APT SOL
A SCHEDIO GROUP COMPANY

YOUR PARTNER IN PILOT AND PRODUCTION AND INDUSTRIAL **SPRAY DRYING**

APT-5.0
APT-5.0 Plus
Spray Dryer

Corso Milano 17 d/g, 28100 Novara NO

(+39) 0321 1586584 · info@aptsol.it . www.spraydryer.it

APT-5.0 Spray Dryer
APT-5.0 Plus

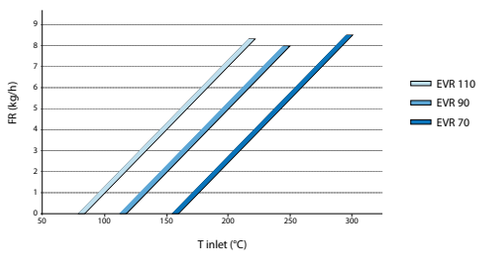
APT-5.0 Spray Dryer

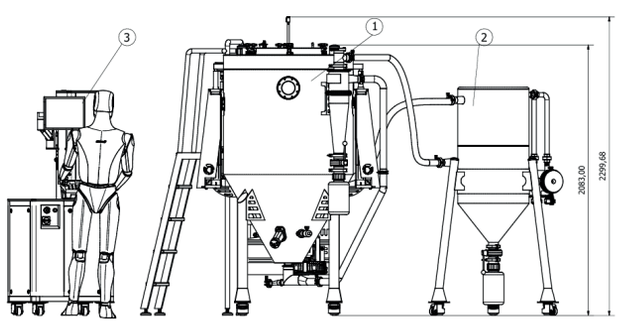
/ DESCRIPTION

The APT-5.0 is an advanced pilot spray dryer that effectively bridges the gap between laboratory-scale and full-scale production. It the capability to conduct preliminary tests and produce small batches make it particularly suitable for initial scale-up and production tests in various fields, including food, ceramics, and cosmetics.
Each component is meticulously designed to emulate a full production unit's performance, while the compact design ensures it fits seamlessly into space-constrained R&D environments.

/ RENDERING

/ EVAPORATION RATE APT-5.0





/ Technical Data

Evaporative Capacity	5 kg/h (distilled water)
Max. Inlet Air Temperature	300 ° C
Heating Capacity	11 kW
Fan Capacity Max.	100 m^3/h
Nozzle	Two Fluids (3 different sizes) / Rotary
Space requirements	250 x 200 x 250 cm (L x W x H) (depending optional)
Weight	680 kg (depending optional)
Filter	PTFE
Materials NOT in contact with the feed	AISI 304 – Acrylic resin
Materials in contact with the feed	AISI 316 (internal polishing Ra <0.5 micron) – PTFE – Pyrex

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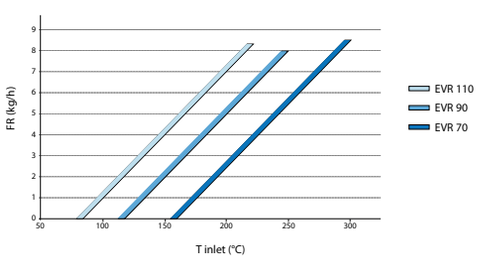
APT-5.0 Plus Spray Dryer

