

Labultima
Process Technologies Pvt. Ltd.



**SPRAY DRYER
TEHNOLOGY**

ENGINEERING DIVISION

Labultima Process Technology Pvt. Ltd

401208, Dhumal Nagar, Golani Naka, Vasai East,
Waliv, Maharashtra 401208

Spray Dryer

Introduction:

- Spray Drying is a continuous, quick, efficient process for drying of clear solutions / emulsions / agglomeration / suspension under controlled variable parameters with best produce repeatability results to achieve desired analytical / physical properties of produce.
- Spray drying can be co-current / counter current.
- The spray drying can be with air as drying media or with inert gas as drying media, categorized as Open Loop Spray Drier or Closed Loop Spray Drier respectively.
- For continuous operations of Lab spray dryer the standard unit with mono bag filter can be replaced with auto-dedusting multi-bag filter.

Lab Models:

LU222 (Advance Table Top Lab Spray Dryer)



Lu228 (Plug-In Lab Spray Dryer)



Applications

- Pharmaceuticals API / Onco /Steroids / Hormones / Formulations
- Prebiotics / Probiotics
- Nutraceuticals
- Healthcare / Cosmetics
- Milk / Milk Derivatives
- Natural or Synthetic Flavors / Fragrances
- Specialty Chemicals
- Foods
- Ceramics
- Polymers
- Metallic dispersion
- Wax based products
- Pyrolysis
- Nano particle generation

Advantages

- For conversion of crystalline form to amorphous form.
- For getting desired particle size distribution & bulk density
- For best reproducibility / repeatability results
- For avoiding oxidation of product under drying
- For encapsulation of core materials.
- For generating the heat sensitive / UV sensitive produce
- Continuous process
- Best yields
- Best operational costs
- Best payback period
- Best compatible for scale up to pilot / plant production spray driers

Consistency

- In general, the particle size distribution of the acquired powders is sharp and consistent, due to easy control and reproducibility of the drying properties.
- Spray dried powders exhibit high flowability, high solubility and dispersibility, allowing for facile transport, storage and subsequent processing.

No Heat Detorioration

- On account of the comparably high drying speed and the short residence times, even heat-sensitive materials such as pharmaceuticals or foodstuff and dairy may be dried without difficulty using spray dryers.
- If a rather slow rise in temperature of the spray mist droplets is required, also counter-current flow systems are feasible.

High Purity & Easy Cleaning

- Cleaning of all spray dryer components is straightforward and can be completed in just a short amount of time. Impurities and cross-contaminations can be avoided reliably.
- Automated WIP, CIP and SIP systems can be applied to spray dryers without difficulty.

