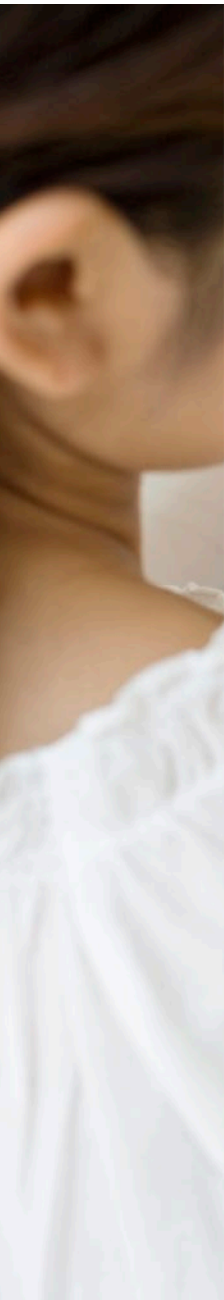


Infant Formula Processing

Infants Depend on You, You can Depend on Us





As global leader in the food & beverage, energy, and industrial markets worldwide, SPX FLOW helps customers improve the performance and profitability of their manufacturing operations and processes with solutions enriched by in-depth application expertise and a solid customer service and spare parts network.

› **Anhydro®**

› **APV®**

› **Waukesha
Cherry-Burrell®**

› **Seital
Separation®**

SPX FLOW offers complete Infant Formula process solutions as part of a comprehensive dairy program ranging from raw milk reception to powder recombination, mixing, evaporation, and spray drying.

NICE TO KNOW

Infant Formula Classification:

- Infant Formula (IF) 0 to 6 months
- Follow-Up Formula (FU) 6 to 16 months
- Growing-Up Milk (GUM) 1 to 3+ years

Is your Infant Formula process flexible and safe?

SOLUTIONS FOR INDIVIDUAL NEEDS

Infant Formula manufacturers are facing constant innovation challenges based on increasingly complex product compositions. Moreover, legal regulations are becoming more stringent than ever before. To produce formulations efficiently you need an expert who can provide the right process and product expertise. A long line of world-leading Infant Formula producers trust SPX FLOW to engineer and supply superior equipment and plant configurations that are individually configured to their needs.

WE OFFER

- Reception, mixing, and blending technologies for the full range of baby foods
- Unique fluid handling and homogenization technologies
- Superior gentle heat treatment systems and extensive experience in aseptic processing
- Evaporation and spray drying processes delivering optimal product quality
- Global installation expertise in Infant Formula Processing lines and turnkey projects
- Development and test facilities for our customers

WE ASSURE

- High quality Infant Formula
- In-depth analysis of formulations
- Energy recovery where possible
- Safe and efficient powder processing
- Hygienic equipment design
- Scalable plant design for future expansion
- Hygienic zoning concept in layouts

Overall SPX FLOW focuses on process safety, efficiency, and total cost of ownership for our customers.



Trials & Training

Reception

Wet Processing

Oil Blending

Evaporation

Infusion & Homogenization

Drying

Automation & Safety Systems



APPLICATION & PRODUCT SERVICES

The SPX FLOW Innovation Centres contain a number of small-scale, full-scale and semi-industrial scale plants, providing for high confidence of production repeatability. All tests and trials can take place in a sealed room, providing full privacy and confidentiality. Our Innovation Centres leverage the extensive industry experience and expertise of a full time staff of food technologists, process engineers, and production engineers to contribute actively to development, testing and application of SPX FLOW equipment, systems and processing lines.

TECHNICAL & LABORATORY FACILITIES

SPX FLOW Innovation Centres have the facilities to test and demonstrate solutions to all kinds of production scenarios. The Centres can also participate in troubleshooting, helping customer's operations be more flexible, cutting energy costs, increasing production volumes or meeting new environmental regulations without sacrificing the quality of the final product.

Our laboratory performs chemical, microbiological and functional analyses which are carried out in accordance with international standards.

TRAINING & RENTAL EQUIPMENT

Training courses

SPX FLOW arrange courses for customers throughout the year. A tailored training programme is often developed and structured around practical trials in our process halls. The theoretical lessons take place in one of our conference rooms.

Rental Equipment

Customers running trials on their own premises can choose to rent whatever new plant and equipment they need to complete their testing. Rentals cover both pilot and full production-scale plant equipment and can be agreed with a purchase option after successfully completed trials.