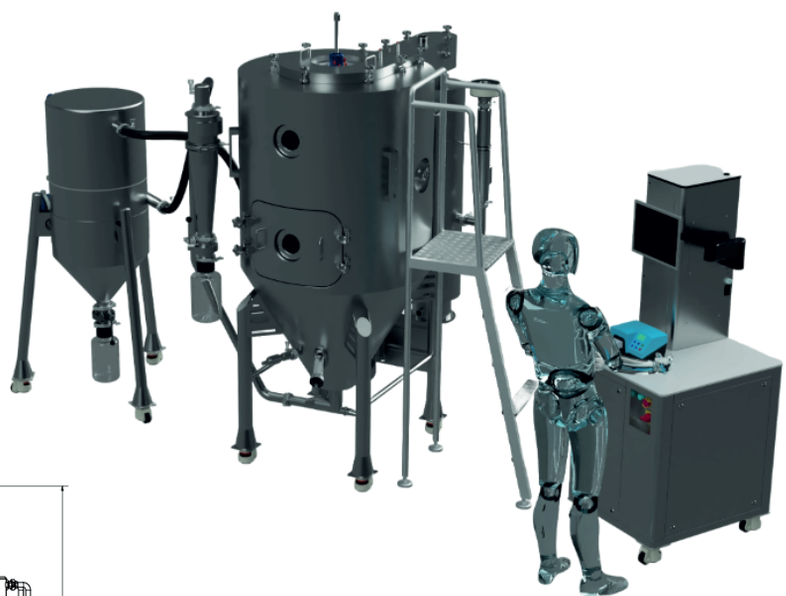
/ DESCRIPTION

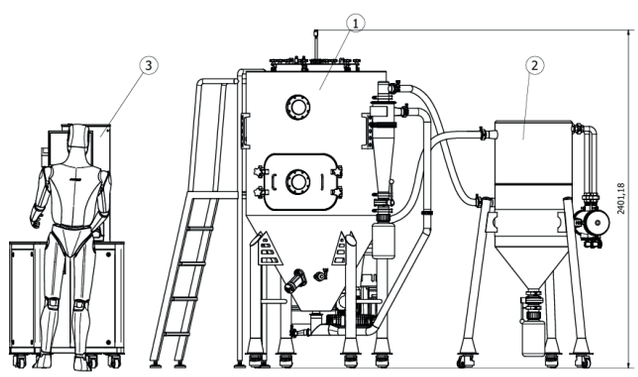
The APT5.0 Plus is a cutting-edge pilot spray dryer designed for both scale-up processes and production. It features automatic valves and enhanced filters, making it versatile for initial testing and full-scale production runs. Despite its advanced capabilities, the APT5.0 Plus maintains a compact design, ensuring it remains manageable and fits easily into space-constrained R&D environments.

/ EVAPORATION RATE APT-5.0 Plus



/ RENDERING





/ Technical Data

Evaporative Capacity Max.	8 kg/h (distilled water)
Max. Inlet Air Temperature	300 ° C
Heating Capacity	17.5 kW
Fan Capacity Max.	210 m^3/h
Nozzle	Two Fluids (3 different sizes) / Rotary
Space requirements	280 x 220 x 330 cm (L x W x H) (depending on options)
Weight	800 Kg (depending optional)

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APT-5.0 Nozzle Configurations

/ ATOMIZERS AND NOZZLE

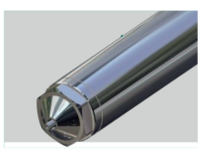
The nozzle atomizer is a carefully engineered device designed to convert a liquid feed into fine droplets and, in a spray drying system, it plays a crucial role in determining the efficiency and quality of the final dried product.
One of the most important choices in a plant configuration is to select the right atomization. We offer a continuous support to customer to better select the right nozzle for their need.

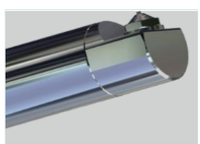
ONE NOZZLE TWO CONFIGURATIONS

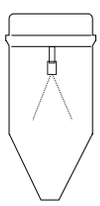
Two fluids Nozzle have special heads that easily allow to switch from counter-current to co-current and viceversa with simple operation.

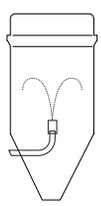
TWO-FLUID CO-CURRENT OR COUNTER-CURRENT MODE

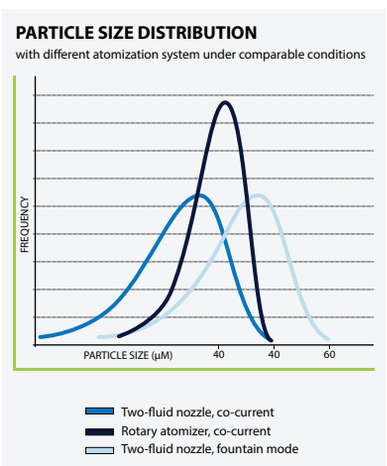
In a two-fluid nozzle, air or another gas are introduced to help the feed atomization process. The force of high-velocity compressed air or gas colliding with the liquid favour its atomization into fine droplets. In the co-current operational mode, the nozzle tip is positioned near the discharge point of the overhead air disperser.
In Counter Current configuration.



