

Total Solutions from

Semi Bulk Systems, Inc.



XSTREAM

Dairy Beverage Drink Mixes

Are these drinkable foods more efficiently produced in a Dairy or Beverage process plant?

The challenges of processing dairy products in a beverage plant cannot be ignored. Traditional beverage mix stations do not provide the technology to properly address dairy powders and thickeners.

Semi-Bulk Systems has years of experience and proven technology to address process requirements for the broad range of dairy powders, thickeners and expanding range of ingredients used in non-carbonated beverages.

Ambient Processing

The Vacucam® Mix Technology totally addresses the challenges of high speed processing of dairy powders and functionalizing ingredients to provide rapid mixing and total hydration required for this rapidly expanding line of drinkable foods. Of equal or greater importance is the capability to offer ambient or cold process to mix milk powders and thickeners.

By eliminating energy to heat the process and energy to cool down the process, the result is a much higher capacity throughput, and a more efficient and higher quality process with substantial cost savings.

In addition, this process offers between a 15-30% yield improvement in the use of functionalizing ingredients. The bottom line for a typical single beverage bottling line is a potential savings of \$2MM+/year from thermal energy reduction and yield improvement.



PROCESS XSTREAMLININGSM

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VACUCAM® EJECTOR MIXER:

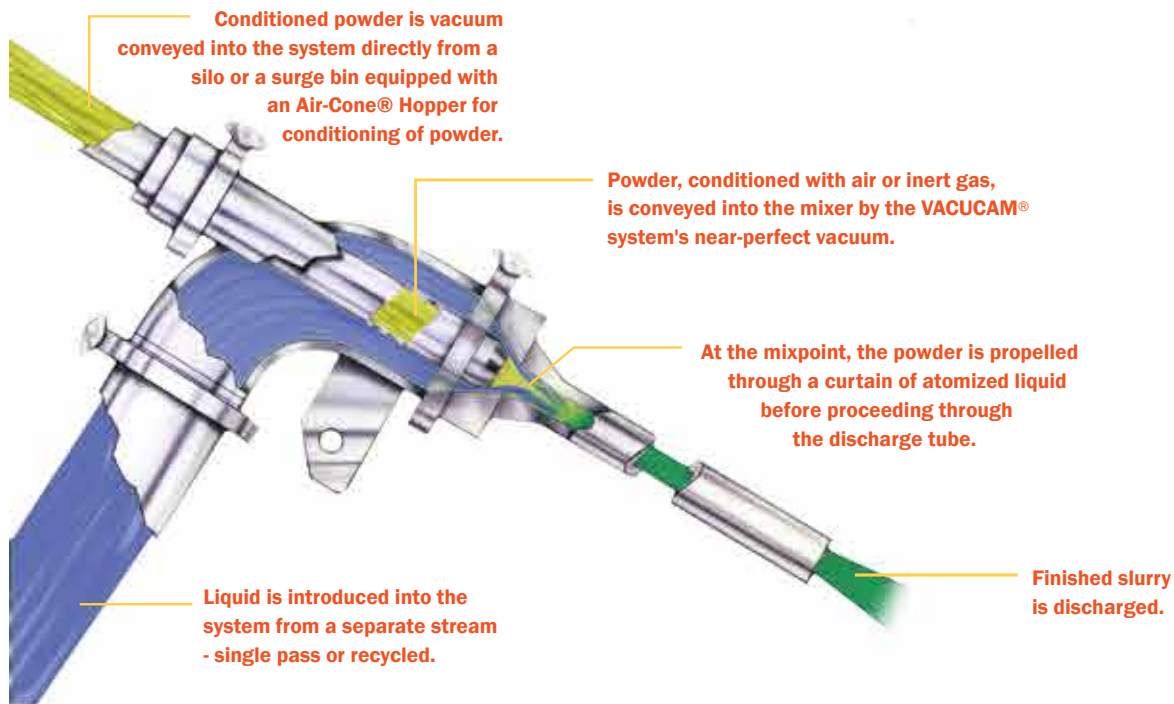


The VACUCAM® Ejector Mixer is the most effective system available for conveying, wetting and dispersing powders into liquids.