MILK RECEPTION & DEAERATION SYSTEM

Milk reception includes intake of milk and other liquid ingredients for further processing. The primary function of this step is to eliminate air, measure quantity, and secure cooling before storage and further processing occurs. SPX FLOW has supplied air eliminators, deaerators, and deodorizing equipment to the dairy industry for more than 45 years, and has installed over a thousand deaeration plants worldwide.



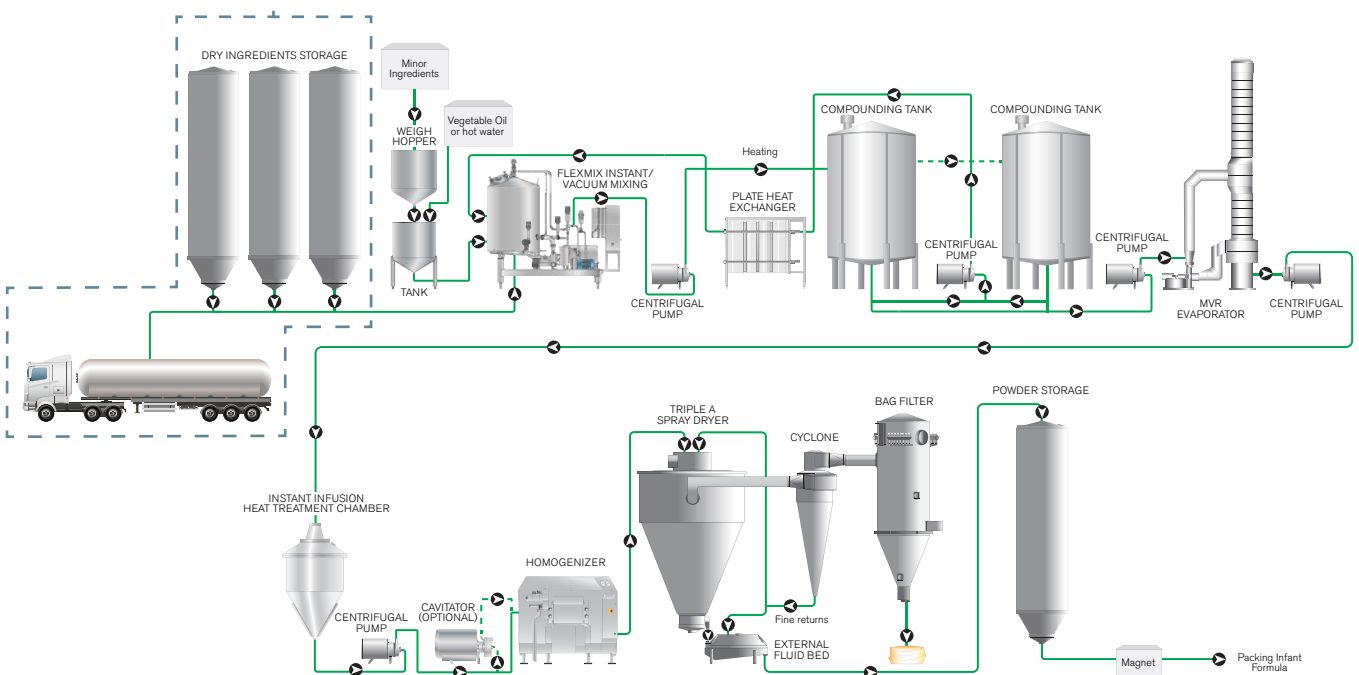
HEAT EXCHANGERS / CHILLERS

Hygienic heat exchanger applications offer a unique set of solutions that comply with stringent cleanability, accessibility, and product integrity demands. SPX FLOW's portfolio is known for its high quality and value added features. Pasteurisation is intended to create only minimal chemical, physical, and organoleptic changes in products to be kept in cold storage.



VALVES & MANIFOLDS

SPX FLOW valves, manifolds, and skidded systems save processors time and money and reduce lead times. Manifolds and systems are engineered, built and tested by SPX FLOW. Solenoid panels can be included in pre-wired manifolds.





MIXING

Infant Formula is a mixture of various powders, liquids and other nutritional ingredients. The Flex-Mix Instant provides an optimum choice to ensure a thoroughly-mixed and homogeneous solution. Designed to work under vacuum for batch or inline mixing over one or more hydration tanks, the Flex-Mix ensures gentle and continuous mixing in closed systems with vacuum powder transport.



