

GEA STEAMFUSION NOZZLE

Adjustable steam treatment for starch, proteins and other food ingredients if you want to cook, spray and dry all in one step.



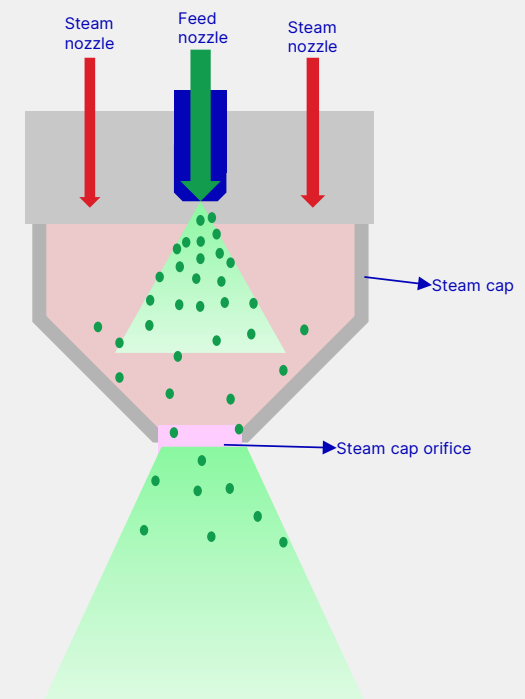
COOK, SPRAY AND DRY.

The GEA Steamfusion Nozzle for our FSD® and TFD spray dryers is uniquely designed to carry out instantaneous, controllable steam treatment of your product feed within the spray nozzle itself. The nozzle is interchangeable with other nozzles designed for the GEA NAD (nozzle with adjustable diameter) nozzle lance system that fits into our DDD® (direct duct air disperser).

How does it work?

Steam is applied to the product directly as it passes through the GEA Steamfusion Nozzle. To achieve this the product feed is finely dispersed by the feed nozzle into the steam environment inside the steam cap. The product is heated instantly in the steam before being sprayed into the hot air of the spray drying chamber, where the droplets are dried to particles.

Nozzle Technology Overview



FOOD APPLICATIONS.

Our Steamfusion Nozzle for in-process steam treatment is the solution when you want to process starch, proteins or food ingredients with desired structural or functional properties. The spray angle, feed flow and feed pressure within the GEA Steamfusion Nozzle can all be adjusted and fine tuned so that you can carry out processes such as starch gelatinization, or manufacture high-density products.

As well as affording opportunities for product functionalization, the high temperature steam also reduces microbial load. Steam heating in the nozzle is instantaneous, and product is kept at high temperature for a very short time. The product is also effectively dried and cooled after it leaves the nozzle on entering the spray drying chamber.



HOW DOES IT FIT INTO THE SPRAY DRYER?

We've developed the GEA Steamfusion Nozzle as an ideal option for the CIP-compatible NAD nozzle lance system, which fits into the DDD® air disperser for GEA spray dryers. NAD lances are introduced at the side of the DDD air disperser, not from the top. This feature allowed the design of a steamfusion nozzle that can be angled and that is also highly adjustable.

One advantage of this combined DDD® air disperser – NAD nozzle system is the shorter lances, and the flexibility to change the position of the nozzles, so you can alter the distance between the atomization nozzle in the system, as well as the distance between each atomization nozzle and wall chamber. This flexibility means you can better control interspray agglomeration and reduce powder deposits on the chamber walls.

We believe that our DDD® technology gives you more operator friendliness, great control of unwanted powder deposit and fouling, so you can be more confident of reproducible, high-quality processing, and longer production runs between CIP. The DDD® air disperser system may help you to achieve comparatively better energy efficiency and draw less power than other types of air disperser because it results in a significant decrease in pressure drop.

The DDD® air disperser in addition supports 24/7 spray drying, and features an improved nozzle lance design, which is ideal for our steamfusion nozzles. The DDD® system is compatible with our compact SPRAYEYE® and SPRAYEYE® IR nozzle cameras.

These can be installed in our DDD® air disperser with easy access, to provide an extra layer of safety and process oversight for your spray drying plant.

The DDD® air disperser



Features and benefits of steam treatment using the GEA Steamfusion Nozzle:

- Instantaneous steam treatment of feed within the spray drying nozzle
- Feed flow and pressure are easily set for each product
- Quick change in and out of the NAD nozzle system
- Short residence time in the nozzle
- Immediate drying of steam-treated feed upon atomization in the spray dryer chamber
- Hygienic, user-friendly nozzle design
- Compatible with 24/7 operation, dependent on product
- Smooth, automated switching between feed lines results in increased dryer capacity and up time.



User-friendly nozzle design.

GEA Process Engineering A/S

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