HCl and Mixed Acid Recovery

Reduces acid consumption and speeds production

» cost-effective, industrial environmental solutions

Beta Control Systems, Inc.

overview

This unique vacuum evaporation process extracts contaminants from spent acid and re-concentrates the acid for reuse.

- Reduces acid consumption
- Improves product cosmetics
- Speeds up production
- Low energy and labor demand

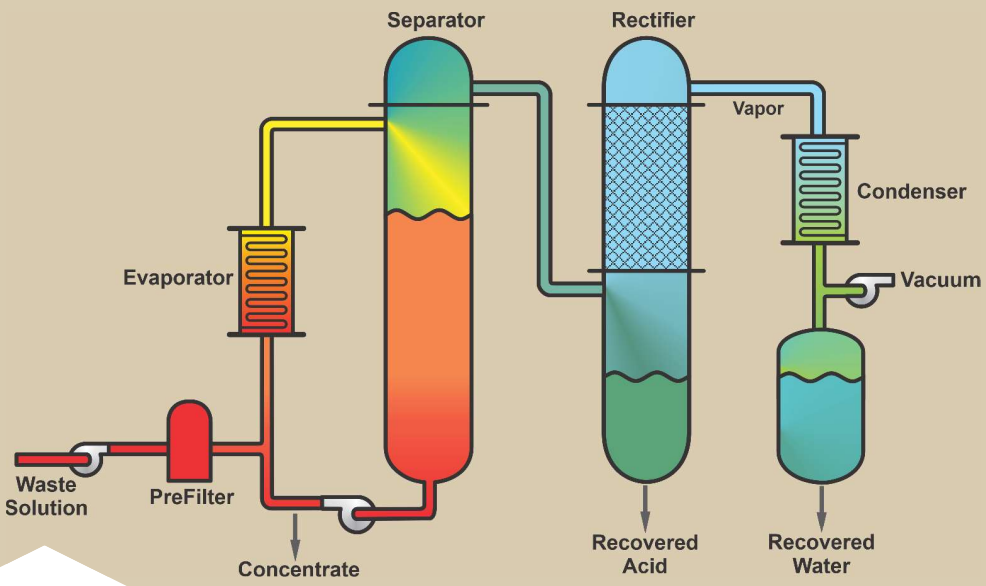
COMPLETE SOLUTIONS

The Beta equipment pictured above addresses a wire plant's disposal problems. The Acid Recovery System *(left)* recycles 2 tons of spent acid per day. The Solids Filtration & Neutralization System *(right)* processes the resulting metals concentrate stream. A Rinse Recovery System is located inside the plant. With these three systems working together, the only waste requiring disposal is dry cake from the filter press.

20 years of research, development, and manufacturing experience has contributed to the optimal design of our Hydrochloric & Mixed Acid Recovery Systems.

Typically, customers experience a less than two-year Return on Investment. Customers also enjoy the environmental, public relations, and legal exposure benefits of minimizing hazardous waste.

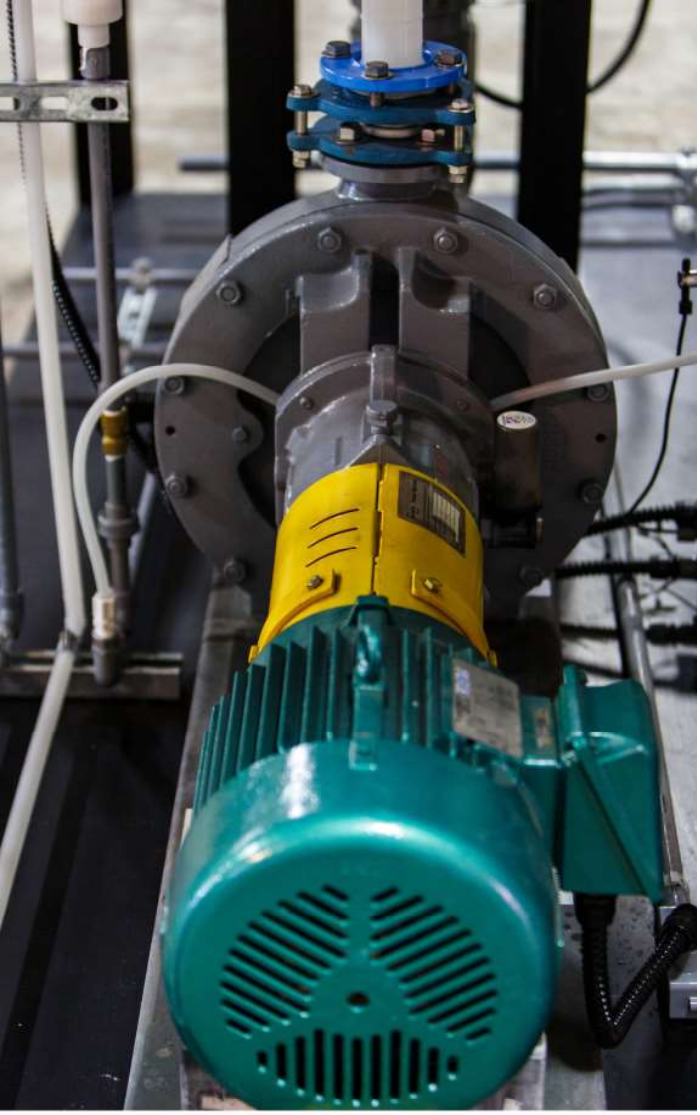
The system requires only one hour of operator attention per shift. The automatic operation of the system maintains the targeted chemistry in the pickling/etching tank(s).