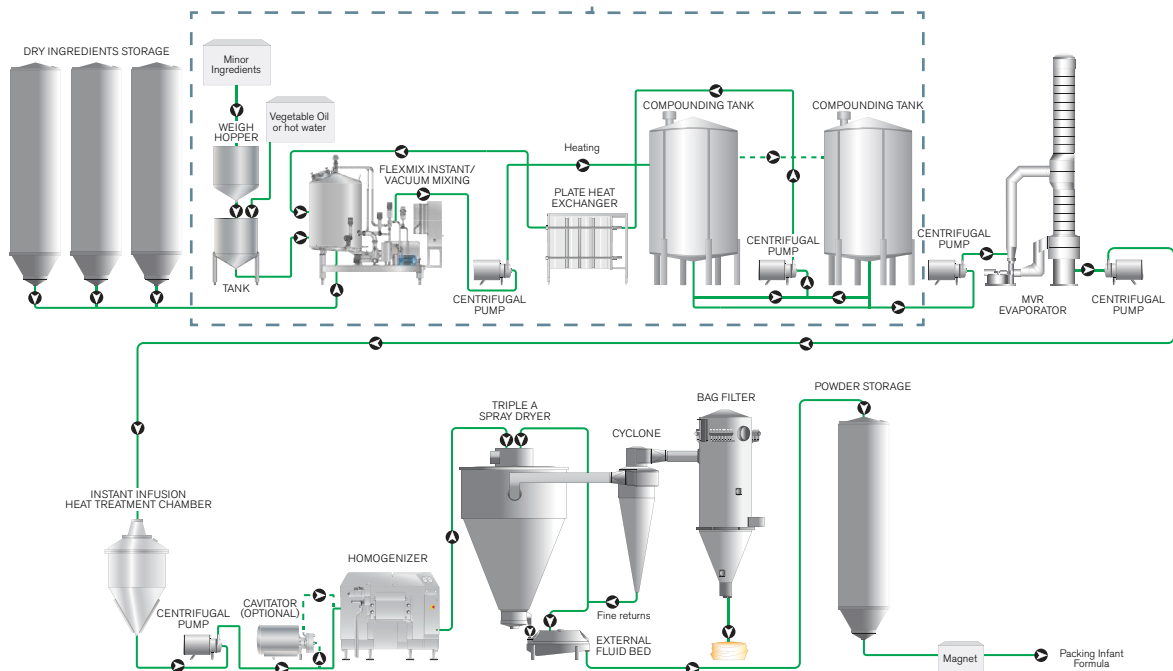
HYGIENIC PUMPS

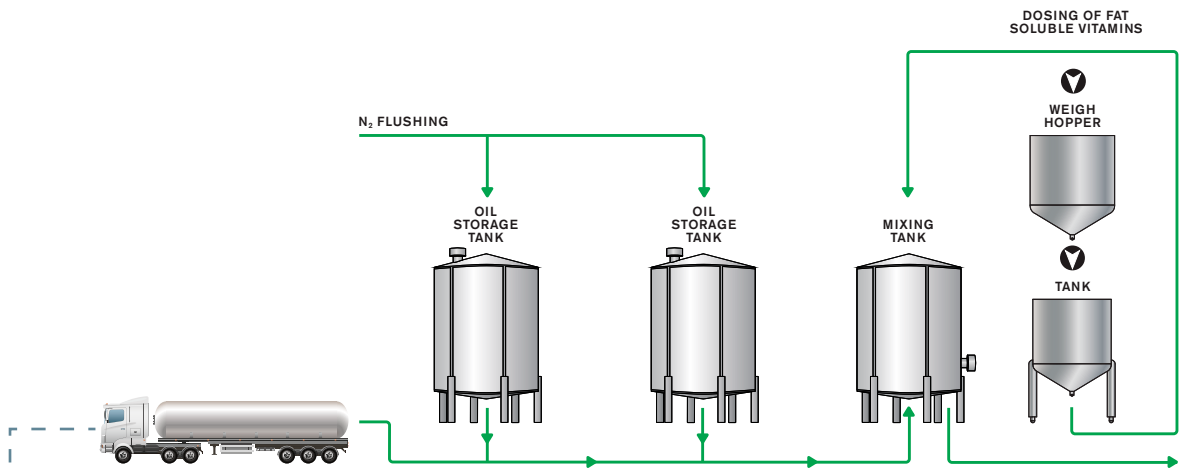
W+ centrifugal pumps are designed to achieve total cost optimization with high efficiency and product dependability. They are installed in countless process facilities around the world and are an ideal choice for low viscous fluid transfer applications.



