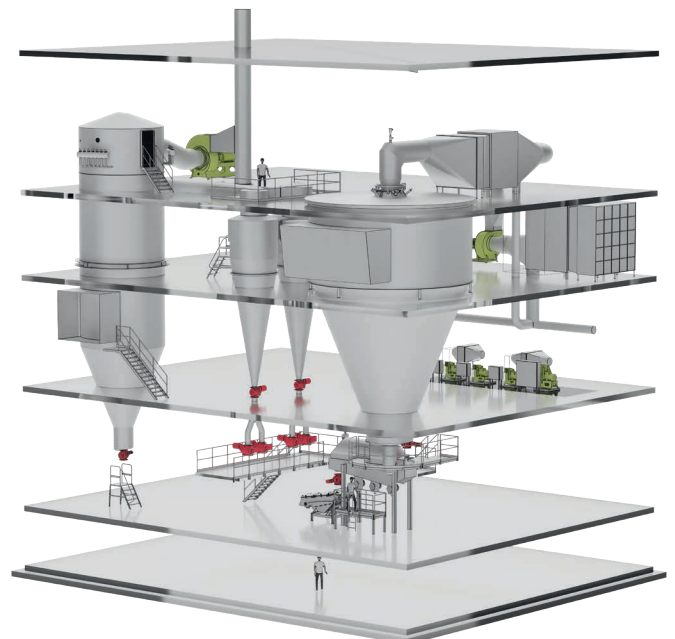


> Anhydro[®]



PLANT EFFICIENCY

**Dehumidification – Air Heating – Model Predictive
Control – Dual Feed Lines – Heat Recovery – CIP**



SPXFLOW[®]

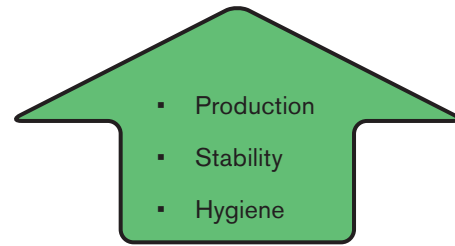
IMPROVING DRYING EFFICIENCY

Efficient spray drying reduces energy use and other operating costs while improving process stability, yield, and hygiene.

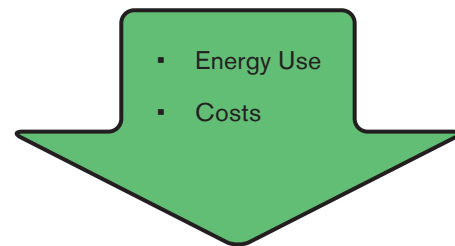
A carefully planned rebuild or upgrade improves performance and extends the life of your equipment.

Our spray dry process experts deploy proven methodology to renovate under-performing air heaters, dehumidifiers, and heat recovery systems. They also improve processes with software that self-corrects process anomalies and dramatically compresses product delivery schedules with dual feed lines.

At SPX FLOW, our goal is to help you make the most of your assets. Thanks to decades of experience, you can rest assured that you will.



Dehumidification
Air Heating
Model Predictive Control
Dual Feed Lines
Heat Recovery
CIP



UTILISE AND OPTIMISE AIR SYSTEM



Recover and Save Energy



Process Stability



Increase Production



Hygienic and Technology Standards

DEHUMIDIFICATION OPTIONS

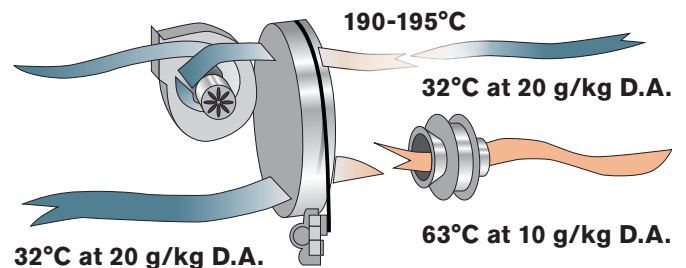
+20%

Capacity increase up to 20% depending on the product

A frequent problem in powder operations is excess water - which is exacerbated during the change of seasons. For control systems that are not calibrated properly, these seasonal changes create instability. Our methods stabilise process conditions regardless of seasonal changes for powder output all year with maximum energy efficiency. Whether you use a desiccant rotor or chilled water cooling, a dehumidification system upgrade can increase capacity by as much as 20 percent.

