

CASE STUDY



Low - Chemical Solution for Juice Demineralization

At an Italian organic foods plant, Fluence installed 4SMB chromatography for a low chemical, economical solution

- **Location:** Vicenza, Italy
- **Customer:** Italian Fruit Juice Company
- **Solutions:** Juice Demineralization Plant
- **Technology:** 4SMB Chromatography

Background

An Italian fruit juice company produces a range of high-quality organic products in response to consumer demand for genuine goods with nutritional value.

In keeping with current quality organic

production requirements, the company was looking for an innovative chemical free method of producing a purified organic apple juice to be used as a sweetener or added to fruit preparations.

Solution

Fluence proposed using 4-column simulated moving bed (4SMB) chromatography technology, a semi-continuous chromatographic process that uses chromatographic resin as a separation medium. The proposed plant has the following characteristics:

- **Starting material:** Concentrated apple juice @ 70°bx
- **Feed flow:** 600 L/h of concentrated juice
- **Sugar production:** 3 m³/h @ 21°bx
- **Salts production:** 8 m³/h
- **Ash abatement:** 92%

Results

Compared to a conventional ion-exchange (IEX) system, 4SMB chromatographic separation has several advantages:

It reduces the initial salinity by 92%.

- It does not need any chemical reagent.
- Wastewater only contains juice salts.
- Operating costs are 33% lower than conventional resin technology.