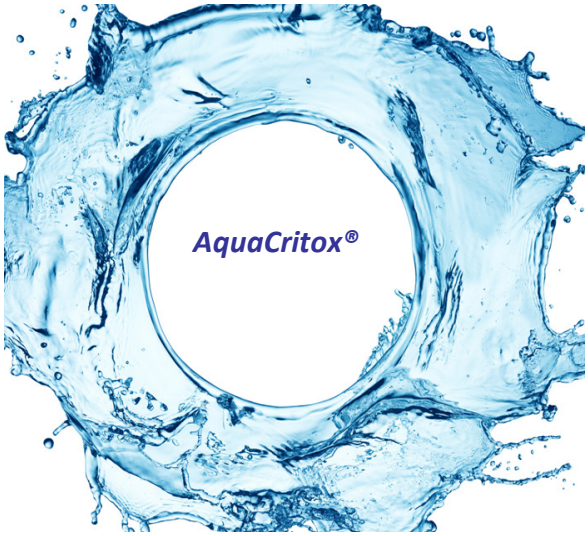


ALUM SLUDGE

From waste to valuable product

With AquaCritox® recovery process

Alum and iron salts are generally used to promote coagulation in the production of clean drinking water which results in the generation of significant quantities of drinking water sludge. This sludge shown in figure 1 is comprised of metal hydroxide (aluminium or iron) together with organic material that has been removed from the treated water. The Alum sludge is typically mechanically dewatered and is currently treated as a waste which cannot be processed through traditional sewage sludge disposal methods and in many cases goes to landfill. This additional cost burden of collection, transport and disposal cost is common to all water treatment plants.

The AquaCritox® unit from SCFI can turn this environmental and cost issue into a sustainable and economically sound solution. Using the patented AquaCritox® process it is possible to recover the coagulant as pure aluminium or iron hydroxide which can be reconstituted to generate new coagulant for reuse.

The process is safe, sustainable and cost effective.

Figure 1. Alum sludge

Water works sludge

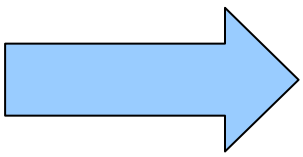


Figure 2. Water & "gel"

Recovered aluminium hydroxide

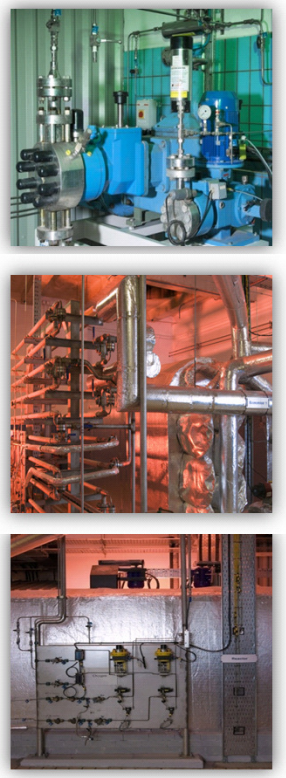


Figure 3 – AquaCritox® plant

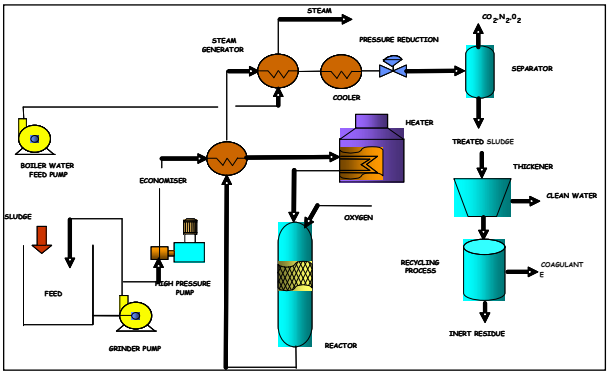
Benefits of the AquaCritox® solution

- *Facilitates the full recovery of coagulant*
- *Reduces operating costs*
- *Eliminates landfill*
- *Reduces transport movements*
- *No hazardous emissions*
- *Small plant footprint*
- *Complete destruction of organic matter*
- *Improved carbon footprint*

The AquaCritox process for the first time in relation to Alum sludge allows for the spent coagulant to be fully recycled in a sustainable way.

The AquaCritox® process is a supercritical water oxidation process in which sludge is heated to between 374^{o} C and 500^{o}C at 221bar pressure in the presence of oxygen. All of the organic matter is completely oxidized in an exothermic reaction producing carbon dioxide, water and aluminium hydroxide/ iron hydroxide as a water insoluble precipitate.

The pure precipitated coagulant hydroxide is readily dewatered and can be reacted with sulphuric acid to form fresh aluminium or iron sulphate that is capable of meeting with BS EN 878. An example of the post AquaCritox® solution is given in figure 2 and has the consistency of a gel. The water is clean and safe to discharge and the Aluminium/Iron Hydroxide gel is easily moved to the sulphuric acid stage which can be either on site or at another location.



The AquaCritox® product for Alum sludge recovery is available in three sizes.

AquaCritox®	*Feed t/ hr*	*TPA*
A10	*0.66 t/hr*	*5,000*
A30	*2.00 t/ hr*	*15,000*
A100	*6.66 t/ hr*	*50,000*

For further information please contact us by email at info@scfi.eu where we would be happy to discuss your requirements and work with you on the prompt turnaround of mass and energy balances supported by capital and economic models on a confidential basis.