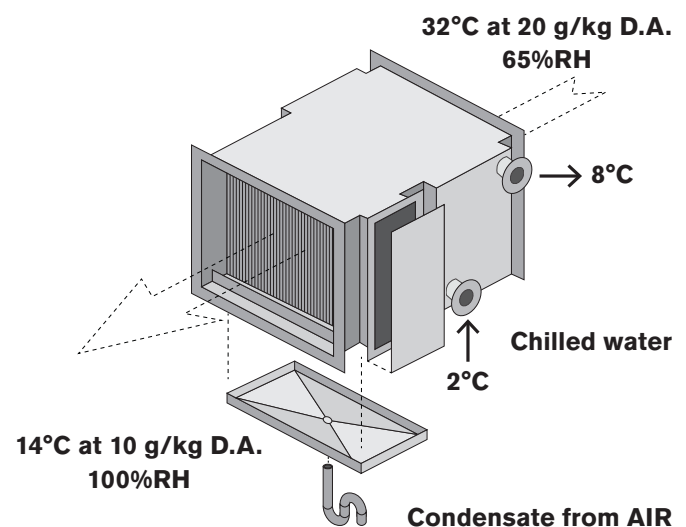
Dehumidification with Desiccant Rotor

The heart of an adsorption dryer is a desiccant rotor covered with silica gel. The silica gel absorbs water from the moist air passing by the rotor. The gel then desorbs the moisture in a separate warm-air flow, venting it away and leaving the rotor dry and ready for duty. The entire process is self-sustaining, requiring minimal inspection or maintenance.



Dehumidification with Chilled Water

Chilled-water systems operate similarly to air conditioning and refrigeration units. They reduce the temperature of ambient air by circulating cooler water and draining off condensation that forms on cooling coils. By regulating water temperature, it achieves a desired dew point temperature that corresponds to the absolute humidity.



Benefits of Dehumidification Upgrades

In addition to increased capacity, dehumidification improvements result in less cyclone blockage, spray dryer fouling, off-spec powder, over-drying and moisture content variation. It also means less manual operation since the dehumidification unit removes moisture by providing a stable process that does not require constant adjustment by operators.

Benefits

- Increased capacity
- Less manual operations
- Interference
- Less lumps on fluid bed
- Less blockage of cyclones
- Less fouling in Spray Dryer
- Less CIP-time and less CIP's in general
- Less off spec powder
- No over-drying
- Decreased variation in moisture content product

AIR HEATING

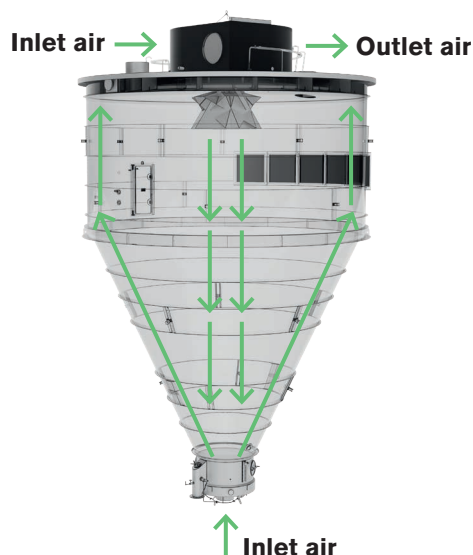
The older the plant, the more opportunity to increase efficiency. Even plants that are less than 5 years old can benefit from a range of upgrades, such as:

- Recovering lost heat
- Increased drying capacity
- Reduction in cleaning time

Additionally, plants can comply with new environmental regulations by optimising air flow, upgrading filters, and implementing indirect heating.