CIP SYSTEMS

CIP-units are used for efficient cleaning of pipeline systems, tanks, and processing plants. Precision-engineered CIP Kitchen and standard CIP circuit configuration are essential in modern Infant Formula plants. The dosing of concentrated chemicals, heating profiles, cleaning time and flow of CIP liquids are controlled by high-end automation.

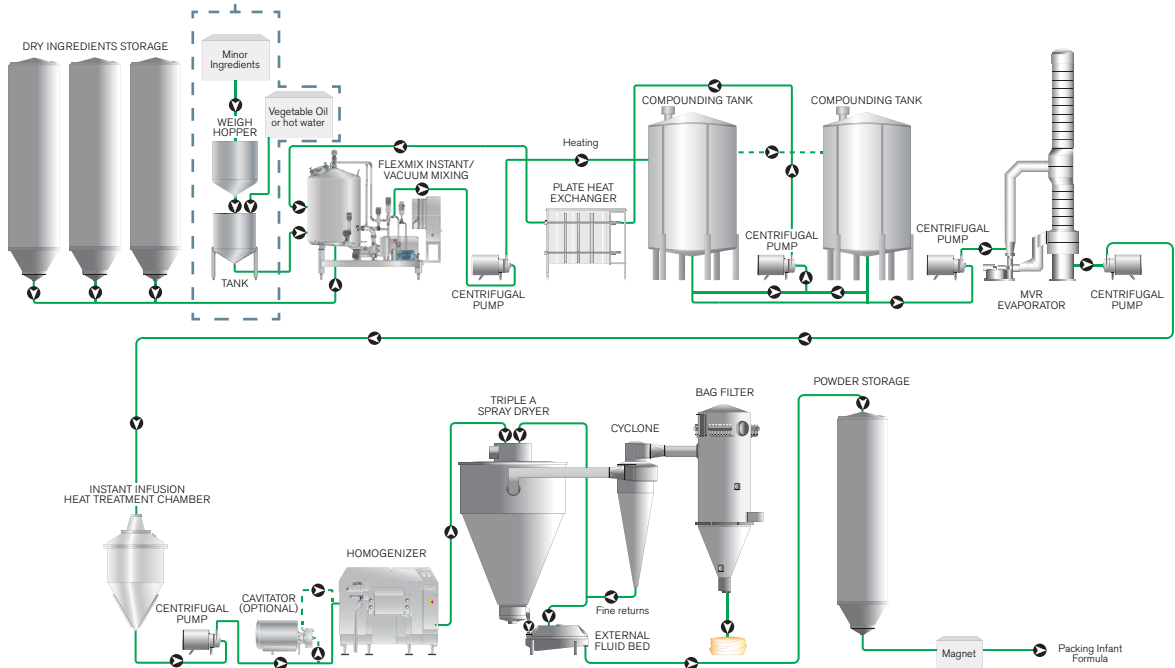




OIL BLENDING

Infant Formula recipes require receiving and blending of various types of oils and fats. Correct reception and storage of oils are necessary in order to preserve microbial quality as well as physicochemical properties. SPX FLOW offers tanker storage solutions under a nitrogen blanket to avoid oxidation.

The oil mixing system features heat traced pipelines for oils with low melting points. A typical oil blending section also comprises vitamin mixing, oil blending, and precision-controlled metered dosing systems.



