

FD30 Small scale freeze dryer

The FD30 freeze dryer is designed for small scale drying of nutraceuticals, food, and pharmaceuticals. It has a hygienic design, with electrical heating elements securing a uniform temperature gradient across the entire tray surface.

Applications

The FD30 freeze dryer is designed for drying of nutraceuticals, food and pharmaceuticals:

- Fruit and vegetable (sliced, puree or extract)
- Coffee
- Ready to serve food
- Algae
- Probiotic bacteria
- Enzymes

Freeze drying process

The small scale freeze dryer, type FD30, is a hygienic bulk freeze dryer with an external condenser which optionally can be isolated from the drying chamber.

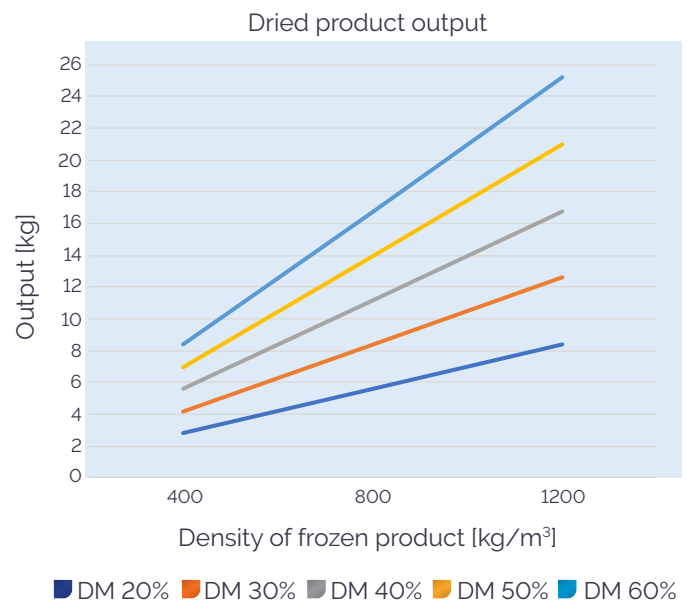
Heating for sublimation is as standard supplied by electrical heating elements. The heating shelves secure a uniform temperature gradient and pressure across the entire tray surface area. They offer the highest level of hygienic design and reduces the maintenance costs.

The design is optimised for up-scaling and ease of maintenance. The FD30 dryer has as an option CIP nozzles installed for full coverage of CIP liquid. It is manufactured from stainless steel, and all surfaces wetted by CIP-liquid can be documented with either 3.1, FDA and/or FCM certificate.



Benefits of the FD30

- Can load between 500g to 30kg of wet product
- Highest hygienic standard
- Optimised energy efficiency
- Virtually maintenance-free
- Multiuse in various setups