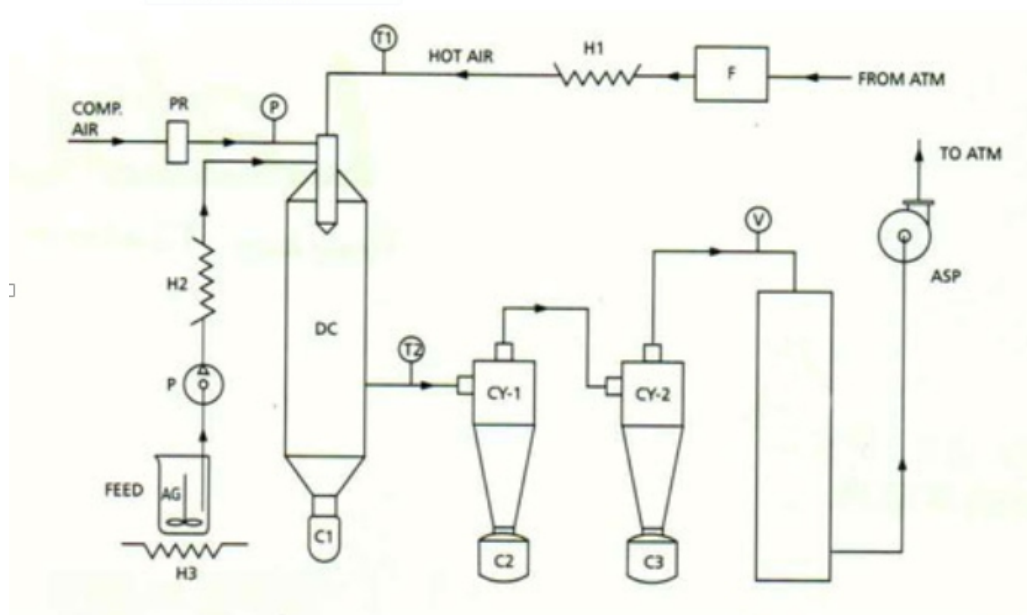
Inflammable Solvents

- For water-based feeds the drying media is filtered air in an open system. For inflammable or in any other way hazardous feeds, nitrogen in a closed loop dryer is used.
- This way, also all solvent is recovered and may be reused.

Spray dryer can be used for Spray Chilling /Congealing / Prilling at molten feeds by using cold air instead of hot air.

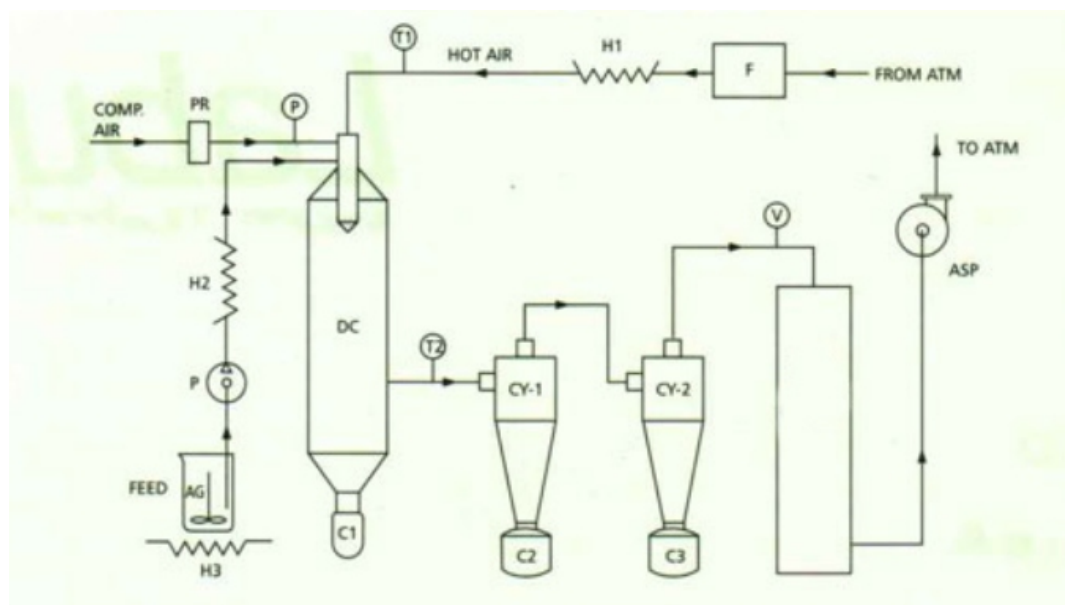
SPRAY DRYER OPEN LOOP

PLC SCREEN IMAGE (Screen shot of Mimic screen of open loop spray dryer)



SPRAY DRYER CLOSE LOOP

PLC SCREEN IMAGE (Screen shot of Mimic screen of close loop spray dryer)



