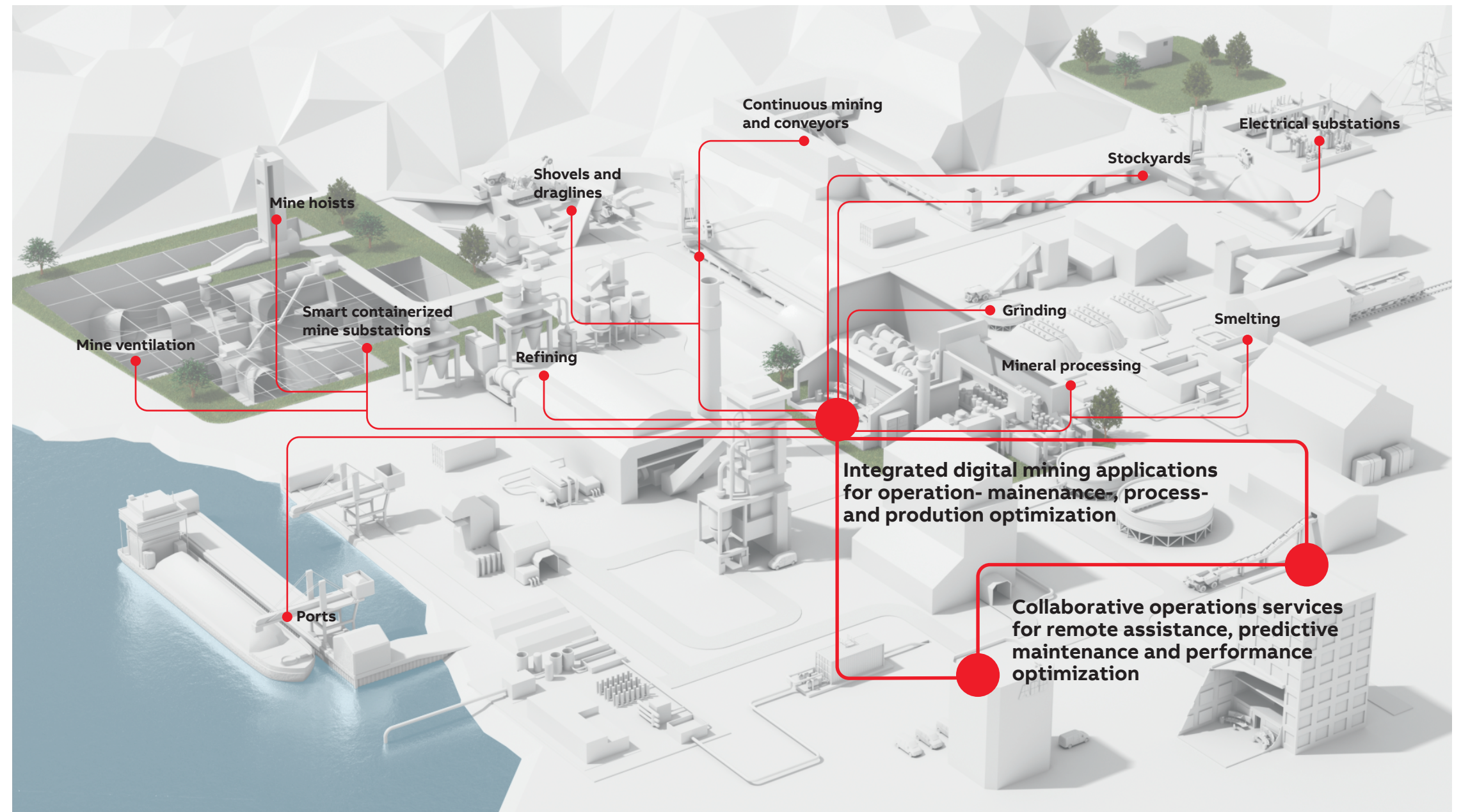
ABB Ability™ MineOptimize

ABB Ability MineOptimize is a four-pillar framework that integrates individual mining solutions into a secure and structured plant-wide system, extending from mine to port and plant to enterprise. The four pillars access all of ABB's engineering capabilities, system solutions, digital applications and collaborative services for mining and mineral processing.

ABB Ability MineOptimize raises efficiency, availability and reliability throughout a mine's entire lifecycle, while optimizing capital costs, maximizing productivity and enhancing safety. The benefits are many but typically lead to:

- **40-50 percent** reduced unscheduled downtime
- **15-20 percent** improved energy efficiency
- **Up to 10 percent** increased asset utilization
- **Up to 10 percent** higher personnel productivity

Enabling high levels of visibility, agility and optimization across operations



Optimized engineering



Vertical industry
and domain
know-how

Project
management

Conceptual and
basic engineering

Manufacturing

Factory
acceptance tests

Delivery

Installation and
commissioning

Seamless
integration

Using standard processes and tools, project execution is taken from a traditional multi-vendor approach to one which streamlines the equipment mix. During this phase, ABB assists in project planning and scheduling, focusing on the critical path to ensure the best delivery mechanism and allocation of resources. Technical optimization throughout the entire plant yields cost savings of about 25 percent.