Here's how it works.

CONDITIONED POWDER IS CONVEYED INTO THE MIXER BY A NEAR-PERFECT vacuum, which is created when pressurized fluid is forced through the Ejector Mixer's unique, patented annular nozzle. The fluid is discharged as a high-velocity, hollow jet into which the powder is drawn.

The VACUCAM® system achieves high-speed, instantaneous and complete wetting by bringing together conditioned powder and highly atomized liquid from two separate streams, incorporating particles of liquid with particles of powder. The reactive surface areas of both the powder and the liquid are maximized before intimate contact is actually made. The result is consistently uniform, superior wetting without the agglomeration or "clumping" usually associated with conventional mixing methods.



Semi-Bulk Systems integrates the VACUCAM® Ejector Mixer into modular, skidded process units to provide a *TOTAL SOLUTION* for various Dairy Beverage Mix Processes

PROCESS BENEFITS OF THE VACUCAM® EJECTOR MIXER MODULAR PROCESSES FOR PRODUCTION OF LIQUID FOODS

Addressing the Challenges in handling small and large volumes of dry ingredients and producing very efficient mixes and dispersions of dairy and beverage mixesdelivering a Total Solution.

- **Ambient Processing of milk powders and thickeners**
 - Cold dispersion and complete hydration of milk powders and functionalizing ingredients.
 - Greatly reduced energy –no steam required for heated process or chill water for removing process heat—large energy and \$\$ savings.
- **Functionalize gums and stabilizers without shear or agglomerates- greatly improved yield w/ ingredient reduction.**
- **No damage to fat globules in milk or cream**
- **Full CIP capability**
- **Separation of dry powders from wet process areas**
- **Clean, dust free operation**
- **Meets 3A/USDA standards**
- **High capacity production for delivery to batch or multi-stream blending**
- **Improved Operator Safety, Ergonomics, Environmental & GMP**
- **Low/No maintenance – pump is only moving part**
- **Automation – reduced batch time and labor—greater accuracy and repeatability.**



The Vacucam® Dairy Mix Brochure describes modular process options relating to different capacity requirement, logistical challenges and ingredient mix challenges where Semi-Bulk Systems provides the most efficient technology addressing the Total Solution for the various Dairy process requirements.

<http://semi-bulk.com/download/SBS-DAIRYMix.pdf>

The Vacucam® Beverage Mix Brochure describes modular process options relating to capacity requirements, logistical challenges and ingredient mix challenges where Semi-Bulk Systems provides the most efficient technology addressing the Total Solution for various Beverage process requirements.

http://semi-bulk.com/download/SBS_AllBeverageMix.pdf



Semi-Bulk Systems has introduced process improvements to meet the Challenges of mixing typical dairy powder ingredients as well as current and new beverage ingredients. The introduction for new Liquid Food production may be incorporated into updated dairy facilities along with beverage bottling lines, or they may be added to beverage production facilities with facility updates to accommodate dairy production environment. Regardless of the environment selected, Semi-Bulk Systems can provide the most efficient powder/liquid mixing process.