Sr. No.	Details	Model No.	Capacity Kg of water evaporation /hr
1	Lab Spray Drier	LU 222 advanced LU 228 advanced (Plug-In)	1.0 kg/hr. 1.0 kg/hr.
2	Kilo Lab Spray Drier	SD/KL-2.5 (Open/Closed Loop) SD /KL - 3 (Open/Closed Loop)	2.5 kg/hr. 3.0 kg/hr.
3	Pilot Spray Drier	SD/PI - 5 (Open/Closed Loop) SD/PI - 10 (Open/Closed Loop)	5.0 kg/hr. 10.0 kg/hr.
4	Plant Spray Drier	SD /PL - 15 (Open/Closed Loop) SD /PL - 20 (Open/Closed Loop) SD /PL - 25 (Open/Closed Loop) SD /PL - 50 (Open/Closed Loop) SD /PL - 100 (Open/Closed Loop) SD /PL - 250 (Open Loop) SD /PL - 300 (Open Loop) SD /PL - 500 (Open Loop) SD /PL - 1000 (Open Loop)	15 kg/hr. 20 kg/hr. 25 kg/hr. ss50 kg/hr. 100 kg/hr. 250 kg/hr. 300 kg/hr. 500 kg/hr. 1000 kg/hr.

FREEZE DRYER



Introduction:

- Labultima Process technologies Pvt. Ltd. Located at Vasai near Mumbai, India most well-known organization in Drying Technology Solutions for Pharma API & Allied Industries in Spray Drying Process, has successfully developed & installed a number of Lab Freeze Dryers & Production Freeze Dryers on Foods, Vegetables, Fruits, Ready to Eat Substances & Probiotics & are now thriving to launch their Ultra-Modern Lyophilizer by 2021 in global market.

Our Freeze Dryers initially to be projected for Foods –

- Ready to eat foods such as Dhokla etc.
- Fruits such as Banana, Kiwi, Dragon Fruit, Mango, Sugarcane, Apple, Pineapple, Sea Buck Thorn Fruit etc.
- Juices of mixed fruit like fruit punch
- Rice, Pulao, Biryani, Poha, Upma etc.
- White & Yellow York of Hea's eggs
- Vegetable like Spinach, Fenugreek Leaves, Amaranth Leaves, Mustard Greens etc.
- Fish, Chicken meat etc.

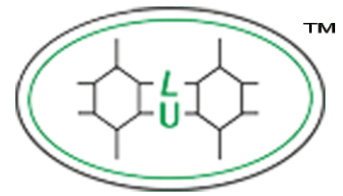
Comparison between Spray Dryer & Freeze Dryer

Sr. No.	Spray Dryer	Freeze Dryer
1	Continuous Process	Batch Process
2	Can control <ul style="list-style-type: none"> - Particle size can be controlled - Residual moisture content 4 to 8% - Bulk density can be controlled 	Can control <ul style="list-style-type: none"> - Particle size can't be controlled - Residual moisture content in powder <0.1% - Bulk density can't be controlled
3	Capital investment has payback period of 9 months to 1 year	Capital investment has payback period of 3 to 5 years (-) ve point
4	Running cost most economical	Running cost 4 to 6 time of spray drying for same capacity (-) ve point

Therefore overall plus point for Freeze Dryer is its moisture content in product is <0.1% which cannot be achieved in Spray Dryer or in any other drying technology.

FOODS FREEZE DRYER

Model	LU-L-005	LU-P-300
Capacity	5 kgs. / 8 hrs.	300 kgs. / 24 hrs.
No. of Shelves	5	48
Shelves Area	0.34 mt ²	16.80 mt ²
Shelves Hourly Size	400 mm Ø X 500 mm long	2400 mm Ø X 2400 mm long
Heating System	Silicone Heater	Hot Water-Individual Heater
Chamber Temp.	800C	800C
Vaccum	<5Pa	<5Pa
Defrosting	Auto Hot Gas	Auto Hot Gas
Control	PLC-HMI	PLC-HMI
Elect. Supply	220 VAC, 50 HZ, Single Phase	440 VAC 50 HZ Three Phase
Overall Size	550mm X 550mm X 1700mm H	4100mm X 2500mm X 2800mm H



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