



# SCALABLE SOLUTION FOR R&D AND PROCESS VALIDATION

ANDRITZ Dedert small-scale spray dryers

**ANDRITZ**

# Flexible, scalable, and ready for your next breakthrough

ANDRITZ Dedert small-scale spray dryers empower your R&D teams and manufacturers to test, optimize, and scale spray drying processes with confidence. Designed for flexibility, compliance, and efficiency, our modular, plug-and-play units deliver small-batch production with precise process control – bridging the gap between pilot trials and full-scale industrial success.

## PERFECT BRIDGE BETWEEN PILOT TRIALS AND FULL-SCALE INDUSTRIAL PRODUCTION

The ANDRITZ Dedert small-scale spray dryer is designed to support product development, process optimization, and scale-up studies with a focus on flexibility and reliability. Available in six models, it offers water evaporation capacities ranging from 5 to 250 kg/hr, ensuring the right fit for diverse applications. Engineered for adaptability, the small-scale spray dryer allows multiple configuration options to meet specific customer requirements. Its modular design ensures easy customization, while the skid-mounted, plug-and-play concept guarantees fast installation and minimal downtime. This makes it the ideal choice for R&D facilities and small-scale production facilities.

## SINGLE OR MULTISTAGE CONFIGURATION

Each unit can be configured as single-stage or multi-stage, providing the versatility needed for complex drying processes. The single stage spray dryer is commonly used for applications whereby the final desired product is a fine powder. The multi-stage spray drying systems incorporate fines return and fluid beds (internal and/or external) which can produce an agglomerated product.

