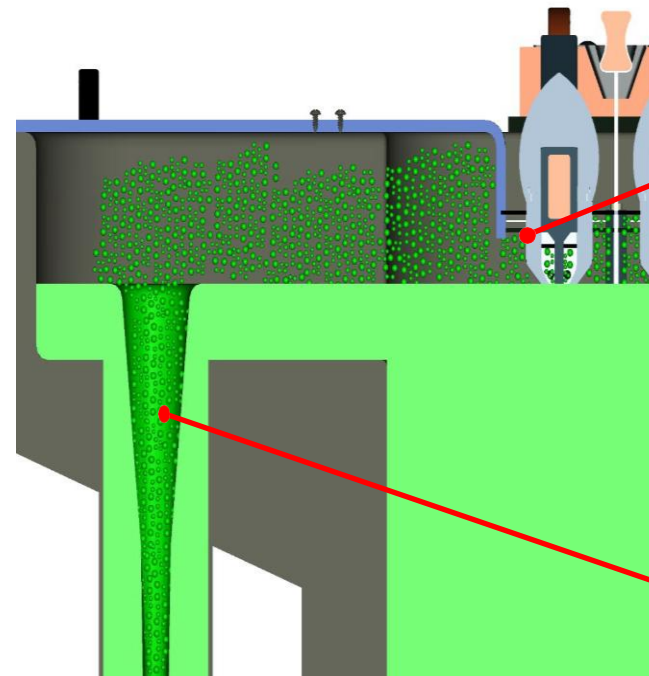


TECHNICAL DEVELOPMENTS

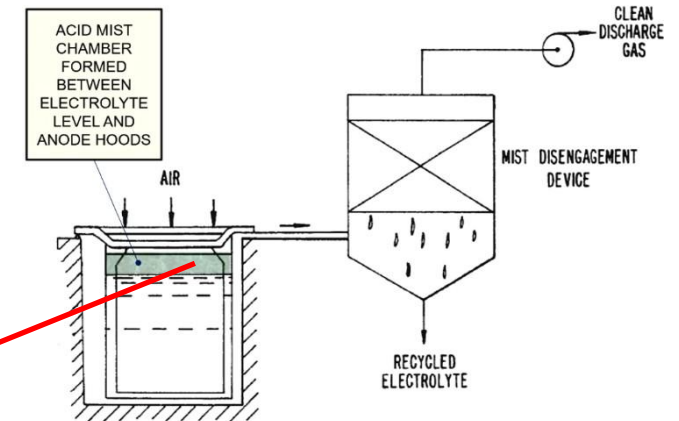
Mist Capturing & Abatement - ECAPS®

Open Tank Electrowinning (Cu & Zn EW)

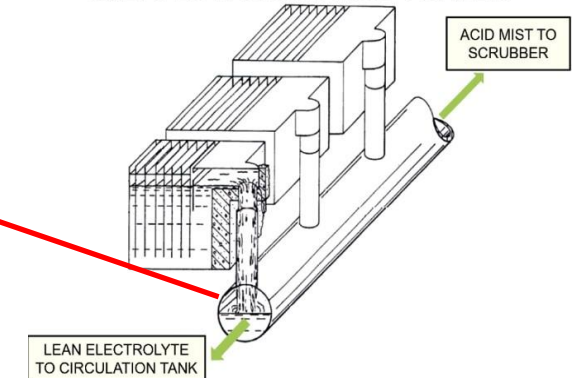
- Captures mist below the electrode level protecting welds, current bars, equipment and infrastructure.
- Mist confined between electrolyte and brushes allows discharging of electrolyte to bath. Minimum electrolyte losses
- Reduces harvest time compared to cell coverage alternatives.
- Cleaning of cathodes while harvesting reduce losses of electrolyte and splashing.
- Ecap® supports operate as cathodic guides facilitating their installation.
- Reduction of heat losses and evaporation.
- Increase cell temperature.
- Minimum gas extraction thru electrolyte pipe. Minimum ducting required to scrubber



GENERAL CONCEPT



ACID MIST SUCTION GENERATED VIA OVERFLOW DISCHARGE VORTEX

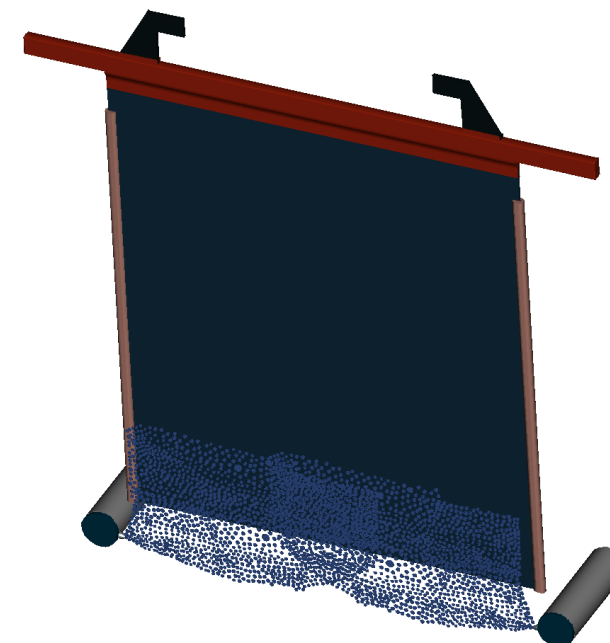


TECHNICAL DEVELOPMENTS

Improved Cell Hydrodynamics - EXMAJET®

Non ferrous Metals Electrowinning

- Allows High Current Density EW, $> 550 \text{ A/m}^2$
- Increased production in same footprints
- Improved cathode quality
- Self-suctioning system. No external air injection required
- Amenable for existing facilities
- Improved mass transfer at double layer
- Minibubbles with minimum energy burst inside cells
- Uses existing cell feed concept. No interference with cell hardware
- Reduces needs for additives and interferences with SX reagents



