



50⁺ Years
Of experience

SPRAY DRYERS



ISO 9001:2015 | ISO 14001:2015 | ISO 45001:2018

ABOUT US

Kerone Engineering Solutions Ltd is a global leader in advanced industrial heating, drying, cooling & end to end process engineering solutions. With over five decades of proven expertise, we specialize in designing, manufacturing, and delivering highly customized, cutting-edge systems tailored to the evolving needs of industries worldwide.

Our commitment to engineering excellence, sustainability, digitalization, and technological innovation has positioned us as a trusted partner for businesses across multiple sectors. By integrating Artificial Intelligence (AI), Machine Learning (ML), and Internet of Things (IoT) technologies into our systems, Kerone ensures smarter automation, real-time monitoring, predictive maintenance, and data-driven process optimization—empowering our clients to achieve greater productivity, efficiency, and reliability.



50+

Years of Experience



10,000+

Satisfied Clients



500+

Employee



100+

Experts



50+

Global Presence



50+ Years Manufacturing Excellence



Great Sale Support



Highly Customized Product



Adherence to Standards



Sound Infrastructure



Team of experts Delivering Quality



Timely Delivery



Cost Effective Solutions



INDUSTRIES WE SERVE

- ✓ Food Processing & Agro-Processing
- ✓ Chemicals & Petrochemicals
- ✓ Pharmaceuticals
- ✓ Textiles, Automotive & Aerospace
- ✓ Paper & Packaging
- ✓ Ceramics & Glass
- ✓ Rubber & Plastics
- ✓ Environmental & Waste Management
- ✓ Oil, Gas & Steel Industries



- ✓ Industry Expertise – Over 50 years of global engineering leadership.
- ✓ Custom Solutions – Tailored engineering that meets unique industrial requirements.
- ✓ Global Reach – Trusted by industries across continents with proven reliability.
- ✓ Digital & Smart Systems – AI/ML-powered automation, IoT-based monitoring, and predictive insights.
- ✓ Cutting-Edge Technology – Continuous innovation in heating, drying, and advanced processing.
- ✓ Energy Efficiency – AI-optimized designs for lower energy consumption and sustainability.

QUALITY & COMPLIANCE

At Kerone, quality and compliance are non-negotiable. All our solutions are engineered in adherence to international standards and industry best practices, ensuring maximum safety, durability, reliability, and efficiency. With integrated digital technologies, we enable smarter quality control and compliance tracking across all operations.





Powered by AI/ML & IoT

Spray Dryers

A spray dryer machine is an advanced industrial equipment used to convert liquid feed such as solutions, slurries, emulsions, or suspensions into dry powder form by rapidly evaporating moisture using hot gas, typically air. The process begins with feed preparation, where the liquid material is homogenized and pumped at controlled flowrate into an atomization system that can be a rotary atomizer, pressure nozzle, or two-fluid nozzle depending on required particle size and product characteristics. Inside the drying chamber, the atomizer disperses the liquid into millions of fine droplets, dramatically increasing surface area and allowing instant heat and mass transfer. As these droplets come into contact with heated air, moisture evaporates within seconds, producing uniform particles with controlled morphology, bulk density, and moisture content.

The drying air flow pattern may be co-current, counter-current, or mixed flow, influencing product quality, thermal exposure, and energy efficiency. The dried powder is then separated from exhaust air using cyclones, bag filters, or wet scrubbers, while fines recovery systems help maintain yield and minimize product loss. Spray dryers are widely used in food processing (milk powder, coffee, flavors), pharmaceuticals (API intermediates, excipients), chemicals (detergents, pigments), ceramics, and biotechnology due to their ability to handle heat-sensitive materials with minimal degradation and precise control over particle engineering. Modern spray drying systems incorporate automated PLC controls, temperature and pressure monitoring, explosion protection, hygienic design for CIP cleaning, and energy optimization features such as heat recovery and multi-stage drying.

Key Features

- **Rapid Drying Technology**
Converts liquid into powder instantly using high-temperature air with very short residence time.
- **Efficient Atomization System**
Rotary or nozzle atomizers create fine droplets for uniform particle size and consistent product quality.
- **Continuous Automated Operation**
PLC-based system enables uninterrupted large-scale production with minimal manual handling.
- **Hygienic Stainless-Steel Construction**
Designed for food, pharma, and chemical industries with easy cleaning and corrosion resistance.
- **High Powder Recovery System**
Cyclones and bag filters efficiently separate powder from exhaust air, reducing product loss.
- **Energy-Efficient Design**
Optimized air circulation and optional heat recovery systems lower energy consumption.

Advantages

- **Fast Drying Speed**
Converts liquid to powder within seconds.
- **Uniform Particle Size**
Produces consistent and free-flowing powder.
- **Continuous Operation**
Suitable for large-scale industrial production.
- **High Product Quality**
Better solubility, color, and texture control.
- **Wide Application Range**
Used in food, pharma, chemical, and ceramic industries.
- **Low Manual Handling**
Fully enclosed process improves safety and hygiene.