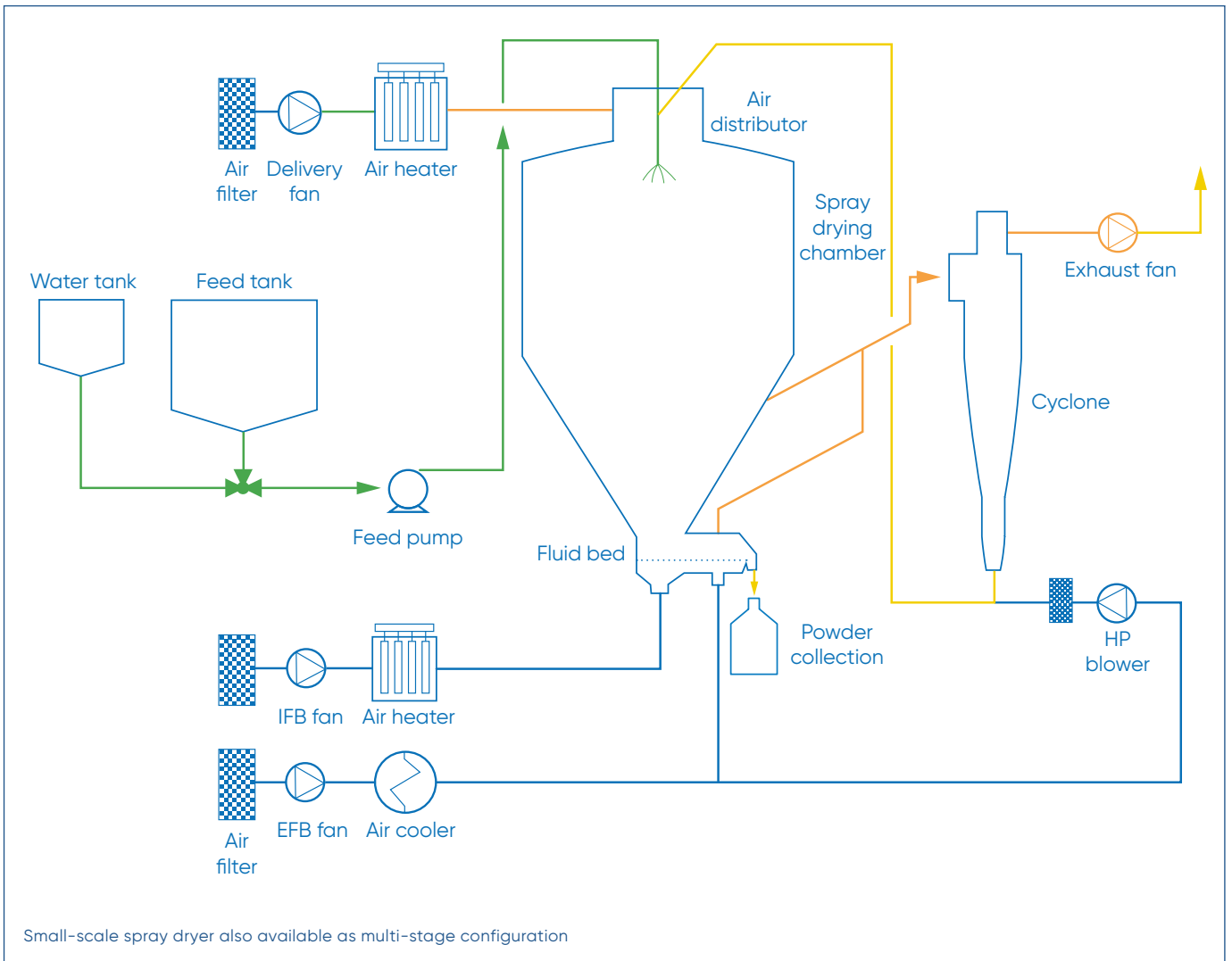
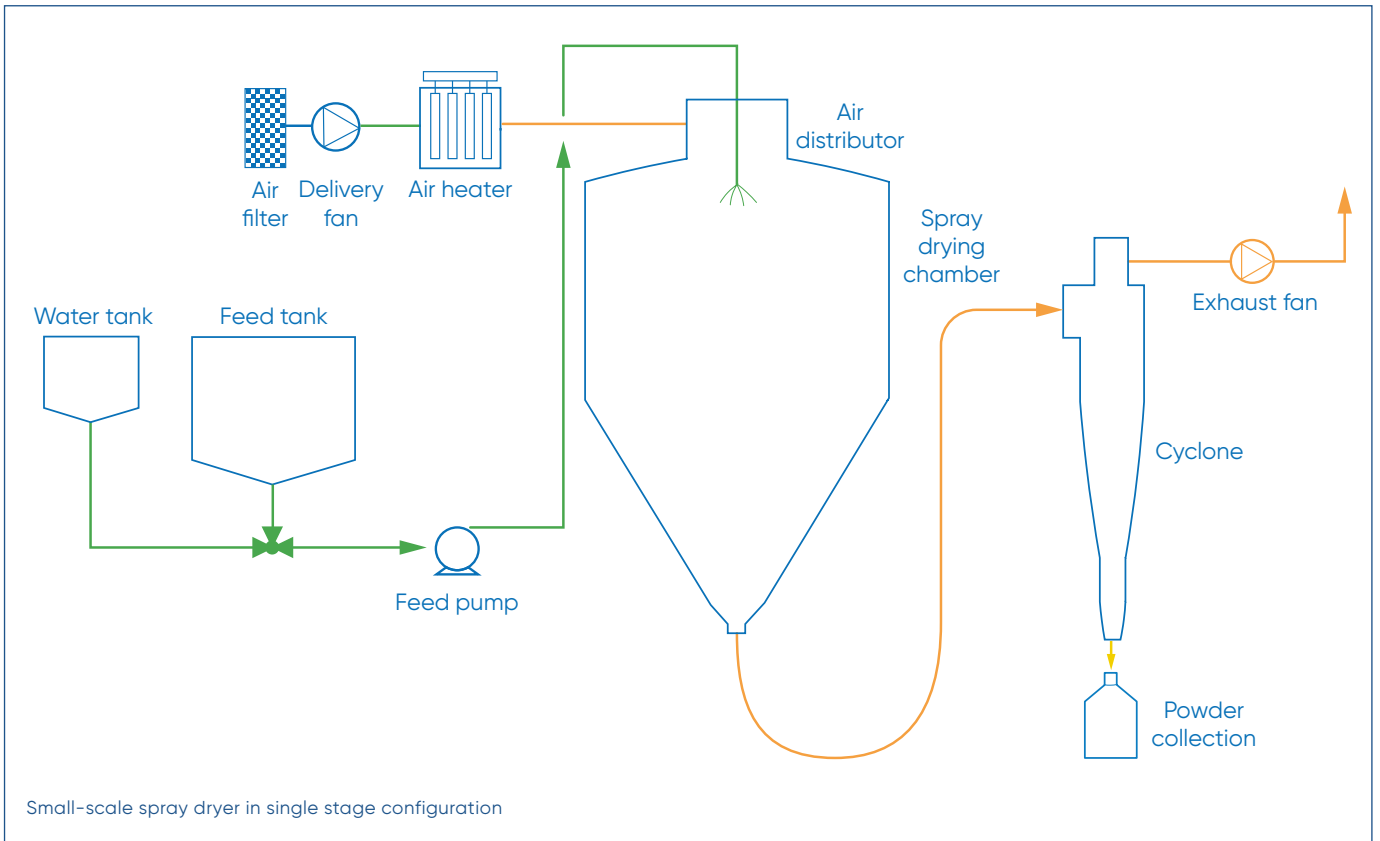
## SAFETY AND COMPLIANCE AT THE CORE

