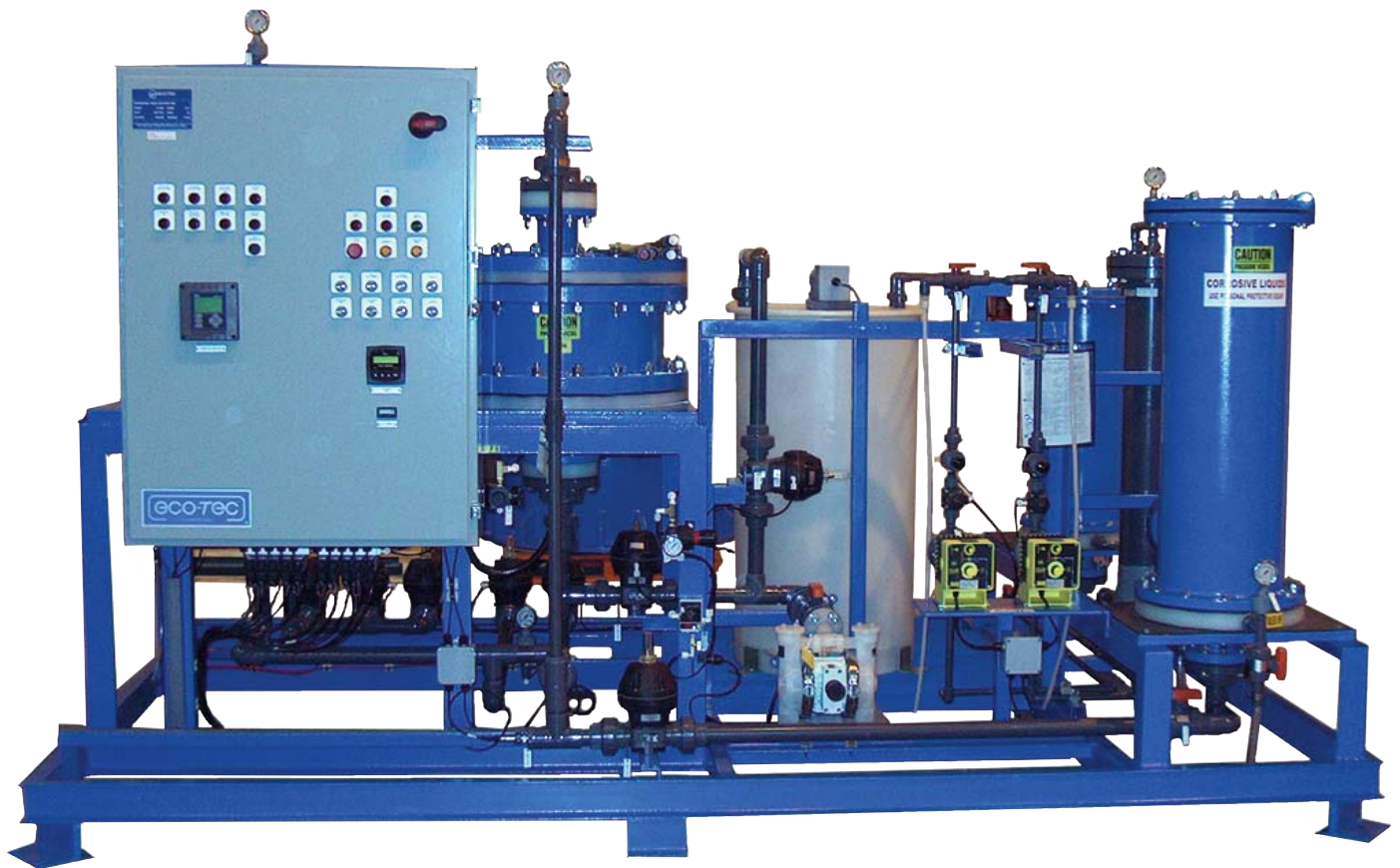


high efficiency ~ simple package ~ proven reliability

NickelPur™

Nickel Recovery Unit

Obtain maximum nickel salt recovery, maximum cost reduction, and maximum consistency with Eco-Tec's nickel recovery unit, NickelPur™



NickelPur™

To ensure quality nickel plating, several factors must be considered, such as; pH, brightener levels, sulfate/chloride ratio, sodium contamination and nickel concentration. With their relatively high temperatures, nickel plating tanks lend themselves to bail-back recovery. The Eco-Tec system is designed so that nickel can be recycled without any long term effects on the plating bath.