Early engagement

The earlier you engage with ABB, the more successful the total integration of engineering, system solutions, digital applications and collaborative services will be. This in turn offers a greater improvement in the total cost of ownership.

Early engagement gives you immediate access to engineers who know exactly how to design, engineer, manage, manufacture, install and commission the perfectly optimized brownfield or greenfield project.

By engaging early you ensure the absolute best return on investment for the assets employed, leading to predictability of operations, asset reliability, productivity improvement, health and safety review and sustainability and energy efficiency.

Hand-picked technology

Throughout a project, ABB ensures the right technology is selected to match the needs of each individual solution. Technology is selected with a close eye on the environmental impact: ABB continuously assesses ways to save energy and reduce CO₂ emissions.



Reduce project build time

One way to reduce project build time is by using pre-manufactured and assembled e-houses. These portable buildings are factory acceptance tested prior to delivery, thereby saving time by avoiding on-site testing and commissioning.

Further project time is optimized across the EC&I scope through efficient schedule management, flexible use of on-site workforce, smarter site management and focused installation supervision and commissioning.

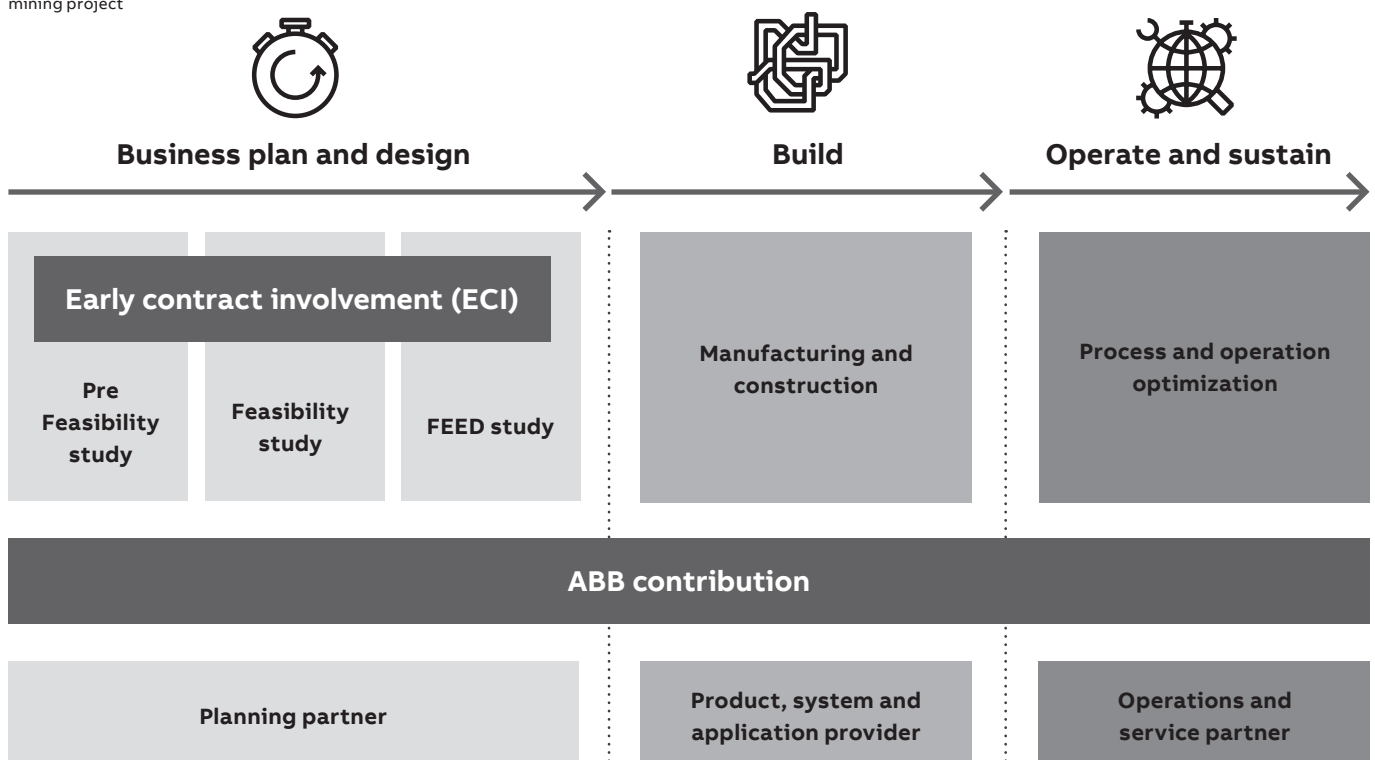
Plant-wide standardization

Applying vertically integrated solutions across the entire plant, enables plant-wide standardization. It lets ABB provide a single management interface, with project coordinators and engineers embedded within the customer's own teams. This eases the coordination of third party equipment while integrating electrical, automation and digital applications. Along with efficient coordination and communication, other benefits are reduced human error, minimized project risks, and decreased time overruns.

