

# Met-Chem Group

## Special Interest Articles:

- Save Money
- Eliminate/reduce expensive hauling costs

## Individual Highlights:

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## SAVE MONEY AND SPACE WITH SLUDGE BAGS Submitted by: Walter Senney

For many years Met-Chem, Inc. has provided "Super Sacks" for receiving sludge from filter presses. These bulk bags are normally mounted under a filter press (see picture below) and sit on a skid with the top loops attached to the filter press chute. These sacks are made of 6.5 oz. heavy woven polypro outer bag with a moisture resistant coating on the inside. A separate inner polyethylene liner bag can be used to ensure a total leak free bag.

The Met-Chem "Super Sack" holds 27 cu. ft. of dried sludge, comparable to (5) 55 gallon drums, and is more cost effective to purchase, store and ship as compared to conventional barrels. Our UN number is listed on each bag to keep it legal for hauling and shipping F006 sludge. A separate side pouch is included for manifest paperwork.



### Features of the Met-Chem "Super Sack"

- 36" x 36" x 36" (1 cu. yd.)
- Closed bottom
- Open duffle top
- 6.5 oz woven polypro
- Inner polyethylene liner bag
- 2200 lbs weight capacity
- U.N. exemption number
- Side pouch for paperwork
- 4 corner lifting straps

***These bags are in stock for immediate delivery.***

## FILTER CLOTH CLEANING Submitted by: Cheryl Banaszak

Proper care and maintenance of the filter cloths are very important to the performance of the filter press.

During filtration, the filter cloths are the initial barrier that separates solids from liquid: therefore, the filter cloth must remain porous to provide high filtration rates.

During normal operation, the filter cloths may gradually become plugged with minute particles, such as those from metal finishing sludge. These particles penetrate the cloth and become lodged in the depth of the weave, which leads to decreased filterability. These particles must be removed periodically to maintain high filtration rates and drier cakes.

Filter cloth washing is required when one of the following factors indicate plugging has occurred:

1. Initial high filtration pressure.
2. Long filtration cycles.
3. Wet filter cakes.

There are several methods used to wash cloths while they are still installed in the press. The most commonly used method with metal finishing sludge is acid washing, which requires the following:

1. Acid storage tank of sufficient capacity to fill press and allow for recirculation, approximately 1.5 times the holding capacity of press (7.5 gallons per cubic foot).
2. A 25% solution of hydrochloric (muriatic) acid. A lower or higher concentration may be necessary due to solubility levels of entrapped particles. Note: Extreme care must be taken when handling acid.
3. Low pressure (20-30 PSI max.) acid resistant pump.
4. Necessary plumbing (hoses or rigid PVC pipe) to isolate the press from the sludge stream and allow for both recirculation to the acid storage tank and final draining of the spent acid solution. A throttling valve installed in the return line to the acid tank may be necessary to ensure complete top to bottom press filling and washing of the cloths.

### **Method**

1. Clean all filter cloths of all sludge cake with nylon spatulas furnished.
2. Close filter press.
3. Disconnect center feed line from sludge pump.
4. Connect outlet of acid pump to center feed line to filter press.
5. Connect lower outlet of filter press to acid recirculation tank.
6. Open acid feed line to filter press.
7. Start acid feed pump. It will take considerable time to fill all of the chambers of the filter press before the acid will return to storage tank. Continually inspect filter press for leakage during filling and recirculating.
8. Allow pump to recirculate for one to two hours.
9. Turn off acid feed pump.
10. Follow air blow-down sequence in operation instructions to purge acid from filter press (use maximum 15 PSI air).
11. Disconnect acid feed system and reinstall sludge pump and outlet lines.
12. Filter press is now ready for operation.

**Cautions continued on page 3**

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## A word of caution regarding acid washing filter press cloths

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Acid washing is not recommended on non-gasketed type filters unless extra precautions are taken to contain the leakage between the plates.

You can also acid “dip” wash the plates by immersing them in a tank of acid. The immersion method though is less efficient than thru washing in the press and will probably require at least an overnight soaking to clean out the depth of the weave. Another slight problem is that the plates are lighter than water and will float, so some method of keeping them submerged must be used.

