AESPL®

www.alfatechahmedabad.com

ALFATECH

ENGINEERING SYSTEMS PVT. LTD.

EXCELLENCE IN DRYING SOLUTIONS

Research & Development

At Alfatech Engineering Systems Pvt. Ltd., innovation drives our engineering excellence. Our R&D division focuses on developing energy-efficient, high-performance drying and evaporation systems tailored to modern industrial needs.

We emphasize process optimization, product quality, and sustainable design, supported by a skilled team of engineers and technocrats.

KEY R&D CAPABILITIES

- In-house Pilot Plant Facility
- Enables testing and validation before scale-up, ensuring reliable and efficient plant performance.
- Process Development & Optimization
- Improves yield, reduces energy consumption, and ensures consistent product quality.
- Customization & Innovation
- Tailor-made solutions based on product characteristics and client
- requirements.
- Advanced Engineering & Automation
- Integration of modern control systems for improved efficiency and process control.
- Sustainable Solutions
- Focus on energy efficiency, reduced emissions, and environmentally responsible design.

OUR APPROACH

We combine pilot testing, engineering expertise, and innovative design to deliver solutions that are:

- Reliable
- Cost-effective
- Performance-driven

Spray Dryer

Spray Drying Solutions for Precision Powder Production

At Alfatech Engineering Systems Pvt. Ltd., we provide advanced Spray Drying Systems designed for precise, consistent, and high-efficiency powder production. Our systems convert liquid feeds such as solutions, suspensions, emulsions, and slurries into uniform, free-flowing powders while preserving essential product properties.

The process involves atomizing the liquid feed into fine droplets, which are brought into contact with controlled hot air inside the drying chamber. This enables rapid moisture evaporation, resulting in powders with uniform particle size, good solubility, and consistent quality.

Engineered for optimal heat transfer, controlled temperature profiles, and uniform airflow, our spray dryers ensure reliable performance and energy efficiency. The systems are fully customizable and suitable for industries including food & dairy, pharmaceuticals, chemicals, and specialty materials.

Pilot Spray Dryer

Alfatech Pilot Plant Spray Dryers are designed for R&D, product development, and small-scale production. These systems enable accurate process simulation and parameter optimization before full-scale manufacturing.

Process Principle

The liquid feed is atomized into fine droplets and dried instantly using controlled hot air. This ensures rapid moisture removal and production of uniform powder with consistent characteristics.

Key Features

- Precise control of temperature, airflow, and feed rate
- Flexible operation for multiple product trials
- Compact and user-friendly design
- Scalable data for industrial plant design
- Energy-efficient and reliable performance

Rotary Disc Atomizer

A Rotary Disc Atomizer is a high-speed mechanical atomization device used in spray drying systems to convert liquid feed into fine droplets for powder production.

Working Principle

The liquid feed is introduced at the center of a high-speed rotating disc. Due to centrifugal force, the liquid spreads radially across the disc surface and is discharged from the periphery at very high velocity. At the disc edge, the liquid film disintegrates into fine droplets due to Centrifugal acceleration & Surface tension breakup. These droplets come into direct contact with hot drying air inside the drying chamber, resulting in rapid evaporation of moisture and formation of a free-flowing dry powder.

Atomizer Wheel Designs

Different industries require specific atomization characteristics depending on product application, bulk density, and particle size requirements. The commonly used wheel configurations include:

- Slotted Type Disc / Wheel
- Orifice Type Disc / Wheel
- Bullet Type Disc / Wheel

Each design provides a different droplet breakup pattern and particle size distribution.

We understand that every industry follows certain standardization norms for powder properties. Therefore, we customize the wheel design as per the required bulk density, particle size distribution, and product specifications to achieve consistent and controlled output quality.

