

FOOD & BEVERAGE PROCESSING



Our **food & beverage processing solutions** use membrane separation, food grade media, ion exchange resins, and absorbent resins to save costs for our clients.



Food Processing Solutions

Fluence has over 30 years of experience in the custom design of treatment plants, using ion exchange resins and absorbent resins for food processing solutions. Our cost-effective and innovative solutions are ideal for wine, fruit juice, and whey demineralization, and for cane sugar decolorizing. Fluence is also a global leader in the design and implementation of 4SMB (Four Simulated Moving Bed) chromatography plants for the purification of fruit juices and the production of organic fructose without the use of chemical reagents.

Demineralization of Fruit Juices

Our demineralization processes offer superior performance and several advantages, including reduced dilution of treated juices and high-quality end product, with very low reagent consumption.

Decolorizing

Fluence builds plants for polyphenol content reduction and for complete decolorizing of grape must, sugar cane, and other fruit juices. This results in a perfect control of the color of the juice and natural colorant recovery (enocyanin), without the use of alcohol. This also results in the reduction of the organic load, which is not readily biodegradable in wastewater treatment plants.

Tartaric Stabilization

Fluence performs tartaric stabilization of wine through ion exchange resins, which reduces investment and operating costs compared to the standard process (cold stabilization). We have designed and built various installations, providing the same benefits as our demineralization lines: reduced dilution of the treated juice, high-quality products and low consumption of regenerants, and maximum use of the resin exchange capacity. We pay particular attention to the optimization of the organoleptic properties of the end product, carefully choosing suitable materials and resins.



Recovery of Organic Acids and Natural Colors of Fruit

Fluence recovers organic acids and natural colors in fruit juices, such as malic acid, tartaric acid, and enocyanin. We eliminate almost all demineralization costs, increase overall plant efficiency, reduce energy consumption, and lower the organic load in the wastewater. Fluence is also able to reduce the required plant dimensions, reducing energy consumption and the quantity of waste-activated sludge produced.



Debittering

The absorbent resins used for recovery of the natural colorants are used to remove the bitter taste of some types of citrus fruits. There are many applications of ion exchange and adsorbent resins, and the technology is continuously developing. We work with the most trusted resin production and distribution companies, including Resindion-Mitsubishi, Bayer, and Purolite, to solve our customers' problems.

4SMB Chromatography

4SMB chromatography is a technique originally used for the purification of molasses in sugar refineries, which only uses water for separating the sugars from the salts. Fluence also applies this technology to fruit concentrates and whey. This technique is based on a physical process, and, therefore, does not use chemical reagents, such as acids and soda, because the resins used do not need to be regenerated. Another advantage of SMB chromatography is the reduction of the saline and contaminating load in the wastewater. 4SMB chromatography can also be used to separate sugars like glucose, sucrose, and fructose from DCM (Demineralized Concentrated Must), or from concentrated apple juice.

Food Treatment: Pilot Plants

As with all new technologies, feasibility, dependability, and cost effectiveness must be verified. Therefore, Fluence offers pilot plants to customers, which are equivalent, in terms of equipment and process, to industrial plants. This allows the customer to realize the advantages of the technology and the potential limitations of the process proposed. It also enables our team to further optimize the plant design according to the actual customer requirements verified in the field.

Whey demineralization

In addition to proteins, whey contains lactose and mineral salts, which can be recovered and converted into more valuable substances, such as baby food ingredients. The demineralization process, which uses ionic exchange resins, reduces the mineral load by 90%, preserving lactose and proteins. Crystallized and dried demineralized whey is used widely as a raw material for food products and in the pharmaceutical industry.



Project: Recovery and decolorizing of organic acids

An historical wine producer in South Italy wanted to recover and decolorize organic acids, in particular malic acid and tartaric acid. Fluence's floating bed counter current regeneration columns suited this need. As opposed to the traditional co-current flow, this technology permits the recovery of pure solution and reduces the consumption of regenerants. Each cycle recovers 95% of organic acids. To produce a concentrate of organic acids easily marketable, Fluence designed a decolorizing plant before concentration. This solution allows the client to recover organic acid suitable for sale.



About Fluence

Formed in 2017 following the consolidation of independent water treatment solution providers Emefcy and RWL Water, Fluence Corporation was established with the vision of becoming the leading global provider of fast-to-deploy decentralized and packaged water, wastewater and reuse treatment solutions.

Fluence has experience in operating in over 70 countries worldwide and employs more than 300 highly trained water professionals around the globe. Fluence provides local, sustainable treatment and reuse solutions while empowering businesses and communities

worldwide to make the most of their water resources.

Fluence offers an integrated range of services across the complete water cycle, from early stage evaluation, through design and delivery to ongoing support and optimization of water related assets. With core operations in North America, South America, the Middle East and Europe, one of Fluence's main focuses is now expanding into the vast market in China for rural wastewater treatment. Fluence is a public company traded in the Australian stock exchange (FLC).