TECHNICAL DEVELOPMENTS

Electrowinning Piloting

Industrial size Electrowinning Testing

Scope of Services

- Design of Demo Cell Tests
- Integration of Cell Components
 - EW Cell
 - Anodes
 - Cathodes
 - Cell Top Furniture
 - Anodes and Cathode Bags
 - Power Supplying & DC Current Distribution
 - Mist Capturing
- Validation of Results



INCO CANADA

Voisey's Bay, Newfoundland, Canada (2005)



Voisey's Bay Pilot Plant

Copper Electrowinning

Scope of Services

- Design of Demo Cell
- Multidisciplinary coordination (Remote)
- Integration of Demo Plant Components
 - EW Cells
 - Lead Anodes
 - Cathode Blanks
 - Cell Top Furniture
 - DC Busbars
 - Acid Mist Capturing and Abatement



MINERA SPENCE S.A.
Antofagasta, Chile
(2005)

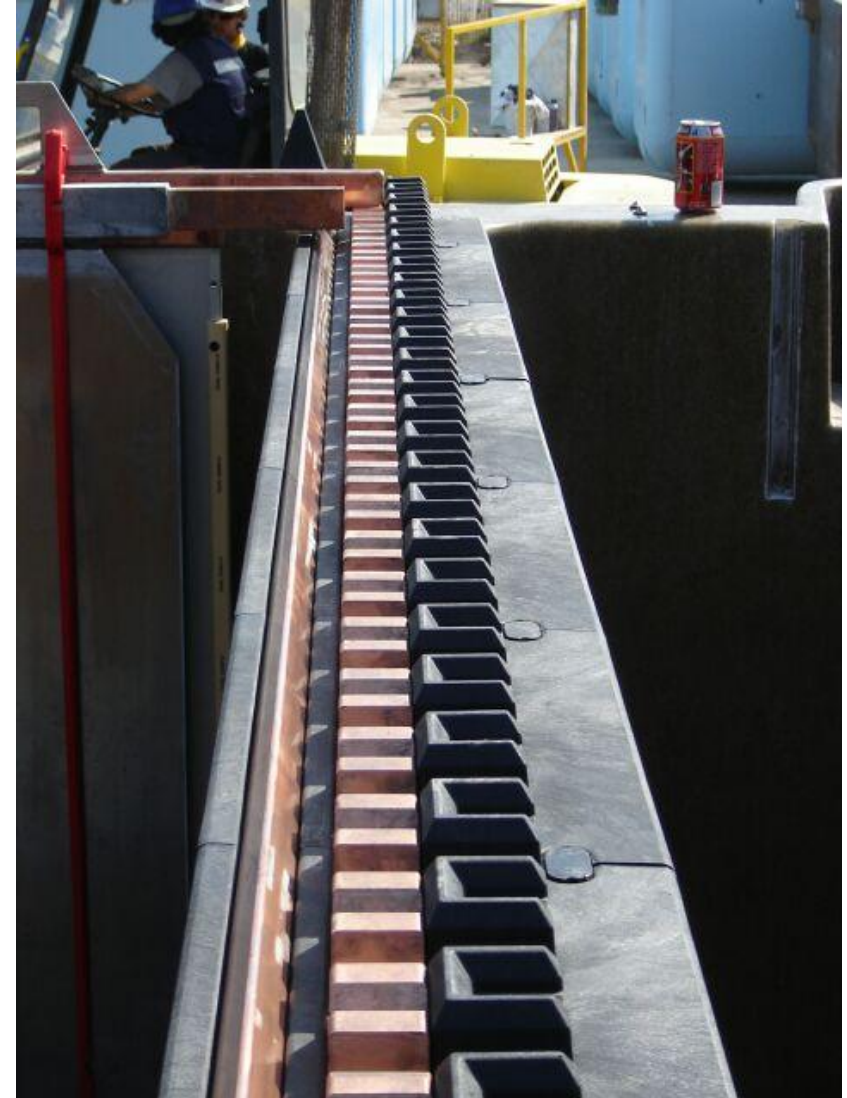


Spence Project Cell Top Furniture (Anode Equalization)

Copper Electrowinning

Scope of Services

- Design of new cell top furniture for Anode Equalization using asymmetric anodes
- Procurement of Components
 - Capping Boards
 - Machined EQ Bars
 - Machined equalizers
- Integration with existing cell hardware
 - Electrodes
 - Electrolytic cells
 - Acid Mist Capturing