ATOMIZER

High Performance Spray Drying Solution

SPECIFICATIONS

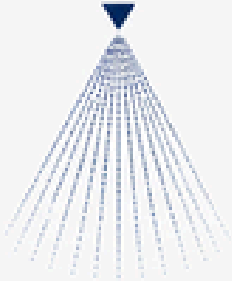
Material Contact Parts	SS 316
Frame Material	Mild Steel
Atomizing Disc Diameter	60 – 400 mm
Motor Power	75 HP
Motor Speed	1440 RPM
Inlet Pressure	1 – 3 bar
Application	Spray Drying, Chemical, Food, Pharma, Ceramic
Construction	Robust, Easy to Maintain, High Efficiency
Drive Type	Direct Coupled

CAPACITY CHART

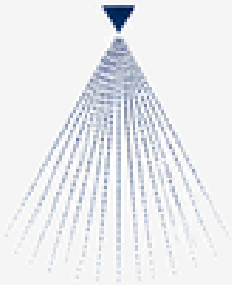
MODEL (AESPL)	ATOMIZING DISC DIAMETER (mm)	DISCHARGE CAPACITY (WATER)	WHEEL TYPE	MOTOR RATING (Approx.)
AESPL-100	60 – 100	75 – 750 LPH	Pin / Orifice / Slot	15 HP
AESPL-125	100 – 125	300 – 1250 LPH	Pin / Orifice / Slot	15 HP
AESPL-160	125 – 160	500 – 2000 LPH	Pin / Orifice / Slot	20 HP
AESPL-200	160 – 200	1000 – 3000 LPH	Pin / Orifice / Slot	25 HP
AESPL-250	200 – 250	1500 – 4000 LPH	Pin / Orifice / Slot	40 HP
AESPL-100	**250 – 300**	**3000 – 5000 LPH**	**Pin / Orifice / Slot**	**75 HP**
AESPL-400	**300 – 400**	**5000 – 11000 LPH**	**Pin / Orifice / Slot**	**75 HP**

TYPES OF ATOMIZING WHEELS

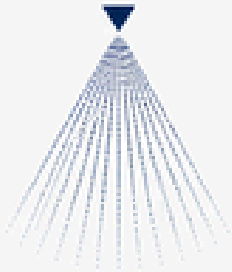
1. SLOT TYPE (WHEEL)



2. PIN TYPE (WHEEL)



3. ORIFICE TYPE (WHEEL)



APPLICATIONS

- Spray Drying
- Chemical Industry
- Food & Beverage
- Pharmaceuticals
- Ceramics
- Dyes & Pigments

NOTE: With respect to density the motor rating might get change.

AESPL®

Nozzle Spray Dryer

A High Pressure Nozzle Spray Dryer is designed to convert liquid feed into fine, uniform powder by atomizing the liquid through a high-pressure nozzle into a controlled hot air environment.

The process begins with the preparation and filtration of the liquid feed (solution, slurry, or emulsion), which is then pumped to a high-pressure plunger pump. This pump raises the liquid pressure typically in the range of 100 to 300 bar, depending on the product and required particle size.
The pressurized liquid is fed into a high-pressure atomizing nozzle, where the pressure energy is converted into kinetic energy. As the liquid exits the nozzle orifice at high velocity, it disintegrates into fine droplets with a controlled size distribution.

Inside the drying chamber, these fine droplets come into contact with a stream of hot air, enabling rapid moisture evaporation and formation of dry powder particles. The controlled airflow and temperature ensure uniform drying while preserving product quality and properties.

