

Met-Chem Group

What to do when your filter media is blinding and you can't filter – Submitted by: Walter Senney, President

Special Interest Articles:

- Save Money
- Eliminate/reduce expensive hauling costs

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Many filtration applications do not require the use of a body feed or a precoat. If the solids in the feed solution are the proper size and are not “slimy” or oily, the filter media by itself will start the filtration process and the solids will build on each other. In this type of application, the media will not blind off and the proper cake thickness will result with the liquid passing through the cake until the filter cavity is packed tight. In a perfect world this would be the end of the story, but since cloth blinding does occur with little or no cake building, the use of precoat materials or media change may be necessary.

The three most common remedies for cloth blinding are a change or addition of filter media, a precoat addition to the media prior to solution feed or a body feed into the solution prior to hitting the media.

The simplest and least expensive remedy is to investigate the media itself. Lab and/or pilot tests can be done to see if a tighter or looser media will help build a cake prior to blinding. The secret to filtering with just the media is to get the solids building on each other before the cloths blind. Sometimes a more open cloth media will allow the fine particles to pass through the media while catching the larger ones. As the media builds a cake without blinding, the smaller particles will filter out on the cake as they are recirculated back. Sometimes a tighter media is required to start building a cake immediately before fines can plug up the media. If the product to be filtered is “slimy” or oily a “slick” cloth, like a mono/multifilament blend, may be required for less plugging and better cake release. Other times a paper or cellulose material may be required to be used either by itself or over a cloth media to begin the filtration process. The goal of any of these strategies is to get the cake building, prior to any media blinding, so the solids can build on themselves.

The next remedy for cloth blinding is the use of a precoat material on the media prior to solution feed. Precoat materials that are commonly used are diatomaceous earth and bleached wood pulp. These materials are mixed with water in a slurry and recirculated back through the filter until the water is clear and the media has a precoat on it. The theory is to have these porous materials set up on the media allowing solution to pass through and build a cake. The many “nooks and crannies” of the precoat give the

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solids places to build while still allowing solution to pass. To precoat a filter some changes to the plumbing may be required as well or a tank and pump may need to be added. A rule of thumb for precoating is to use 10 pounds of material for every 100 sq. ft. of filtration area in the filter.

Another strategy to use that has proven very successful is the use of a body feed. Either a diatomaceous earth or bleached wood pulp can be used here also, but the difference here is that it is mixed in with the solution downstream prior to entering the filter. This can be done by injecting it into the feed line or pre blending in the solution feed tanks. The idea is to have the body feed material become part of the product and set up on the cloth to stop it from blinding. This method has worked very well, but if the solids are your finished product, the body feed will become part of it and this may be unacceptable. A rule of thumb here is to start with 100 pounds of body feed to 1000 gallons of solution and then wean back the amount as much as possible with each filtration cycle until the minimum amount required is used. This method may require a separate feed pump, tank and/or mixer.

Each filtration application is different and a careful study must be done to insure the correct method is used for your application. The filtration experts at Met-Chem can help you solve your filtration problems and improve your efficiencies. Contact the filtration specialists at Met-Chem to see if a consultation or lab test would be appropriate for any and all of your process needs.

Our sister company, Auto Technology Company, now offers a comprehensive list of A2LA accredited contract tests for environmental testing.

Tests range from Salt Spray, CASS, high and low temperature testing, humidity, UV and cyclic testing. All of the hard to run automotive based corrosion tests are a specialty in this laboratory. Accredited testing conditions include

Temperature: -70C to 180C

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Immersion: ambient to 75C

PH - 0 to 14

Conductivity 5S to 13mS

For a quote, contact Kerwin Nealer. 440-572-7800

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Poly Products – Submitted by: Jeff Kubiak**POLY PRODUCTS INC.**

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The Poly Products **ET-III-W™** Evaporator is used throughout the United States for many different and creative applications.

The Dragout recovery is the original intended use for the Poly Products evaporator; “Close the Loop”. Creative minds have found many other ways to optimize their production by using the **ET-III-W™** Evaporator, such as, waste water minimization and bath cooling.

Poly Products has had a significant role in “**Saving the Earth’s Environment through Recycling and Recovery**” in the USA as well as many parts of the world. This article will focus on the growing international appeal of the **ET-III-W™** and **ET-Companion™** CONDENSER in Japan.