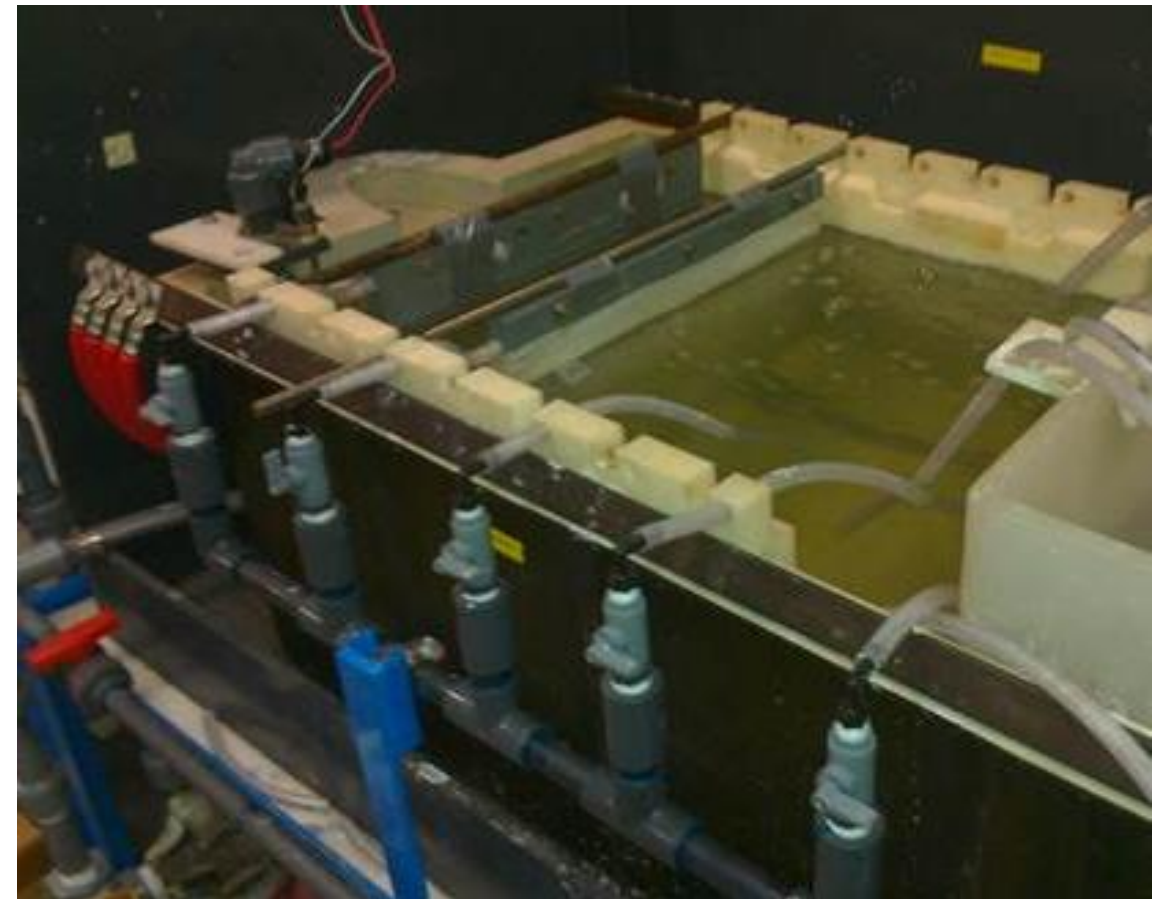
TECK - CESL Richmond, BC , Canada (2005)

Ni/Co Pilot Plant

Ni & Co Electrowinning

Scope of Services

- Design of Demo Cell
- Supplying of Demo Plant Components
 - EW Cells
 - Titanium Anodes
 - Cathode Blanks
 - Cell Top Furniture
 - Anodes and Cathode Bags
- Integration with other components
 - Mist extraction system



RUSTENBURG PLATINUM MINES LTD.

Rustenburg, RSA (2005 - 2015)



RBMR Ni EW Plant Modernization, Expansion & Upgrading

Nickel Electrowinning

Scope of Services

- Review process data
- Design of Cell Block for Ni EW using divided cell technology
- Introduction of titanium permanent blank
- Design of fully automated tankhouse
- Generation of process data sheets for ain equipment
- Assistance in procurement
- Inspection service



ELECTROWINNING RESOURCES LTD Zambia (2007)

EPCM & Operation Ndola Demo Plant

Copper HL/SX/EW

- EPCM
- Engineering for local permitting
- Selection of Designated Vendors
- Inspection of equipment fabrication
- Site Preparation
- Civil/Estructural Works
- Equipment Erection
- Commissioning and Start-Up
- Plant operation for 24 month
- Training of local crew



VALE CANADA

Long Harbour, Newfoundland,
Canada (2010)

Long Harbour Processing Plant

Nickel, Cobalt and Copper Electrowinning

Scope of Services

- Coordination of designated OEMs
- Supplying of DC Busbars Cu EW
- Supplying of Hoods for CuEW
- Supplying of Cell Top Furniture Cu EW
- Supplying of anode frames Ni EW
- Supplying of anode frames Co EW
- Supplying of cathodes balnks
- Supplying of transformer-Rectifiers



CANADIAN MANGANESE CORPORATION

New Brunswick, Canada
(2011)