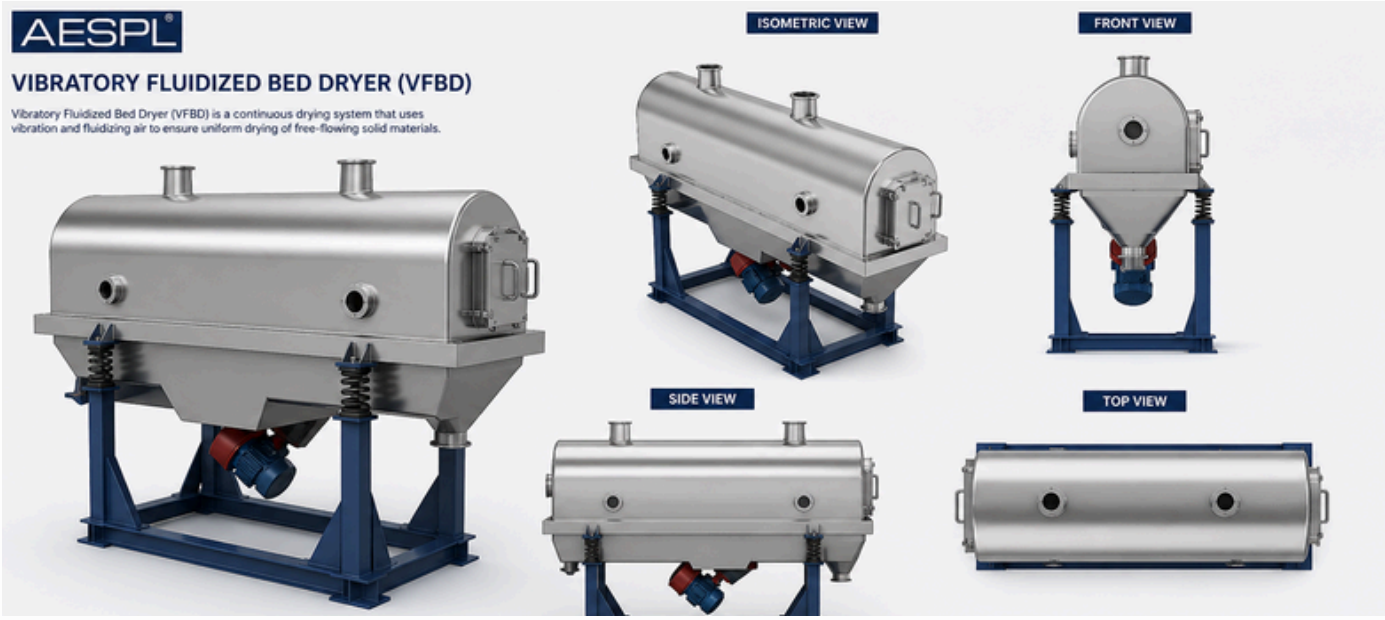
Fluidized Bed Spray Dryer

SPRAY DRYING SYSTEM WITH VFBD / IFBD (Vibratory Fluid Bed Dryer / Integrated Fluid Bed Dryer)

In a Spray Drying System combined with VFBD / IFBD, the fluid bed acts as a secondary stage for final drying, cooling, and particle conditioning. Semi-dried powder from the spray dryer is uniformly fluidized, while vibratory motion (in VFBD) ensures controlled residence time, gentle handling, and efficient heat transfer—resulting in improved bulk density and consistent product quality.

Key Benefits:

- Improved bulk density & flowability
- Uniform final moisture control
- Reduced stickiness & caking
- Efficient cooling for hygroscopic materials
- Energy-efficient operation



Spin Flash Dryer

A Spin Flash Dryer is a continuous drying system designed for efficient conversion of wet cake, slurry, or thick paste into uniform, free-flowing powder. The system integrates drying, size reduction, and classification in a single compact unit, making it ideal for handling sticky and difficult-to-dry materials.

Wet feed is introduced into the drying chamber through a screw conveyor, ensuring controlled and consistent feed. Inside the chamber, a high-speed rotating agitator disperses and disintegrates the material while it comes in direct contact with a stream of hot air, enabling rapid heat and mass transfer for effective moisture removal.

The drying process is highly efficient due to the short residence time and continuous recirculation of heavier particles until the desired moisture level is achieved. The dried material is pneumatically conveyed to a cyclone separator, where primary powder recovery takes place. Remaining fine particles are subsequently collected in a bag filter, ensuring maximum product recovery and minimal dust emissions.

