

## MOBILE MINOR™ Spray Dryer



- New generation of laboratory spray dryers
- Choice of three atomizer systems
- Dries both aqueous and solvent feedstocks safely
- Excellent access, easy to clean



# MOBILE MINOR™ Spray Dryer



MOBILE MINOR '2000'

The Niro MOBILE MINOR™ spray dryer has enjoyed unique success ever since it was first introduced back in the 1950's. Around 2000 units have been supplied to universities, research centers, and specialist powder production facilities around the world.

The new MOBILE MINOR '2000' version has been introduced to meet the still increasing demand for a more flexible, modern and easy-to-handle laboratory dryer having different levels of control systems.

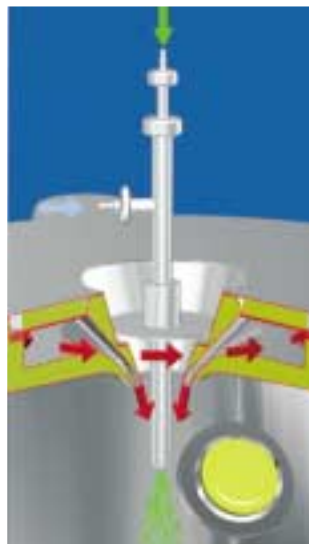
Spray drying is a unique drying process involving both particle formation and drying. The powder characteristics can be controlled and powder properties maintained constant throughout a continuous operation. The selection and operation of the atomizer is of extreme importance in achieving an optimum operation and production of top-quality powders.

In the MOBILE MINOR™, small quantities of solutions, suspensions, and emulsions can be dried into representative powder samples. Test results from the MOBILE MINOR™ provide important information for selecting the design and technical specification of a given drying project.

Three alternative atomizing systems are offered:



**Rotary atomizer,** located in the center of the chamber roof. An air turbine drive operating from a six-bar compressed air source, supplies power to the atomizer wheel. A vaned atomizer wheel is used for non-abrasive feeds and an atomizer wheel with carbide bushings for atomizing abrasive feeds. Particles in the range 5-25 $\mu$ m are created.



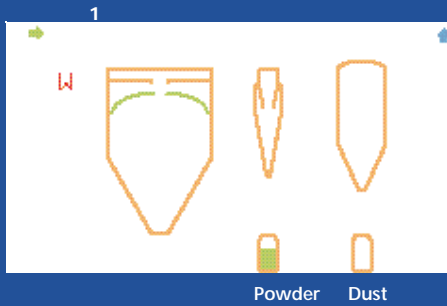
**Co-current two-fluid nozzle,** located also in the center of the chamber roof. The atomization is created by compressed air at a pressure of 0.5-2.0 bar. The feed and atomizing gas are passed separately to the nozzle head where the atomization takes place. Two-fluid nozzles have the advantage of handling more viscous feeds. The co-current mode is selected for drying heat sensitive products to fine particles in the range 5-25 $\mu$ m.



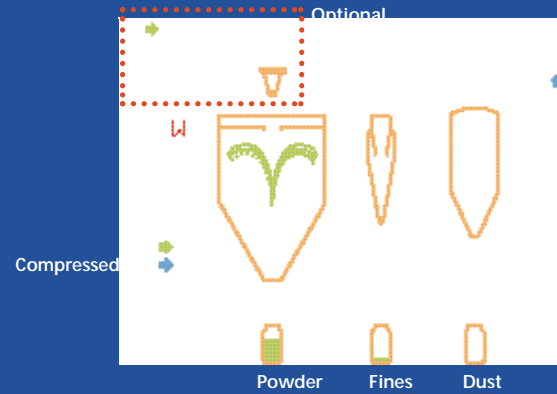
**Fountain two-fluid nozzle,** located in the cone of the drying chamber, spraying upwards. The fountain mode is selected to meet a more coarse and free-flowing powder specification. Often used for fine ceramics and other non-heat-sensitive products. The counter-current flow offers a dryer performance with excellent heat utilization and provides the longer powder residence time in the drying chamber required to complete the drying to larger particles in the range 15-80 $\mu$ m.

