СУШИЛКИ И УСТАНОВКИ ДЛЯ ОБРАБОТКИ ЧАСТИЦ MOBILE MINOR R&D, MSD, PRODUCTION MINOR

Технические характеристики

MOBILE MINOR™ R&D Spray Dryer

Wet grinding for even better coffee flavor

Ever since its introduction, the MOBILE MINOR™ Spray Dryer has enjoyed a unique reputation as the perfect choice lab-scale spray dryer to explore the possibilities of spray drying and produce small-volume powder samples.

In the GEA MOBILE MINOR™, small quantities of solutions, suspensions or emulsions can be dried into representative powder samples, facilitating the retrieval of the process data required for scaling-up to industrial production. It is a flexible and easy-to-handle spray dryer which has become standard equipment in the R&D departments of many leading manufacturers, independent research institutes and universities worldwide.

The MOBILE MINOR™ is available in different versions designed to cater for different requirements including the drying of aqueous and/or solvent based feedstock. As different atomization techniques give different droplet sizes and drying characteristics, the MOBILE MINOR™ is available in three different atomization techniques:

Rotary atomization
Atomization by a co-current two-fluid nozzle
Atomization by a co-current two-fluid nozzle

In addition, a number of options are available for powder collection, explosion protection, cleaning, data logging and other technical features.

Key figures

Nominal main process gas flow (kg/h)	80
Water evaporation capacity (kg/h)	0.5 - 6
Typical mean particle size (µm)	5 - 80
Space requirements, LxWxH (m)	2.5 x 2 x 2.3

MSD™ Spray Dryer

The MSD™ Spray Dryer is the preferred choice for many dairy products such as e.g. Milk Powder and Nutritional Formula where uniform coarse, agglomerated, free-flowing and dustless powders are in great demand.

The MSD™ Spray Dryer, specifically designed to meet the requirements of the dairy industry, incorporates the latest in dairy processing and spray drying technology. Acknowledged for its high efficiency and documented hygienic design, the MSD™ Spray Dryer has been setting the standards within agglomerated dairy powders ever since its introduction in the market; and, hence, it holds a prominent position within the dairy industry.

The drying process
GEA Niro MSD agglomerated powder, dairy
The MSD™ Spray Dryer is a multi-stage Spray Dryer that combines spray and fluid bed drying technology to a three stage drying process to ensure the best overall drying efficiency and product quality.

A set of nozzles atomize the concentrate and feed it into the drying chamber. The drying air enters vertically through the air disperser at a high velocity, ensuring optimal mixing with the atomized concentrate. At this stage, the evaporation takes place instantaneously while the droplets pass through the drying chamber. The drying chamber and air flow is designed to prevent particles from sticking to the drying chamber walls, leading them directly to the integrated Fluid Bed at the bottom of the drying chamber for the second stage drying. Finally the powder is led to a VIBRO-FLUIDIZER™ Fluid Bed for final drying and cooling.

The drying air leaves the chamber at the top allowing for a very well defined secondary agglomeration when the fine particles in the drying air collide with the spray from the nozzles. The exhaust air passes through a SANICIP™ Bag Filter that separate out the remaining particles contained in the air. The fines discharged from the Bag Filter are returned to the drying chamber - either to the static fluid bed or to the nozzles depending on the agglomeration in demand. If a non-agglomerated powder is required, the fines are led directly to the VIBRO-FLUIDIZER™ Fluid Bed.

PRODUCTION MINOR™ Spray Dryer

The capacity of the PRODUCTION MINOR™ Spray Dryer makes it the ideal R&D spray dryer for the production of samples in connection with product development and testing as well as for production in small quantities.

The PRODUCTION MINOR™ belongs to GEA's range of versatile R&D and small-production-scale spray drying units. It is a standard Spray Dryer for which several modules and options are available to configure it to match specific requirements. This includes interchangeable atomization and powder discharge systems intended to provide even greater flexibility in e.g. product or process development.

Paragraph title

A sanitary design makes it applicable in most industries whether for food, food-grade or chemical products. A number of options are available to cater for requirements such as e.g. drying of aqueous and/or solvent-based products, explosion protection, cleaning, data logging and other technical features.