Coordinated procurement

Using its extensive sourcing outreach, ABB can access the right technology for the required applications. Providing coordination between all ABB factories and offering a direct interface with major OEMs, procurement costs are reduced by negotiating contracts and administration costs. This also provides one single purchase order along with consistent terms and conditions.

—
Lifecycle of a
mining project



Optimized solutions



Electrification

Automation

Hoists

Gearless mill drives

Ring-gear mill drives

High pressure grinding rolls

Gearless conveyor drives

E-houses

Infrastructure

Shovels and Draglines

Trolley lines

Proven system design is based on ABB's infrastructure, electrification, drives and automation solutions and the ability to seamlessly integrate everything into a fully engineered package. For instance, equipment can be installed into pre-assembled electrical room modules and factory tested to simplify transportation and reduce installation and commissioning time at site. Optimized solutions for integrated power and process automation from mine to port, are available for:

- Mine and minerals processing electrification and automation, including pre-fabricated e-house
- Gearless and ring-gear grinding systems
- Underground mining electrification and automation, as well as hoisting
- Open-pit mining equipment electrification
- Material handling systems for underground and open-pit applications
- Charging system and trolley lines for the all electric mine





Digital applications



Process and power control
Advanced process control
Asset management
Operations and production management
Quality management

The suite of ABB Ability™ digital applications and libraries are packed with mining and minerals domain knowledge. By using this digital suite in close collaboration with a mine's own operations and maintenance teams, the performance and availability of the optimized solutions can be enhanced. This helps deliver sustainable profitability and create full visibility over a mine's entire operations – ensuring the right people have the right information at the right time.

ABB's mining software applications rely on advanced libraries and software to reduce process complexity. The standardized and proven application building blocks for digitalization in mining ensure that integrated systems reach their full potential and deliver sustainable profitability.

Digital applications cover:

- **Operations management system** – create a new level of visibility in mining operations by allowing the mine operator and planner to react in real time to any disturbance and assist planning with automatic scheduling (ABB Ability™ Operations Management System).

- **Production information management systems** – consolidates data on plant and enterprise level and provides analytics along with key performance indicators in easy-to-understand dashboards and reports (ABB Ability™ Knowledge Manager).
- **Plant asset management with real time condition monitoring and health prediction** – minimizes unplanned downtime and increases equipment availability while helping to optimize maintenance activities (ABB Ability™ Asset Vista Condition Monitoring, ABB Ability™ Remote Assistance & Predictive Maintenance).
- **Process and power control** – increase operator effectiveness by offering unmatched focus on situation awareness so as to avoid operational errors and loss of productivity (ABB Ability™ System 800xA Minerals Process Control Library, ABB Ability™ System 800xA Power Control Library).
- **Advanced process control** – reduces energy consumption and increases productivity by maintaining the desired quality automatically, around the clock (ABB Ability™ Expert Optimizer, ABB Ability™ Ventilation Optimizer).
- **Stockyard management and material tracking systems** – integrate the material flow from mine to port (ABB Ability™ Stockyard Management System).

Collaborative services



Care contracts
Service agreements
Remote assistance
Availability improvement
Predictive maintenance
Condition monitoring
Performance optimization
Quality optimization
Consulting
Spare parts

ABB specialists can be connected with in-house teams, either remotely or on-site and in real-time, providing a suite of digital services ranging from remote assistance to predictive maintenance and performance optimization.

ABB acts as single source supplier with global integration experience for electrical, instrumentation and control. This provides a fast track way of moving mines from costly and reactive time-based maintenance to planned preventive and predictive interventions. Through remote services, predictive maintenance and upgrades and retrofits, ABB helps mining companies ensure maximum performance throughout the mine's life cycle.

Remote assistance enables a secure connection between ABB and the customer to provide real-time guidance through remote access and augmented reality.

Predictive maintenance: Equipment alerts you through intelligent cloud-based data analytics when it needs to be serviced.

Performance optimization: Increases a facility's productivity and keeps it on the highest level through remote monitoring of key performance indicators. If deviation is detected, improvement activities can be executed instantly.

Training: Comprehensive training program for customer's personnel through in-house and on-site courses as well as active participation in engineering and commissioning.

Care contracts: Through a range of care contracts and service agreements, training programs and advanced capabilities, ABB helps mining companies ensure maximum performance of their equipment, people and processes by combining its considerable global experience with an extensive local presence.



Global reach

The principles behind ABB Ability™ MineOptimize are built on decades spent working with partners and customers on over 1,000 global projects, extending from mine hoist systems to material handling and conveyor solutions, in open-pit, underground and mineral processing plants. ABB provides strong local and regional presence across engineering, manufacturing and service capabilities.





ABB Switzerland Ltd
Local Business Line Process Industries
Segelhofstrasse 1K
5405 Baden-Dättwil
Switzerland
Phone: +41 58 586 84 44
E-Mail: minerals@ch.abb.com

For contact details, please visit our website
www.abb.com/mining