THERMAL VAPOUR RECOMPRESSION EVAPORATOR



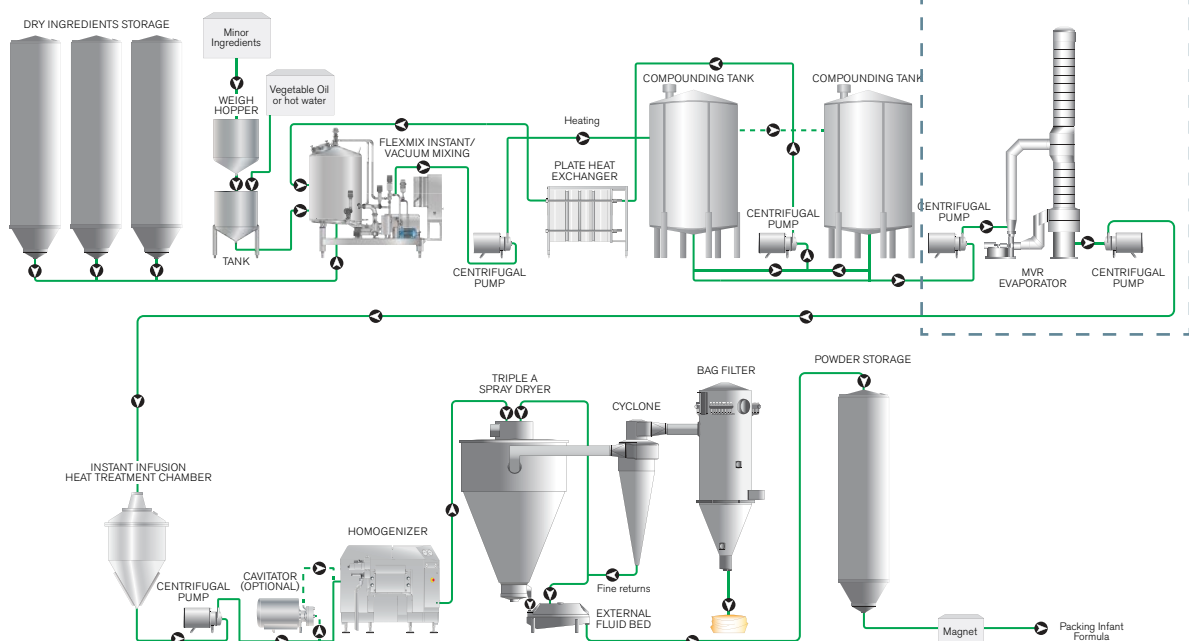
MECHANICAL VAPOUR RECOMPRESSION EVAPORATOR

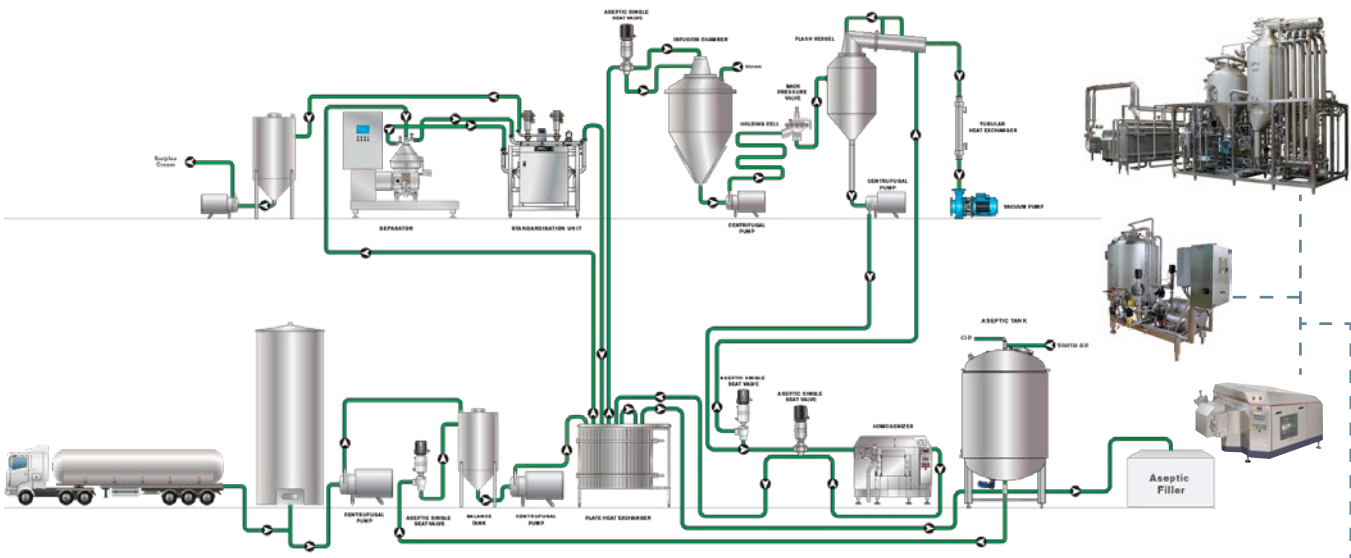


ANHYDRO EVAPORATION PROCESS

Selection of a proper type of heat treatment system and evaporator for Infant Formula applications is essential for the final product quality and operating costs. The primary evaporation design for Infant Formula is a falling film tube evaporator with a MVR (Mechanical) or TVR (Thermal) Vapour Recompression system or a combination of both. The important points for selection of the design are :

