

SWIRL FLUIDIZER™

From paste to powder
in one efficient step



Dry pastes, filter cakes and viscous slurries more cost-effectively

Fast, efficient processing

When it comes to drying pastes, filter cakes and highly viscous slurries, the GEA Niro SWIRL FLUIDIZER™ offers a cost-effective solution for obtaining a fine, homogenous, non-agglomerated dry product – in one compact process step.

Unlike the SWIRL FLUIDIZER™, conventional drying processes such as contact dryers, band dryers, drum dryers and tray dryers are all characterised by lengthy, energy-consuming processing time and the need for costly post-treatment such as milling.

But the efficient SWIRL FLUIDIZER™ requires neither post- nor pre-treatment. It can even handle filter cakes with a very high solids content in one step, making it an attractive alternative to spray drying for applications where dilution is needed to obtain a pumpable, sprayable feed.

Significant process advantages

The SWIRL FLUIDIZER™ delivers the following main process advantages:

- Handles non-pumpable products
- Combines drying and product treatment in one stage
- Saves energy
- Operates continuously
- Fully automatic operation minimises manpower requirements
- Requires only a minimum of space
- Transfers heat and mass effectively
- Virtually eliminates heat loss
- Simplifies maintenance

Ideal for many applications

Today our comprehensive SWIRL FLUIDIZER™ delivery programme covers a wide range of applications from small standardised units to very large industrial installations.

The flexible SWIRL FLUIDIZER™ is the choice of chemical industry customers as well as the pharmaceutical and food industries. Chemical industry applications include:

- Agrochemicals – typically various herbicides and fungicides
- Ceramics – silica, bentonite, kaolin, etc.

- Dyestuffs/pigments – iron oxides, titanium dioxides, phthalocyanines, zinc phosphates, etc.
- Inorganic chemicals – metal carbonates and hydroxides, calcium phosphates, zeolite, etc.
- Organic chemicals – optical brightener, flame retardant, polymers, etc.
- Waste products – sludge, sediments, etc.

Tailored to your needs

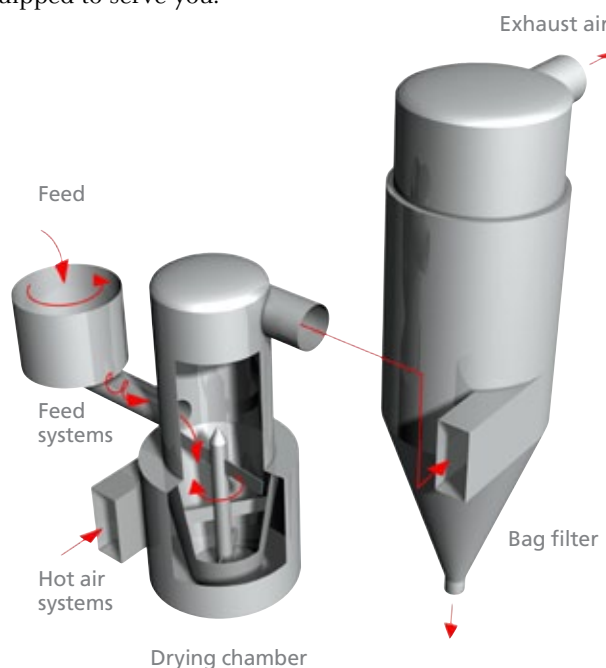
The SWIRL FLUIDIZER™ is available in a number of versions, all configured to meet your exact requirements.

This includes closed-cycle designs for operation with organic solvents and reinforced designs for dust explosion protection.

Ready to serve you

Regardless of the industry or application, GEA Niro's comprehensive pilot plant facilities are available for testing, trial and production. If you are in doubt about which system to use, let us arrange a pilot scale test of your product in our test laboratory. Our skilled process specialists will make sure you achieve the final product quality you need.

You're also free to draw on GEA Niro's overall expertise in the field of drying. Having supplied more than 10,000 plants worldwide since our founding in 1933, we're equipped to serve you.



How it works



The SWIRL FLUIDIZER™ is available in several sizes. This picture shows the drying chamber for a unit designed to dry more than 12 tons of powder per hour.

Drying chamber

The heart of the process is the drying chamber, in which feed disintegration, evaporation and powder classification take place. The rotation of the air created by the tangential air inlet and the disintegrator assures very rapid moisture evaporation. It also supports the separation of the dry fine powder, discharged at the top, from the remaining moist, larger particles.

The bottom of the chamber has a conical design to ease the conveying of larger product lumps upwards in the drying chamber, while the entrance of the hot drying gas into the chamber is configured in such a way that product will not fall back into the gas disperser.

Cooling of the hot air entrance is an option for heat-sensitive products.

Feed tank

The cylindrical feed tank is equipped with a slowly rotating agitator that ensures a steady feed supply to the bottom-mounted, frequency-controlled dosing screw, transferring feed to the drying chamber at a continuous and controllable rate.

Hot air system

Hot drying air is supplied to the air disperser at a controllable rate to ensure optimum thermal efficiency of the drying process.

In principle, any available energy source can be used.

Powder recovery and exhaust air cleaning system

Most customers select a GEA Niro bag filter for dried product collection and cleaning of the spent drying air.

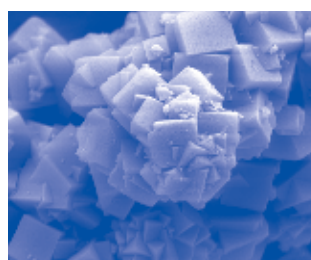
Safeguarding the system

For organic products with a fire or dust explosion risk, the drying plant can be protected by pressure relief to a safe area, explosion suppression or use of an inert drying gas.

For dusts, the inert gas may be generated by a direct gas-fired air heating system – the so-called self-inertising principle. An external inert gas supply is required when drying organic solvents.

Dual Feed System (patent pending)

GEA Niro's patent-pending Dual Feed System is ideal for products with too low solids content and thereby low viscosity – for example silica and titanium dioxide. Available for new installations and as a retrofit to existing units, this new principle of operation uses the mixing that already takes place in the drying chamber. Two inlet systems ensure that the dry powder is immediately mixed with the liquid feed so that the moisture is distributed over the entire powder surface for rapid evaporation.





Experience

GEA Niro has contracted and installed more than 10,000 plants worldwide

GEA Niro is a world leader in industrial drying, with spray drying, spray cooling/congealing, flash drying, freeze drying, granulation and fluid bed processing as core technologies. Having installed more than 10,000 plants around the globe, GEA Niro is known for delivering solutions that meet customers' exact requirements. The GEA Niro companies are part of GEA Process Engineering.



GEA Process Engineering

GEA Niro

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