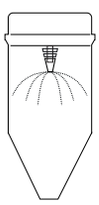








ROTARY ATOMIZER



The rotary atomizer guarantees the atomization process using high rotating speed of a spindle with different orifices frow which the feed liquid is forced by centrifugal speed. In comparison to two-fluid nozzles, the powders obtained using the rotary atomizer is characterized by a more restricted particle size distribution and produce powders that exhibit enhanced free-flowing characteristics.
Moreover different design are available such as: Curved Vanes Wheel with non- abrasive products when is required to increase powder bulk density of the powder.

VIBRATIONAL

In case of wide particle size distribution and goof flowability. The use of vibrational unit allows to reach the goal atomizing the feed liquid into single, small and separated droplets.

On request, all nozzle can be equipped with jacket for cooling or heating the nozzle in order too meet special requirements in case of complex process.

WIP Wash

/ CLEANING SOLUTIONS

We provides various cleaning solutions for small-scale spray drying plants, ranging from manual to automatic processes.

- **MANUAL**
  inserted into ducts and the chamber bag filter, after manually removing filter bags. A WIP tank or trolley with a circulation pump collects and recirculates liquid.

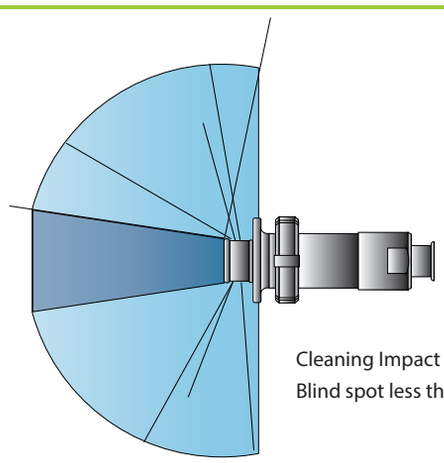
- **AUTOMATIC**
  Pop-up nozzles in ducts and cyclone, rotating impact cleaners are insert in the chamber and bag filter through a dedicated clamp. Cleaning sequences can be programmed in the control system of a dedicated WIP.

- **AWSTM**
  Automatic units can be equipped with an automatic Wet In Place (WIP) system, featuring spray nozzles fed with compressed water or solvent, positioned throughout the unit, including inside the jet milling system. Drains are equipped with a syphon and interlocks.

Nozzle CIP (Clean in Place)
retractable nozzles in the drying tower

/ OPTIONS

- Open and close by the liquid pressure
- Self lubrificant with cleaning media
- High Active impact radious
- Blind spot less than 30°
- AISI 316
- Weld directly into the tower, filter or piping



Cleaning Impact Radius
Blind spot less then 30°

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MACHINES

/ OUR SOFTWARE Available for all equipment sizes

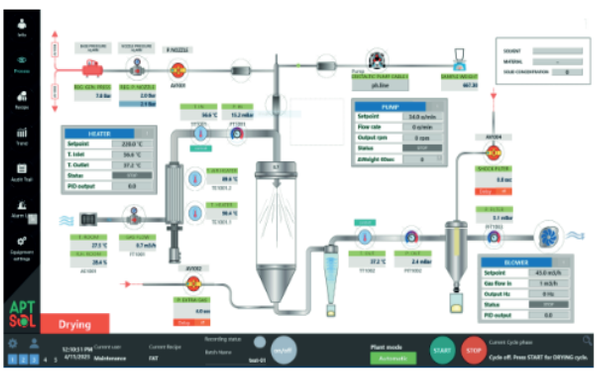
- Up to 15 data recorded
- USB, LAN and Wi-Fi connections
- Easy download in a sheet all the processes recorded (PDF or Excel)
- Customizable user level access (Operator, R&D, Production, Administrator...)
- CFR 21 PART 11 compliance