The system offers precise control over product moisture, particle size, and temperature, making it suitable for a wide range of applications including chemicals, minerals, food products, and agro-based materials.

Flash Dryer

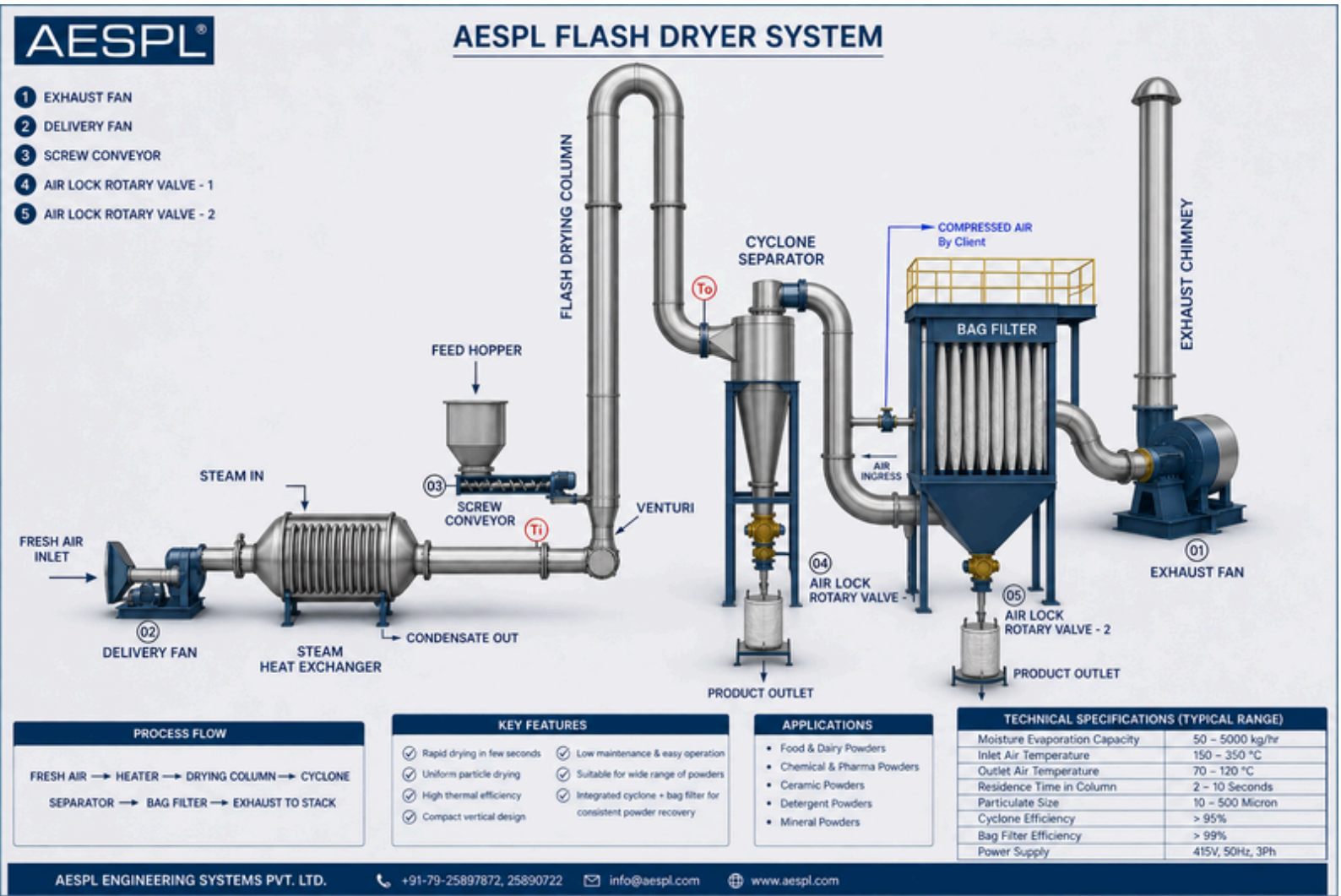
Efficient Drying Without Size Reduction

The Alfatech Flash Dryer is engineered for rapid and efficient drying of materials that already possess a uniform and suitable particle size, eliminating the need for disintegration or crushing.

