



Process Engineering  
Division

Niro

# Spray Dryer

SDMICRO™

Ideal for  
Research and  
Development



NIRO POWDER TECHNOLOGY

APPROX VOL  
— 400  
— 300  
— 200



- Ideal for research and development
- Designed for spray drying of small volumes of high value pharmaceutical, chemical and food & dairy formulations
- Water or organic solvent based formulations can be spray dried by using compressed air or inert process gas
- Two-fluid nozzle atomization
- High efficiency cyclone and bag filter
- Easy to dismantle for cleaning
- Fast product switch

# SDMICRO™ *Spray Dryer*

**The SDMICRO™ Spray Dryer is designed for two-fluid nozzle atomization and drying of small volumes of high value pharmaceutical, chemical and food & dairy formulations.**



*Process gas disperser*

## **Guaranteeing Efficiency**

The SDMICRO™ Spray Dryer helps pharmaceutical, chemical and food & dairy companies to evaluate spray drying during the early stages of product development. It enables companies to identify the most appropriate isolation technique for the product to guarantee the most efficient manufacturing process.

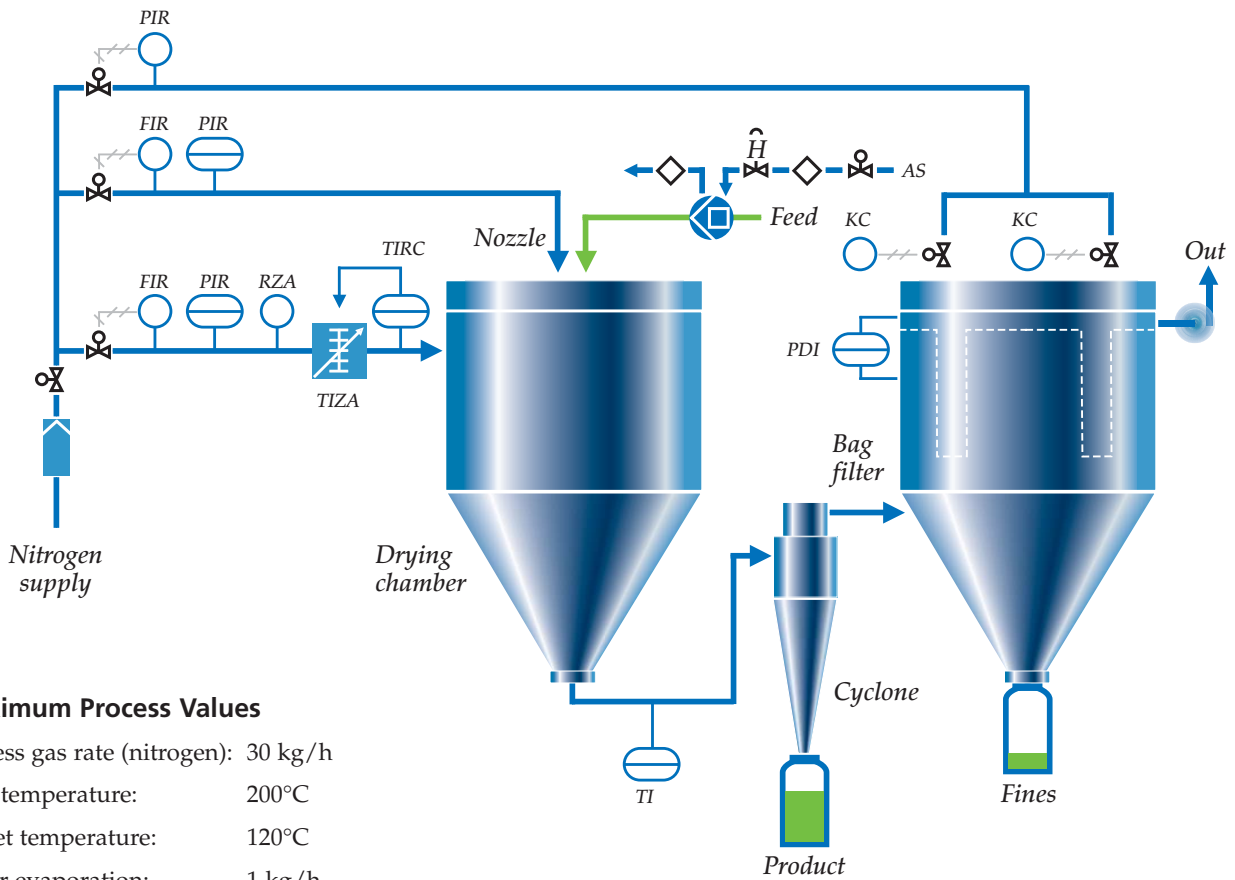
The SDMICRO™ is a fully functional spray drying plant in very small scale. Computational Fluid Dynamics have been used to design the smallest possible spray drying chamber that retained the same air flow pattern as a full scale production model. The resulting equipment can make test

volumes of product at the smallest possible scale (100-200 ml).

The Intrinsically Safe operation makes the SDMICRO™ suitable for use with Nitrogen for products dissolved in organic solvents. Compressed air is used for drying of aqueous fluids.

The cyclone is used for the initial powder collection and the bag filter collects fine particles passing through the cyclone. The cyclone may be by-passed completely for collecting very fine powders in the bag filter.

The SDMICRO™ is easy to dismantle for simple cleaning and fast product switching.



### Maximum Process Values

Process gas rate (nitrogen):	30 kg/h
Inlet temperature:	200°C
Outlet temperature:	120°C
Water evaporation:	1 kg/h
Nozzle gas rate (nitrogen):	6 kg/h
Heat radiation:	0.7 kW (at 200°C in/120°C out)
Design pressure:	0.5 bar g



### Configuration Example

- ① Lower part
- ② Cyclone, stainless steel with powder recovery
- ③ Drying Chamber including the two-fluid nozzle.  
Cylinder made of glass or stainless steel
- ④ Middle section including the electrical heater,  
2 kW, class EEx de IIC T1, T2, T3
- ⑤ Exhaust gas bag filter. Cylinder made of glass  
or stainless steel. 4 bags of PTFE. Filter area: 0.3m<sup>2</sup>.  
Continuous 'pulse jet' cleaning
- ⑥ Upper part
- ⑦ Process gas disperser

Control system with animated HMI LC display

Glass type: Boro Silicate

Stainless steel: AISI 316L

### Dimensions

Assembled LxWxH: 1200x600x1700 mm

Weight (exclusive of control panel): 200 kg

Control panel: 150 kg

# Spray Dryer SDMICRO™

*Niro is a world leader in industrial processing, with evaporation, spray drying, freeze drying, and fluid bed processing as core technologies. The Niro companies are part of the Process Engineering Division of GEA Group.*



Process Engineering  
Division

A company of GEA Group

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