Precise and accurate beverage blending

Tetra Alblend™
In science, “precise” means you get very little deviation, while “accurate” means you’re on target. If you can get both precision and accuracy in beverage processing, it means no more waste – and big-time savings....

**Precision and accuracy mean savings**

By switching from batch production to in-line production, you can achieve major cuts in investment costs, operating costs, product losses, human error and environmental impact. And you get outstanding product quality and food safety into the bargain.

**On the cutting edge of change**

The world of beverage production is changing rapidly. Apart from traditional juices, nectars and still drinks, today’s consumers are looking for diversity: health drinks, functional and exotic ingredients, juices with pulp, protein drinks, energy drinks, sports drinks, enhanced water and beverages with alternative sweeteners. Consumers are also demanding less preservatives, which requires heat treatment of the product and high hygiene in equipment design.

Batch production solutions can simply no longer give you the kind of precision, accuracy, flexibility and production efficiency you need to stay competitive and grow your business.

**Tetra Alblend** is optimized for high-precision, highly accurate, continuous in-line blending of beverages. It utilizes Automatic Mass Compensation (AMC) technology to ensure uniform product quality, outstanding savings on premixes and concentrates, as well as uncompromising food safety. Tetra Alblend uses advanced, user-friendly software to assure high product quality, regardless of variations in the incoming premix or concentrate. Instruments register the ingredient and transmit the data to the PLC, which instantly calculates the product composition in a mass balance equation. Using AMC technology, the PLC then transmits signals that regulate the flow of the premix or concentrate, as required, to a high level of precision and accuracy.

This is all done in-line, and continuously. It gives you the flexibility to achieve high throughput and quick product change-overs.

**Cutting your losses**

When blending beverage ingredients – some of them quite costly – it is essential to stay as close to your recipe target values as possible. Thanks to AMC technology, Tetra Alblend delivers unique, state-of-the-art precision and accuracy that keep you right on target, all the time.

In-line production also means a smaller footprint – fewer or smaller tanks and pipes, less other equipment, even a smaller building. It also means less energy to heat and cool, and less water, energy and detergent for CIP.

What about product losses? We can customize a line solution that includes Tetra Alblend and Tetra Therm Aseptic Drink units that eliminate all the mix phases and feature unique product recovery functions. As a result, you can eliminate your product losses and achieve full utilization of your valuable beverage ingredients!

**Uncompromising food safety**

Tetra Alblend is CE-marked and built on the EHEDG (European Hygienic Engineering Design Group) guidelines. Tetra Alblend can also be equipped with mix-proof valves to further enhance CIP safety.

**Reduced environmental load**

Thanks to its high precision and accuracy, and its product recovery functions, Tetra Alblend means more efficient utilization of ingredients, saving natural resources. And less product waste means reduced load on the sewage system. Moreover, by using less equipment and piping, there is less to clean, which means significantly less water and detergent consumption. So helping to protect the environment doesn’t cost you money, it saves you money!
Select your performance level

Tetra Alblend can be customized to balance your investment with your production needs and give you the performance level with greatest value and profitability for you.

Tetra Alblend matches your recipes and makes blending simple! Tetra Alblend can be configured for precise, accurate in-line blending of just about any recipe. It easily stores up to 100 recipes as standard, but line extensions are no problem if you want to add new recipes later on.

No matter how demanding your products are, we enable you to take full control of the blending process, from the premix and concentrate tanks to the finished product tank or filling machine, with instant in-line ingredient compensation during product changes. And with an absolute minimum of product loss and downtime, as well as maximum flexibility and efficiency.

Pays for itself – quickly

Thanks to AMC technology, Tetra Alblend enables you to keep your beverage production very close to the target values for the ingredients at all times. This means uniform product quality that consumers can count on. It also means tremendous savings for you – every single day you’re running.