Utilizing a Venturi-type air duct, the system generates high-velocity hot air that instantly lifts, disperses, and dries the material. This ensures quick moisture removal while maintaining the original particle characteristics.

Key Advantages

- Preserves Particle Size – No significant size reduction during drying
- No Disintegrator Required – Simplified system design



Multi Effect Evaporator

Evaporator systems are designed to concentrate liquid feed by removing moisture under controlled thermal conditions, making them one of the most energy-efficient operations in the overall drying process. Typically operating on the principle of multiple-effect evaporation and vapor reuse, these systems significantly reduce specific steam consumption compared to direct drying.

Incorporating an evaporator prior to the spray drying stage increases the total solids content of the feed, thereby reducing the thermal load on the spray dryer. This results in lower fuel/energy consumption, reduced exhaust air volume, and optimized system efficiency.

Pre-concentration through evaporation also enables a more compact spray dryer design, lowering capital investment while improving throughput capacity. The integration ensures better process control, uniform product quality, and overall reduction in operating cost.

Key Advantages:

- Low specific energy consumption due to multi-effect operation
- Reduced spray dryer size and heat load
- Lower operating and fuel cost
- Improved process efficiency and plant capacity
- Consistent and controlled feed concentration for drying

Allied Products

Alfatech Engineering Systems Pvt. Ltd. offers a comprehensive range of allied products designed to complement and enhance industrial drying, conveying, and processing systems. Backed by strong engineering expertise, advanced design tools such as CFD analysis, and a deep understanding of customer processes, our products deliver superior performance, efficiency, and reliability across diverse industries.

Blowers

High-performance industrial blowers designed for optimal airflow, energy efficiency, and dust handling.

- Forced Draft and Induced Draft Blowers
- Robust construction with advanced CFD-tested designs
- High efficiency with low power consumption

Wet Scrubber (Venturi System)

Efficient air pollution control system for removing dust and particulate matter.

- Single-stage and twin scrubber options
- High particle removal efficiency
- Environment-friendly and low maintenance

Bag Filters

Advanced filtration systems for efficient dust collection and product recovery.

- Suitable for fine particulate handling
- Anti-static and explosion-proof designs
- Large-scale installation capability

Rotary Atomizers

Precision-engineered atomizers for uniform droplet formation.

- Ideal for viscous and abrasive materials
- High-speed disc design for consistent spray
- CFD-optimized for performance and durability

Pneumatic Conveying Systems

Efficient bulk material handling using air flow.

- Suitable for powder and granular materials
- Can integrate drying or cooling during conveying
- Low product attrition and high efficiency

Screw Feeders

Reliable and continuous material feeding systems.

- Modular and customizable design
- Suitable for powders, grains, and semi-solid materials
- Anti-choking and high-capacity operation

Heat Exchangers

High-efficiency thermal systems for industrial heating applications.

- Direct and indirect configurations
- Steam, oil, or electric heating options
- Corrosion-resistant and energy-efficient design

Rotary Valves

Compact devices for controlled material discharge and airlock applications.

- High efficiency with low maintenance
- Durable construction for harsh conditions
- Precision flow control

Bucket Elevators

Efficient vertical material handling systems.