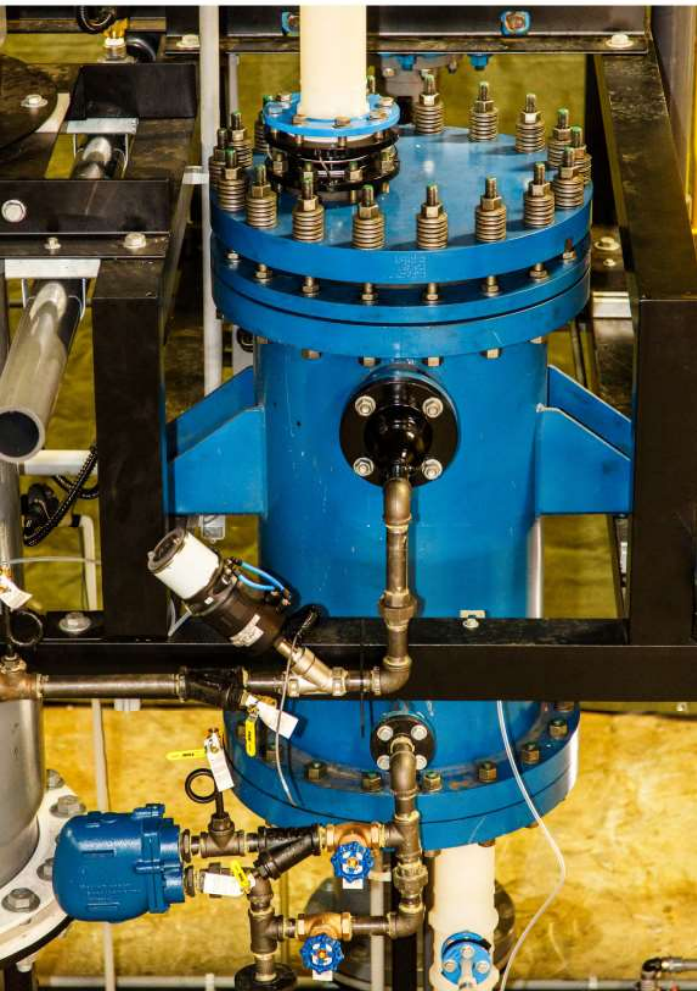


How it works. Vaporizes acid and water to remove heavy metals.

1. Spent acid is pumped through a **Pre-filter**. It enters an evaporation loop, comprised of: a.) Centrifugal Pump, b.) Evaporator Exchanger, and c.) Separator Tank.
2. The acid and water vaporize in the **Separator Tank** while the metals remain in solution.

   As the temperature increases in the evaporation loop, a **Concentrate stream** of metals exits through a port at the back of the system.
3. The recovered acid & water vapors travel to the **Rectifier** where the acid is cooled to liquid form and returned to the process tank.
4. The water vapor, stripped of acid, continues its journey into the **Condenser** where it is condensed to good quality water for reuse.





20 Years of Research

Beta's 20 years of research, development, and manufacturing experience has contributed to the optimal design of our Hydrochloric & Mixed Acid Recovery Systems

Centrifugal Pump

This corrosion-proof, centrifugal pump is the heart of the evaporation loop on the system. The high temperature and low NPSH are designed to operate in corrosive vacuum applications.

Evaporator Exchanger

Beta uses either carbon graphite or silicon carbide as the heat exchange media for our evaporators and condensers. Only these materials will withstand the extreme environments of an acid evaporator.

System Components

Condenser

Each installation is designed by Beta's engineers to meet size limitations as well as the engineering specifications.

We minimize the footprint of the system to fit into the plant's available space.

Instrumentation

Beta provides analog and digital feedback both to our PLC and to the Operator. The instruments' live data is available via graph format in the operating software.

Teflon-lined Steel

Teflon-lined steel provides an option in materials of construction for HF and HNO_3 applications.

These reactors are specially manufactured for vacuum operations recovering these highly aggressive acids.

Our thermodynamic engineers custom-design each system to meet the needs of the application.

Components chosen to withstand corrosive acid environments

Beta's remote support is the next best thing to being on site at your plant.

Control Software

A computer or a control-panel-mounted HMI directs the operation of the system. Beta's proprietary software allows the user to view live operating conditions and to initiate tasks manually or automatically.

The software contains set points which optimize the efficiency of the system.

Remote Monitoring

Remote access allows the operator, management, and Beta engineers to monitor the system from a computer, smart phone, or internet-connected remote device by means of a free app.

Hydrochloric Acid Recovery

Sulfuric Acid Recovery

Flux Filtration

Mixed Acid Recovery

Sustainable Solutions

Beta designs, manufactures, installs, and supports its own resource recovery equipment. We provide cost effective, robustly engineered systems to recover your assets and attain your company's environmental goals.

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