Atotech is one of the world's leading suppliers of chemistry and related equipment for decorative and functional electroplating, semiconductor and printed circuit board manufacturing. They have branches though out the United States and the world.

One of Atotech's locations is in Japan. The customers in Japan are in variety of industries such as automotive, construction and sanitation. Our friends in Japan especially recommend our **ET-III-W™ Evaporative Tank** for cost savings and recovery techniques.

The **ET-III-W™ Evaporative Tank** is especially beneficial in the automotive industry for the cooling effect offered by the act of evaporation. Many plating processes will produce an abundance of heat, as a byproduct of the electroplating current. This is especially true in hard chrome applications. The **ET-III-W™ Evaporative Tank** will often be used primarily as a temperature control device, where the benefits of evaporation and recovery are secondary.

Japan, and other countries, have made environmental awareness and conservation a priority in recent years. In addition to saving money, the **ET-III-W™ Evaporative Tank** will “Close the Loop” and eliminate the drain. The only way plating material will leave the plant, is when it is on the PART and it SHIPS.

With the addition of the optional **ET-Companion™** CONDENSER, we can also recapture the evaporated air by condensing it into distilled water for reuse, or recycling. Although this is an option, and approximately one third of the **ET-III-W™ Evaporative Tanks** in the USA, are currently coupled with **ET-Companion™** CONDENSERS, nearly all of the units in Japan take advantage of this money saving technology.

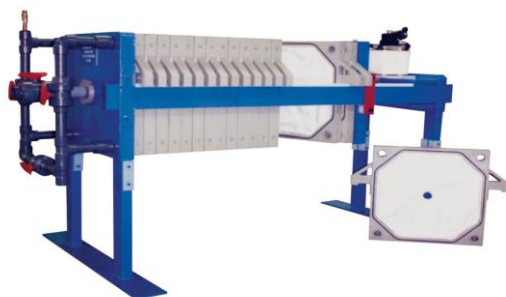
Poly Products has many loyal customers in Japan. Atotech reports to us that their customers are repeat customers for the **ET-III-W™ Evaporative Tank** and the **ET-Companion™** CONDENSER because of the many production and technological advantages, and the positive impact on our world’s recourses and environment at an economical cost.

Filter Press info – Submitted by: Drew Senney

One of the many benefits of a filter press is that for such a large piece of machinery it has few parts to it. The different parts to a filter press include the steel skeleton, the plates, the hydraulic pump and cylinder, the plumbing which includes the manifold and center feed pipe, and the filter cloths. The simplicity of the filter press means there is little maintenance work that is needed to be done to the press. However, understanding the different parts of the filter press can be vital to proper operation and maintenance. In this article the center feed pipe assembly will be explained. The filter press skeleton and filter press plates need zero repairs and as long as the press is operated properly they will last a lifetime. The different types of filter cloths will be discussed in a later article, but Jeff Kubiak did write an article in issue #3 of the newsletter that gives a detailed outline of how to replace the cloths, http://www.metchem.com/MC_News_July2008.pdf . Also, the hydraulic pump and cylinder will be discussed in a later issue.

The center feed pipe is what connects the filter press to the product that needs to be filtered. The center feed pipe assembly consists of five different parts. The first part is the lock nut which fastens on the center feed pipe and connects to the outside of the press. The pipe, which is the second part, goes through the head of the filter and all the way through the head plate of the filter press. The third part of the center feed pipe assembly is a gasket which ensures the assembly is water tight. Next, is the clip nut seat which fastens the assembly to the head plate. This part of the assembly will always stay in place unless you are replacing the assembly or one of its parts. The final part, the cloth clip nut, will be removed often as it is screwed into the cloth clip nut seat after the head cloth is put on the head plate. The cloth clip nut needs to be tightened in order to keep the cloth in place. Met-Chem provides a tool to make this process easier. The Met-Chem Spanner Wrench is a specially designed tool that can be used to loosen and tighten the cloth clip nut when changing the head cloth on a filter press. This tool can be very helpful as the cloth clip nut has a design that requires a unique tool to tighten and loosen it.