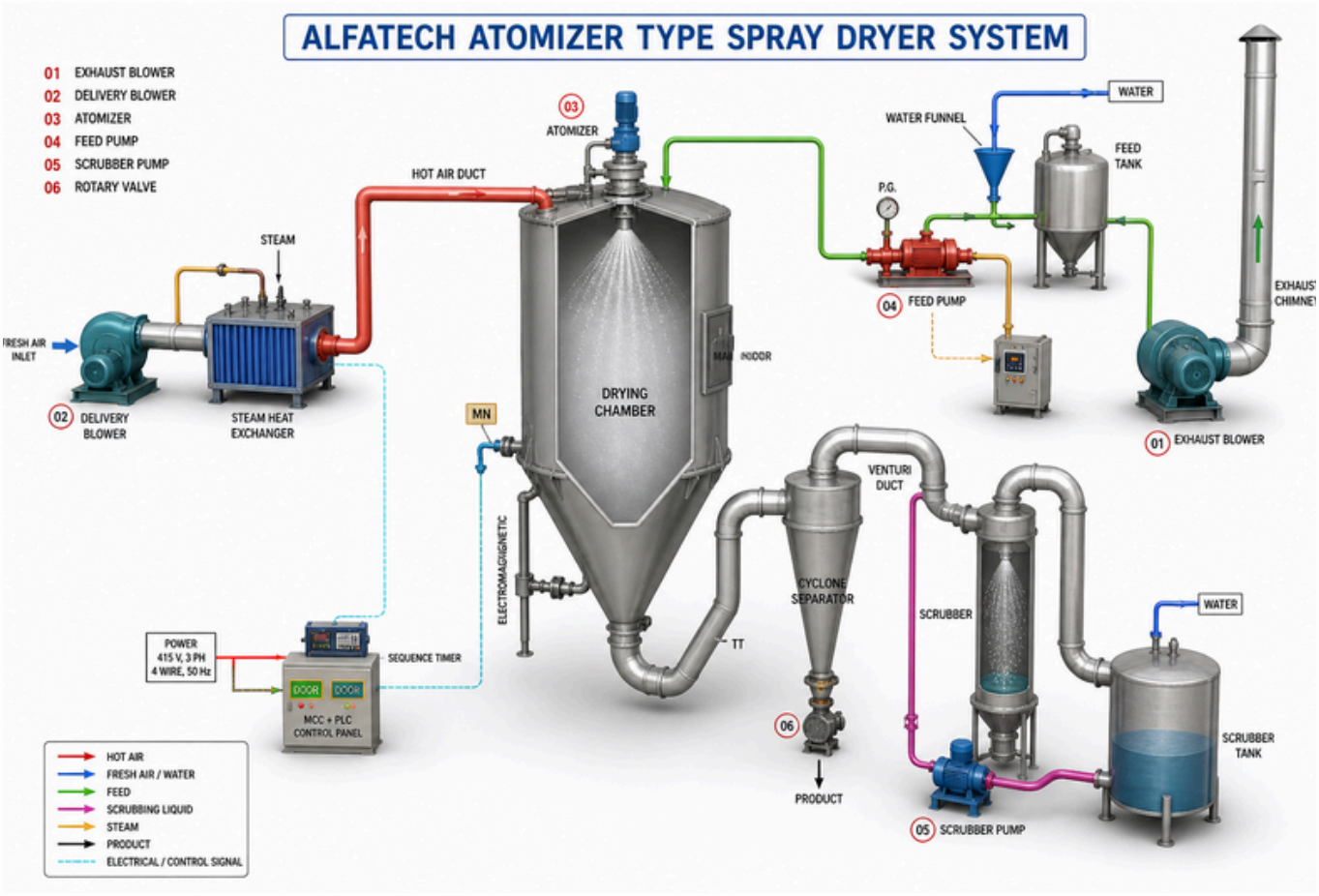
- Low power consumption and safe operation
- Suitable for powders, grains, and pellets
- Sturdy and modular construction