Another method used for cloth washing is a portable high pressure (800-1200 PSI at 2-10 GPM) cold water spray unit. These units come with a hand held power wand with spray nozzle which is slowly moved over the cloths. They clean by not only flushing off the cloth surfaces but by also penetrating the cloth to flush particles out of the depth of the weave.

## Atmospheric Evaporators by Jeff Kubiak



A wise man once told me that “Things should be made as simple as possible, but not simpler”. In other words we want it simple, but it still has to work. I am proud to say here at **Poly Products Inc.** we employ the K.I.S.S. method. The **ET-III-W™** evaporators are so simple, they require only two moving parts: the blower and the pump the feeds the unit; then **just add water!**

Each unit ships with a user friendly manual. In this manual, you will know what the set-up requirements are, as well as how to operate and maintain your

evaporator in optimal working condition. We believe that this manual will address all of your questions and concerns. In fact, you may want to review our Poly Products Manual for the **ET-III-W™** Evaporator and **ET-Companion™** CONDENSER before making your purchase decision, or perhaps you have misplaced yours. I have a limited number of manuals set aside for those who want a free copy. To get your free copy, simply e-mail me at [jkubiak@metchem.com](mailto:jkubiak@metchem.com) and tell me what the letters in K.I.S.S. mean, *as it pertains to this article, not the rock group*; and please include your name and address, so I can send your manual.

Most of the information in the manual is intuitive, but there is also helpful information that is not so obvious. For example, I have worked with many companies who have outlined their needs, and then we work together to establish the proper operating parameters, and yet, a few will call me back and report that they are not getting the evaporation rates we had anticipated; with few exception, these problems can be resolved by simply consulting the manual. As long as the heat source is adequate, the problem is usually one of the following three issues:

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1. The blower on the **ET-III-W™** evaporator will fit in two orientations, verify that the blower has been *mounted* onto the *yellow* blower sleeve correctly, as described in the installation manual. *The motor should be close to the exhaust stack*, as shown on the cover of the brochure or as seen on our internet web site at **[www.poly-products.com](http://www.poly-products.com)**. The blower opening must match the opening of the yellow blower sleeve. If the blower is mounted backwards, the air flow will be blocked by a built-in splash guard on the blower sleeve, and you will have virtually no evaporation.

2. Verify that the blower is *rotating* properly, as described in the installation manual. The fan should be moving downward on the motor side of the blower, as indicated by the direction arrow on the blower itself. If the blower is rotating backwards, it will still blow air in the correct direction, but at a drastically reduced rate, and again, you will lower your evaporation rate. The standard three phase blower motor, usually supplied on the **ET-III-W™** Evaporator, can be reversed by switching any two of the three input legs: **Consult a qualified electrician for this correction.**

3. Verify that the *drain is routed and draining properly*, as described in the installation manual. Any horizontal runs must be sloped at least 2" per foot. This is a gravity return line and should be routed like you would rout a rain gutter down-spout on your house.

It is also very important that the drain pipe **DOES NOT GO BENEATH THE WATER LEVEL** of the tank. The drain pipe **MUST STOP BEFORE THE TANK LEVEL HIGHEST POINT**. If the pipe enters into the water, it will not vent or breath, and there will be too much back pressure to allow the solution to drain out of the evaporator as freely as needed.

Either of the above will cause the evaporator to fill up with solution. As the solution level rises in the evaporator, it gets closer and closer to the bottom of the *yellow* blower sleeve. If the water rises to the blower sleeve, the air flow will be blocked. As the solution is rising, the air flow becomes more restricted until it stops. Just as in items 1 and 2, a restriction of air flow will severely impede the evaporation of your solution.

Our Poly Products **ET-III-W™** evaporator is so simple, after reading this article you are virtually an expert on installation, but I would still recommend reading the manual; I look forward to your e-mails, so I can get this stack of free manual off of my desk.

Feel free to ask other questions or request a quote while you are e-mailing.

## Samsco Case Study :

### Water Evaporator Eliminates Expensive Hauling Costs – Submitted by: Jason Verderber

Established in 1987, Ravenna Aluminum Foundries (Ravenna, OH) has produced more than 20 million castings for customers in a variety of industries. Each piece has been manufactured with the quality and attention to detail that has built the reputation of the FSI Group (Foundry Systems International).

