Bag-in-box filling equipment for dairy products
- Packaging and aseptic filling
What we’ll cover today

- Agenda

- What is bag-in-box (BIB)?
- Where are the bags sourced?
- Advantages of BIB solutions
- Basics of BIB filler functionality
- Aseptic fillers portfolio
- Non-aseptic fillers portfolio
What is bag-in-box?

- Sustainable packaging option for beverages and liquid foods
- Simple way to store, package, transport or serve beverages and/or liquid foods in flexible multi-material bags
- A big business forecast to grow at 6.5% CAGR to USD $5.5 billion by 2027

Source: Grand View Research, February 2020
What is bag-in-box?
- US market growth

U.S. bag-in-box container market size, by application, 2016–2027 (in millions of USD)

Source: Grand View Research
What is bag-in-box?

- Filling product into a protective bag
- Combination of flexible packaging materials and/or solutions
- Pre-made bags that are uncapped, filled, and recapped
Which bags can be used?

- Basic barrier
- Standard barrier
- High barrier
- Very-high barrier
Advantages of the bag-in-box

Specifically engineered for every product
Advantages of the bag-in-box

Warehouse space-savings
Advantages of the bag-in-box

Recyclable
Advantages of the bag-in-box

No oxygen pick-up
Sustainable packaging
Best-in-class carbon footprint
- Flexible, sustainability packaging

- **8x lower carbon footprint**
  Compared to glass bottles

- **More than 85% less plastic**
  Bag-in-box uses less plastic than rigid plastic containers

- **Reduced transport emissions**
  Substantial savings in logistics costs and CO₂ emissions

- **Transport storage savings**
  One truck carrying BIBs transports the same volumes as 7 trucks carrying 75 cl bottles
Best-in-class carbon footprint
- Flexible, sustainability packaging

75+% corrugated cardboard
Fully recyclable, renewable and biodegradable

Recyclable
Minimizes waste or litter in landfills, oceans, forests and coastlines

Minimal water and energy use
Compared to other packaging types
Future of flexible packaging

Alfa Laval's four Business Principles; 
**Social, Business integrity, Environment**
and **Transparency**, describe the way we must act within society whilst achieving our business goals.

By aspiring to our Business Principles, we can find many opportunities to contribute to a more sustainable future and deliver better everyday conditions for people.
Future of flexible packaging

- A future with far less plastic

Minimize plastic content of packaging

- Reduce the plastic content of packaging
- Switch to mono-material recyclable packaging
- Identify new sustainable packaging materials
- Explore the use of innovative and sustainable materials
Aseptic fillers
## Aseptic fillers
- pH value impacts filling and sterilization

<table>
<thead>
<tr>
<th>Products</th>
<th>pH value</th>
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<tr>
<td>Lemons, lemon juice, lime juice</td>
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<tr>
<td>Vinegar, plums</td>
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<td>Pineapple, strawberries, orange juice, cider, grapefruit</td>
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<tr>
<td>Cherries, apples, apple juice</td>
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<td>Banana, guava, coconut</td>
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</table>
Aseptic fillers
- Steam sterilization vs. steam and disinfectant

For **high acid pH values**, use only steam for cap sterilization

For **low acid pH values**, use disinfectant and steam for cap sterilization
Aseptic fillers

- Video
Aseptic fillers

Applications

Some dairy applications

- Liquids such as UHT milk
- Dense products, such as ice cream mix
- Cream 20–40%
# Fillers portfolio

- Complete Alfa Laval portfolio of aseptic fillers

## Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Pilot Aseptic Filler PTAF</th>
<th>Compact Aseptic Filler CAF</th>
<th>Thousand-litre Aseptic Filler TAF</th>
<th>High Speed Low Acid Filler HS-LA</th>
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1) US Food and Drug Administration
2) European Hygienic Engineering & Design Group
Pilot aseptic filler (PTAF)

- Compact aseptic filler
- For 3–20 litre sterile flexible bags
- For 200-litre sterile flexible bags
- For larger volume bags with trunk
- With different filling valves
Alfa Laval Pilot aseptic filler

- Aseptic fillers

- Small pilot unit with all the features of a full-size aseptic filler
- Competitively priced, lab-scale unit
- Special FDA version available
Alfa Laval Compact aseptic filler

- Aseptic fillers

Compact aseptic filler (CAF)

- Heavy-duty industrial filler customized to customer requirements
- Tested, pre-assembled, plug-and-play filling system
- Designed for filling of a wide range of food and beverage products
- Fills product into appropriate containers under aseptic conditions
Features and benefits

- Automatic bag filler (ABF) system
- All bag/container size in a single model
- Viscous fluids up to 1,200 Cp at 20°C
- Competitive pricing in case of multi-formats lines (3/20L and 200L/1000L on the same line)
Alfa Laval Compact aseptic filler

- Video
High speed low acid (HS-LA) aseptic filler

- Designed to meet market demand for faster and better performing machines, with special focus on high and low acid products
- New concept of motion with brushless electric servo motor technology that controls and adjusts all movements inside and outside the aseptic area with an extremely high degree of accuracy
Alfa Laval High speed low acid aseptic filler

- Aseptic fillers

- Unique filler is completely driven by servo motors
- New clamp design, no changeover from high to low spout
- No dripping system
- Hand-off CIP and SIP phases
- Innovative system to store and recall product recipes
- Integrated P&ID on machine HMI
Alfa Laval High speed low acid aseptic filler

- Video
Non-aesthetic fillers
## Fillers portfolio

- Complete Alfa Laval range of non-aseptic fillers

<table>
<thead>
<tr>
<th></th>
<th>Piccolo Filler</th>
<th>Beer-in-box Filler</th>
<th>Grande Filler</th>
<th>Clean Filler</th>
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Non-aseptic fillers

Applications

Typical non-aseptic applications

• When product is pasteurized and then hot-filled
• When product is stable at ambient temperature
• When product has been filled and is kept in a cold chain
Alfa Laval Piccolo filler

- Non-aseptic fillers

Alfa Laval Piccolo filler

- Simple, compact, universal system
- Low maintenance
- Able to fill a wide range of products and bags
Alfa Laval Piccolo filler
- Non-aseptic fillers

- Entry point for BIB production
- Vacuum system before filling
- Nitrogen puffing after filling
- Plug-and-play
- Possibility to run 200 litres
- Various options to meet every needs
Alfa Laval Piccolo filler

- Video
Alfa Laval Grande filler

- Non-aseptic fillers

Alfa Laval Grande filler

- A high-speed filling machine for web bags applicable for a wide range of caps
- For applications, like the wine industry, that require high speed and complete automation
Alfa Laval Grande filler
- Non-aseptic fillers

- Plug-and-play system
- Vacuum system before filling
- Nitrogen puffing after filling
- HEPA filter on top for high air overpressure
- Different options to meet every requirement
Alfa Laval Grande filler

Video
Alfa Laval Combibox

- Non-aseptic fillers

Combibox cartoning machine

• Compact cartonning system for the food and beverage industries

• Most suitable solution for packing bags into bag-in-box cartons from the packaging line
Alfa Laval Combibox
- Non-aseptic fillers

- Complete mono-block with carton former, autoloading and carton closer
- Possibility to run American and French cartons
- Possibility to close cartons with either tape or hot melt glue
- Different hopper design to run from 2- to 25-litre cartons
- Option for stainless steel support frame
Thank you for your attention
Any further questions

Please feel free to contact:

**Jacopo Montali**  
Global Technology Manager,  
Alfa Laval Food & Beverages

jacopo.montali@alfalaval.com  
+39 342 955 39 67

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