The ANDRITZ Dedert small-scale spray dryer units meet NFPA and VDI European regulations, are OSHA compliant, and incorporate a sanitary, hygienic design aligned with GMP standards. These features ensure not only operational safety but also adherence to the highest quality and hygiene requirements for food, dairy and chemical applications.

## YOUR BENEFITS WITH SMALL-SCALE DRYERS

- Six standard sizes available, each size either in single stage or multistage configuration
- Flexible design plant: Multiple options to enable different configurations and customized to fulfill customer requirements
- Low installation time and cost: Skid mounted unit, plug-and-play unit, and easy installation
- Safety: NFPA and VDI European regulation compliance unit, as well as OSHA compliant
- Sanitary and hygienic designs available





# Unleash what's possible with ANDRITZ small-scale spray dryers

Engineered to deliver high performance, flexibility, and seamless integration, ANDRITZ small scale spray dryers embody the reliability and efficiency demanded by modern production environments. The full capability range across both single stage and multi stage configurations highlights scalable solutions designed to support ambitious process development and consistently elevate product results.

ANDRITZ small scale spray dryers are available in both single stage and multi stage configurations, each designed to meet specific process needs.

## **SINGLE STAGE CONFIGURATION**

The standard single-stage unit includes:

- Feed tank and water balance tank
- Feed pump
- Two-fluid nozzle atomization
- Air inlet filters
- Delivery fan (for PSD64 and above)
- Electric air heater and swirl-type air distributor
- Drying chamber and high-efficiency cyclone
- Powder double flap valve, and powder container
- Exhaust fan
- Pneumatic hammers on chamber and cyclone
- Fire extinguishing and explosion protection systems
- Explosion protection by flameless venting (for smaller units)
- Explosion protection by suppression bottles (for larger units)
- Control/MCC panel with touch screen
- Stainless steel support structure with stairway, platform, and railing
- Materials of construction: AISI 316 for parts in contact with the product (with Ra<0.8 micron), AISI 304 for parts not in contact with the product, external surfaces finished with welds pickled (2B)

## **MULTI-STAGE CONFIGURATION**

The multi-stage unit builds on the single-stage features and adds:

- Pressure nozzle atomization (for PSD64 and above)
- High pressure pump (for PSD64 and above)
- Fluid bed air supply system for fluid bed (fans, electric heater, and ducting)
- Fines return system with blower, piping, and diverter valve

