

## A Comprehensive Automation Solution to Address Safety and Load Material Challenges Faced in the Mining Industry

In mining, electrical components are exposed to highly corrosive environments and there are a number of processes that may be unsafe for workers. Mitsubishi Electric Automation Inc. and DICISA provide reliable solutions for mining processes to reduce downtime and improve operational safety.

### Key points

- **The Challenge:** Address mining heavy-load and corrosion challenges
- **The Solution:** High-efficiency VFDs for withstanding aggressive pumping material and for anti-sway crane technology
- **The Result:** Significant safety, cost savings, and time saving benefits



### THE CHALLENGE

Finding a Comprehensive Solution to Address Heavy-Load and Corrosion Challenges Faced in Mining

In the mining industry, electrolysis and slurry pumping processes are vital for efficient and safe operations. However, these processes present unique challenges, such as highly corrosive environments and heavy loads. This case study explores how DICISA, in collaboration with Mitsubishi Electric Automation, offers comprehensive and advanced solutions to address these challenges through Mitsubishi Electric's range of FR-A800 VFDs.

DICISA is a company with over 40 years of experience in the market. It specializes in meeting the needs of the national industry in control, distribution, automation, and electrical equipment. The company is dedicated to designing, developing, and implementing comprehensive solutions for the mining sector, offering highly specialized attention and advice.

### Understanding the metal extraction and refining process

Either a hydrometallurgy or pyrometallurgy based process is used to refine a metal ore, like copper. Both processes introduce liquids into the crushed ore. Whether dealing with solvents from leaching or moving a slurry, pumping in this environment presents unique challenges.

The final step is very similar for both methods, and is completed with either an electrowinning or electrolysis process. Electrowinning and electrolysis accomplish the same result using similar methods. In both processes, an electrical current is used to plate a cathode with refined metal. Both methods require moving large anodes and cathodes safely into and out of electrolyte solution, typically using a crane. Lifting and lowering large copper plates efficiently and safely in this environment is very demanding because of swaying caused by the heavy weight of the plates.

### THE PUMPING SOLUTION

An Aggressive Solution for Aggressive Material

Pumping in underground mines presents challenges such as high temperatures and humidity, as well as start-up torque, the cleaning sequence, and maintaining a constant output flow. Mitsubishi Electric's FR-A800 VFD provides high efficiency in high-torque and start-up current applications and is durable to withstand harsh environments. The solutions can prolong the life of the equipment, resulting in less downtime and return on investment.

## THE CRANE SOLUTION

### Stopping the Sway and Withstanding Harsh Conditions

To address the swaying issue, Mitsubishi Electric provides its FR-A800 Series VFD, which has built-in anti-sway technology to provide safer trans-lateral movement, reduce overload failures, and increase operating speeds. In addition, the FR-A800 VFD possesses durability and quality in high-humidity and corrosive environments, typical to mining industries. The overall footprint of the VFD, also reduces the total installation space within its cabinet.



**"We have already migrated 5 of the 11 cranes, with positive results, highlighting the reduction of failures and improvements in operational safety."**

*– DICISA Representative*



**"Mitsubishi Electric's brand has the capability to offer a comprehensive solution to address the client's specific needs through its range of products and services."**

*– Daniel Gómez  
DICISA*



## THE RESULT

### Long-lasting, Reliable Drive Performance

VFDs such as Mitsubishi Electric's FR-A800 VFD Series, used in collaboration with DICISA's control panel integration, provide effective and long-lasting solutions to the challenges of modern mining. With less sway in crane operations and more reliable movement of material in sludge pumping, a company can experience higher production rates, less downtime, and a more reliable system on the component level.

## SUSTAINABILITY BENEFIT

- Mitsubishi Electric VFDs have a long design-life to extend the life of a machine which can result in less e-waste in landfills and better return on investment.
- VFDs reduce energy consumption through drawing only the power required to achieve the desired output speed.

### Learn more about



[FR-A800 Series](#)



<https://www.dicisamx.com/>

For more information or a free consultation with an automation engineer, please **CONTACT US.**

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