Key figures

Nominal main process gas flow	360
Water evaporation capacity (kg/h)	5 - 30
Typical mean particle size (µm)	10 - 90
Space requirements, LxWxH (m)	4.4 x 2 x 2.7

GEA FILTERMAT®
spray dryer

As a manufacturer, you know that spray drying is a complex process. Not every product easily transforms into a free-flowing powder. GEA FILTERMAT® technology is designed to take the turbulence out of spray drying, making it more of a breeze to turn challenging products into high-quality powders.

Spray drying is used widely by the food and dairy industry to reproducibly process diverse products into stable, powdered formulations. But some types of food and dairy products are difficult to spray dry using conventional methods, because they can generate deposits in the spray dryer ducts and cone, or produce lumps in the fluid beds. This may be a particular problem when spray drying products that are sticky, hygroscopic, or slow to crystallize, and can impact on overall yield, product quality and safety.

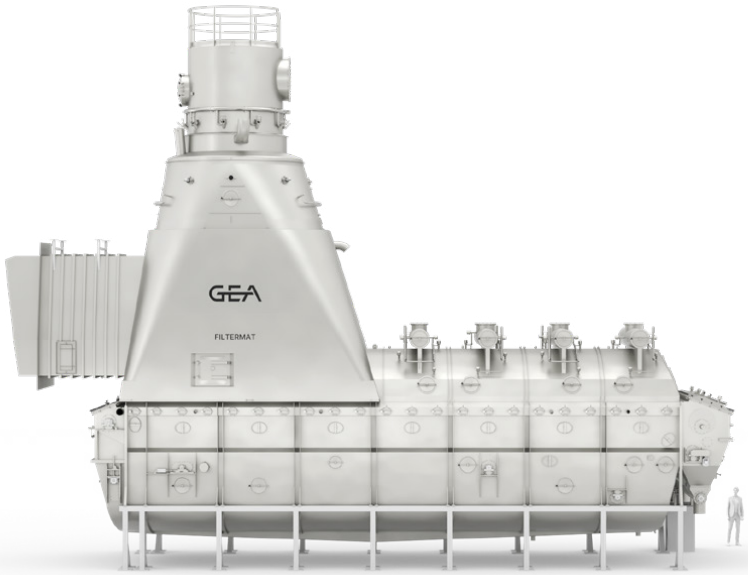
For less straightforward applications GEA offers the FILTERMAT® spray dryer, which gently and evenly deposits the partly dried product onto a moving, perforated filter belt, through which the air passes as the belt is conveyed through the drying and cooling zones. Therefore the FILTERMAT® is ideally suited to drying products that are difficult to handle in conventional spray dryers. These may include whey permeate, high fat non-dairy creamers, toppings and fruit powders, as well as hydrolyzed proteins, palatants, fat soluble vitamins and lysed cells. For such products spray drying using the FILTERMAT® can minimize lumping and deposit formation, which means longer production run times, less waste, and fewer planned and unplanned stoppages for cleaning.

Precise control for defined powder characteristics

The GEA FILTERMAT® spray dryer has been designed to keep key process parameters, including retention time and temperature at different zones in the dryer precisely controlled.

Accurate adjustment makes it possible to reproducibly transform even the most testing of products into free-flowing, agglomerated powders with precisely defined characteristics such as moisture content, powder structure, degree of crystallization and dispersibility, as well as aid control of Maillard reaction.

The FILTERMAT® also operates at lower temperatures than conventional spray dryers, so you may be able to achieve increased yield when processing more heat sensitive products. The fine product particles are retained within the powder layer on the filter belt, which in addition means that only a very small fraction of product exits with the gas to be collected by a cyclone, bag filter and/or scrubber. And of course, every part of the FILTERMAT® meets the strictest regulatory requirements for food processing.



GEA FILTERMAT® spray dryer

Benefits of the FILTERMAT® at a glance

- Reproducible spray drying of sticky and thermoplastic products
- Gentle processing, with reduced heat impact
- Precise control of powder temperature and residence time
- Production of agglomerated powders without the need for powder fines recycling
- Easy equipment inspection and cleaning
- Longer production runs and less risk of unexpected stoppages
- Less product waste

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