

CWRS: Caustic Water Recovery System

Frequently Asked Questions



Q. *What is a membrane and how does it work?*

A. A membrane is a semi-permeable barrier which lets only caustic, water, and other small molecules pass through. Protein, fat, soils, bacteria and suspended matter are rejected by the membrane.

Q. *Does the strength of recovered caustic change?*

A. The strength of recovered caustic is unchanged during processing. If CIP waste has 3.5% caustic, recovered solution will also have 3.5% caustic.

Q. *How long does the membrane last?*

A. This membrane is made out of ceramic material. The lifetime expectancy depends on the feed being processed. It may vary from 1 to 5 years.

Q. *How often do we have to clean the system?*

A. Cleaning the membrane is done only when the membrane shows low permeate flow rate. Normally, a weekly CIP cleaning is enough to maintain the performance. However, water flushing is necessary if the system will be idle for more than 4 hours. Chemicals such as chlorinated caustic and nitric acid are used for cleaning the system.

Q. *How high of a caustic strength can this membrane handle?*

A. This membrane system can handle up to 10% caustic.

Q. *What about the temperature?*

A. The membrane system can handle up to 190°F. It is normally operated at temperatures from 160 to 180°F where CIP cleaning systems normally operate.

Q. *How much caustic does this system recover?*

A. Theoretically, the membrane system can recover more than 95%. However, the higher the solid content in the waste stream, the lower the permeate flow rate will be. After recovering 80 to 95% of caustic, the solids content of the concentrate builds up and reduces the production rate.

Q. *Is it easy to operate?*

A. Yes. The system can be fully automated with controls that monitor pressures, temperatures, flow rates and tank levels and can alert production personnel when an alarm condition occurs. Minimum supervision is required.



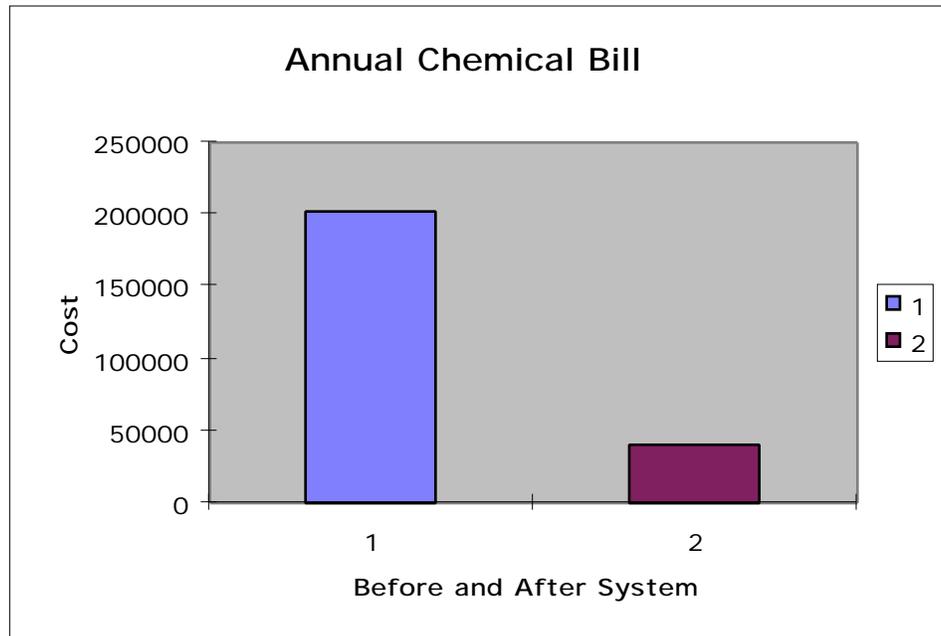
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Q. *How much can I save by using the FES caustic recovery system?*

A. The system will reduce more than 70% of the chemical spending in both caustic cleaner and pH adjusting chemicals. Following is a chart showing the chemical bills before and after the caustic recovery system. Other savings come from reduction in wastewater produced, fresh water usage, and heat energy.



Q. *What do I do with the remaining 5 to 20% of concentrated waste?*

A. After recovering the 80 to 95% of caustic, the waste stream will be concentrated and high in solids such as proteins and fats. The concentrated waste stream is a valuable byproduct and can be sold as inedible product/animal feed.

Q. *What is the operating cost?*

A. Very small. The system uses electricity for the feed pump and a recirculating pump, however there are some heating and cooling requirements for heat exchangers in the system. The total power requirement will depend upon the model and the capacity of the system.

Q. *What is the typical maintenance schedule on the caustic recovery system?*

A. The maintenance of the system depends on the caustic strength and the impurities in the feed/spent caustic. Typically, the system may need a CIP cleaning once per week. The membrane gaskets will typically last for six months. The pump's seal will generally last a year. Life of the membrane varies from 1 to 5 years depending on the caustic strength and how abrasive the feed is.

For answers to other questions or for additional information please call or fax our office at the numbers listed below.



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