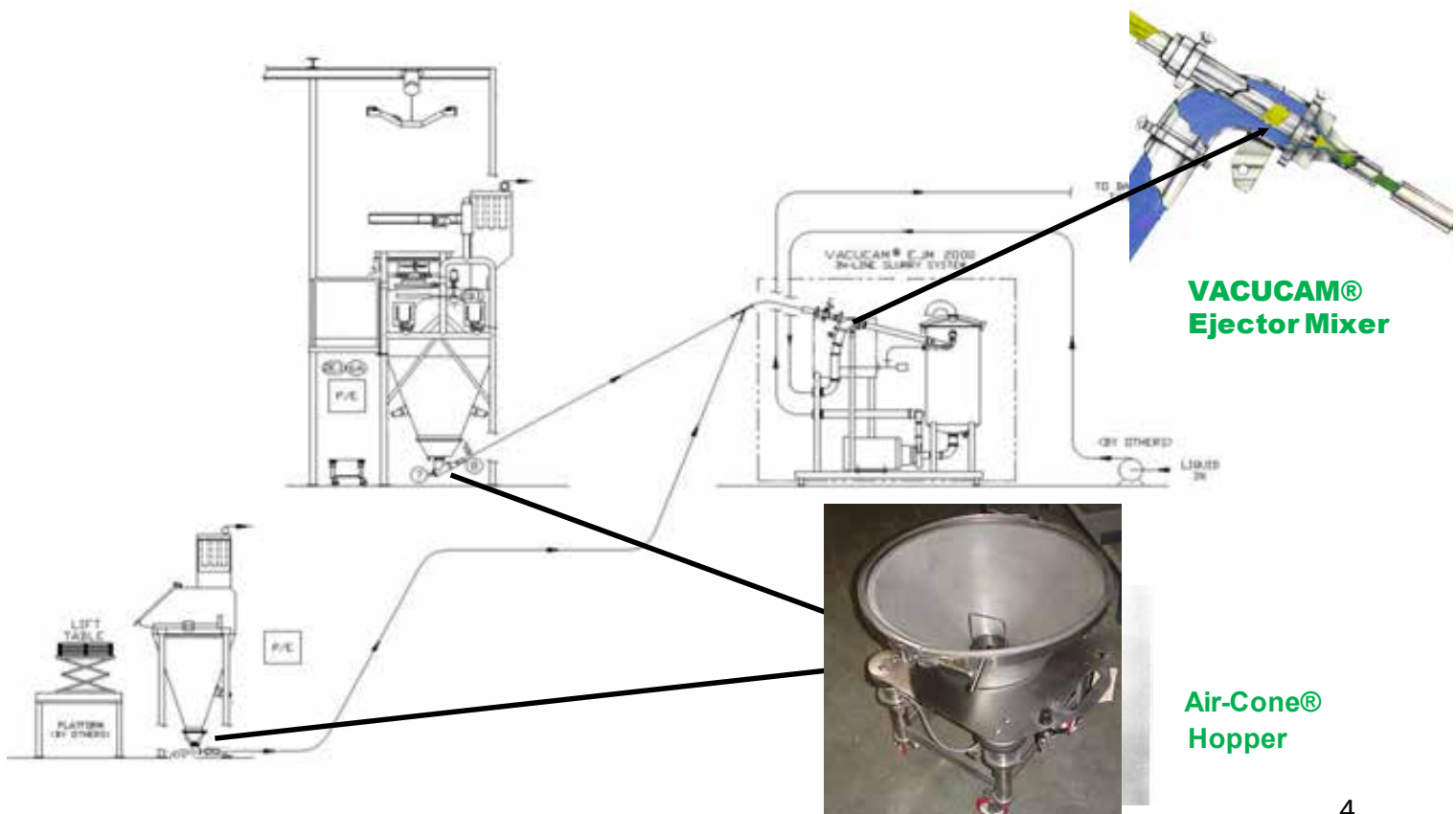
Process Selection greatly depends on the ingredients to be incorporated into the Dairy-Beverage product and their packaging source; the capacity requirements for bottling; the available logistics for processing; batch or multi-stream blending; and other plant requirements for multiple process requirements.

Semi-Bulk Systems will review the total project with the customer to fully understand the process requirements and propose a Total Solution incorporating one or more of its modular process skids to provide *the most efficient and sustainable* process.

Example processes may include a typical in-line Vacucam® Mixing system or a typical Dynamic Beverage Batching Station-DBBS.