Optimised Air Flow

Adjusting air flow to the fluid bed keeps powder agglomeration in control. Doing so requires passing air through filters that must be carefully selected for each application.



Upgrading filters

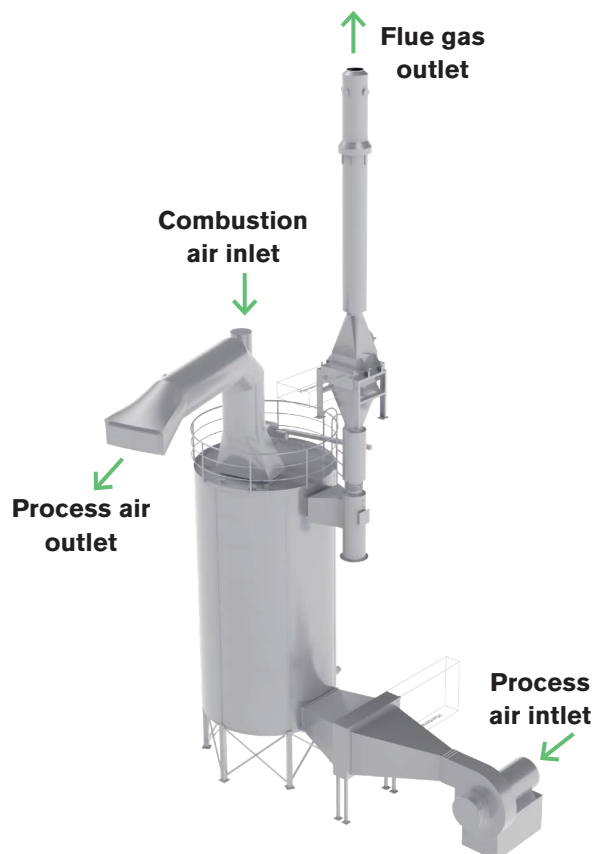
Determining whether coarse, fine HEPA, or ULPA is right for you can lead to performance improvements.

Improving Air Heater Efficiency

The more precisely you control the air temperature in your drying operation, the more efficient your process becomes. Whether running direct, indirect gas or steam, electrical heaters, or boosters, SPX FLOW specialists make sure you have the air heating solution that yields maximum reliability and lowest energy consumption.

Upgrading to Indirect Air Heaters

Maintaining higher air temperatures boosts drying capacity. That is why we often recommend upgrading to new indirect gas or oil-fired air heaters.



Benefits

- Hot process air will meet hygiene standards
- Improve efficiency
- Lower energy costs
- Recover lost heat
- Increase drying capacity
- Comply with new environmental regulations

MODEL PREDICTIVE CONTROL (MPC)

Humidity changes so often that manual adjustments cannot keep up with it. We solve this with model predictive control (MPC) software that senses moisture levels and adjusts process parameters automatically. You get more stable powder production, higher product quality and higher capacity.

DUAL FEED LINE

Waiting for a single clean-in-place (CIP) operation to complete before feeding the next batch of powder is an inefficient use of time. But with dual-feed lines, one line can clean while the other runs a new batch. Having one line always in production saves valuable processing time while also getting more product to market faster.

