Outstanding solutions for infant formula production

Every producer of infant formula has individual recipes and product requirements. GEA can deliver end-to-end infant formula plants with outstanding solutions and innovative equipment for all process steps from wet compounding through heat treatment, evaporation to spray drying, powder handling, dry mixing and retail filling.

An extract of what you can expect from GEA:

Wet Compounding
Wet compounding of infant formula is where all or most of the raw materials required in the individual recipes come together.

The wet compounding system is customized to handle the available raw materials for a specific project. In the heart of this process is the GEA vacuum mixer MIXING FORMULA™. The mixer is designed for introduction of powder below the liquid surface by means of vacuum to achieve instant wetting of the ingredients. The mixing process ends up with a homogeneous, de-aerated product ready for further processing.

Evaporation
Concentration of infant formula products requires efficient falling film evaporators, designed to meet both product- and energy specifications.

Due to gentle evaporation and extremely short residence times in the evaporator, you achieve the best product quality with an evaporator from GEA.

We know that hygienic design is essential. Therefore all components of our evaporators are designed to meet highest hygienic requirements.

Furthermore GEA evaporators are flexible when it comes to operation: quick start-up and easy switchover from operation to cleaning, uncomplicated fast change over product are valuable advantages.
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Spray drying
No one knows more about spray drying than GEA. This expertise has been gained over more than 80 years, where we have designed and supplied more than 10,000 plants all over the world, and even more tests for customers to test the feasibility, effect and product quality of spray drying.

The spray drying process depends entirely on the composition of the product. Some are very easy and others very difficult to spray dry. In this context it should be stated that a GEA spray dryer is designed and the process parameters selected to ensure:

- Best product quality
- High level of hygiene
- Low energy consumption
- Protection of the environment
- Long operation time between cleaning
- High level of plant safety

Our Multi-Stage Dryer MSD™ is recognized as the leading plant type in the IMF industry both in terms of product quality and performance. GEA covers the full range of capacities including the world’s largest nutritional plants.

Every part of the spray drying plant is designed to avoid product deposits and contamination. All materials are carefully selected focusing on the surfaces’ ability to improve the performance. Another advantage is removable insulation (air-filled sandwich panel) which allows regular inspections of the drying chambers at any time.

Process control and monitoring
GEA’s range of process control and monitoring systems are designed to optimize the spray drying process, giving you the best possible return at the lowest cost of ownership.

One of these systems is our DRYCONTROL™ system. Our customers benefit from precise control and optimization of residual moisture in the final powder, as well as optimized drying conditions in the spray dryers. Using DRYCONTROL™ means increased utilization of the Spray Dryer’s capacity as well as increased yield with higher precisely regulated moisture content in the final powder.

Even the smallest deviation in quality and consistency during the drying process can lead to downstream problems, rejected product or loss of production time.

GEA's POWDEREYE™ issues warnings to the operator, thereby preventing costly out of spec production and provides a basis for final product control and process adjustments. The POWDEREYE™ is installed after the last drying stage and measures in an adjustable frequency:

- Bulk density
- Tapped density
- Scorched particles with high resolution imaging
- Residual moisture in the powder
- Protein and fat content (optional)

Powder Handling
Powder Handling in a Hygienic Food Processing Environment covers a broad range of expertise. GEA delivers that expertise to your doorstep in one complete package of:

- Powder Ingredient Unloading Systems
- Pneumatic Conveying
- Powder Storage
- Batching, Weighing & Filling
- Powder Testing

Dry Mixing
GEA has extensive experience with all types of mixing units. The all new range of Opti-Mix Paddle Mixers from GEA have been designed to suit a wide range of dairy and food ingredient applications, where high performance hygienic mixing is essential. Based on the well proven twin paddle type mixer design, this range has been developed to ensure consistent mixing performance and minimal downtime.

With the addition of loss-in-weight feeding and fast discharge, our mixers can easily keep up with the requirements of a typical Infant Formula plant. Typically up to ten batches per hour can be achieved.

Powder Filling
GEA is the only supplier capable of meeting the full spectrum of powder filling and packing requirements, saving the need to search the world for specialized machinery. In addition to 25-kg Bag filling and Powder Packaging Systems, we can offer retail filling solutions.

High hygiene, high accuracy, product safety and fully integrated automation are key requirements for filling high value powders like infant formula into retail containers. GEA has a comprehensive range of world class fillers to cover throughputs up to 400 containers per minute and container sizes from 200 grams to 2.5 kilograms.

As all GEA retail powder filling lines are designed with the customer’s requirements in mind, they combine the highest levels of productivity and accuracy with the gentlest product handling, while ensuring that requirements, such as correct spoon placement, are met.

Depending on the product to be filled, GEA filling technologies such as auger, auger/vacuum or vacuum only can be offered.

Visit our website gea.com for more information!