CASE STUDY

Automated Cathode Refurbishment Line

EPCM

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PROJECT OVERVIEW

One of the world's largest copper producers required an efficient and cost-effective solution to refurbish their copper cathodes. The manual refurbishment process was labor-intensive, time-consuming, and prone to inconsistencies. To address these challenges, the client partnered with EPCM Group for a Build, Own, Operate, and Maintain (BOOM) project, implementing an automated cathode refurbishment line.

CLIENT

Leading mining operator in South America

PROJECT SCOPE

EPCM Group was tasked with designing, supplying, and maintaining an automated system comprising eight robotic cells to handle various stages of cathode refurbishment. The system was required to:

- Perform vision inspection of the cathodes.
- Strip difficult-to-remove copper.
- Conduct ultra-high pressure cleaning.
- Perform surface conditioning.
- Remove edgestrip.
- Flatten cathodes.
- Correct verticality.

SOLUTION

EPCM Group provided a comprehensive BOOM solution that included:

Design
- Customization of robotic cells to meet specific operational needs.

Supply
- Provision of state-of-the-art robotic equipment and necessary infrastructure.

Operation
- Continuous operation of the system to ensure optimal performance.

Maintenance
- Ongoing maintenance to ensure reliability and longevity of the system.

IMPLEMENTATION

The automated system was installed and commissioned at client's facility, with the following key components:

Robotic Cells
- Eight robotic cells were integrated into the existing production line. Each cell was equipped with advanced vision systems to accurately inspect and refurbish the copper cathodes.

Copper Stripping Unit
- A specialized unit was installed to handle difficult-to-strip copper, ensuring thorough refurbishment.

Ultra-High Pressure Cleaning
- This cleaning unit was designed to remove contaminants and prepare the surface for further processing.

Surface Conditioning
- A dedicated unit was installed to condition the cathode surfaces, ensuring uniformity and high quality.

Edgestrip Removal
- Automated mechanisms were implemented to efficiently remove edgestrip.

Cathode Flattening and Verticality Correction
- These units ensured that the cathodes were flattened and their verticality was corrected, maintaining consistent dimensions and alignment.

RESULTS

Over the past six years, the automated system has delivered significant benefits to Codelco:

Increased Efficiency

- The automated process reduced the time required for cathode refurbishment, leading to higher throughput.

Cost Savings

- Automation significantly lowered labor costs and minimized manual intervention, reducing the risk of human error.

Consistent Quality

- The vision inspection and advanced processing units ensured uniformity and high quality of the refurbished cathodes.

Sustainability

- The ultra-high pressure cleaning and surface conditioning units contributed to sustainable production practices by minimizing waste and improving resource utilization.

CONCLUSION

The BOOM project executed by EPCM Group has transformed the cathode refurbishment process. The successful implementation of the automated system has not only improved operational efficiency and reduced costs but also ensured consistent product quality and sustainable practices. This project stands as a testament to EPCM Group's commitment to delivering innovative and effective solutions to its clients.

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