

# Sulfuric Acid Recovery

Maintain pickle tank chemistry by removing iron and zinc



» cost-effective, industrial environmental solutions



# overview

**This crystallization process extracts iron and zinc from spent acid and returns the recovered acid to the pickle tank.**



## WHY BETA?

"I've dealt with Beta Control Systems Inc. for 25 years. They are professional. They are efficient. They take the time to slow down and succinctly explain the science of acid recovery and hot dip galvanizing to anyone who cares to listen. We'd all be much better off if the companies with whom we do business managed their business the way Beta Control manages theirs. A first class operation."

*Matt, Plant Engineer  
Hughes Brothers, Inc. Nebraska*



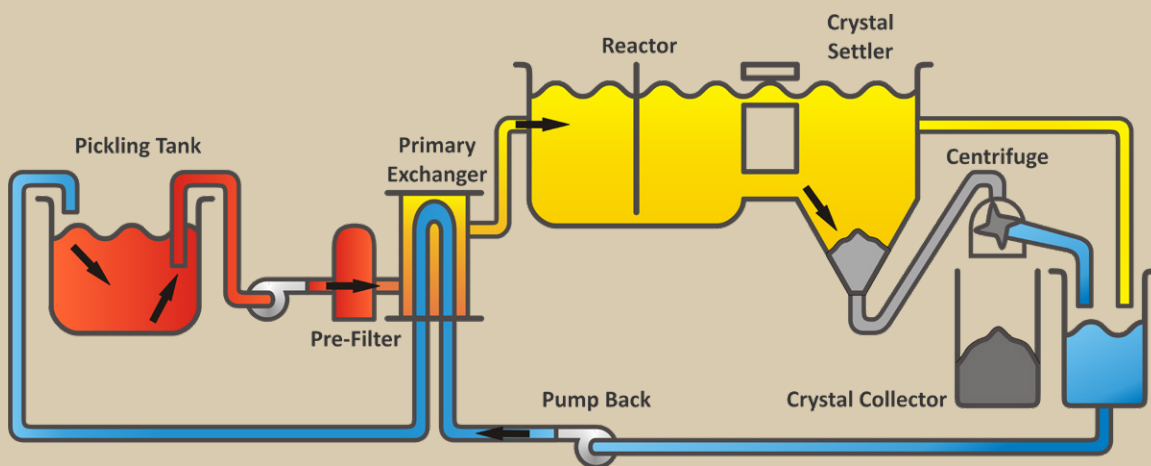
40 years of research, development, and manufacturing experience has contributed to the optimal design of our Sulfuric Acid Recovery System.



Typically, customers experience < 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 optimum chemistry in the pickling operation.



## How it works. Chills acid to precipitate heavy metals.

- 1 Spent acid is fed through a Pre-filter before entering the Primary Exchanger. This thermal interchanger cools the hot, incoming pickle liquor by using recovered, chilled acid traveling counter-currently through the exchanger.
- 2 The acid enters the Reactor where it is chilled to form an iron sulfate crystal. This crystal slurry enters the conical-bottomed Crystal Settler tank where the iron sulfate crystals quickly settle to the bottom and the clear, iron-reduced acid solution overflows into a pump station.
- 3 The settled crystals are pumped to a Centrifuge. The thick slurry separates into dry ferrous sulfate crystals and a centrate solution of acid and undersized crystals.
- 4 The centrate is returned to the Reactor where the undersized ferrous sulfate crystals act as seeds to grow larger crystals. The clarified recovered acid travels back through the Primary Exchanger where it is reheated and returned to the Pickling Tank.



## 40 Years of Research

Beta's 40 years of research, development, and experience has contributed to the optimal design the Sulfuric Acid Recovery System.



### Self Cleaning

An automatic cleaning mechanism at the bottom of the Crystal Settler Tank optimizes the smooth flow of crystal slurry.



### Immersion Heat Exchangers

The PVDF exchangers in the Reactor Tank provide maximum heat exchange per sq. foot/ meter. Exchangers are easy to repair and quick to replace.



### Crystal Filter Option

On our smallest systems, we offer a Crystal Filter in place of a centrifuge. Crystals drain in the hopper which is lined with filter cloth. Filtered crystals are wetter than centrifuged crystals, so they are packaged in IBC totes.

## Conical Tank Design

The conical design of our Recovered Acid Tank minimizes the carryover of small crystal fines. The recovered acid is pumped from the top of the tank.

## Software for System Control

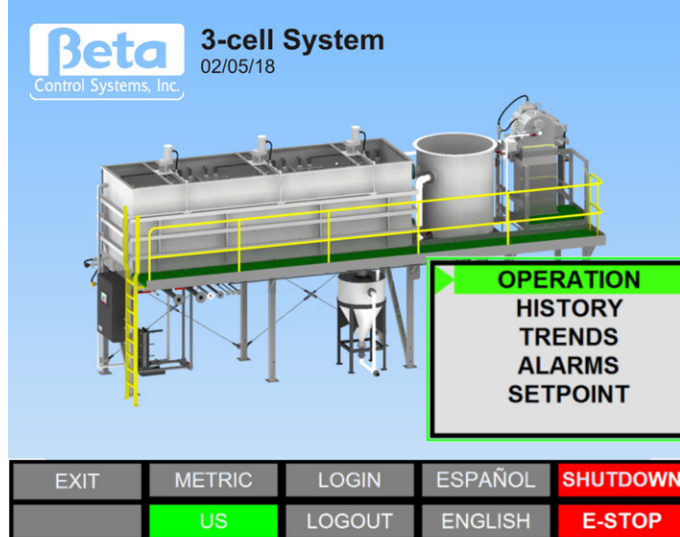
A computer or a control-panel-mounted HMI may be used to direct the operation of the system. Beta's proprietary software allows the user to view live operating conditions and to manually or automatically initiate tasks.

The software contains set points which optimize the efficiency of the system based on readings from temperature probes, flow transmitters, and pressure regulators.

## Remote Monitoring

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

**This enables Beta to provide support as if we were on-site at your plant.**





# 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.

## Beta Control Systems, Inc. (headquarters)

6950 SW 111th Ave  
Beaverton, OR 97008 USA  
(503) 646-3399, [contact@betacontrol.com](mailto:contact@betacontrol.com)

## INDIA | Leak-Proof Steel Plant Equipment

Mr. Arvind Joshi + 91 22 2636 1737  
[AGJ@edrgroup.in](mailto:AGJ@edrgroup.in)

## MALAYSIA SINGAPORE THAILAND VIETNAM

Mr. Hum Weng Loong  
[hum.weng.loong@deeploy.com.my](mailto:hum.weng.loong@deeploy.com.my)

## MEXICO | Tecnomex

Ing. Daniel Pietra Santa + 52 (55) 1107-7582  
[daniel.pietrasanta@tecnometalweb.com](mailto:daniel.pietrasanta@tecnometalweb.com)

## TAIWAN & CHINA | Yongsun Corp.

Mr. Frank Shy + 886-2-2881-7288  
[frankshy@ms24.hinet.net](mailto:frankshy@ms24.hinet.net)

## UNITED KINGDOM | Chem Resist Groupe

[enquiry@chemresist.com](mailto:enquiry@chemresist.com)  
+ 44-1924-499466



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