

# Control system solutions for the mining industry



# **The challenge:** To design and build a control system that works for you—and your plant



## **The solution:** **Simulate. Measure.** **Control. And profit.**

**As the interface between your people and your plant, your control system is integral to the success of your operation. Implementing the best control strategy requires specific expertise—and that's why ANDRITZ AUTOMATION specializes in electrical, controls, and instrumentation systems for mining and mineral processing operations.**

We have the people, patented technology, and proven tools that help mining facilities

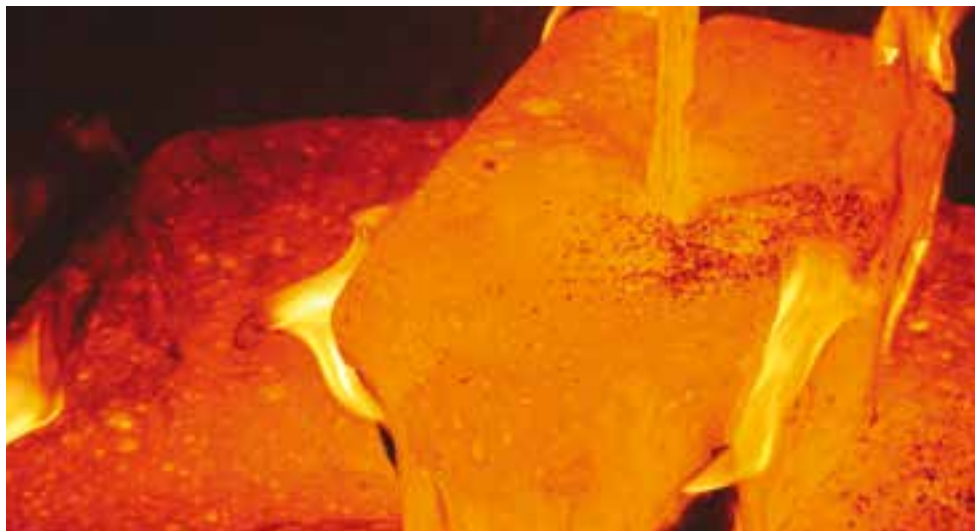
achieve operational readiness and become low cost producers—quickly, safely, reliably, and ahead of the curve.

Our team of dedicated experts has years of hands-on, on-site experience at mining facilities, positioning us to help make your automation project a success.

By combining our industrial process knowledge with our technical systems expertise, ANDRITZ AUTOMATION is able to offer turn-key control system solutions customized to suit your specific process and your plant. Whether a greenfield or a brownfield project,

the control system scope can be readily and logically separated from the main engineering and construction supply.

This leaves the main engineering contractor with the process, mechanical, and construction disciplines with which they are adept, and allows ANDRITZ AUTOMATION to engineer the control system scope, which is our main strength. It's an arrangement that brings concentration of the correct talent to the appropriate task, resulting in smoother start-ups and more operable plants.



**Control system platform selection and specification**

ANDRITZ AUTOMATION works with you to select the control system platform that is right for you, your process, and your plant. The fact that we are vendor-independent allows us to objectively analyze the options available to you.

**Single point of responsibility for your control system supply**

By taking advantage of our complete range of control system services, you have a single point of responsibility, resulting in congruent design and implementation across your entire automation system. You reduce the risk to your project.

**Getting the most out of your control system**

We are able to help you maximize your plant's throughput by presenting information to operations in the most intuitive way possible. We implement control strategies that are effective and easy to maintain, strategies that seamlessly integrate advanced process control technologies.

**Control system testing to achieve more successful start-ups**

By staging your plant control system with our IDEAS dynamic simulator, you can verify that control logic and process interlocks are correct long before the real commissioning and start-up phase begins on site.

**On-site commissioning services**

Commissioning is a unique, stressful and action-packed period in the plant's life. To relieve the pressure related to the controls, our control configuration team comes to site to make sure all control loops function as designed in the field. Our teams and our systems allow us to know which loops are signed off and operational, when, and by whom. The goal is to keep the controls well off the critical path, and when the start button is pressed, you begin making product as soon as possible.

**Process data for operations and maintenance**

The profitability and efficiency of your plant is directly linked to how easily operations staff can see what's going on in the plant.



*“ANDRITZ AUTOMATION's people are professional, knowledgeable, take pride in their work, and do an excellent job from design through start-up.”*

Bryan Nielson, VP Production, US Graymont

Automated reporting and KPI trending allow staff and management to keep a finger on the pulse of your plant, allowing them to take immediate and corrective action when key operational variables start to drift off course.

# The challenge: To efficiently take your control system from concept through to operation

## The solution: Complete control system delivery

ANDRITZ AUTOMATION offers vendor-neutral, “one-stop shopping” for your complete control system delivery. Our dedicated team of experts will work with you to select the control system platform that best suits your needs and your plant.

With one supplier responsible for your complete control system delivery, you have a single point of responsibility. This results in consistent design and implementation practices across all aspects of your control system. Additionally, you don’t have to spend time managing various vendors, contractors, manufacturers, and engineers to keep your control system project on track; ANDRITZ AUTOMATION will look after all aspects of the control system.

