

Continental Milkose India Ltd

A world class facility for Spray Drying



Milkose Journey

Continental Milkose is a 26 year old organization with a proven track record of delivering high quality products. Key highlights:

- Promoted by: Mr. Shyam Sundar Agarwal
- Managed by: Mr. Deepak Agarwal.
- Started in: 1994 as a dairy set-up
- Technologies available:
 - Spray Drying
 - Vacuum Oven Drying
 - Band Drying
 - Dry blending
 - Extrusion products (In-house use only)



The Spray Drier

Spray drying is one of the most effective ways to dry foods and other products that are typically heat sensitive.

Spray drying's one-step ability to complete the drying process within seconds gives it an edge over other industrial drying techniques.

In the food industry, fast drying plays a vital role in ensuring minimum overall flavor loss.

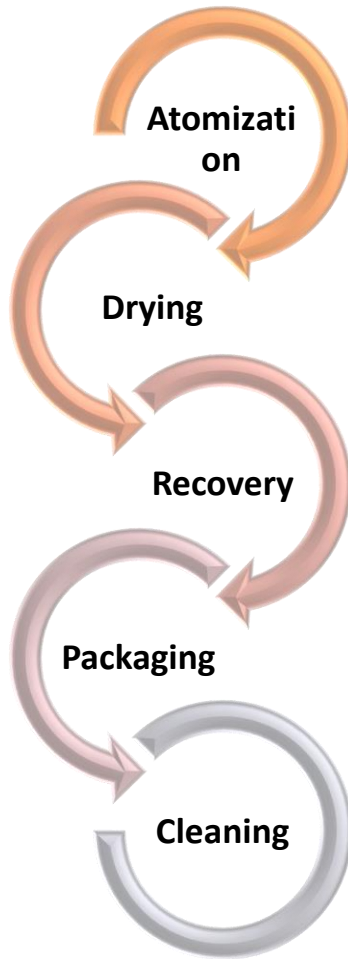
Spray drying produces powders of controllable particle size and overall quality.

Other characteristics manipulated during spray drying include bulk density, degree of crystallinity and residual solvent levels.

The food industry puts a premium on moisture content, which determines a product's shelf life.



Process Flow



Atomization

- A multi spray nozzle targets liquid feed stock to turn it into tiny liquid droplets.
- This allows us to control such product qualities as particle size and density.

Drying

- Air is heated using steam radiator to dry the powder
- We can control moisture during this phase by fine-tuning the temperature of the hot air.

Recovery

- A bagging cyclone collects and discharges powder that is passed over in-line gravity feed metal detector, sifter seal and magnet before filling into bags.

Packaging

- Product packed in primary pack under vacuum Packing with residual oxygen content less than 2% or nitrogen flushing as per the nature of the product.
- Final seal in secondary pack of drums/bags for transportation.

Cleaning

- After completion, with CIP system and our trained operators lead the charge in thoroughly cleaning the system for the next production in line.

Spray Drying: One Step - Many Objectives

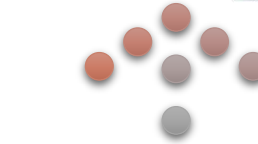
- ◀ Powder obtained directly from Solution
- ◀ Modification of particle size
- ◀ Agglomeration of Nano-particles
- ◀ Drying suspensions
- ◀ Particle Coating
- ◀ Immobilization of liquids and solid materials in a matrix.
- ◀ Manufacturing of Microcapsules.

Scale up Process at Milkose

From moisture levels to particle size, colour, pH, bulk density, and more, just show us the product specifications you need.

Milkose has different scales of spray drying machines to cater to varying needs of customers.

- Lab Scale Drier: 1L per hour
- Pilot Scale Drier: 10L per hour
- Commercial Spray Drier: 800kg per hour



**Commercial
Spray Drier**



**Pilot Scale
Drier**



Lab Scale Drier

Lab Scale Drier

The lab scale drier produces a drier, uniform powder in only a few minutes. In most cases, the product is less hygroscopic than freeze dried products.

The Lab Scale Drier at Milkose has the following parts which enhance its functionality:

Two-Fluid Co-current nozzle with Auto De-blocking device and option of variable nozzle apertures.

Lab scale homogenizer for uniform mixing, PLC driven system

Product Contact Parts and Main Stand: SS-316L

Variable nozzle apertures: 1mm, 1.5mm and 2mm.