/ Smart and User-friendly HMI

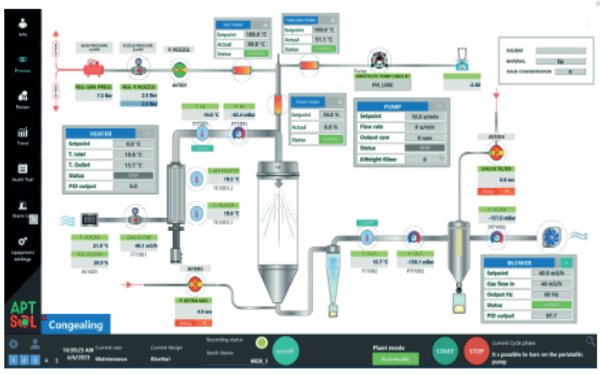
High-performance Spray Dryer and Spray Congealing for lab, pilot, and industrial production activities with advanced PLC functions and a high level of control of process parameters. APT Pilot ONE software offers a brilliant 19" touchscreen display with advanced graphic functions and an intuitive navigation menu, with the possibility to control multiple units simultaneously.

From Spray Drying to Congealing in one touch

DRYING



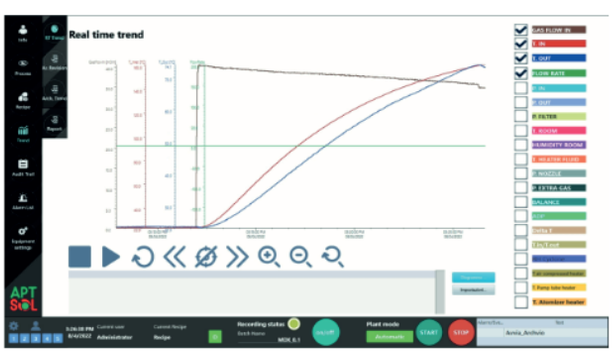
CONGEALING

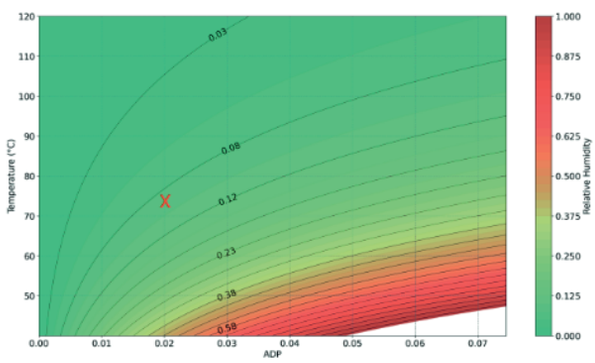


/ Tools

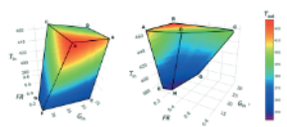
APTSol constantly works to develop and improve its equipments with new technologies and cutting-edge tools available to deepen process understanding during the R&D and manufacturing control phases.

From data recorded To SD-DoS® (Real time Spray Drying Design of Space)





SD-DoS® is integrated in the equipment software and allow scientists during recipes developing



On request: 3D space (as service)