Technical data

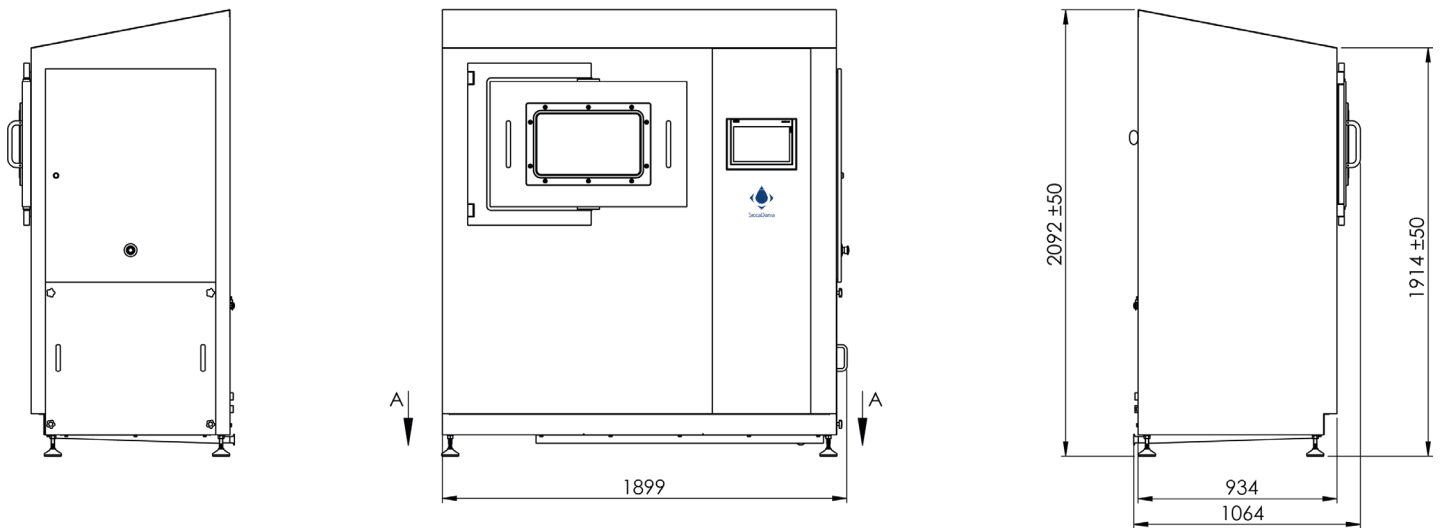
FD30 - Standard batch configuration

Capacity	[kg/lbs]	~ 30 / 66 (bulk density of 1.000kg/m ³ / 2,200 lbs/cu ft)
Coil capacity	[kg/lbs]	+30 / +66
Condensor coil	°C/°F	< -45/-49
Maximum sublimation capacity	[kg/h or lbs/h] H ₂ O	1.6 / 3.5
Shelf area	[m ²]/ [ft ²]	1/10.76
Number of shelves		5
Heating type for shelves		Thermal fluid: -25°C - 120°C / -13°F - 248°F (Standard) Silicone: -45 °C - 80 °C / -49°F - 176°F (Option) Water: 20°C - 120°C / 68°F - 248°F (Option)
Number of trays		8 (Natural anodized aluminium)
Materials		Stainless steel (no painted carbon steel)
Size	W x L x H [m/ft]	1.8 x 1 x 1.8m / 5.9 x 3.2 x 5.9 ft
Refrigeration system	Bitzer	3.3kW, R448a
Heat		Radiation and/or conduction
Vacuum	Edwards	<0.1mbar/0.075 Torr, 35m ³ /h / 1,235 cu ft/h Dry scroll pump (leak valve for vacuum control)
De-icing		Thawing or Vacuum steam (Standard)
Dry out		Software/hardware sequence (Standard) or Liquid ring pump (option)

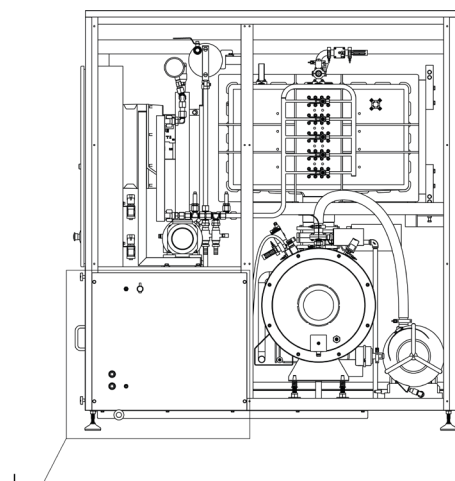
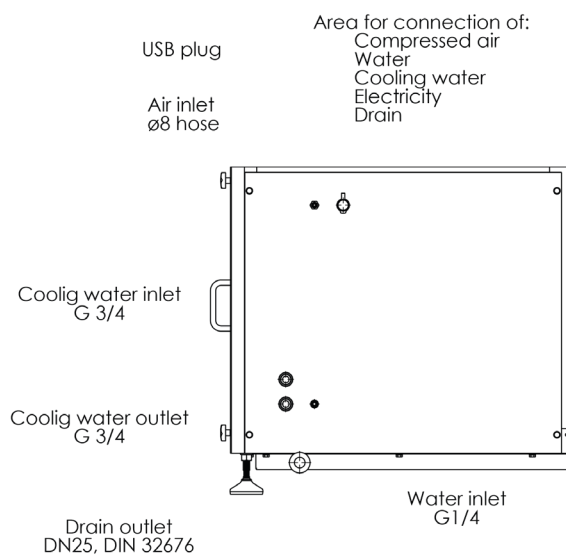
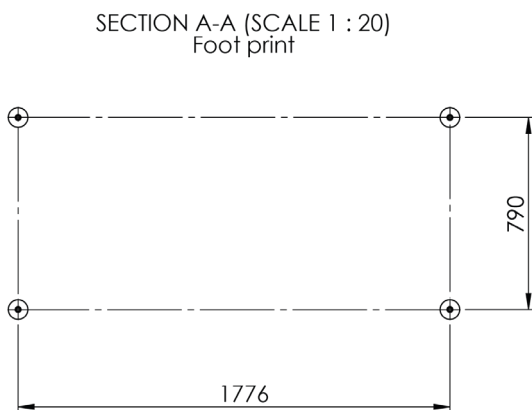
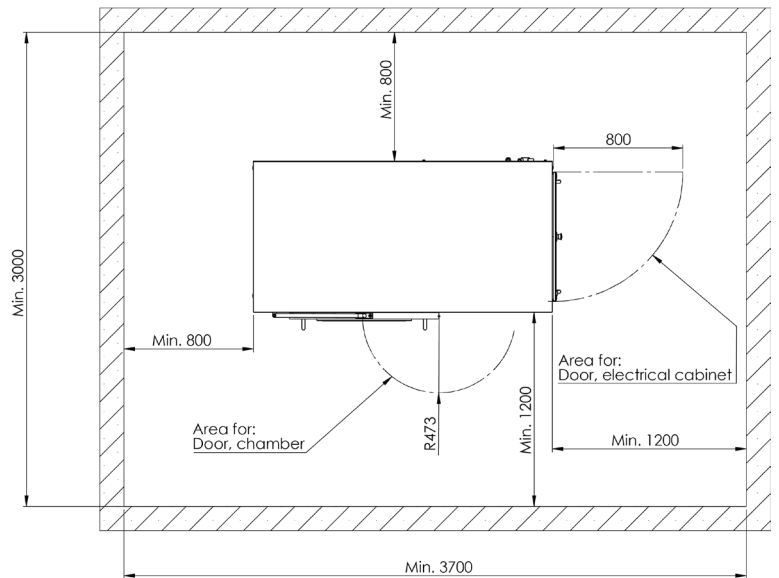
Utility and connections