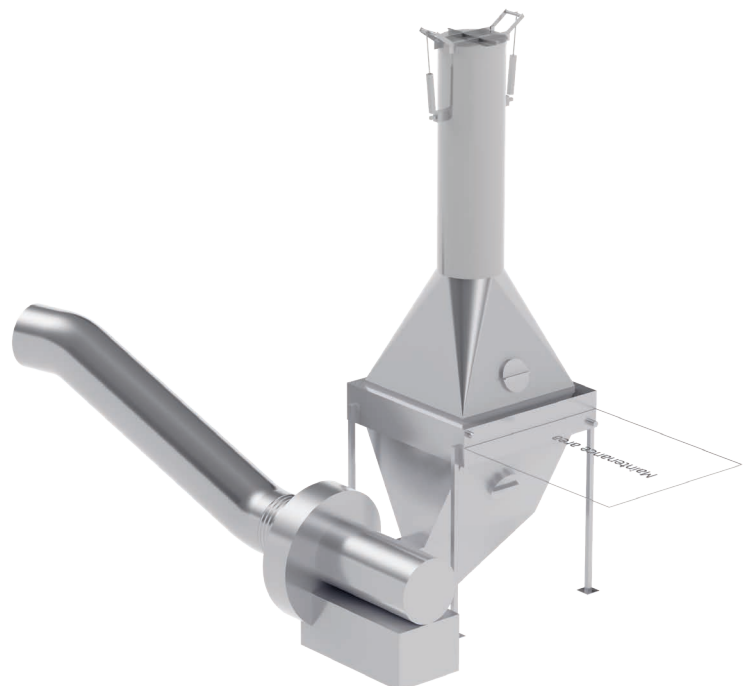
Doubling the feed line to nozzle atomization system simplifies switching between the two lines during daily feed line CIP operation. This keeps production running during the daily CIP, adding hours of production each day. Note: Doubling the feed line typically requires the addition of a homogenisation/HP pump, at least one additional feedline, and additional nozzles.

IMPROVING HEAT RECOVERY

Heat loss from the main exhaust air system and exhaust stack gas from the air heater is an inefficient use of energy. Recapturing this heat and using it to process air saves money. The recovered heat can also be used to preheat process inlet air before air heating. Note: A heat recovery upgrade typically involves installation of inlet, flue-gas and/or exhaust recuperators, pumping stations, and field instrumentation.

Energy saving system consists of:

- Inlet recuperator
- Flue-gas recuperator
- Exhaust recuperator
- Pumping station
- Field instrumentation



CUSTOMISED SOLUTION OFFERING

CUSTOMER MEETING

Review customer requests, challenges, and expectations.

Plant and Process Review

Key parameters:

- Temperature in/out
- Absolute humidity
- Relative humidity
- Enthalpy
- Air flow rate
- Dryer capacity with current set-up
- Feed preparation
- Feed recipe
- Sanitary aspects
- Powder specifications

Engineering Study

A solution is developed based on process parameters and calculations. All layout, execution and schedules are approved by the customer.

Proposal Preparation

A detailed proposal is created in collaboration with the customer and contains clear deliverables and schedules.

Solution Presentation

The customer has full control of the execution process via transparent collaboration and detailed proposal.

Execution Model

Full project management, detailed engineering package, on-site installation, supervision, and commissioning of a plant is all part of our standard execution model.

WHY PARTNER WITH SPX FLOW?



Years of Experience

- We have been in the spray dryer business since 1948
- Implemented 6,000 different types of spray dryer plants around the world
- Extensive experience rejuvenating spray dryers for safety, efficiency, optimisation, and sustainability
- Developed a proven process for matching strengths to market opportunities
- Long and successful track record in project development and execution



Our Mission

SPX FLOW combines extensive experience and proven technologies to help you capitalise on market trends with:

- Maximum utilisation of your existing assets
- Maximum return on new investments
- Maximum environmental protection

We help you find the best solution for your long-term needs. We work with you to evaluate market opportunities and provide the modernisation, upgrade, or repairs necessary to capitalise on them.



Your Account Team

Your SPX FLOW project manager selects the ideal team for your specific project based on the following criteria:

- Customer support
- Process and design
- Mechanical engineering
- Supply chain optimisation
- Installation and commissioning



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For more information, visit www.spxflow.com.