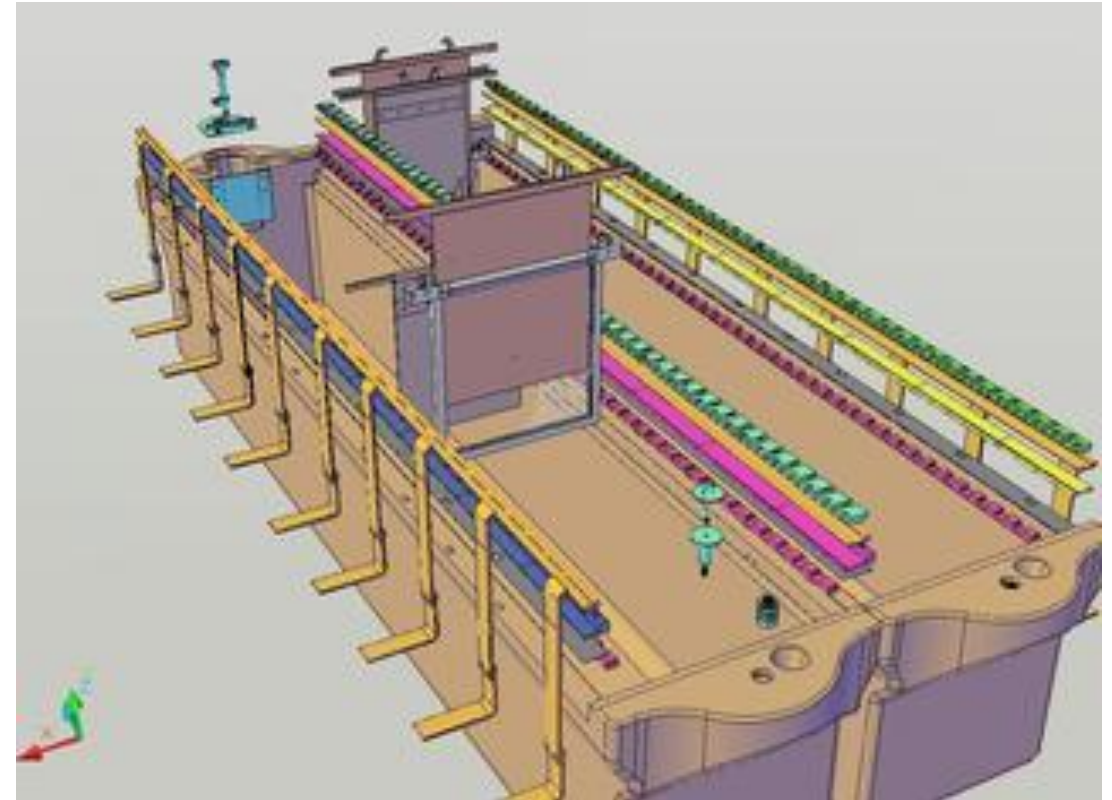


Woodstock Manganese Project

Manganese Electrowinning

Scope of Services

- Orden of Magnitude estimate for 40 ktpy production of electrolytic manganese
- Review of process data
- Design of fully automated EW tankhouse concept
- Design of product material handling concept to final manganese rounds



ANGLOAMERICAN CHILE

Santiago, Chile

(2010)



San Francisco Plant CTF Upgrading

Copper Electrowinning

Scope of Services

- Design of new cell top furniture for high current density electrowinning (600 A/m²).
- Procurement of Components
 - Underlying Pad
 - Copper bars resting tray
 - Machined EQ Bars
 - Bars equalizers
 - Electrodes spacers and insulators
- Integration with existing cell hardware
 - Electrodes
 - Electrolytic cells
 - Acid Mist Capturing



BROCHOT SA France (2011-2014)



Sungun Copper Project

Copper Electrorefining

Scope of Services

- Review process data
- Design of Cell Block for Cu ER
- Design of Cell Block for Cu EW Plant
- Consulting on Nickel recovery Options
- Consulting on Modelling of fully automated tankhouse
- Verification of 100 ktpy basic engineering and adaption to 200 ktpy tankhouse
- Assistance in equipment selection
- Design of local facility for fabrication of polymer concrete cells