Pilot Scale Drier

For product development projects, Milkose offers its special design pilot dryer with below highlights:

- Nominal water evaporative capacity of approx. 20 litre/hr.
- It cost-effectively validates products before moving them into our full-scale dryer.
- Effective management of products from pilot to production very efficiently.
- Drier parts are as below:

VFD rotary disc atomizer

Two-Fluid Spray Nozzle (Additional size spray nozzles can be purchased as required)

Two Stage High Pressure Lab Homogenizer – FBF

Batch processing tank with high shear pump

CIP system

Entire setup is PLC driven



Commercial Spray Drier

Our special design full-scale spray dryer can process a wide variety of product types without ignoring efficiency and cost effectiveness.

Our spray dryer has a nominal water evaporation capacity of up to 800 kg per hour with a 170°C inlet temperature that can be raised up to 200°C.



Batch processing tanks – 2 tanks of 5000 litre each.

Oil blending tank – 1500 litre

Holding tank – 5000 litre each with cooling and chilling facility for addition of vital nutrients.

Transfer tank – 2000 litre

In line filters for arresting foreign bodies

Two Stage High Pressure Homogenizer - FBF

High Shear Mixer – Fristam

Delavan Spray Nozzle

Online Metal Detector / Magnet

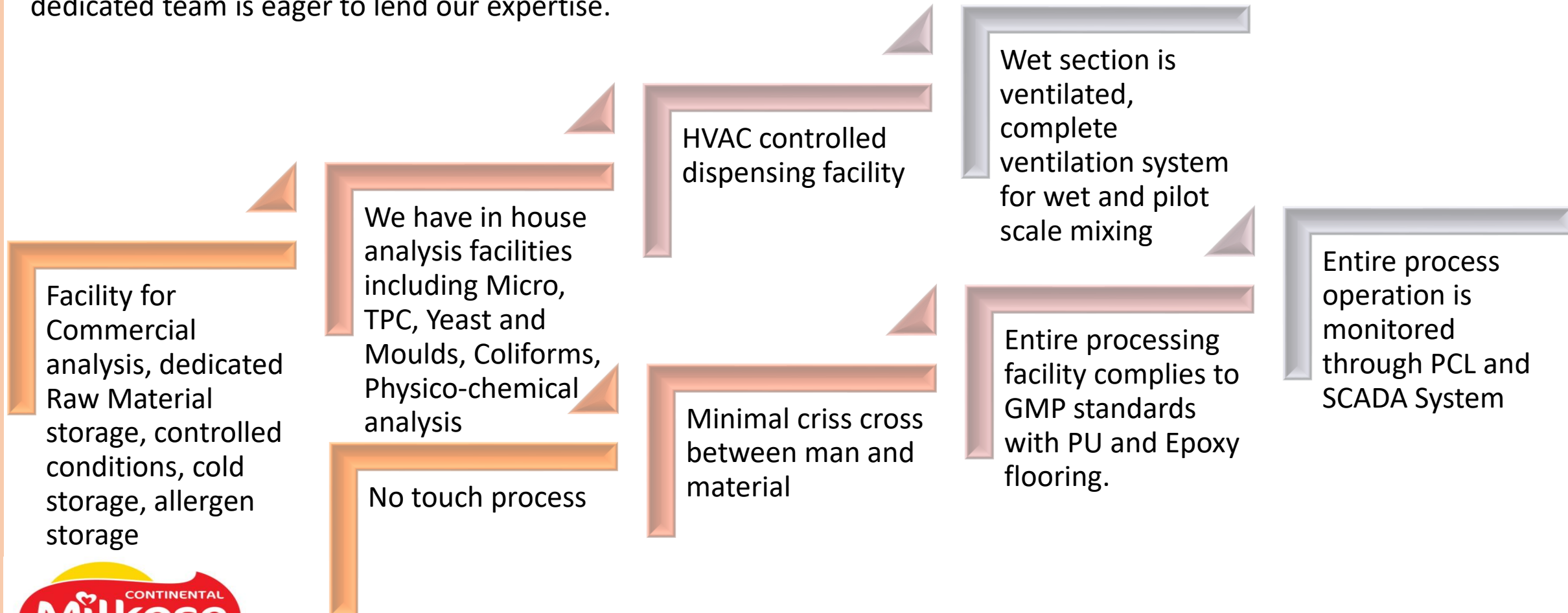
Sifter Sieving – Russle Finex

Vacuum Sealing with N2 purging

CIP system

Why Continental Milkose is your best bet?

As a contract spray drying company, Milkose team knows the spray drying process inside and out. We know what works best based on product and application. When it comes to contract spray drying or any of our other services, a dedicated team is eager to lend our expertise.