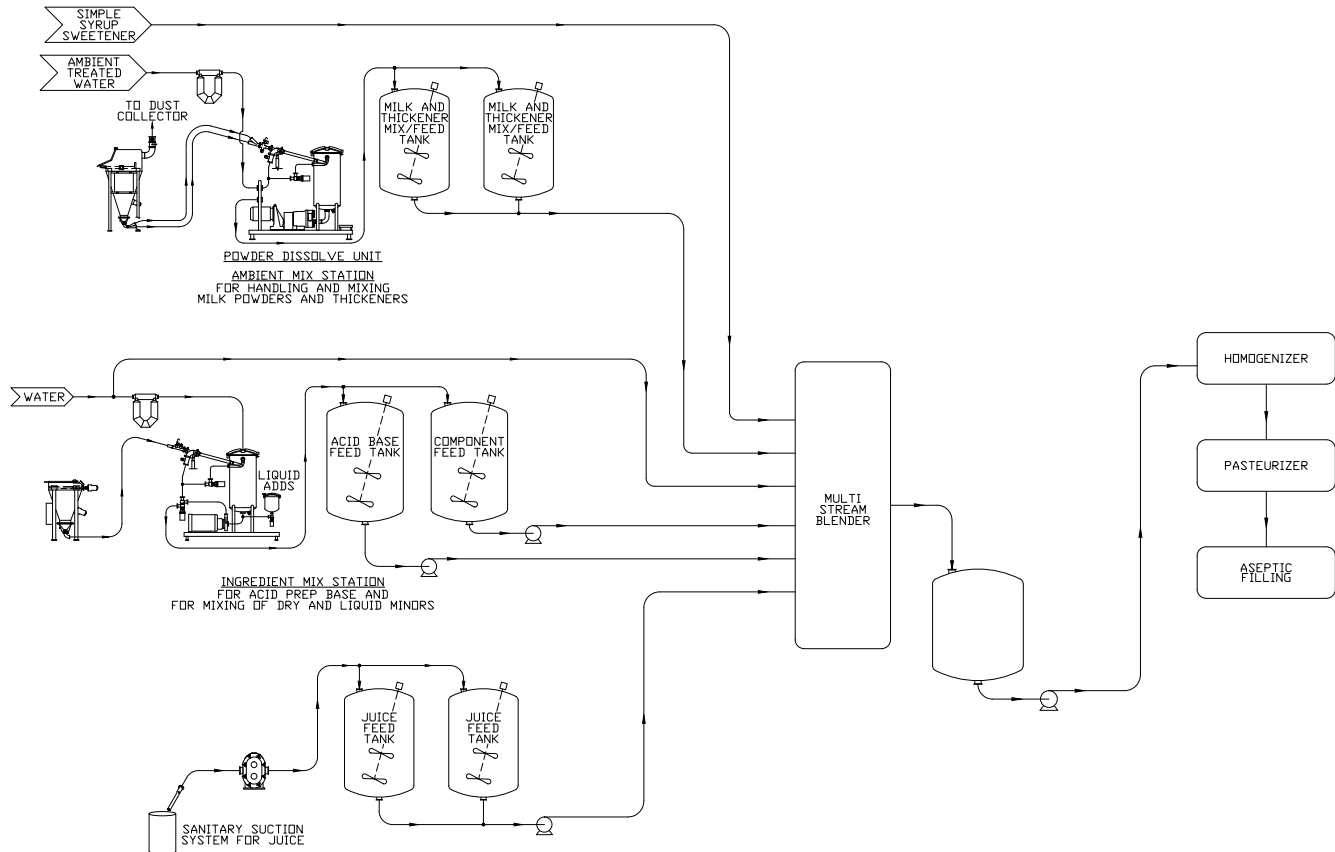
Total Dry Mix Automated Process

- Single In-Line process to deliver to selected mix tanks
- Separate dry room from wet area
- Bulk bag handling of major ingredients. Paper bag handling of minor ingredients
- Multiple bulk bag hoppers for automated powder delivery of all dry ingredients



