Oxyfilter

Maintain optimal flux chemistry to minimize excess zinc usage

» **cost-effective, industrial environmental solutions**

Beta
Control Systems, Inc.

overview

Beta's new Oxyfilter System extracts contaminants from flux tanks. Our system works continuously, maintaining a solids-free flux tank using < 1 micron filters.

- Decrease gross zinc consumption
- Improve product cosmetics
- Minimize dross and ash production
- Eliminate flux treatment or disposal

Recycle dirty flux solution using our Oxyfilter's crossflow microfiltration membranes.

Overview: A solids-laden flux is pumped at high velocity through the membranes. The velocity scours the surface of the membranes to discourage the deposition of solids. Permeate (clean flux) migrates through the walls of the membranes and is returned to the Flux Tank. Solids are sent to a Settling Tank or Filter Press.

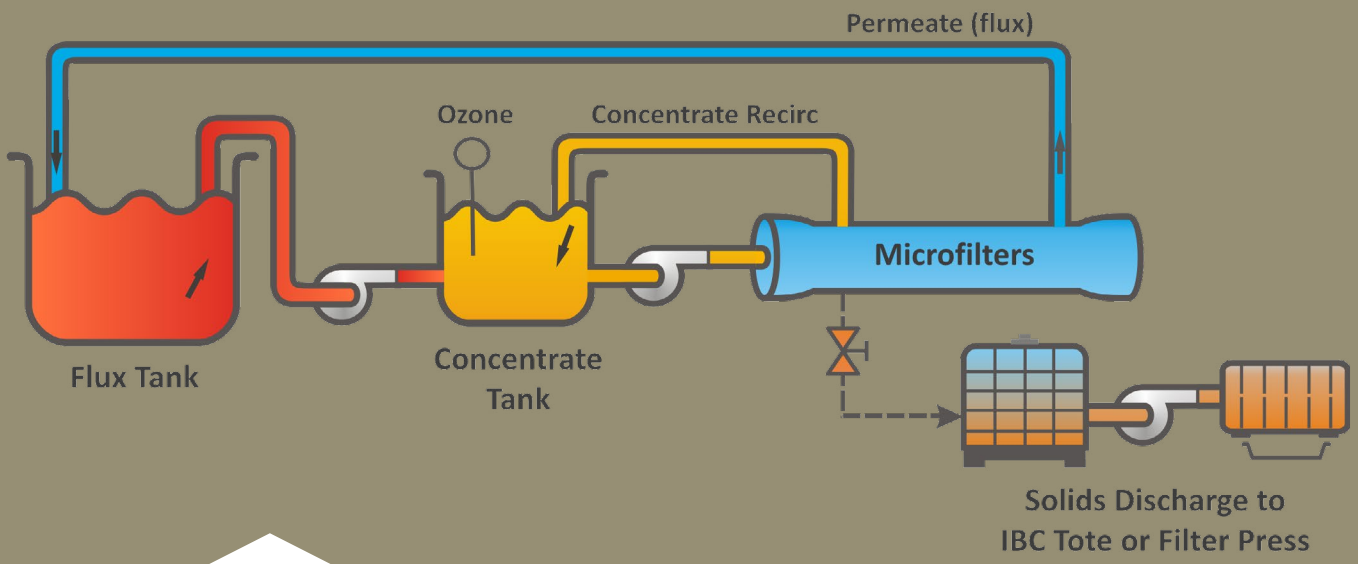
Removing ferrous ions maintains a clean, efficient flux tank.

Clean flux tanks save money. Saving just 1% in excess GZU results in a savings of $14,700 per million pounds of galvanizing.

LME Zinc $1.42/lb. + $0.05 delivery = $1.47/lb

Power consumption is similar to operating a household clothes dryer, < 3kWh per ton.

The system requires minimal operator attention— approximately 30 minutes per shift.



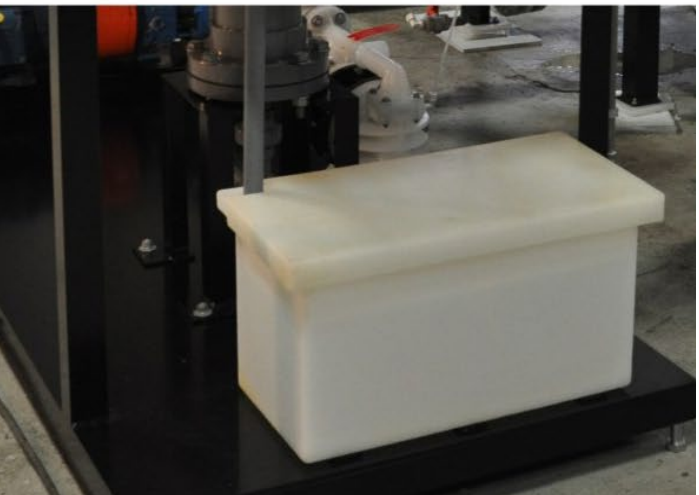
How it works. **Simple chemistry and cross-flow microfiltration.**

The Beta Oxyfilter is impervious to pH. However, the Flux Tank chemistry should be monitored regularly and balanced each week.

Soluble Ferrous (Fe+2) ions are converted to insoluble Ferric (Fe+3) solids using ozone. Beta's patent pending process continually produces highly oxidative Ozone and injects it into the flux filtration loop through our unique generation and injection system. There is no need to purchase or handle highly corrosive chemicals.

After ozone-treatment, the flux is pumped through crossflow microfiltration membranes. The suspended solids travel through the inside of the membranes and return to the Concentrate Tank. The solids-free flux solution permeates the membranes and returns to the Flux Tank.