Applications



Food and Beverage



Pharmaceuticals
Ingredients and
APIs



Extracts and
colorings



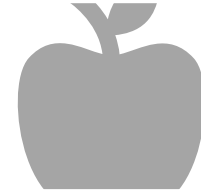
Milk Powders
and Dairy
Derivatives



Coffee & Tea



Spices and
Flavors



Vitamins and
Enzymes



Encapsulation

Accreditations



FSSC 22000



Other Technologies

Apart from the Spray Drying Technology, Milkose also has the below technologies to formulate various kinds of protein powders and Malt based products:



Vacuum Tray Drying



Vacuum Band Drying



Dry Blending

Vacuum Drying: For Malt Based Products



Band Drier

- Vacuum belt dryer accomplishes continuous feeding and continuous discharging of material in vacuum state, turn the traditional static drying to dynamic vacuum drying.
- GMP Standard through hygienic realization of drying by finishing continuous charging, discharging and grinding under vacuum condition.
- Unchanged thermal sensitivity of materials, recoverability of 95% solution with a non-touch process and CIP cleaning
- No mechanical impact on product ensuring safety of thermal sensitive material and oxidation of it. Dry Temperature with no air and short stay throughout the process.
- High recovery with minimal Labour and low energy consumption ensuring best costs.



Tray Drier

- Less energy is needed for drying, cutting down on the economic and environmental costs
- Tends to work faster than other drying methods, cutting down on processing times.
- Low heat under vacuum tends to retain the integrity of the original item.

Vacuum Drying: Applications

This technology is widely used for manufacturing malt based products like Bournvita, Horlicks, Ovaltine, Milo & more. It is also used for manufacturing Malt Extract Powder. Fruit Powders, Natural Colors can also be manufactured on this technology. It finds its Applications in the following areas:

Drying all kinds of liquid or paste

Drying high viscous food products

Dried Natural Colors

Malted Milk Food

Malt Based Food and Powders

Fruit Powders

Pharmaceuticals

Enzymes

Beverage Mix

Protein Extracts

Dry Blending: For Powder blends

Dry Blending process for powder blends offers Customization and Versatility in food supplement formulations. There are limitless innovative ways in which dry foods can be blended. This process can shorten the product development process and preserve food for an exceptionally long time.

Nutraceuticals

Protein Powders

Instant Drink Mix

Bake Mixes

Pharmaceuticals

Pharmaceuticals

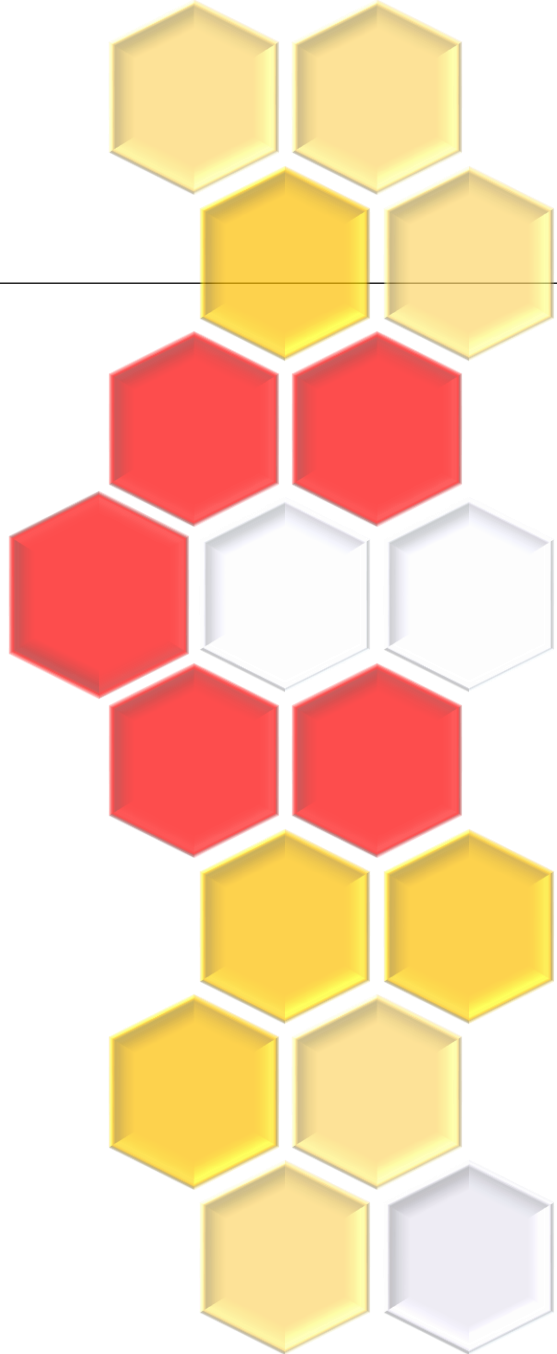
Premixes

Animal feed

Sugar Blends

Cosmetics





Thank You