A center feed pipe assembly on a filter press should be able to last many years the same way any other type of plumbing will. However, if the material of the center feed pipe assembly is not strong enough to handle the corrosiveness of the solution running through the press then the center feed pipe assembly can corrode. Because of this Met-Chem offers, along with our standard CPVC steel center feed pipe assembly, a standard steel and a 316 stainless steel center feed pipe assembly. If you would like a price on any of these assemblies, parts for the assembly, or a spanner wrench please give us a call. 216-881-7900



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Clarifier Application – submitted by Luke Johnson

The world of water treatment and filtration for Met-Chem Inc. seems to find every niche for new uses and applications. An age old application for our equipment has been the treatment of municipal sanitary waste. However, the project that was recently completed last year was done in a new way. Two new 120 GPM Met-Chem clarifiers were manufactured for the cleaning of sanitary waste, from a private New England boarding school.

Recently the state of Massachusetts tightened their regulations on phosphorus levels, based on the findings of high phosphorus levels that were affecting plant and aquatic life in the Nashua River. The school's 70,000 GPD WWTS with over 6-miles of sewage pipe treated sanitary waste for approximately 400 students and employees. The WWTS consists of a two chamber settling tank with a total volume of approximately 14,000 gallons. This settling tank requires pumping for removal of accumulated sludge two to three times per year. Effluent from the settling tank goes to a 10,000 dosing tank followed by a siphon, a flow recorder and four, approximately 8,000 sq. ft. intermittent sand filters. A distribution manhole with flap gates doses the filter beds alternately. The sand filter beds then provide additional treatment and are lined and underdrained. The effluent from the filter beds is directed to a manhole, it is disinfected with UV radiation. Effluent is then conveyed through an outfall pipe to a discharge point below the surface of the Nashua River. Based on submitted samples from the school, phosphorus levels were measured at between 6-7 mg/L. These levels needed to be reduced drastically. In order to renew their discharge permit, the levels needed to be reduced to 1 mg/L. This of course needed to be done with an unmanned, low-cost, minimum floor-space piece of equipment.

A plan was devised in conjunction with an engineering firm to install two Met-Chem clarifiers with a polymer injection system to reduce the phosphorus levels. The steel above-ground clarifiers would save the school hundreds of thousands of dollars in property, capital, and equipment costs over traditional in-ground concrete clarifiers. The Met-Chem high-retention time and dense surface area design would work well for the light floc phosphorus that would form with chemical treatment. Because the school was in a dire situation, the equipment also needed to be manufactured in 8-10 weeks. The primary contractor for the building kept in close communication with Met-Chem for the tight scheduling. The clarifiers shipped as promised just in time for installation, in a matter of days before the roof was placed over head. Startup was scheduled for this September, 2009 and the school has re-applied for their discharge permit. Yet again another Met-Chem project ended successfully.



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Water & Wastewater Filtration: Wastewater Evaporator System Helps Manufacturer Meet Stringent Municipal Guidelines – Submitted by: Henry Isaacs

Many industrial companies recognize the need to dispose of their wastewater in an environmentally friendly way. Although there are many options available to them, including chemical treatment, biological treatment, membrane filtration and evaporation, evaporation is the only technology that eliminates the need for sewer discharge by removing the water portion of the waste.

International Seal, FNGP, a Santa Ana, Ca. manufacturer, joins a growing list of companies to install a complete wastewater treatment system that includes an evaporator component. Because of the company's desire to go to zero liquid discharge (ZLD), they selected a system designed, engineered and installed by Samsco. FNGP's system incorporates filter presses to remove particulate from a tumbling operation, a UF/RO membrane system to provide clean rinse water and an evaporator to minimize the UF/RO reject wastewater. The system will reduce the company's water usage by a minimum of 30,000 gallons per day by recovering and reusing the filtered water in their tumbling and rinsing processes.

How it works

International Seal, FNGP's system operation begins by pumping the tumbling and parts cleaning wastewater to a collection tank. The water from the tank is then delivered to the filter press system. When a certain level is reached in the filter press feed tank, the operator is notified to start the second filter press system. Automatic alarms prevent overflow of the feed tank.

The clean water from the filter press is pumped to the tumbling water tank, which is then reused in the tumblers and for hand-spraying parts. About 4 gallons per minute are sent through the UF/RO system to blow down dissolved contaminants and to generate even cleaner water to be used in the final rinse of the product.

With its new waste treatment system, International Seal, FNGP is able to eliminate sewer discharge while still producing the same quality product as before. The system offers an ideal solution for manufacturers and local POTWs alike.