- Effective bacterial elimination rates for Infant Formula with the use of direct culinary steam injection
- Minimum heat impact on sensitive ingredients due to short residence time
- High-efficiency heat transfer
- Integrated vapour separators for improved milk solids separation from vapours
- Mechanical Vapour Recompression (MVR) – low steam consumption
- Thermal Vapour Recompression (TVR) – low power consumption





INSTANT INFUSION HEAT TREATMENT

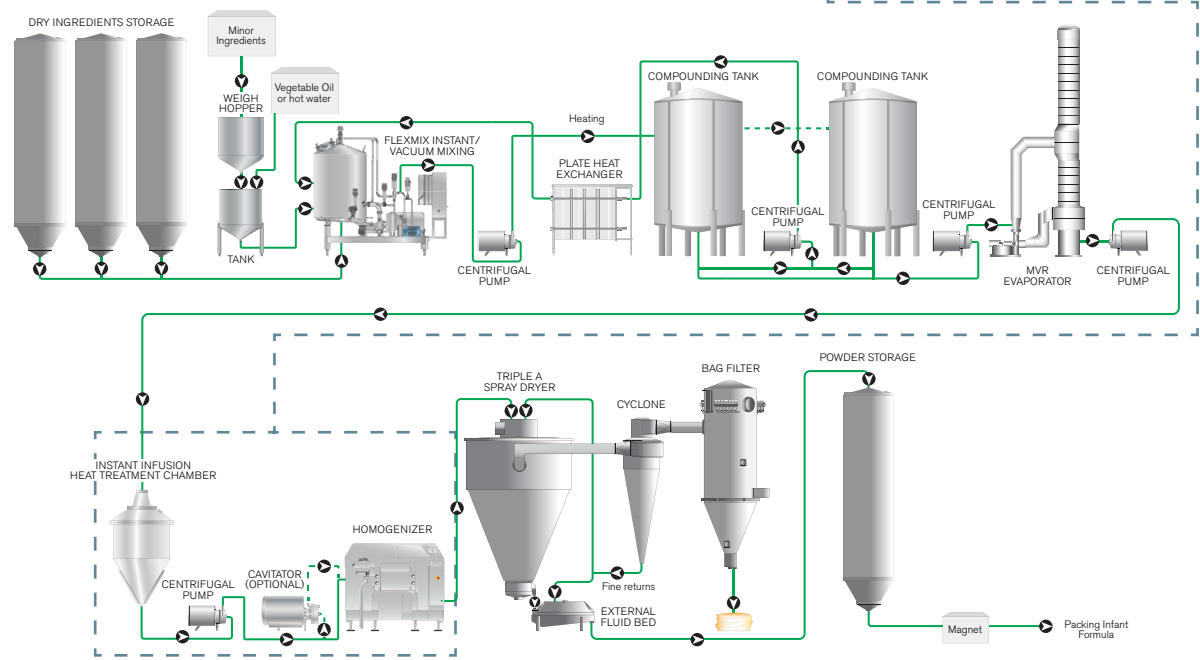
Direct culinary steam infusion systems for superior product quality are now available for high solids concentrates. These innovative heat treatment systems can be readily integrated into your process. The Infusion plant is designed for very fast heat treatment and ultra short, precision-controlled holding time.

ADVANTAGES

- Gentle and accurate heating
- Superior product quality
- Efficient bacteria spore kill rate, reduction of vitamin losses
- Precision-controlled holding time down to 0.09 sec
- Long production runs and low fouling rates
- Flexible and cost effective solutions.

HIGH PRESSURE PUMP AND HOMOGENIZER

The high percentage of blended oils and fats in Infant Formula means it is important to homogenize the ingredients at high pressure before sending to a nozzle atomizer. The SPX FLOW homogenizer has a large selection of standard and special options, is service friendly, and easy to operate.