Tetra Alblend also helps you cut capital costs by eliminating the need for intermediate storage tanks and associated pumps, valves and piping – and the need to clean them. You can also minimize labour costs by reducing manual sampling, lab analyses and tank adjustments to a minimum. Moreover, you can cut product losses, thanks to the highly accurate, precise controls of product specs, even with complex recipes.

Additionally, you get significantly increased uptime – practically non-stop – as blending is done in-line, automatically, with extremely accurate and precise automated controls. You thus get better utilization of your downstream equipment as well, together with the opportunity to optimize and harmonize your entire production line.

All this means an exceptionally fast return on your investment – often about one year! After that, it’s all money in the bank…

Future-proof

Part of our promise of flexibility is the fact that Tetra Alblend has a modular design that enables future upgrades to meet your future needs. Moreover, the unit is prepared for full line integration, including compatibility with advanced automation systems that can give you complete line or plant automation for maximum efficiency, accuracy and precision, as well as report generation and full traceability:

The benefits of Tetra Alblend
continuous in-line blending

Exceptional precision and accuracy
– thanks to consistently running very close to target values
– means big savings thanks to better utilization of premixes and concentrate
– means consistent product quality

Cuts product losses
– thanks to triple recovery:
  • Production concentrate recovery
  • Production start recovery
  • Production reject recovery

Increase capacity and save time
– thanks to fast product changes
– thanks to far fewer manual procedures
– fewer batches to prepare

Different models
– different performance levels

Setpoint value of final orange juice (°Bx) 10.9625 11.00
Daily orange concentrate consumption (kg) 63 751 63 969
Yearly orange concentrate consumption (kg) 22 312 903 22 389 230
Yearly orange concentrate cost (€) 33 469 355 33 583 846
Savings per year (€) 114 491

Batch versus continuous

Setpoint value of final orange juice (°Bx) 10.9625 11.05
Daily orange concentrate consumption (kg) 63 751 64 260
Yearly orange concentrate consumption (kg) 22 312 903 22 491 000
Yearly orange concentrate cost (€) 33 469 355 33 736 500
Savings per year (€) 267 145

(Production data: lowest customer acceptance level °Bx 10.95, orange juice concentrate cost (€/kg) 1.5, filling capacity (l/h) 18 000, running hours/day 20, running days/year 350)

Improved environmental performance

Compared to conventional batch production, in-line continuous blending offers reduced environmental impact. In addition to reduced concentrate consumption, water consumption is reduced, as well as energy consumption and associated CO2 emissions. This is mainly because it requires less cleaning thanks to the reduced number and/or size of tanks.

Environmental indicators (1,000 litres of product)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity, kWh</td>
<td>10.1</td>
<td>-20%*</td>
</tr>
<tr>
<td>Carbon footprint, kg CO₂</td>
<td>1.1</td>
<td>-20%*</td>
</tr>
<tr>
<td>Water for cleaning, m³</td>
<td>148</td>
<td>-50%*</td>
</tr>
</tbody>
</table>

* Tetra Alblend benefits versus batch
(Production data: 1.5, filling capacity (l/h) 15 000, running hours/day 20, running days/year 300, product changes 2-3 times/day, CO₂ emissions based on electricity production generating 0.5 kg CO₂/kWh (world average), and heat production from natural gas (for heating of cleaning solution).)

Tetra Alblend for advanced high-precision production
- Proven in hundreds of installations
- Can handle up to 5 streams
- Precision 0.0075
- Accuracy ±0.03 Brix
- Typical blending range 4 000-100 000 l/h
- Particularly suitable for beverages using costly premixes and concentrates, e.g. carbonated soft drinks

Tetra Alblend for accurate high-efficiency production
- Reduced capital cost
- Can handle up to 3 streams
- Accuracy ±0.05 Brix
- Typical blending range 4 000-34 000 l/h
- Ideal for efficient production of most juices, nectars and still drinks

Typical blending range 4 000-100 000 l/h
- Reduced capital cost
- Can handle up to 5 streams
- Precision 0.0075
- Accuracy ±0.03 Brix
- Typical blending range 4 000-100 000 l/h
- Particularly suitable for beverages using costly premixes and concentrates, e.g. carbonated soft drinks