#### **The Challenge**

During the manufacturing process, wastewater is generated from parts washing, floor scrubbing and spent coolant. The annual volume of wastewater had grown over the years to about 80,000 gallons. When the volume was relatively small, hauling the wastewater was the most cost effective option, but as the wastewater volume grew and hauling costs escalated to over \$50,000 per year, Ravenna Aluminum began to look for lower-cost options.

#### **The Solution**

Ravenna Aluminum had been purchasing their cleaners and coolants through the same supplier for a number of years. When Ravenna's chemical supplier became aware of the volume of wastewater and associated hauling cost for cleaners, spent coolant and other waste streams, they suggested that Ravenna Aluminum consider an evaporator from Samsco Corporation (Goffstown, NH).

Ravenna Aluminum welcomed the opportunity to explore evaporation technology as a means of minimizing their wastewater and associated hauling cost. A Samsco application engineer worked with Ravenna Aluminum to obtain appropriate samples of the wastewater streams. Samsco performed a laboratory functional pilot test on the wastewater samples to determine their appropriateness for evaporation and to make the best recommendations for a successful installation.

The functional pilot test determined that over 90% of the wastewater could be evaporated and that 316L stainless steel construction was appropriate for the application.

Ravenna Aluminum determined that installing the evaporator would save about \$45,000 per year in wastewater disposal costs and provides a six month payback. Management approval of the project came quickly due to the thorough presentation that the Samsco engineer was able to make the laboratory functional pilot test results to accurately predict the evaporator performance, the research on the cost of the equipment, operating and installation costs, and the excellent payback.

For more information on Samsco, see our website at [www.samsco.com](http://www.samsco.com) or call 603-668-7111

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## Used Equipment – submitted by Luke Johnson

You might have heard the saying: You can't sew a silk purse out of a sow's ear. While working here at Met-Chem Inc. for the used equipment division, I have witnessed differently.

Sitting in our facilities for the past couple years has been a fairly large Durco quad press, 140 cubic feet capacity. Coming from the good 'ole days of American construction the press was built with plenty of steel, a thick I-beam ran down the center from which the 1200 MM plates hung. However, as it was used for quite a few years in waste treatment for a glass manufacturing plant, the quad filter had seen better days. It lacked some of the pieces seen with larger presses. What was left of the plate shifter was simply a broken chain, and as it sat low to the ground it would obviously need to be raised to dump the filter cake. The plates had been disassembled from the press to lighten the 20,000 lb filter press, and the plumbing was broken off the back. It was a sore sight.

However, along came a plastic recycler in need of a 140 cubic foot filter press, and the need to save money. But they needed a plate shifter, a complete stand and catwalk system, a conveyor to unload the sludge, gasketed plates, control panel, new filters, working hydraulic system, a custom paint job and a long warranty. In short, they wanted a silk purse. Met-Chem of course rolled up its sleeves and took on the job with fervor.

The polypropylene plates were quickly stripped of the old filters, power sprayed, marked and machined for new gasket material and the tongue and groove filter cloths. The filter press frame was power sprayed clean, and sanded down for the custom paint job, and parts for a specially designed plate shifter for the overhead plate style were ordered. The press was thoroughly measured, and put into a drawing program so steel for the catwalk and stand could be ordered. When parts finally arrived, the steel was welded together, prepped for paint, and spray coated with a thick epoxy. The newly machined plates were reassembled onto the press, and the plate shifter was installed. The control panel was built and tested. A new PVC manifold was cut, measured, and glued into place. The conveyor was assembled and tested. The entire package was assembled to pass a final quality control test, spanning half of the manufacturing floor here at Met-Chem. Two flat-beds were brought in to haul away the masses of steel and the large used press sailed down the road, no longer a sow's ear.

This recent project always keeps my eyes and mind open when viewing used equipment, because with a little hard work and American ingenuity it's amazing how useful dirty neglected pieces of used equipment can become.

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### We're on the Web!

See us at:

[www.metchem.com](http://www.metchem.com)

[www.poly-products.com](http://www.poly-products.com)

[www.samsco.com](http://www.samsco.com)

[www.lamports.com](http://www.lamports.com)