THE ANHYDRO TRIPLE-A® SPRAY DRYER

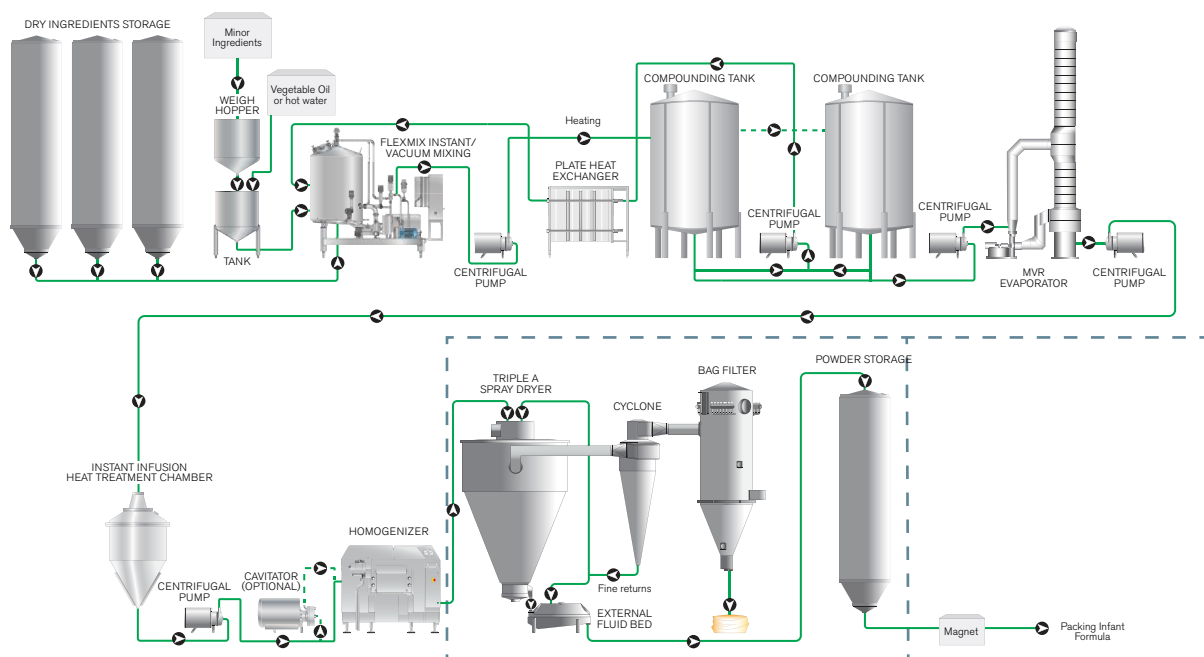
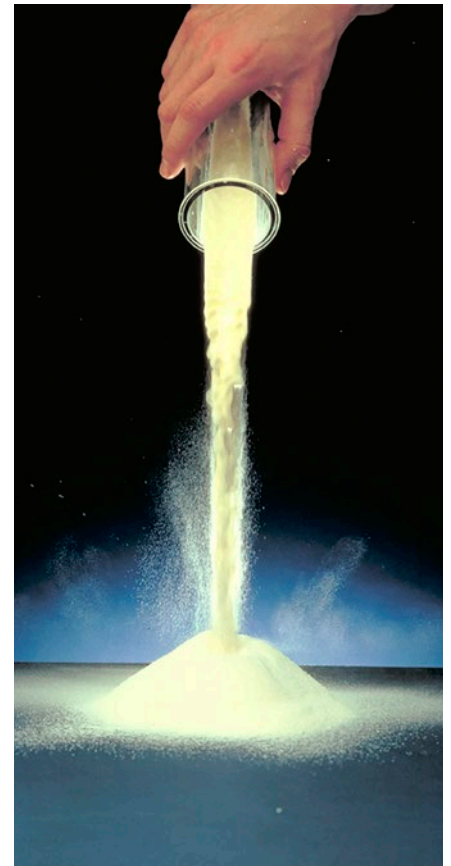
FEATURES