Our specific services include:

- Control system requirement definition
- Control system assessment study
- Controller and I/O hardware specification and supply
- Software and licensing specification and supply

## Benefits

- Single point of delivery means consistent design and implementation
- Complete control strategy services, from design through to commissioning and start-up
- Systems that archive and analyze data to help keep operation optimized



- Server and workstation specification and supply
- Controller and I/O cabinet design, manufacture, and supply
- Control network architecture design and hardware supply
- Process control narratives
- Process control strategy and motor control logic configuration and testing
- Operator graphic layout and configuration
- Data historian integration and configuration
- On-site commissioning and start-up assistance

### Maximizing return on investment throughout a plant’s lifecycle

Start-up marks the transition from project to operation for your plant’s control system —the beginning of its useful life. All control systems offer a window into the process, allowing the operations staff to manipulate process variables. Putting plant performance information in the hands of operators will allow real-time decisions that directly improve the plant’s bottom line. From energy con-

sumption to chemical addition, the objective is to help operators connect their actions with safety and production, and to improve the profitability of the plant.

Properly historizing your process data provides more than just the ability to troubleshoot process upsets and plant equipment failures. Automated production, maintenance, and cost reporting can be leveraged along with KPI reporting and trending to substantially increase the return on investment of your control system project through process transparency and optimization. Knowing the details of your plant’s performance lets you direct efforts to improve and optimize the process areas that will yield the greatest return.

Additionally, historical process data is a great asset in the justification of future process and equipment upgrade projects. Ultimately, KPI data is the basis of supervisory or expert control algorithms that drive your process to specific, optimal conditions, increasing quality, throughput, and profit.

## Success story

**Customer:** Confidential Potash Mine

**Project objective:**

- Replace existing, pneumatic/hard-wired controls with new DCS

ANDRITZ AUTOMATION was selected to replace existing pneumatic analog controls and hard-wired motor controls with a state-of-the-art, distributed control system at a surface potash processing plant and associated underground mining operation.

We worked closely with the customer's personnel to develop the DCS architecture and cabinet layout for the new system, keeping in mind a capacity requirement for future additions.

Following delivery of the control systems at the customer's facilities, our experts were on site to assist with commissioning and the "cut-over" to the new systems with a bare minimum of process downtime.



The customer's new control room features large-format overview screens, and gives both operations and maintenance staff an instantaneous view of the entire process.



# The challenge: To maximize the benefits from your control system configuration

## The solution: Proven technology and tools

ANDRITZ AUTOMATION employs proven design standards and templates in the implementation of our process control logic, motor control logic, and operator graphic interfaces. This means a control strategy that is more uniform, easier to maintain and service, and easier to operate. We design with the human operator in mind, using layout and color palettes for graphics that make for ease of use. Our design allows important information, such as anomalous events and alarms, to be detected and dealt with quickly by the control room operators.

By using the IDEAS dynamic simulator to develop and test our device logic templates, we are able to debug the process control logic in a controlled environment prior to plant start-up. This allows us to improve the quality and reliability of our configuration deliverable.



On site, this translates into faster commissioning, fewer on-site changes being made to the control logic, and a smoother start-up. In addition, we design the logic templates and controller pop-up graphics so that they can easily integrate BrainWave, our patented, advanced process controller.

America, helping producers large and small remove bottlenecks, reduce energy consumption, produce higher quality products more consistently, and lower production costs—all of which result in significant savings.

BrainWave has revolutionized control at mining facilities throughout North and South

## Benefits

- User-friendly graphical configuration allows operators to quickly analyze data and detect anomalous events
- IDEAS dynamic simulator helps test and debug control prior to commissioning
- Advanced control with BrainWave helps plants achieve smooth, stable operation



## Success story

**Customer:** Freeport-McMoRan Copper & Gold

**Project objective:**

- Design DCS control logic and operator graphics

When the control system configuration for the Cerro Verde copper concentrator project in Arequipa, Peru, fell behind schedule, Freeport-McMoRan turned to ANDRITZ AUTOMATION for possible solutions to get the project back on track.

Because ANDRITZ AUTOMATION already had a contract to simulate the plant for operator training, our control experts were able to use our dynamic models to check the configuration. They were then immediately able to begin building and testing device logic templates and automatic control sequences.

By combining the simulator-verified logic with custom bulk module creation/editing software tools, our team of engineers was able to produce the plant DCS logic and graphics quickly and accurately.

The configuration was ultimately completed, staged, and delivered alongside the simulator to the project site in Arequipa, Peru, within the original schedule.



Our personnel provided ongoing site support throughout the commissioning and start-up efforts.

*“ANDRITZ AUTOMATION engineers worked on the Cerro Verde Copper Concentrator DCS programming and configuration project in Arequipa, Peru. It was my pleasure to work with ANDRITZ AUTOMATION engineers as they performed their work in a professional manner. I would highly recommend them on any DCS configuration project.”*

Ron Cook, Superintendent, Process Control  
Freeport-McMoRan



# Automation solutions

## Release your full potential



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