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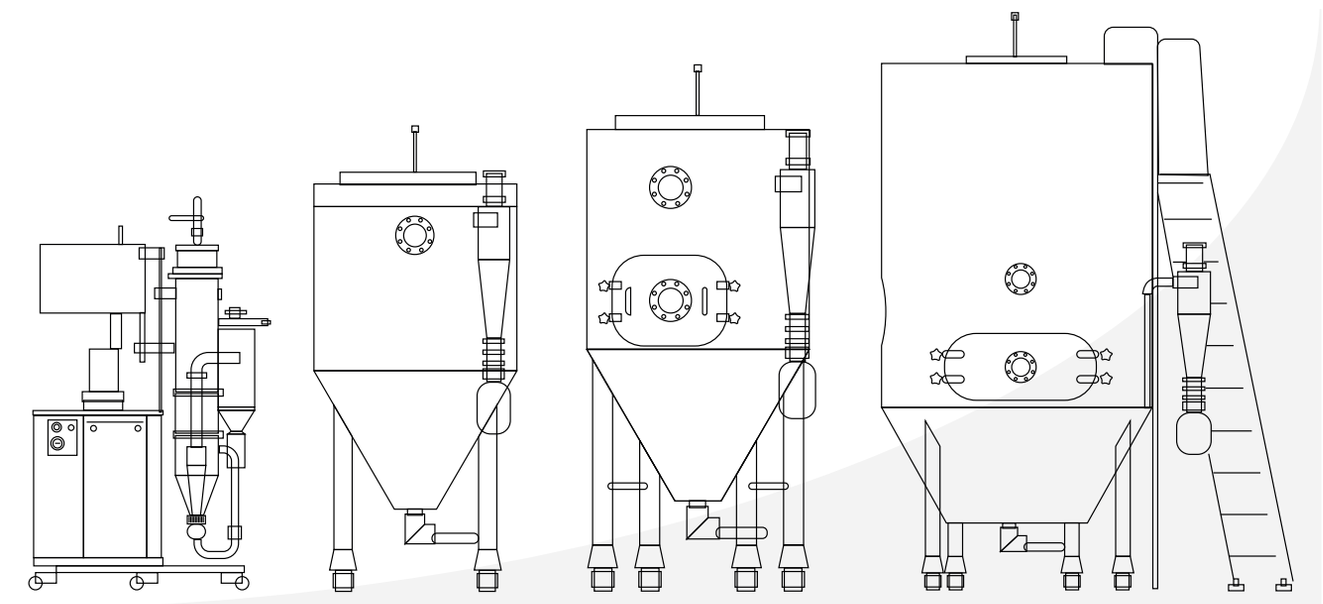
APT-5.0 / APT-5.0 Plus Spray Dryer

/ OPTION



APT 2.0 | **APT 5.0** | **APT 5.0 Plus** | **APT 30.0**

	APT 2.0	APT 5.0	APT 5.0 Plus	APT 30.0
Water / Acetone Evaporation Capacity [L/h]	2 / 4	5 / 9	8 / 15	30 / 55
Nozzle Type	Two Fluid	Two Fluid | Rotative	Two Fluid | Rotative	Single Fluid | Two Fluid Rotative
Movable	✓	✓	✓	✗
Atomizing Displacement	Top	Top | Bottom	Top | Bottom	Top | Bottom
Product Contact Material	Glass | AISI316L	Glass | AISI316L	AISI316L	AISI316L
Available Configurations	E-L | STX | C-L	E-L | STX | C-L	E-L | STX | C-L	E-L | STX | C-L
APT Assisted DoETM	✓	✓	✓	✓
High Potent Predisposition	✓	✓	✓	✓

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/ SAFETY - FLAMMABLE COMPOUNDS

All equipments are designed to adhere to the highest standards of health, safety, and environmental protection, ensuring you access to the most secure solutions available in the market. In case of dubts we can tests your product and its properties, assess risks through established safety protocols, and recommend the safety concept best suited to your circumstances.

VENTING

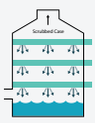
Explosion vents rupture to mitigate overpressure and direct explosions safely. They are available in various shapes, materials, and specifications to suit different conditions.

PRESSURE RESISTANCE

When venting overpressure isn't feasible, components like cyclones or piping are designed with increased resistance, up to 10 Bar.

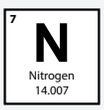
FLAME SUPPRESSION

The system detects early-stage explosions and introduces extinguishing powder into the pipe, ensuring secure isolation.



SCRUBBER

In a wet scrubber, contaminated gas enters at the bottom, passes upward through the system, and is cleaned by downward-flowing solvent sprays.



INERTIZATION

Nitrogen is used instead of ambient air, allowing the spray drying process to handle toxic substances, prevent explosive mixtures, and treat products susceptible to oxidation.

/ SERVICES

In our headquarter we also offer contract services for feasibility study, formulation development and consultancy around several encapsulation techniques.