

SINGLE STAGE CONFIGURATION

The Small-Scale Spray Dryer, type SD2000 single stage, has been designed for drying of liquid products into powders. In single stage configuration the air is introduced in the top of the drying chamber where the feed is atomized into droplets. All air and powder is conveyed through the drying chamber to the cyclone for efficient powder separation. Single stage configuration enables production of single spherical particles.

The spray drying process is scalable and the SiccaDania Small-Scale Spray Dryers are available in many flexible configurations enabling process simulations of larger industrial size spray dryers.

SD2000 is targeted for R&D work as well as small-scale production and used by companies worldwide. It is available in a standard version and features a range of optional items and modules, thus enabling customisation to match individual requirements.

The SD2000 is produced in sanitary design following GMP guidelines and includes state-of-the-art solutions regarding safety, easy cleaning and a sophisticated PLC based control system. All parts in contact with product are made in stainless steel and all elastomers are food grade approved. All plants are skid-mounted, FAT-tested and pre-wired which minimise installation time and costs.

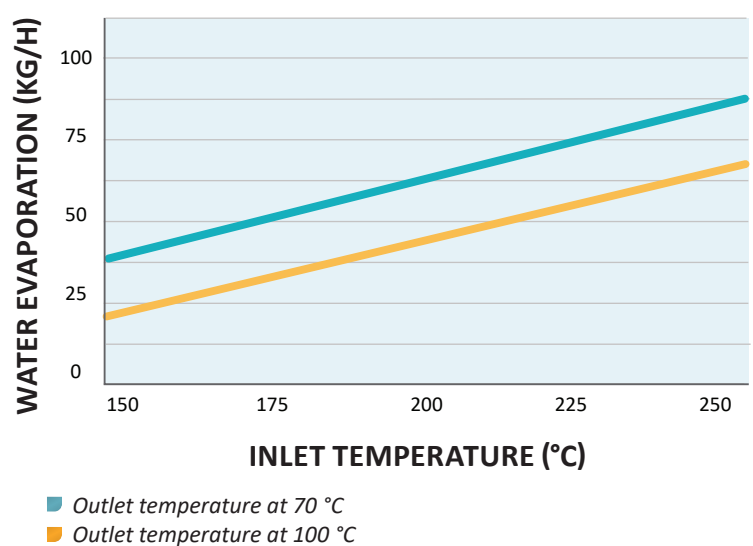


TECHNICAL DATA

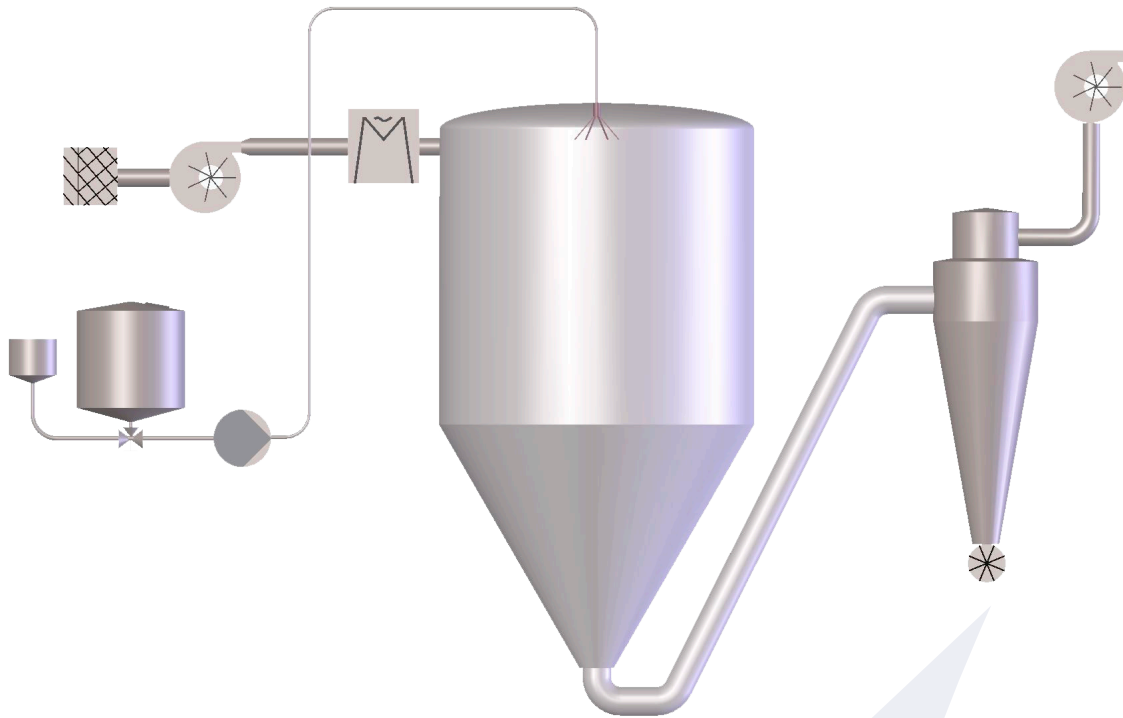
Drying air rate, max.	1400 kg/h
Inlet air temperature, max.	250 °C*
Water evaporation capacity, max.	Approx. 87 kg/h*
Drying chamber diameter	2.0 m
Power supply	3 x 400 V, 50 Hz
Compressed air consumption	Up to 5.6 bar(g) Up to 250 NI/min
Noise emission, max.	85 dB(A)
Kst value, max.	200 bar·m/s
Pressure shock resistance	1 bar(g)
Space requirements LxWxH	4.9 x 5.1 x 6.3 m
Recommended free height	7.4 m
Product contact parts	AISI 316
External surfaces	AISI 304
Weight, net	3.000 kg