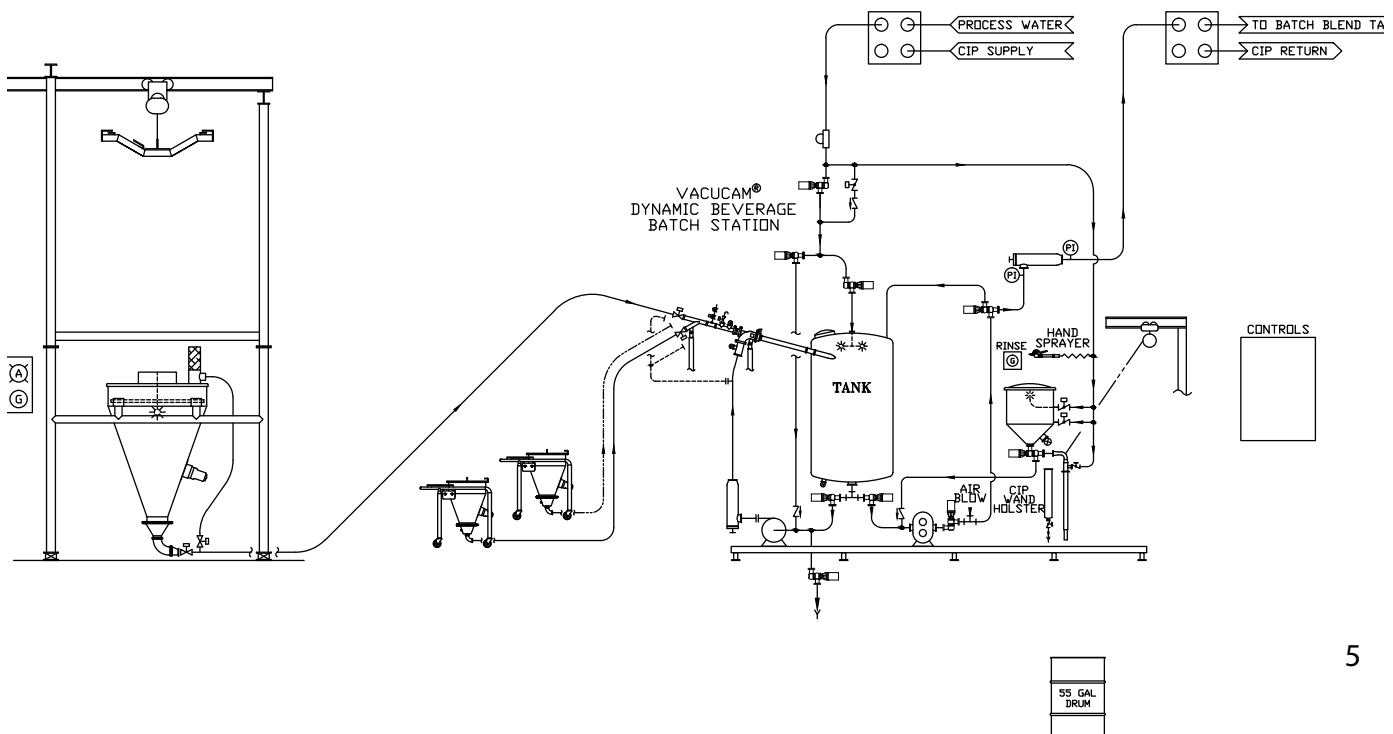
Ambient Process - Single Pass for Dairy Powders and Thickeners

Feeding Multi-Stream Blenders



DYNAMIC BEVERAGE BATCHING STATION

DBBS – Dynamic Beverage Batching Station with continuous transfer of mix.
Processes: Single Pass; batch and transfer, continuous mix and transfer



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Get XStream Results

***With Several Standard Module Process Options,
for Dairy, Beverage, and Sugar Liquefaction***

***Learn more at www.Semi-Bulk.com
or call (800) 732-8769
to speak to a representative***

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