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Providing leading edge clean technology solutions for environmental stewardship, metal recovery, energy efficiency and waste water treatment.

## NICKEL RECOVERY SIMPLIFIED

Nickel electrowinning is dramatically simplified with the emew nickel process. This novel process coupled with high-flow emew cell delivers high purity nickel cathode from a variety of feed sources.



The patented emew technology significantly enhances electrowinning performance over a wide range of flows and process conditions. Customers have been operating emew plants from various industrial byproduct streams for over 20 years.

The fully enclosed design of the emew cell completely eliminates acid and nickel mist making for a safer and healthier workplace.







## Nickel can be recovered as high purity cathode from many waste and by-product streams including:

- Wastewater treatment sludges
- Nitric acid nickel strip solutions
- Nickel-copper sulfate pickle solutions
- Low-grade nickel streams
- Nickel sulphate in black acid refinery bleed
- Nickel carbonate or nickel hydroxide
- Spent watts solutions
- Nickel chloride plating solutions
- Other nickel waste byproducts

The combination of Ion Exchange (IX) and emew electrowinning technology allows nickel to be removed selectively from most solutions/sludges and electrowon as high purity nickel cathode for commercial sale or recycling without the need for additional refining.

The emew+IX and emew+SX packages are customized to suit the stream composition and volume for a given application.



## Process Benefits:

A simple solution to recover nickel cathode without the need for complicated membranes to separate the anolyte and catholyte.

- No sludges generated
- Full value for nickel cathode which can be sold with no further processing
- No transport or disposal costs for low-grade sludges or waste solutions
- Separation of nickel, copper (and other materials) into pure products for sale
- Large solution volumes can be handled
- Zero discharge/full recycle options
- Modular design to suite volume and metals content
- Copper and nickel recovered to <5 ppm

## Schematic of Nickel Recovery from Wastewater using emew + IX