* On request the maximum temperature and capacity can be increased further depending on type of main heater.

WATER EVAPORATION CAPACITY



FLOW CHART - SMALL SCALE DRYER SD2000 SINGLE STAGE



EQUIPMENT:

BASIC PLANT

- Water balance tank, 10 L with level control
- Feed tank, 100 L with level switch control
- Mono pump
- Feed line
- Two-fluid nozzle atomizer
- G4 and F7 air inlet filter
- Electrical heater
- Drying chamber
- Rupture disc
- Cyclone
- Powder container, 22 L
- Air ducts
- Suction fan, stainless steel
- Fire extinguishing system
- Control panel with PLC incl. touch screen, cables, wiring and data logging
- Support structure with stairways, platforms and railings – all in stainless steel

OPTIONS

- Insulated feed tank
- Agitator in feed tank
- Duplex filter
- High pressure feed system
- Homogenizer
- Centrifugal atomizer
- HEPA filter H13
- Dehumidifier
- Steam heater
- Gas heater, indirect or direct
- Pneumatic hammers
- Bag filter
- Venturi scrubber
- Powder cooling and conveying system
- Indoor explosion venting system
- Explosion suppression system
- N2 and CO2 gas injection unit
- CIP components and connection points incl. CIP return tank and return pump

OTHER VERSIONS

- Multi stage version

MULTI STAGE CONFIGURATION

The Small Scale Spray Dryer, type SD2000 multi stage, has been designed for drying of liquid products into powders. In multi stage configuration the air is introduced in the top of the drying chamber where the feed is atomized into droplets. An Integrated Fluid Bed (IFB) with a separate air supply system is installed below the drying chamber. The powder is discharged from the IFB whereas the fines are conveyed to the cyclone together with the drying air. Below the cyclone a Fines Return system blows back the fines to the wet atomization zone in the top of the drying chamber. Multi stage configuration enables production of dust-free agglomerated particles.

The spray drying process is scalable and the SiccaDania Small Scale Spray Dryers are available in many flexible configurations enabling process simulations of larger industrial size spray dryers.

SD2000 is targeted for R&D work as well as small scale production and used by companies worldwide. It is available in a standard version and features a range of optional items and modules, thus enabling customisation to match individual requirements.

The SD2000 is produced in sanitary design following GMP guidelines and includes state-of-the-art solutions regarding safety, easy cleaning and a sophisticated PLC based control system. All parts in contact with product are made in stainless steel and all elastomers are food grade approved. All plants are skid-mounted, FAT-tested and pre-wired which minimise installation time and costs.

