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Frequently Asked Questions Ultrafilters

1. What happens if paint flow to an UF Element is allowed to stop?

The velocity of the ED paint slows to a stop, and then the solids begin to fall out of suspension. It is difficult to recover the UF membrane once the ED paint solids begin to accumulate inside the UF Element. The ED paint solids do two things, the first is that some of the membrane is blinded; secondly, the paint velocity in this region is reduced and so a larger area of the membrane suffers from poor permeate production.

2. What happens if I only have one pre-filter vessel before the UF Rack?

This pre-filter needs to be changed when the pressure differential exceeds the recommended value. In order to change the filter, flow must be stopped, which means the UF Elements are starved from ED paint during the change out time interval. In this situation, follow the manufacturer's instructions to first purge the UF Elements of ED paint and then flush with buffered DI water. Take care to always to turn a paint valve handle slowly, otherwise damage can occur to the delicate UF membranes.

3. Should I bypass a single bag vessel during the bag filter change out?

No. Follow the instructions from the manufacturer of the ED paint system when changing the bag filters.

4. What is the typical life of a spiral-wound Element?

The typical life is about one year. In some cases an element can last up to 1½ years.

5. What happens if I change just one UF Element and all the other positions have old elements?

The new Element has the least amount of resistance to flow. The old elements have higher resistance to flow of ED paint. The new Element will allow a greater than normal amount of flow since the ED paint has a harder time going into the old elements. The permeate rate of the new Element will be very high at first. However, the new Element will suffer a short life due to the great volume of ED paint that goes through it.

6. Should I just change one or two Elements at a time?

No. For the longest life of all elements, change all the Elements at the same time. If the ages of the elements are similar, then they will have similar resistance to the flow of ED paint and work better as a team.

7. What does the term 'flux rate' mean?

Flux rate refers to the amount of permeate an UF Element can produce. The normal terms are either liters/minute or gallons/minute.

8. What is a UF Element?

Generally, a UF Element is the portion that can be removed and disposed of when the permeate rate can no longer be recovered by cleaning.

9. Does back flushing a UF improve the permeate rate?

Back flushing means to reverse the direction of the flow of the ED paint. This practice has not been very popular. It requires more initial expense to add the piping, valves and automatic controls. Not many customers have been able to justify the extra expense.

10. Does a UF Element require a pre-filter?

Spiral-wound UF Elements do require paint pre-filter. The filter size is typically 25 to 50 microns and sometimes even as small as 10 microns. Hollow fiber and tubular version typically do not require a pre-filter.

11. What are the major factors that affect permeate flux rate?

Percent solids of the ED paint, ED paint temperature, and velocity of ED paint past the face of the membrane.

12. What is MWC?

MWC is an acronym for Molecular Weight Cutoff. Some membrane manufacturer use this term to describe the typical opening size in the membrane. Values of 150,000 and smaller are typical for UF paint.

13. What are the major types of UF elements?

The different types are: tubular, hollow fiber, spiral, and plate & frame.

14. When ready to replace UF elements with newer (low VOC type) cathodic ED paints, is it best to replace several elements at a time?

This may not be a good plan as the new UF elements has less resistance to flow and thus take on a larger percentage than the older one they replaced. In most cases, this increased flow of ED paint with result in a shorter than normal life.

15. Is it always a good practice to open the ED throttling valves (to the UF elements) full wide open?

Some customers report longer life if the ED paint flow is throttled back so the initial permeate rate is 110% of break-in permeate rate. For example, if the typical permeate rate for an 8" UF element on cathodic ED paint is 2.5 gpm, then limit the initial permeate rate to 2.5 gpm plus 10%, or about 2.8 gpm.