What is the NickelPur™?

Eco-Tec's nickel recovery unit with maximum recovery efficiency utilizes the next generation of ion exchange with compressed-bed, counter-current technology. With the consistent philosophy of a simple package with proven reliability, the NickelPur™ recovers over 95% of nickel dragged into rinses.

The NickelPur™ System:

- uses deionized water for rinsing to avoid recovery of tap water contaminants
- does not recover brighteners from rinses, allowing nickel salts to be recycled back to semi-bright tanks
- rejects sodium from rinse water to prevent build-up in the plating tank
- recovers nickel salt in the correct sulfate/chloride ratio
- removes acid from the recovered nickel salts to ensure bath pH is not affected

Why use a NickelPur™?

“Nickel salt drag-out” is a normal operational occurrence during the electroplating process that normally results in nickel loss and additions to sludge compounds. Operational costs related to both the replenishment of the nickel, and sludge waste disposal can seriously impact an operations efficiency. The NickelPur™ is specifically designed and manufactured to assist companies in their efforts to increase efficiencies, and lower waste and operating costs.

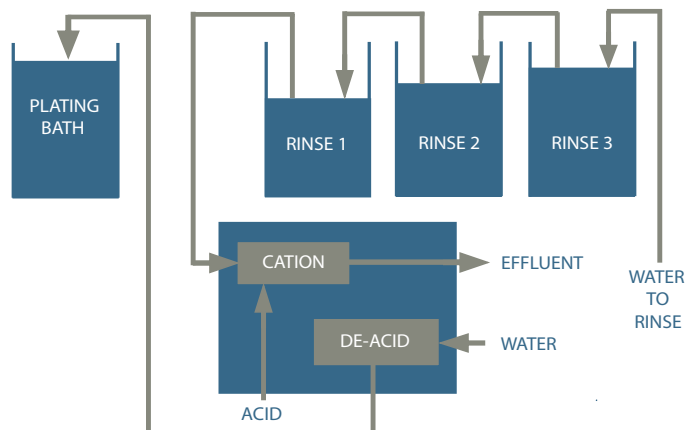
How Does a NickelPur™ Work?

The combination of ion exchange resin and acid sorption resin ensure the effective recovery of nickel in electroplating operations.

The cation exchange and acid sorption beds are coupled in a manner that produces a concentrated de-acidified nickel salt product. Rinse water is pumped through cartridge filters and then through the strong acid cation resin bed where the nickel is exchanged for the acid on the resin. The effluent is essentially free of nickel and is to be pH adjusted prior to discharge. Regeneration is accomplished using a mixture of sulfuric and hydrochloric acids, which are pumped into the cation resin bed. Regeneration yields a concentrated nickel sulfate and nickel chloride product, which then passes through the de-acidification bed to remove excess acids.

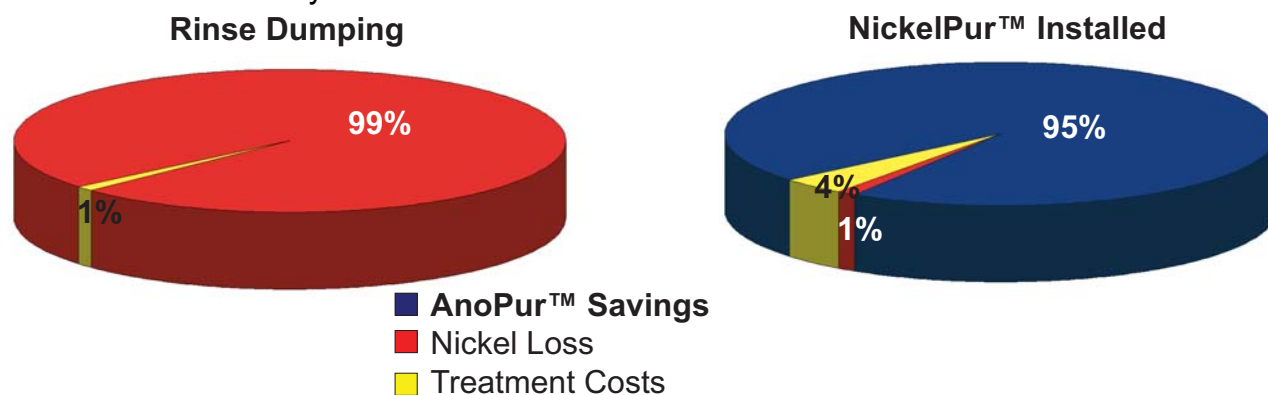
The resulting concentrated, purified, pH adjusted, nickel chloride/nickel sulfate product is stored and added to the bath as required.