Our crossflow microfiltration process runs continuously with very little attention. The process is self-cleaning and only requires minimal weekly cleaning.



Operator Attention

The system is semi-automated and requires occasional attention by an Operator assigned to the system.

Adjust the pH of the flux tank between 4 and 5.

Drain Concentrate Tank — Each week, accumulated solids in the Concentrate Tank are drained to an IBC tote or to a filter press. The centrate or filtrate from the collected solids drains back into the Oxyfilter's Mixer Tank.

Membrane Cleaning — Every week, the system is shut down for 4 hours while 5 gallons of chelating agent through the membranes to restore original performance.

System Automation

The system does all the rest of the work automatically, using instrumentation and software setpoints.

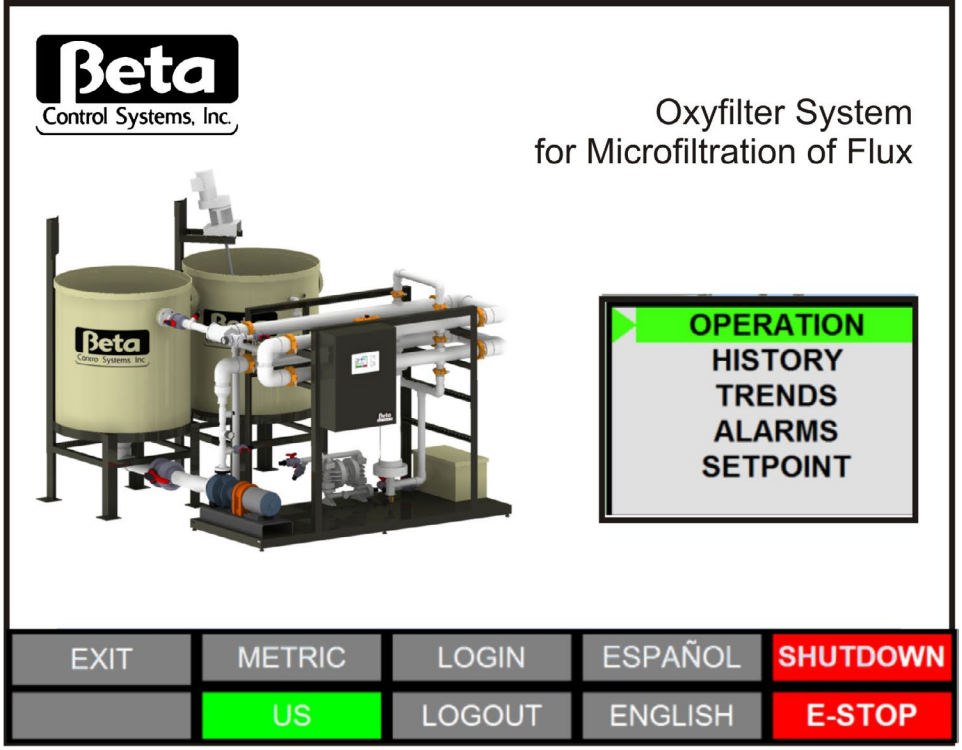
A **level switch** automatically matches the volume of incoming dirty flux to the exiting volume of clean flux.

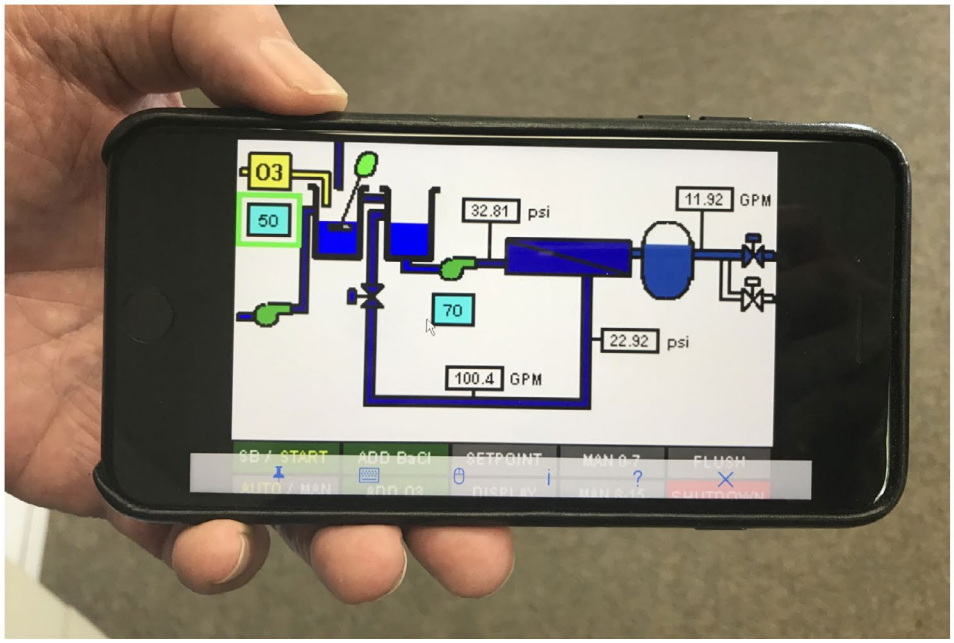
The **ozone is aspirated** into the Concentrate Tank with the entering flux.

A **pressure transmitter** and the automated circulation pump maintain a pressure of 40 to 60 psi in the Microfiltration membranes. This keeps the solids inside the membranes while the permeate passes through the pores and returns to the Flux Tank.

Initiates a 20 second "backpulse" operation every 15 to 20 minutes to clear the membranes of any built up solids.

Power consumption similar to operating a household clothes dryer. < 3 kWh/ton





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 - 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.

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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