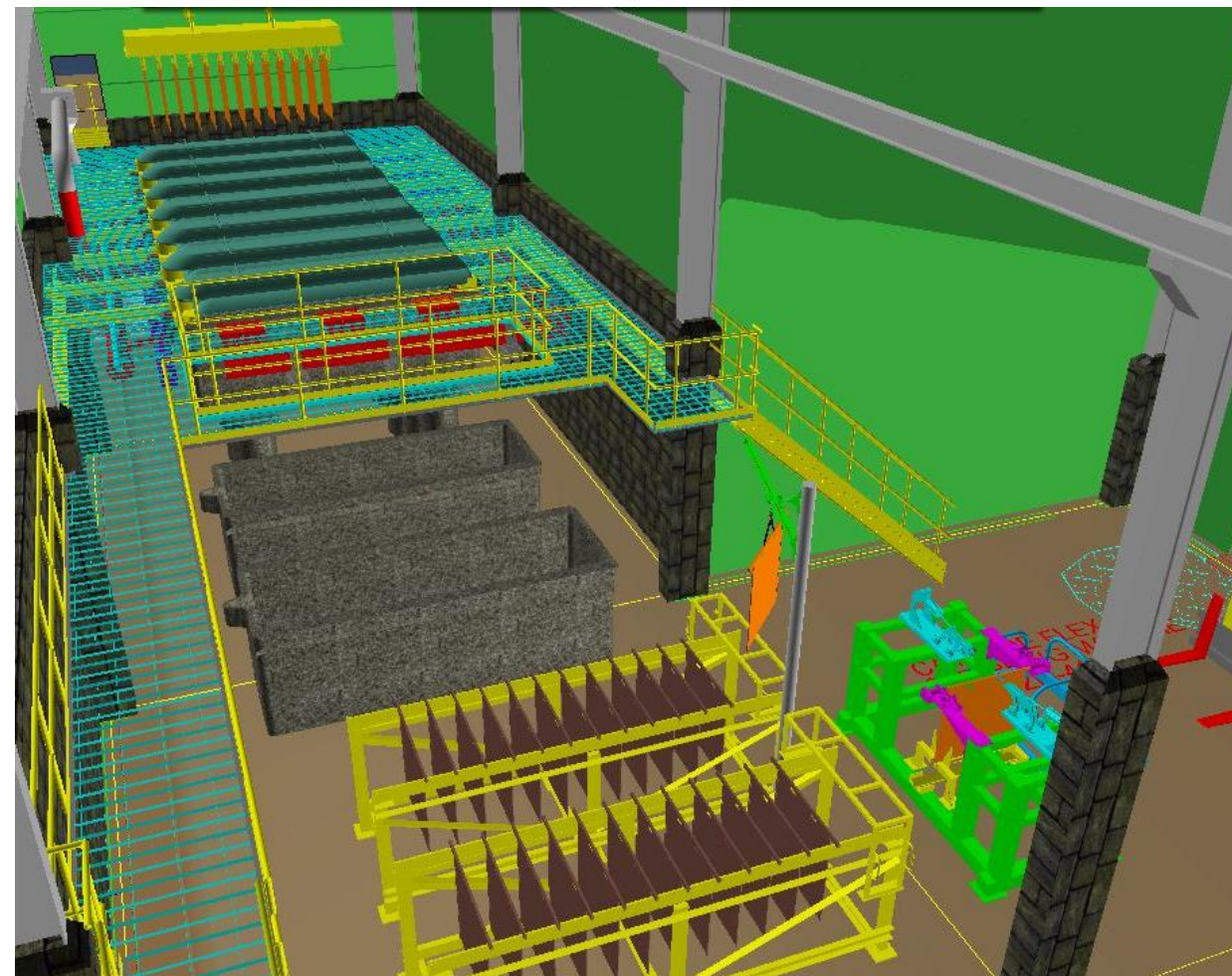
MINERA CHINALCO PERU S.A. Perú (2012)



Toromocho Project EW Package

Copper Electrowinning

- Basic engineering review
- Technical Package Integration
 - Designation of OEMs
 - General Arrangement Drawings and Models
 - Verification of Vendors' engineering
 - Compilation of designated vendor's supplied engineering
- Coordination and Administration of Vendors
- Assistance in commissioning and start-up



ECOVALUE

Santiago, Chile (2017)