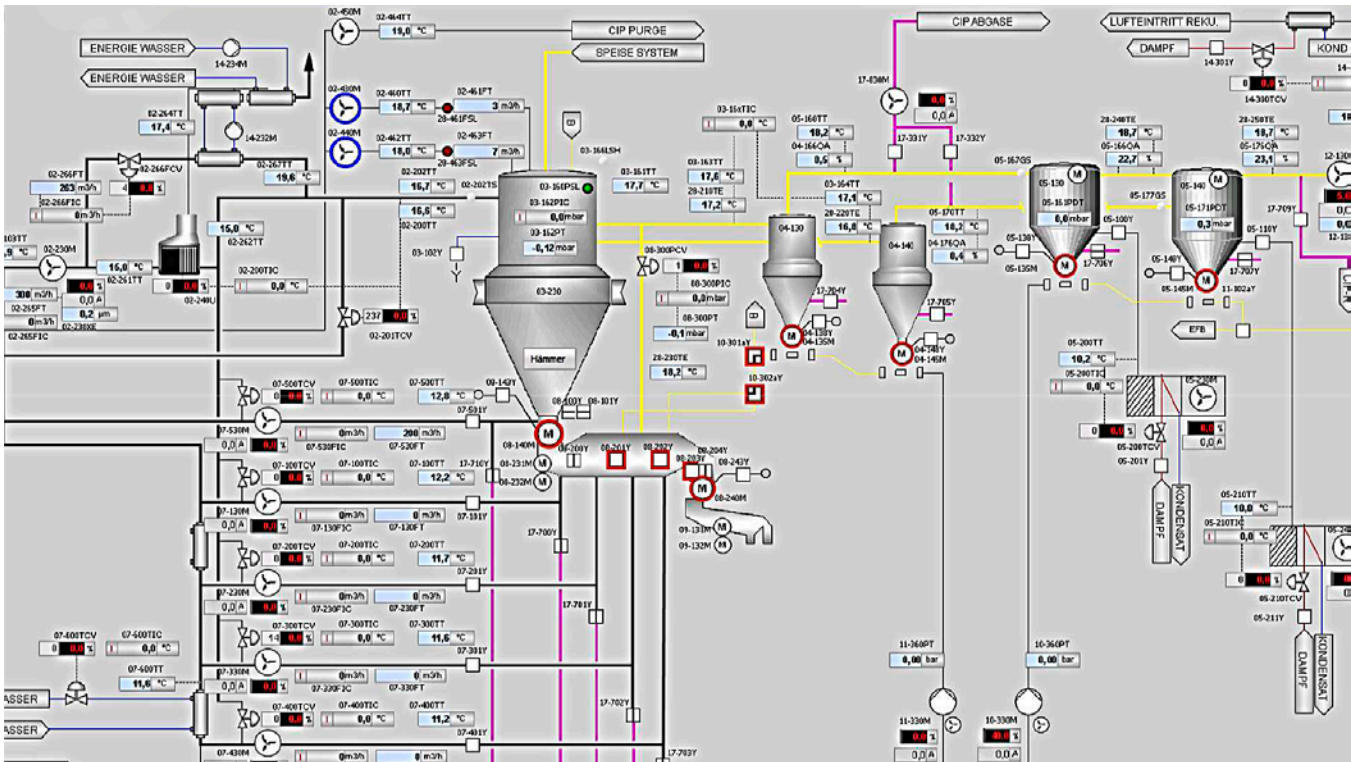
The Anhydro Triple-A® spray dryer offers plant configuration options enabling you to take full control of particle size and powder structure in your production of agglomerated and free-flowing dustless powders. The Triple-A drying chamber features:

- Innovative design for efficient drying and long production time between CIP cycles
- Nozzle atomization for optimum spray of feed material
- Selection of integrated second-stage fluid bed drying
- Third-stage external fluid bed option for final drying and/or cooling.

Added features for infant formula:

- Air dehumidification system
- HEPA air filtration
- 24x7 running hours by dual feed system
- Fully flexible fines return system
- Integrated nozzle camera system
- Insulation panel or hot room for chamber insulation
- CIP-able bag filter
- CO₂ injection system
- CIP-able recuperation system for heater and exhaust air
- Noise attenuators.





SPX FLOW AUTOMATION CONTROL SYSTEM

Automated process control is essential in order to optimize key process settings such as feed rate, temperature, pressure, residence time, particle size, moisture content, bulk density, etc.

The SPX FLOW spray drying plant is controlled from numbers of operator stations, providing the operator with an end-to-end overview of all production parameters. SPX FLOW control systems also enable plant performance optimization, rapid troubleshooting, and real-time recording of critical process data providing complete traceability. Process data can be passed on to a local network or even remote computer via a dedicated dial-up line or the Internet.





GLOBAL SERVICES FOR INDIVIDUAL NEEDS

SPX FLOW's aim is to help you find the best solution for your long-term needs. SPX FLOW offers a close partnership based on personal attention from the initial needs analysis and planning stage through the long life of your Infant Formula plant. Together we help analyze available process options based on your product and throughput requirements. If necessary, we can run a pilot test at our Innovation Centres to ensure that

the process will meet your expectations on a production scale.

Engineering standards

Environment protection is incorporated in accordance with local rules and regulations and is a key factor in the plant design. We are ISO 9001:2008 certified. All our plants meet the CE marking and ATEX requirements where applicable.

Long term service and support

The SPX FLOW worldwide service organization is ready, at all times, to provide necessary spare parts at short notice. We can also dispatch service technicians to help you rectify any issues, thus reducing unscheduled downtime to a minimum.

SPX FLOW offers a number of service agreement options, depending on your individual needs, and our service engineers are always available to provide applications and development support.





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