Utility		Connections (Located on the backside)
Electricity	3x400VAC+N+PE/50HZ TN-S grounding or 3 x 480V/60Hz	13.4 kW(indication)
Cooling water	7/12°C / 45/54 °F	0.7m ³ /h / 25 cu ft/h
Compressed air	6-8bar / 87-166 psi acc. to ISO 8573-1:2010	negligible
CIP Alkaline (optional)	Novadan/CIP Rensinon	1 – 2% / 45°C / 113°F
CIP Disinfection (optional)	Novadan/Oxidant Extra	0.2 – 0.5% / cold water
Condenser chamber drain	-	-
Inert gas in/outlet (optional)	-	-

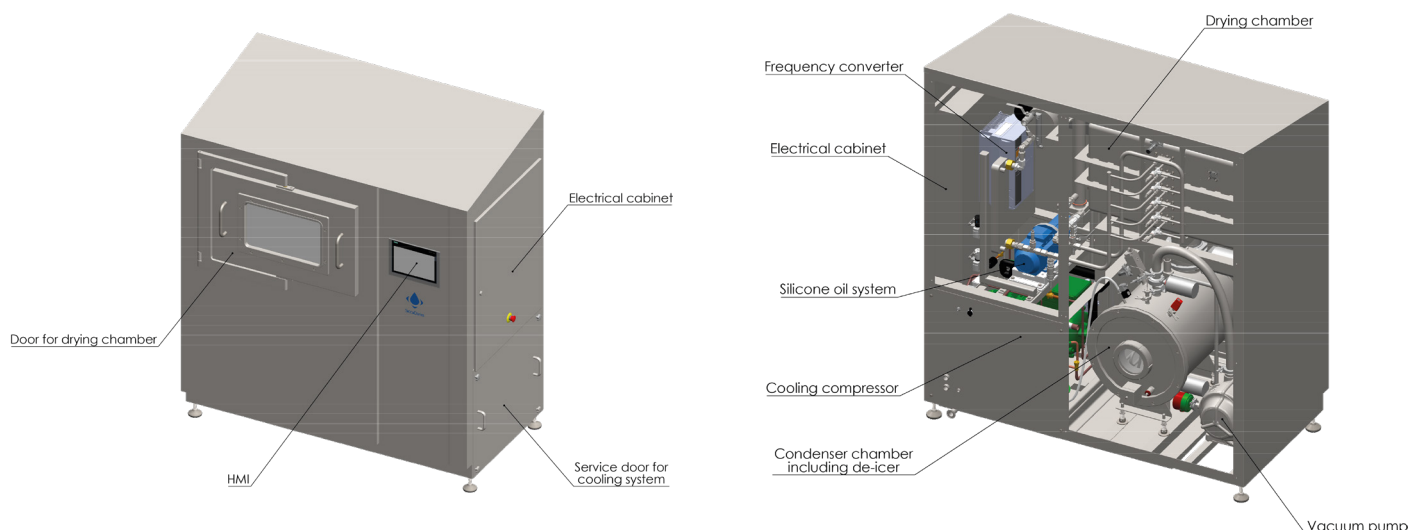
Dimensions



Space required:



Product drawings



Equipment

Standard equipment

- Stainless steel door, frame and cladding
- Stainless steel drying chamber
- Stainless steel condenser chamber and coil
- Complete refrigeration system (water-cooled)
- Non-lubricated vacuum pump (dry scroll pump)
- Pre-cooling of drying chamber
- Pressure sensors (high and low)
- Heating/cooling of shelves with thermal fluid
- Natural anodized aluminium product trays
- Stainless steel sheeted thermocouples for product temperature measurement
- Touch screen control panel with PLC
- Data logging
- Defrost of condenser (hardware/software sequence)
- FAT, SAT and CE-documentation
- Hygienic design prepared for CIP
- Isolation valve
- Additional port

Optional equipment

- 3.2/2.1 certificates for all product wetted parts
- CIP equipment for both chambers
- CIP return equipment
- Disinfection e.g. H2O2
- Wireless product temperature probes
- Nitrogen purging
- Double pressure sensor set
- GMP software and documentation package
- Batch report
- Additional ports
- Cooling water unit
- Defrost of condenser via vacuum steam

Other versions

- Silicone heating/cooling shelves including system
- Water heating/cooling shelves including system
- Realtime product weighing (in chamber)
- Air cooled refrigeration system
- Alternative refrigerant (R404A, R744, R747)