Enhanced water 4 000-60000 l/h.
- Reduced capital cost
- Can handle up to 3 streams
- Precision 0.0075
- Accuracy ±0.03 Brix
- Typical blending range 4 000-34 000 l/h
- Ideal for efficient production of most juices, nectars and still drinks

Carbon footprint, kg CO₂ 1.1 -20%*
Guaranteed performance

Tetra Alblend units represent our cutting-edge blending technology and come with written, validated performance guarantees. Moreover, Tetra Alblend may be incorporated as key unit in our customized production solutions.

In fact, Tetra Pak can customize a production solution for you that will enable you to run different beverages with different specifications simultaneously in parallel lines, or in succession with rapid product changes in the same line.

Once we have a clear understanding of your needs, we customize your production solution. The best of these solutions are our Tetra Vertenso best-practice solutions for beverage production, i.e. those incorporating the best of our processing technology and applied automation know-how, e.g. Tetra Alblend.

Wherever you are

Tetra Alblend units are constantly improving performance and functionality for beverage producers on every continent worldwide. We also have a service organization with a strong local presence – also worldwide – to provide technical support and readily available spare parts to ensure that your unit keeps performing well. In other words, we’re talking about a well-proven, tested and validated unit – a true performer that delivers uniform product quality, year after year.

This applies to your entire Tetra Vertenso best-practice solution for beverage production and is not just something we say. We back our words with a validated guarantee on the performance parameters that are of importance to you, such as accuracy, precision, product loss and running time. And we honour our guarantees.

Unique recovery means savings

With Tetra Alblend and its unique product recovery systems, you can eliminate product loss and achieve maximum utilization of costly raw materials. This means big-time savings all the time you run!

The innovations behind Tetra Alblend that enable you to eliminate product loss comprises five key areas:

- Precise, accurate dosing of the premix/concentrate for maximum utilization of raw materials
- The production concentrate recovery system recovers concentrate between the premix tanks and Tetra Alblend unit.

Each solution is designed according to the type and number of streams in your beverage recipes, as well as your production and investment criteria. A wide range of instruments and regulating components are also available.

Recovery features

<table>
<thead>
<tr>
<th>Reduced product loss</th>
<th>Reduced operational cost</th>
<th>Reduced COD load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production start recovery</td>
<td>100%</td>
<td>9 069</td>
</tr>
<tr>
<td>Production reject recovery</td>
<td>100%</td>
<td>82 336</td>
</tr>
<tr>
<td>Production concentrate recovery</td>
<td>Min 66%</td>
<td>14 025</td>
</tr>
<tr>
<td>Product return recovery</td>
<td>Min 66%</td>
<td>14 176</td>
</tr>
<tr>
<td>Summary</td>
<td></td>
<td>119 606</td>
</tr>
</tbody>
</table>

(Production data: orange juice concentrate cost (€/l) 1.7, filling capacity (l/h) 20 000, running hours/day 20, running days/year 250, product changes 2/day, unexpected stops 1/day, distance from TA Drink to filler (m) 25, distance from premix to Tetra Alblend (m) 25, COD: Chemical Oxygen Demand).

“Tetra Vertenso best-practice solutions for beverage production can eliminate product loss! Just imagine how much that can save you!”
Enabling superior beverage production – with guaranteed performance

Tetra Pak delivers performance by focusing on customized production solutions, not merely individual machines and components.

Tetra Vertenso is the name for our best-practice solutions for beverage production, i.e. those production solutions that start with a clear understanding of each customer’s needs and that incorporate the best of our processing technology and applied automation know-how.

Tetra Vertenso best-practice solutions for beverage production enable beverage producers to achieve outstanding performance over the lifecycle in terms of consistent product quality, uncompromising food safety and greater efficiency with minimal environmental impact for long-term sustainable growth.

Superior performance – we guarantee it!