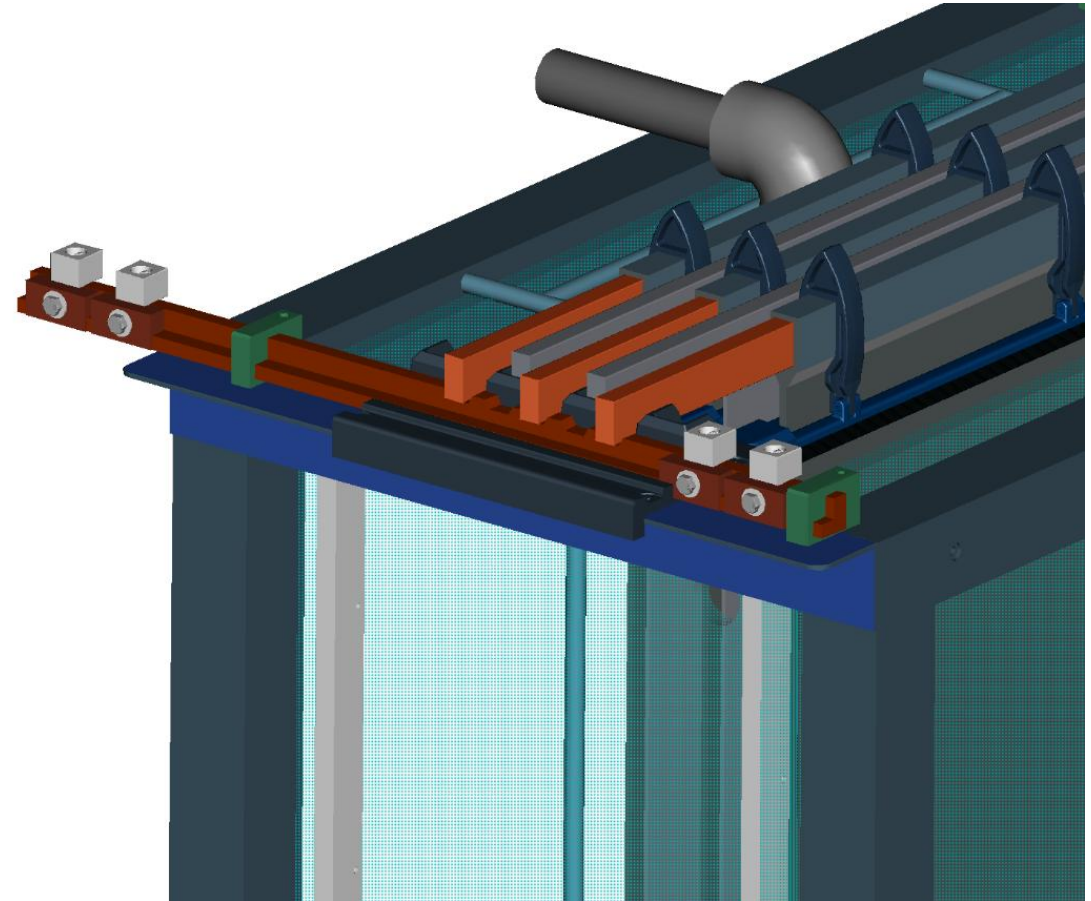


Testing Services

Zn Electrowinning

Scope of Services

- Design of Demo Cell
- Supplying of Demo Plant Components
 - EW Cells
 - Lead Anodes
 - Cathode Blanks
 - Cell Top Furniture
 - DC Busbars
 - Acid Mist Capturing
- Integration with other components



ROSSLYN HILL MINING

Perth, Australia

(2017 - 2018)



Paroo Station Project

Lead Electrowinning

Scope of Services

- Review process data
- Design of fully automated EW tankhouse concept
- Design of product material handling concept to final lead ingots
- Generation of process data sheets for main equipment



EMN 25
Vancouver, Canada
(2022)

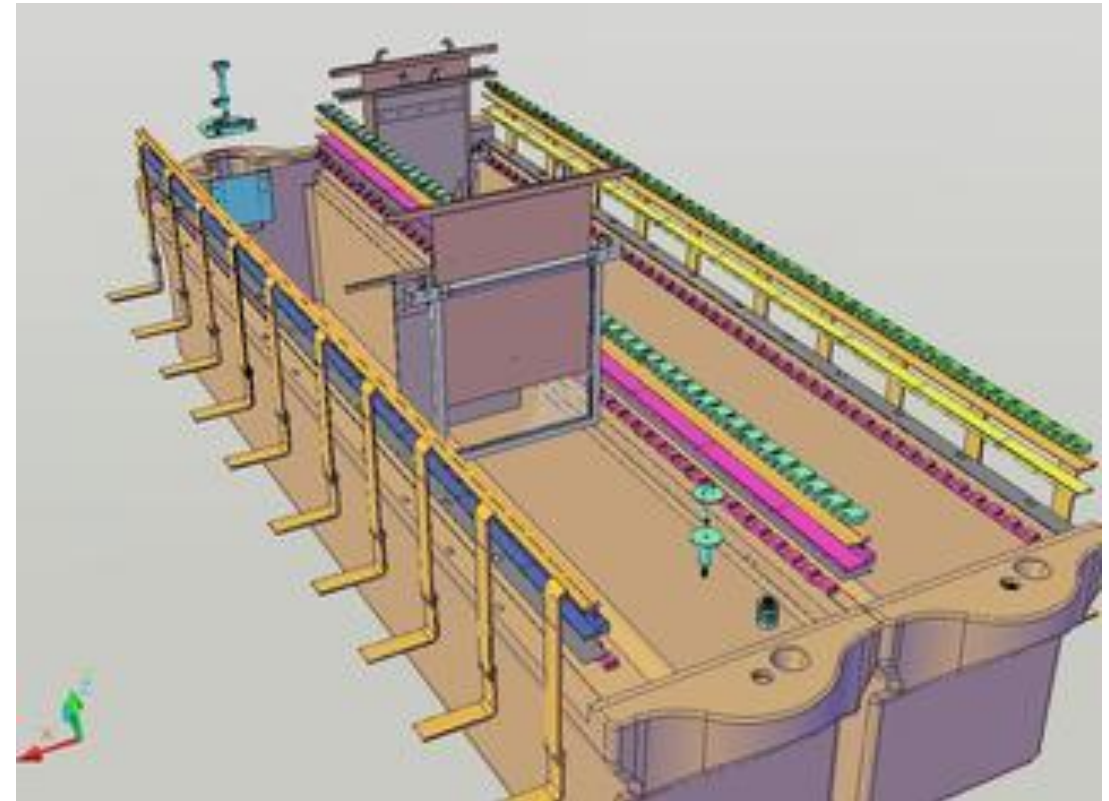


Chavaletice Manganese Project

Manganese Electrowinning

Scope of Services

- Consulting service for debottlenecking the base case developed technology
- Evaluate how to utilize this existing cell technology/geometry, and improve the infrastructure surrounding it.
- Evaluate solutions for the sludge capture/handling, the cartridge design/handling, stripping, mist abatement, etc.