## **OPTIONAL ENHANCEMENTS FOR SINGLE AND MULTI-STAGE UNITS:**

- Feed tank agitator and insulation
- Pressure nozzle atomization
- Centrifugal atomization
- HEPA filter
- Steam or indirect gas air heater
- Ice water or desiccant wheel dehumidification
- Cooling conveying system for single stage units
- Two point discharge for single stage units
- Rotary valve for powder discharge
- Exhaust gas handling with bag filter or wet scrubber
- Explosion protection by flameless venting or suppression bottles or vent panels or with combination
- Additional powder container
- Noise attenuation
- CIP system (automatic or semi-automatic)
- Closed-loop inert gas system for solvent handling
- CIP kitchen



TECHNICAL DATA	SINGLE STAGE VERSION						MULTI-STAGE VERSION					
	PSD 40	PSD 50	PSD 64	PSD 80	PSD 102	PSD 120	PSD 40	PSD 50	PSD 64	PSD 80	PSD 102	PSD 120
<b>Drying air rate (kg/h)</b>	150	280	580	1,250	2,500	4,300	150	280	580	1,250	2,500	4,300
<b>Inlet air temp, max (°C)</b>	320	320	320	315	320	320	320	320	320	315	320	320
<b>Water evaporation capacity, max (kg/h)</b>	12.5	23	50	100	210	360	12.5	23	47	92	208	328
<b>Chamber diameter (m)</b>	1	1.25	1.6	2	2.6	3	1	1.25	1.6	2	2.6	3
<b>Installed power for basic unit (kW)</b>	3.5	5.75	6.5	13.5	24	36	4	7	12	25	38	54
<b>Main air heater, energy (kW)</b>	14	26	54	124	228	388	15.5	28	59	137	245	419
<b>Compressed air consumption for basic unit (Nm<sup>3</sup>/h)</b>	<10	<10	<12	<15	<15	<15	<10	<10	<2	<2	<2	<3
<b>Compressed air quality, dry, oil-free (bar [g])</b>	6	6	6	6	6	6	6	6	6	6	6	6
<b>SYSTEM DESIGN</b>												
<b>Kst max (bar m/s)</b>	<300	<300	<200	<200	<200	<200	<300	<300	<200	<200	<200	<200
<b>Pressure shock resistance (bar)</b>	1	1	1	1	1	1	1	1	1	1	1	1
<b>MAIN DIMENSIONS</b>												
<b>Length (m)</b>	2.2	4.5	5.3	6.5	6.5	7.4	2.5	5	6.3	7	7.5	9
<b>Width (m)</b>	2	3	5	5.2	6	6.2	2.5	4	5	6	7	7.5
<b>Net height (m)</b>	2.5	3.5	5.8	6.7	7.5	8.7	3.2	4.5	6.4	8.7	9.5	11.5
<b>Recommended free height (m)</b>	3.2	4.1	7	7.5	8.5	10.2	3.8	5.1	7.5	10	10.5	12.5
<b>Net weight (kg)</b>	1,000	2,000	2,600	3,200	4,200	6,200	1,300	2,500	3,500	4,000	5,200	7,500
<b>Gross weight (kg)</b>	1,250	2,200	3,000	3,500	4,500	6,800	1,500	2,700	3,900	4,400	5,700	8,300



# Industrial and innovative spray drying solutions for superior product quality

On top of small-scale spray dryers, ANDRITZ offers industrial spray dryers delivering high performance, reliable, and hygienic drying solutions for a wide range of applications in the food, chemical, and industrial sectors. Built around advanced atomization technology, they ensure efficient liquid to powder conversion with full control over particle characteristics, powder quality, and process efficiency.

ANDRITZ Dedert spray dryers combine cutting edge engineering with decades of drying expertise to provide scalable solutions from pilot systems up to large industrial installations.

The dryers can be configured as single stage or multi stage systems with integrated or external fluid bed processing, allowing optimized drying, agglomeration, cooling, or conditioning depending on product requirements.

Featuring a proprietary hot gas distributor for optimal heat exchange, ANDRITZ spray dryers ensure uniform drying conditions and high powder quality – even for heat sensitive or difficult-to-dry materials thanks to flexible chamber design. With evaporation capacities ranging from pilot scale to industrial plants, the systems are engineered for performance, efficiency, and seamless integration into modern production environments.