Types Of Spray Dryers

Lab Spray Dryer

Pilot Spray Dryer



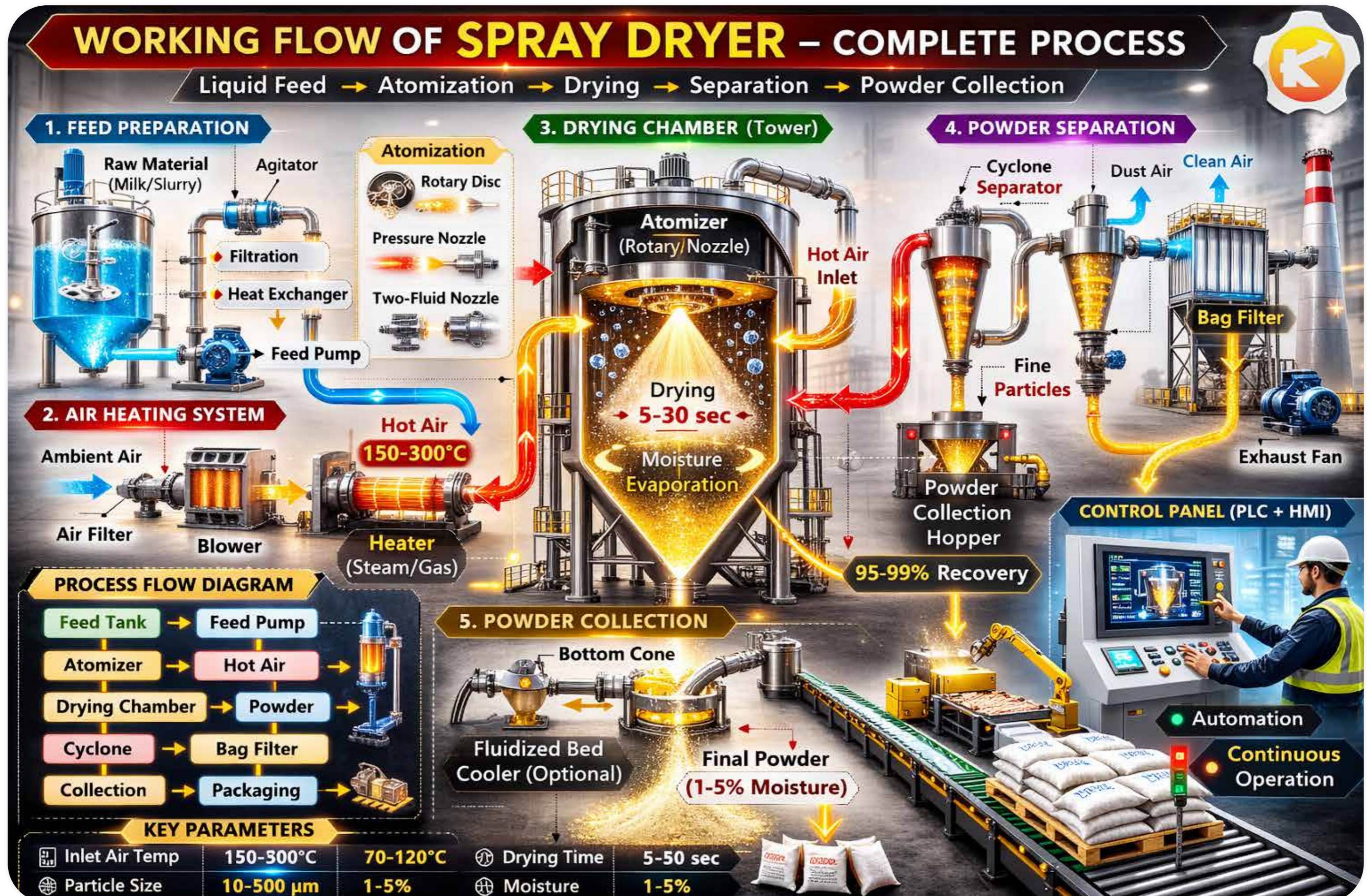
Lab Spray Dryer

A Lab Spray Dryer is a compact drying system used in research and pilot-scale applications to convert liquid solutions or slurries into dry powder. It works by atomizing the liquid into fine droplets inside a hot drying chamber, where rapid evaporation occurs. This equipment is widely used in universities, R&D centers, and industries for product development and formulation testing.



Pilot Spray Dryer

A Pilot Spray Dryer is a medium-scale drying system designed to bridge the gap between laboratory trials and full industrial production. It atomizes liquid feed into fine droplets inside a heated chamber, enabling controlled and scalable powder production under realistic operating conditions. Pilot spray dryers are widely used for process optimization, scale-up studies, and pre-commercial manufacturing validation.



Applications

Application	Description
Food & Dairy	Milk powder, coffee, flavors, egg powder, protein powders with long shelf life.
Pharmaceutical	Drying APIs, herbal extracts, vaccines, and excipients into stable powder form.
Chemical	Detergents, catalysts, pigments, resins, and specialty chemical powders.
Ceramic & Materials	Ceramic slurry drying to produce uniform granules for tile and component manufacturing.
Agrochemical	Fertilizers, pesticides, and plant nutrients converted into easy-to-handle powders.
Environmental	Waste liquid treatment and drying of sludge into manageable dry solids.



Technical Specifications

Parameter	Specification Range	Description
Feed Type	Solution / Slurry / Emulsion / Suspension	Liquid feed prepared with controlled viscosity and solid content.
Evaporation Capacity	5 – 5000 kg/hr water removal	Defines production capacity of the dryer.
Inlet Air Temperature	150 – 350 °C	High temperature air for rapid moisture evaporation.
Outlet Air Temperature	70 – 120 °C	Controlled to maintain final moisture and product quality.
Particle Size Range	10 – 300 microns	Adjustable by atomizer speed, pressure, and feed rate.
Airflow Pattern	Co-current / Counter-current / Mixed Flow	Affects thermal exposure and drying efficiency.
Powder Collection	Cyclone / Bag Filter / Wet Scrubber	Separates dried particles from exhaust air.
Energy Consumption	3000 – 7000 kJ/kg water evaporated	Varies with efficiency and heat recovery system.
Moisture Content (Final Product)	1 – 6 %	Controlled through airflow and outlet temperature.



THANK YOU

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