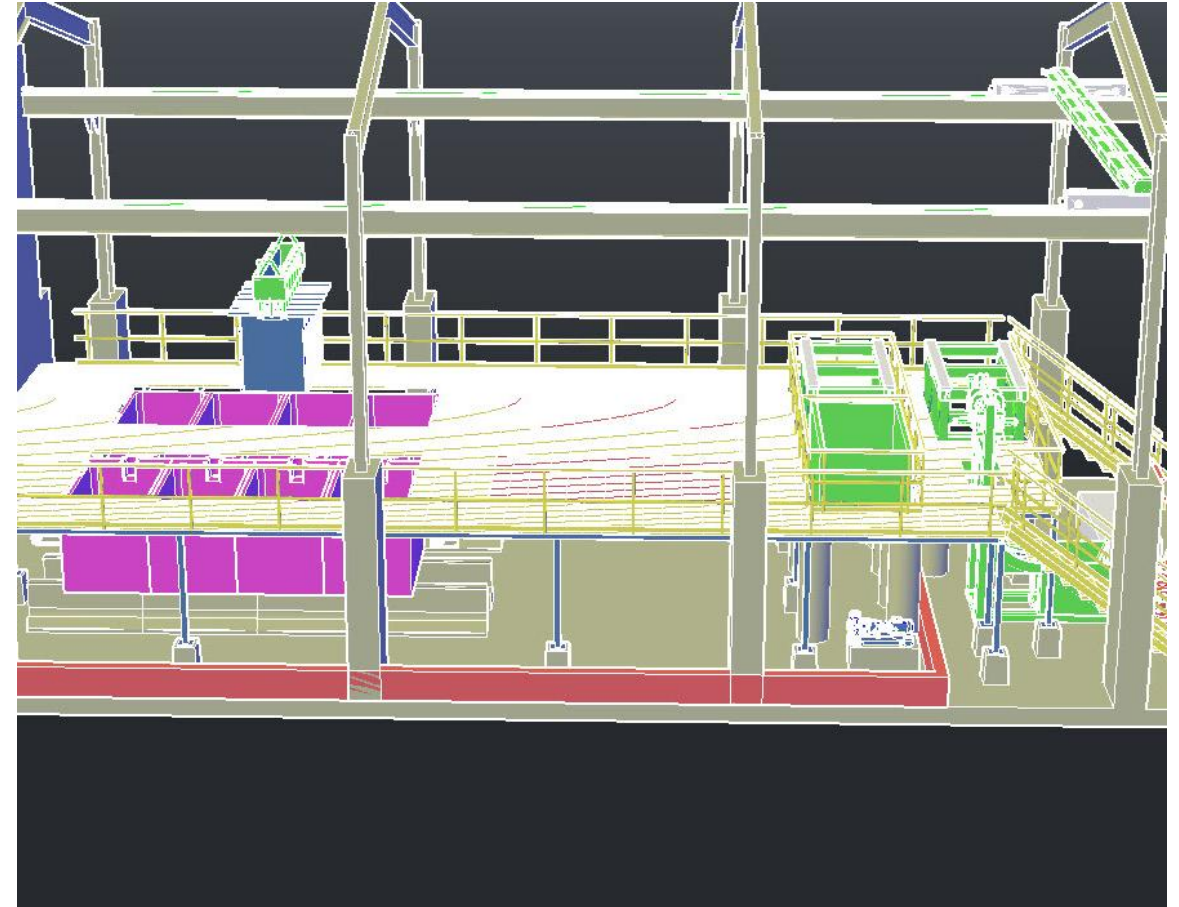
COMET TRAITEMENTS S.A. Belgium (2020- 2023)



Secondary Metals Recovery

Copper SX/EW

- Basic engineering review
- Technical Package Integration
 - Designation of OEMs
 - General Arrangement Drawings and Models
 - Verification of Vendors' engineering
 - Compilation of designated vendor's supplied engineering
- Coordination and Administration of Vendors
- Assistance in commissioning and start-up



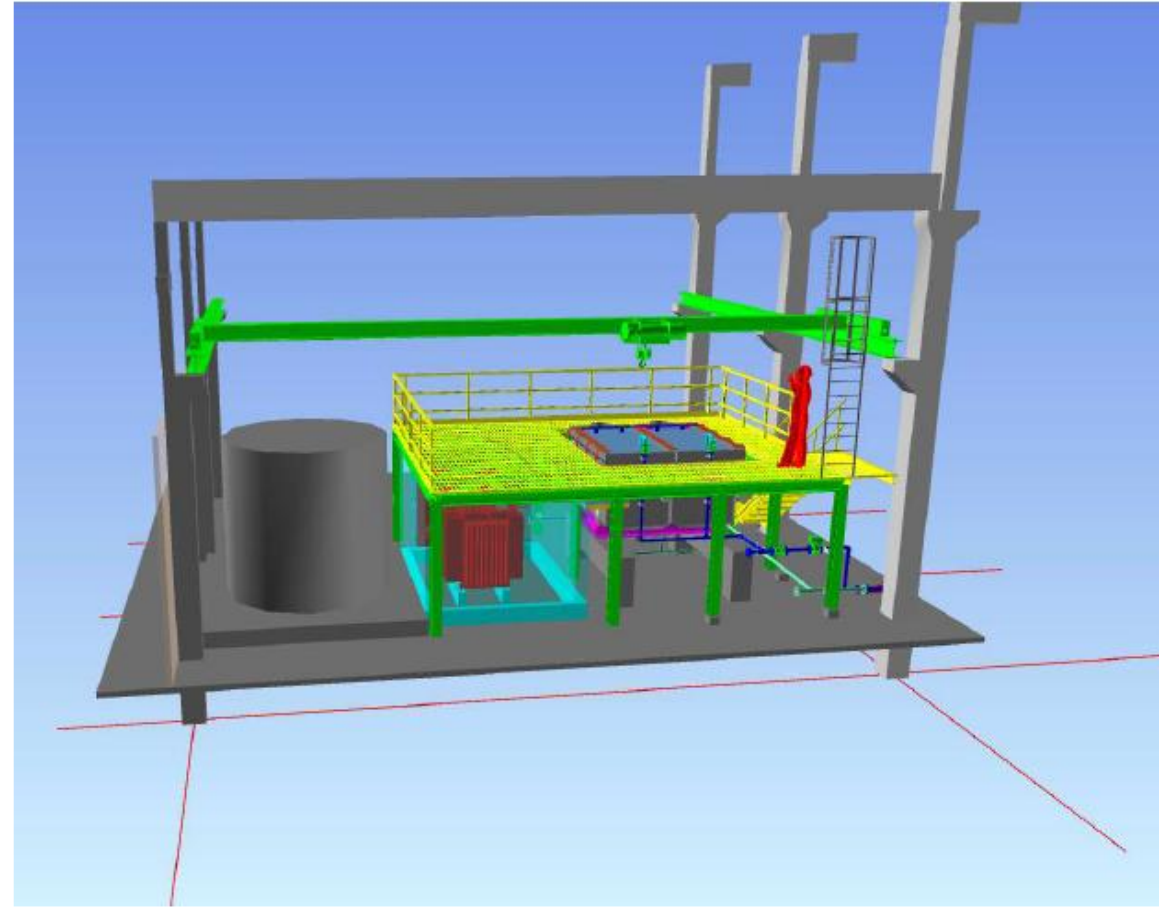
AURUBIS OLEN N V Belgium (2022)