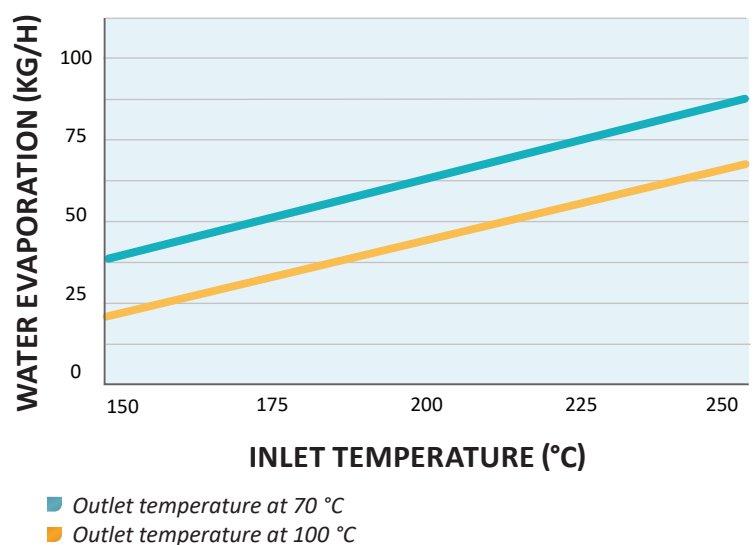


TECHNICAL DATA

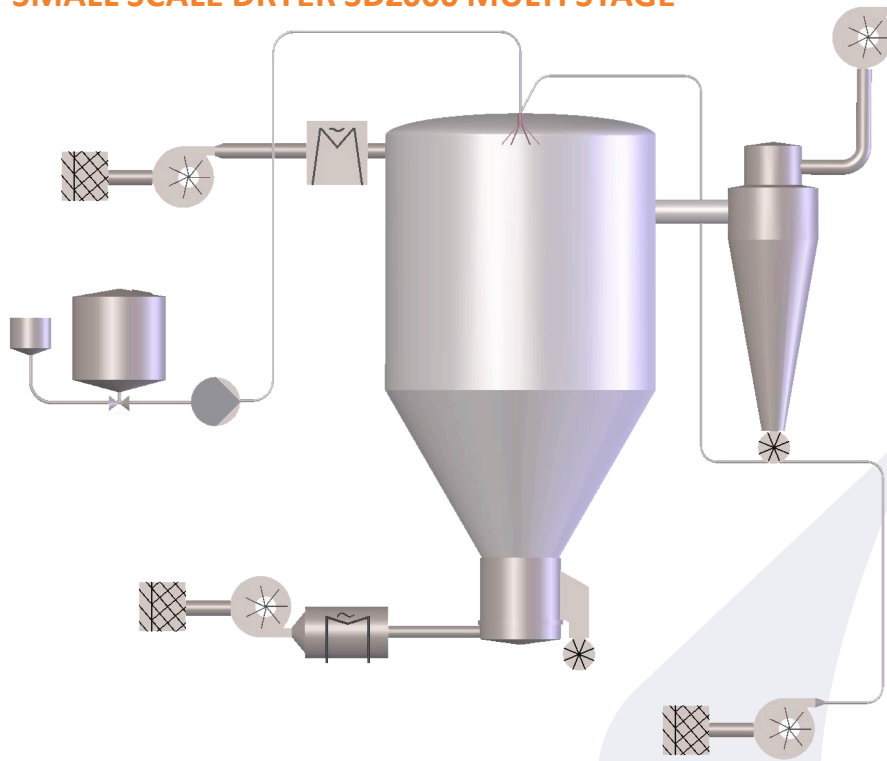
Drying air rate, max.	1400 kg/h
Inlet air temperature, max.	250 °C*
Water evaporation capacity, max.	Approx. 87 kg/h*
Drying chamber diameter	2.0 m
Power supply	3 x 400 V, 50 Hz
Compressed air consumption	Up to 5.6 bar(g) Up to 250 NI/min
Noise emission, max.	85 dB(A)
Kst value, max.	200 bar·m/s
Pressure shock resistance	1 bar(g)
Space requirements LxWxH	5.0 x 5.0 x 7.2 m
Recommended free height	8.3 m
Product contact parts	AISI 316
External surfaces	AISI 304
Weight, net	3.500 kg

* On request the maximum temperature and capacity can be increased further depending on type of main heater.

WATER EVAPORATION CAPACITY



FLOW CHART - SMALL SCALE DRYER SD2000 MULTI STAGE



EQUIPMENT:

BASIC PLANT

- Water balance tank, 10 L with level control
- Feed tank, 100 L with level switch control
- Mono pump
- Feed line
- Two-fluid nozzle atomizer
- G4 and F7 air inlet filter
- Pressure fan, stainless steel
- Electrical air heater
- Drying chamber
- Rupture disc
- Cyclone
- Blow-through valve under cyclone
- Blower for fines return system
- Air ducts
- Suction fan, stainless steel
- Internal fluid bed (IFB)
- Secondary air supply system for IFB
- Powder container
- Control panel with PLC incl. touch screen, cables, wiring and data logging
- Support structure with stairways, platforms and railings – all in stainless steel

OPTIONS

- Insulated feed tank
- Agitator in feed tank
- Duplex filter on feed line
- High pressure feed system
- Homogenizer
- HEPA filter H13
- Dehumidifier
- Steam heater
- Gas heater, indirect or direct
- Pneumatic hammers
- Rotary valve under internal fluid bed
- Bag filter
- Venturi scrubber
- Indoor explosion venting system
- Explosion suppression system
- N2 and CO2 gas injection unit
- CIP components and connection points incl. CIP return tank and return pump
- Static external fluid bed for powder cooling (1 section)
- Vibrating external fluid bed (2 sections)

OTHER VERSIONS

- Single stage version