NickelPur™ Process Flow



Cost Savings

By ensuring that all the salts recovered can be safely and fully recycled, the NickelPur™ can reduce related operating costs by over 90% and recover 95% of the nickel that would otherwise be lost to the plant waste treatment system.



Basis:

- Chemical Treatment with sulfuric acid and sludge disposal
- Chemical usage for NickelPur™ of sulfuric acid and hydrochloric acid

Sizing a NickelPur™

It is simple to select the right NickelPur™ for your needs. Here are two methods:

Boric Acid (H₃BO₄) Calculation

Required Information:

Annual Boric Acid Purchases (kg/hr) _____

Hours of operation (hr/yr) _____

Calculation:

$$\text{H}_3\text{BO}_4 / \text{hr/yr} \times 1,875 = \text{___g/hr Ni}$$

Rinse Water Calculation

Required Information:

Rinse Water Flowrate (m³/hr) _____

Ni concentration in rinse water (g/l) _____

Calculation:

$$\text{m}^3/\text{hr} \times \text{g/l} \times 1,000 = \text{___g/hr Ni}$$

Notes:

- crosscheck with amount of nickel in sludge
- do this calculation for each line in operation
- use typical flowrates not maximum

NickelPur™ Capacity Chart

Model Number	Maximum Capacity (g/hr) based on Feed Concentration (g/L)		
	1 g/L	3 g/L	5 g/L
151-500	335	540	620
151-501	595	965	1,105
151-502	935	1,505	1,730
151-503	1,345	2,170	2,495
151-504	2,395	3,855	4,435
151-505	3,740	6,030	6,930
151-506	5,390	8,680	9,980

maximum recovery ~ simple package ~ proven reliability

Features	Benefits	Impacts
Short bed height and small resin volume	Small equipment size with easy maintenance	Maximum recovery efficiency Lower operating costs
Counter-current regeneration	Efficient resin Effective resin rinsing	High purity, concentration, and pH control High productivity and quality Over 95% recovery with less waste
Pre-assembled, skid mounted	Easy installation	Reduced installation and capital costs
Fully automated with full factory pretesting	Fast installation Consistent operation	Reduced operating and installation costs

NickelPur™ Partial User's List

Customer	Location
TRW	Ontario, CANADA
Schlage Lock Company	Colorado, USA
Kohler Company <small>Multiple Units</small>	Wisconsin, USA, Jiangxi, CHINA
Harley Davidson	Pennsylvania, USA
Superior Metal Products	Ohio, USA
Plated Strips International	Birmingham, ENGLAND
Honda	Amazonia, BRAZIL
Lacks Wheel Trim <small>Multiple Units</small>	Michigan, USA
Delta Faucet	Indiana, USA

For a Fast Quote, email NickelPur@eco-tec.com



www.eco-tec.com



Eco-Tec Inc.
1145 Squires Beach Rd., Pickering, Ontario
Canada L1W 3T9
Tel: (905) 427-0077 Fax: (905) 427-4477
E-mail: ecotec@eco-tec.com

Eco-Tec (Europe) Ltd.
Unit 29C Ring Road, Zone 3, Burntwood Business Park
Burntwood, Staffordshire, England WS7 3JG
Tel: (44) 01543 683086 Fax : (44) 01543 674117
Email: ete@eco-tec.com

All statements, information and recommendations contained herein are, to our knowledge, true and accurate.
However, no guarantee or warranty is given, expressed or implied.

Nor shall any statement, information or recommendation constitute a representation unless set forth in an agreement signed by Eco-Tec.
NickelPur is a trademark of Eco-Tec. All rights reserved.