Rod Plant Cu EW Upgrading

Copper Electrowinning

- Basic engineering review
- Technical Package Integration
 - Designation of OEMs
 - General Arrangement Drawings and Models
 - Verification of Vendors' engineering
 - Compilation of designated vendor's supplied engineering
- Coordination and Administration of Vendors
- Assistance in commissioning and start-up



AURUBIS OLEN N V

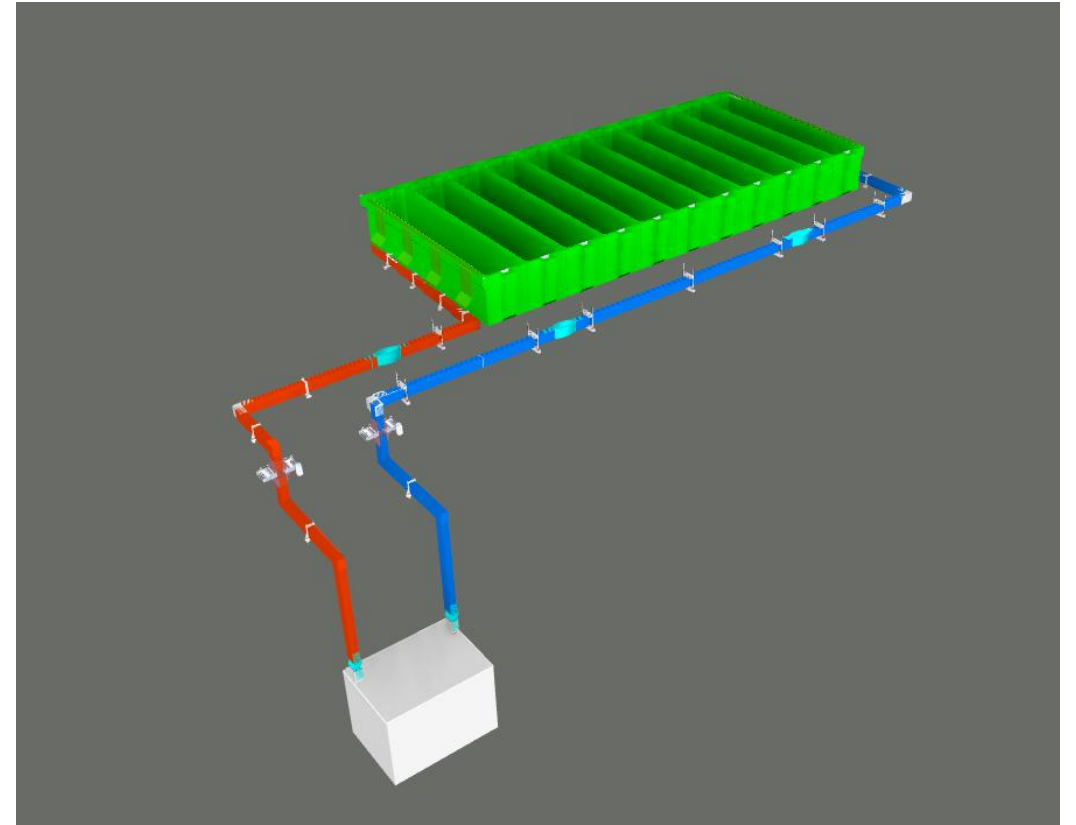
Belgium (2023 - Ongoing)



BOB Decopperization Project

Copper Electrowinning

- Basic engineering review
- Technical Package Integration
 - Designation of OEMs
 - General Arrangement Drawings and Models
 - Verification of Vendors' engineering
 - Compilation of designated vendor's supplied engineering
- Coordination and Administration of Vendors
- Assistance in commissioning and start-up



RUSTENBURG PLATINUM MINES LTD.

Rustenburg, RSA (2024 - Ongoing)

RBMR Cu EW Plant Modernization & Upgrading

Scope of Services

- Review process data
- Design of Cell Block for Cu EW upgrading from stating sheets to permanent cathodes
- Integration for automated tankhouse
- Generation of process data sheets for hardware needed
- Assistance in procurement
- Inspection service

