

Optimizing beverage production



Subject		Page
Efficient beverage production with Alfa Laval Iso-Mix rotary jet mixers		1 / 2
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The Iso-Mix rotary jet mixing technology is employed worldwide in optimization of beverage production. Applications include; soft drinks, RTD's, beer/lemonade mix drinks, mixing of juice with or without fibres, smoothies, colas, functional, new age and health drinks, and for carbonation and deaeration of water and finished beverages.

Beyond optimized performance an advantage of the rotary jet mixers is a more sanitary design compared to traditional systems. Systems using impeller mixers, where a rotating shaft penetrates the tank wall, are often fitted with a mechanical seal and a gearbox, both of which might be leaking.

With the rotary jet mixer technology, shaft, seal and gearbox are eliminated. As an added benefit, baffles are not required. It offers faster mixing times, lower investment costs, ATEX compliance and premium CIP performance, resulting in a more efficient and cost beneficial production.

From raw water to finished drink **- Optimization in multiple applications**

1. Fast dissolution of sugar and crystals

Sugar and other crystals, e.g. citric acid or artificial sweeteners, are dissolved fast and efficiently. The sweeping jets generated by the rotary jet mixer prevent crystals from settling, and the hydraulic shear generated in the nozzles of the rotary jet mixers results in fast dissolution of the crystals.

2. Efficient deaeration

Oxygen can be removed from liquids to levels as low as 5 ppb. Oxygen is removed by adding N₂ or CO₂ in the recirculation loop. Small bubbles are generated by the rotary jet mixer and distributed uniformly in the tank, thereby stripping oxygen from the liquid. An existing tank, e.g. a buffer tank, can be converted into a deaeration system by installing a rotary jet mixer in combination with a recirculation loop with N₂ or CO₂ supply. Investment costs for an Alfa Laval rotary jet mixer based system is substantially lower than for traditional solutions.

3. Quick and easy powder mixing

Stabilizers and thickeners such as xanthan, guar gum, pectin and other difficult-to-dissolve hydrophobic powders are quickly dissolved by employing a combination of a powder mixer in the recirculation loop and a rotary jet mixer. Fish eyes and partly wetted crust on the tank wall become history.

4. Efficient ingredient mixing without baffles

The rotary jet mixer is efficient for mixing of ingredients including colour, aroma and concentrated juice. In the beverage industry baffles are preferably avoided due to sanitary design requirements. However, it is difficult to achieve good mixing using rotating stirrers without introducing baffles. With the rotary jet mixer system however, baffles are not required and good mixing without foam formation or air entrainment is achieved.

5. Low cost carbonation

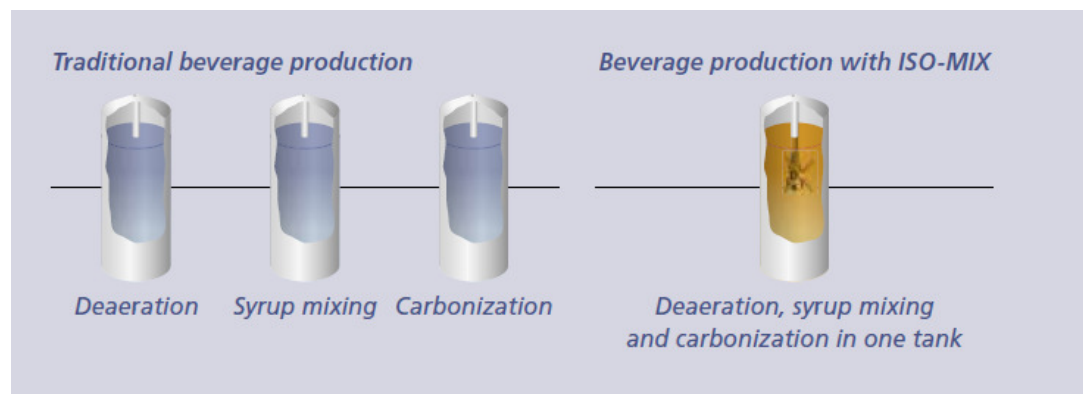
The rotary jet mixer can be used to carbonize the soft drink. Carbon dioxide is added in the pressurized recirculation loop where the solubility due to the increased pressure is high, leading to overall efficiencies close to 100%. Carbonation level is easily achieved by controlling the tank pressure or flow of carbon dioxide. The system offers a simple, flexible and low investment solution for carbonation, which can be combined with other unit operations.

One mixer for several different operations

For decades, the process of beverage production has required several individual processing steps. The innovative and patented rotary jet mixing technology offers considerable simplification of the entire beverage production process.

A single mixer can be used for several different operations in the same tank for instance for deaeration, mixing, and/or carbonation (see illustration below).

Furthermore, the rotary jet mixer is an efficient CIP unit. The installation of the rotary jet mixing technology leads to faster, simpler, and cheaper beverage production compared to traditional designs and processing methods. The Alfa Laval Iso-Mix rotary jet mixer is easy to install, whether in new or existing plants.



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