At the heart of this technology is the Air Bearing Atomizer (ABA) – a patented high speed rotary atomizer that eliminates mechanical bearings, gear drives, belts, and lubrication systems. This oil free, low maintenance design offers superior reliability and consistent droplet formation across a broad range of feed materials, including abrasive products.



Air Bearing Atomizer (ABA) available in various sizes

## YOUR BENEFITS

- Flexible technology enhancing high pressure nozzle atomization
- Advanced air bearing atomizer: Oil free, low maintenance, high reliability atomization with consistent particle formation
- Single or multi stage configurations: Adaptable designs with integrated fluid beds for improved drying efficiency and powder control
- High product quality: Uniform moisture content, optimized particle size distribution, and excellent powder handling
- Flexible capacity range: From pilot scale development to full industrial production
- Enhanced process safety and hygiene: Options for full Clean-in-Place systems and compliance with modern process safety standards



ANDRITZ Dedert spray dryer

# The right solution for any separation challenge

PEACE OF MIND, COST EFFICIENCY, AND SUSTAINABILITY – ALL FROM ONE TRUSTED PARTNER.

Regardless of your industry – whether environmental, chemicals, mining and minerals, or food and beverage – efficient separation processes are essential for high product quality, reduced waste, and the responsible use of valuable resources. With our advanced technologies, comprehensive services, and smart automation and digitalization solutions, we deliver peace of mind today and lasting success for tomorrow – efficiently, responsibly, and with measurable impact. What's more, with us you also gain access to one of the world's largest OEM manufacturers for solid/liquid separation for well-known brands such as 3Sys Technologies, Bird, Dedert, Delkor Capital Equipment (Pty) Ltd., Escher Wyss dryers, Guinard Centrifugation, KHD Humboldt Wedag, Krauss-Maffei centrifuges, dryers, and filters, LENSER Filtration, Netzsch Filtration, REINEVELD centrifuges, Rittershaus and Blecher, Royal GMF Gouda, Sprout Bauer, and Vandebroek.

## SEPARATION EQUIPMENT AND SYSTEMS

- Decanter and filter centrifuges
- Filter presses
- Dryers
- Presses and screens
- Extractors
- Thickeners
- Evaporators and crystallizers
- Disc and drum filters
- Screening and filtration components
- Specialized thermal systems



## FULL-SERVICE OFFERING

- OEM spare and wear parts
  - Maintenance and repairs
- Service agreements
  - Automation and digitalization
  - Machine and process optimization
  - Second-hand and rentals

## AUTOMATION AND DIGITALIZATION SOLUTIONS

Site assessment and integration • Advanced process control and artificial intelligence • Simulation and training • Digital twin technology • Data analytics and prediction • Electrification, instrumentation and controls

# Enabling the green transition

As a technology leader in a changing world, we strive to make a positive impact on our environment. We believe that what we do today can make a difference tomorrow and in the future. We drive change and enable our customers to achieve their sustainability goals and make the world greener with our sustainable solutions in decarbonization, circular economy, renewable energy, and environmental technologies. It all starts with your specific process requirements and ends with a system that gives you the best results – day in and day out, for decades to come.

**ANDRITZ. FOR GROWTH THAT MATTERS.**



## A WORLD OF SEPARATION SOLUTIONS

ANDRITZ provides mechanical and thermal solid/liquid separation technologies, complemented by comprehensive services, automation, and digitalization solutions for the chemicals, environment, food and beverage, as well as mining and minerals industries. Our customized, innovative solutions focus on minimizing resource consumption and maximizing process efficiency, thus making a substantial contribution towards sustainable environmental protection. With over 150 years of experience and more than 2,700 separation specialists around the globe, we are a driving force in the evolution of separation solutions – enabling industries to meet tomorrow's demands responsibly. **ANDRITZ. FOR GROWTH THAT MATTERS.**

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