# Plant Configurations

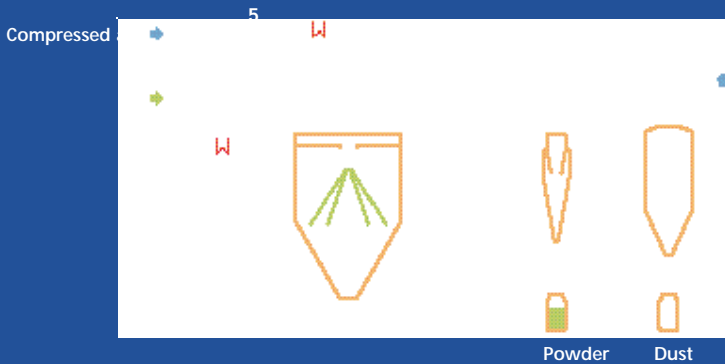
## Single point powder discharge



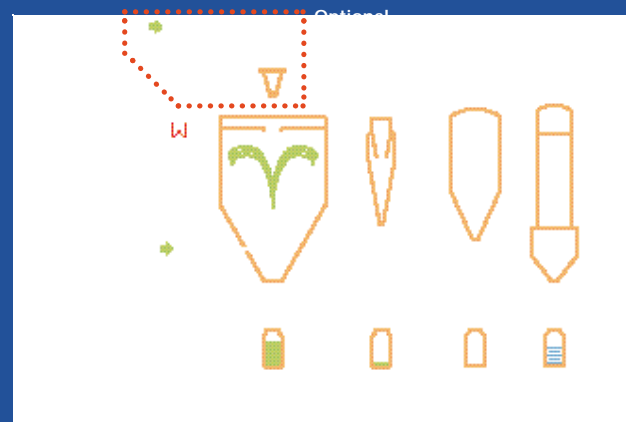
## Two-point powder discharge



## Aseptic design



## Closed cycle design



- 1 Feed pump, peristaltic
- 2 Rotary atomizer
- 3 Two-fluid nozzle, co-current
- 4 Two-fluid nozzle, fountain
- 5 Pre-filter, EU4
- 6 Heater, 7.5 kW
- 7 Drying chamber, Ø800 mm x 620 mm
- 8 Cyclone, Ø140 mm
- 9 Cartridge filter (optional)
- 10 Cartridge filter, in-line
- 11 Exhaust fan, 0.75 kW
- 12 Supply fan, 0.75 kW
- 13 HEPA filter
- 14 Laminar air flow box
- 15 Tube/shell condenser
- 16 Nitrogen compressor (optional)
- 17 Oxygen analyzer

Different levels of control systems are offered — from a traditional wall mounted control panel to the latest PLC operator panel with display and optional output signals for data logging.

Material: Surfaces in contact with product: AISI 316.  
Other surfaces: AISI 304.

Standards: Designed according to relevant EU directives and standards.

Water evaporative capacity: 1-7 kg/h depending on temperature profile.

### Further available equipment

- Explosion-proof components
- Pressure shock resistant components on request
- Chamber extension section
- PLC control
- Data logging facilities
- Exhaust gas filter with different filter media
- Active carbon bed adsorber for solvent vapors



GEA Process Engineering Inc. • 9165 Rumsey Road • Columbia, MD 21045  
Tel: 410-997-8700 • Fax: 410-997-5021 • Email: [gea.pe.na@geagroup.com](mailto:gea.pe.na@geagroup.com)  
GEA Process Engineering Inc. • 1600 O'Keefe Road • Hudson, WI 54016  
Tel: 715-386-9371 • Fax: 715-386-9376 • Email: [gea.pe.na@geagroup.com](mailto:gea.pe.na@geagroup.com)  
Web: [www.niroinc.com](http://www.niroinc.com)