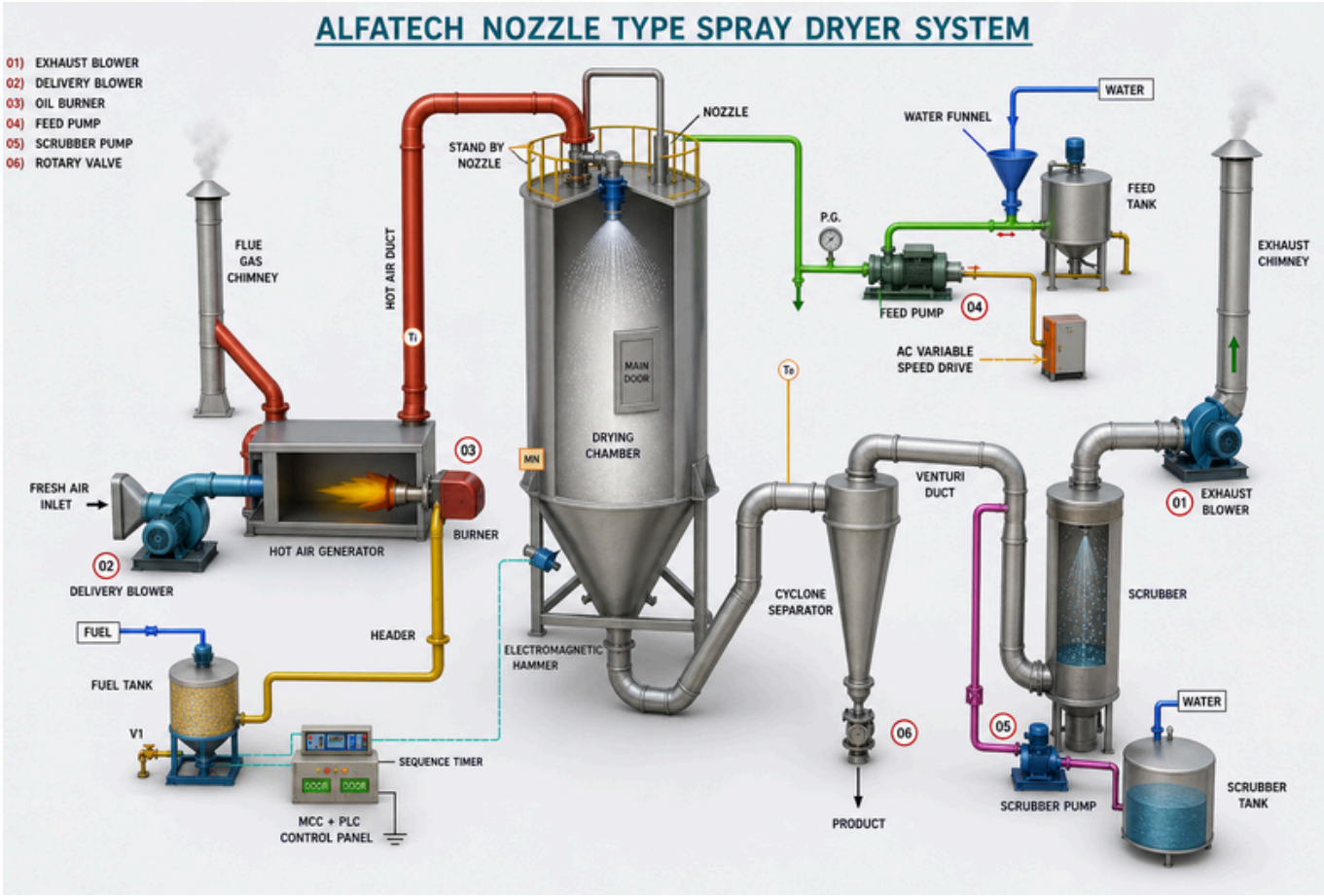
Coal Crushers

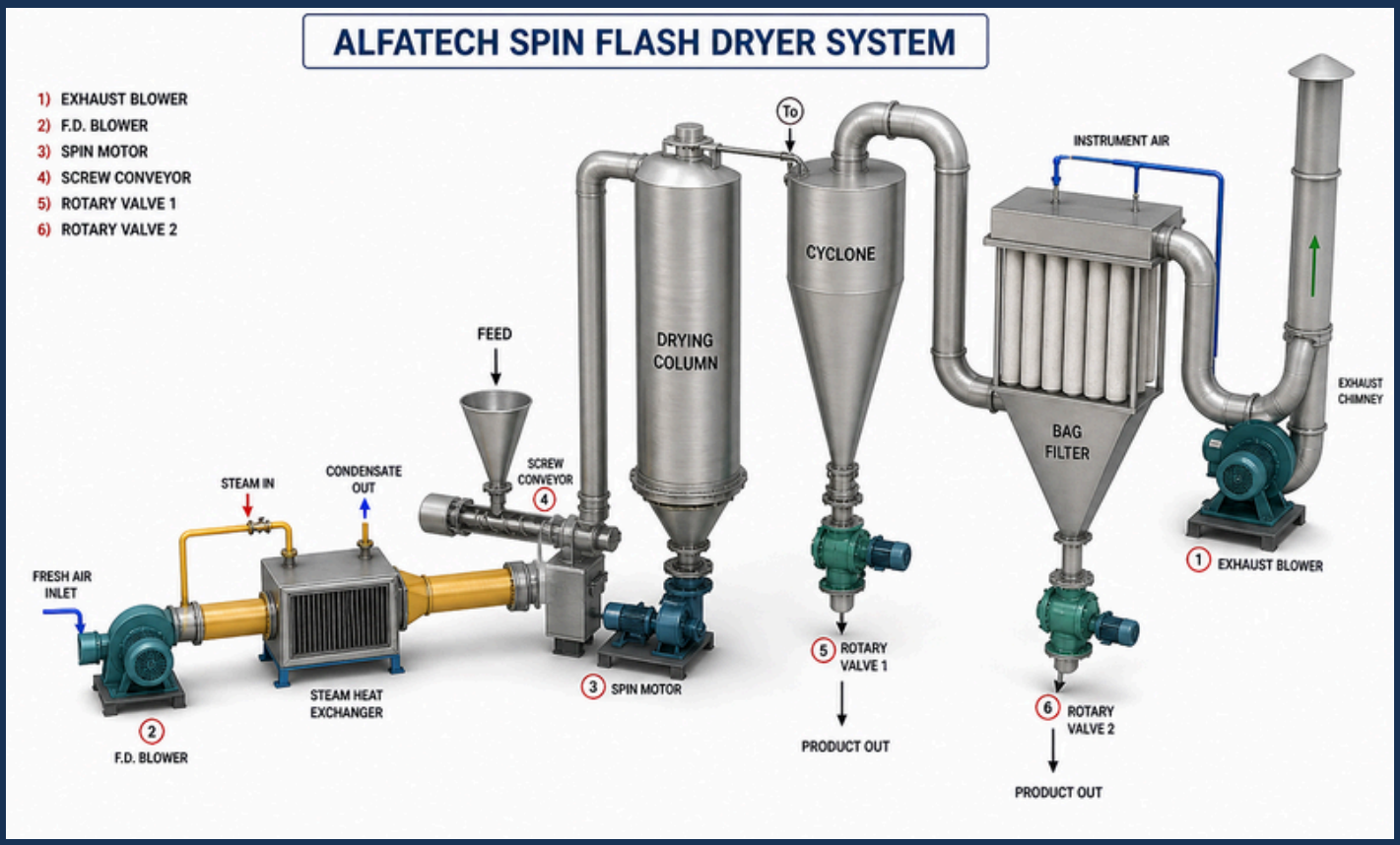
Heavy-duty systems for efficient size reduction of coal.

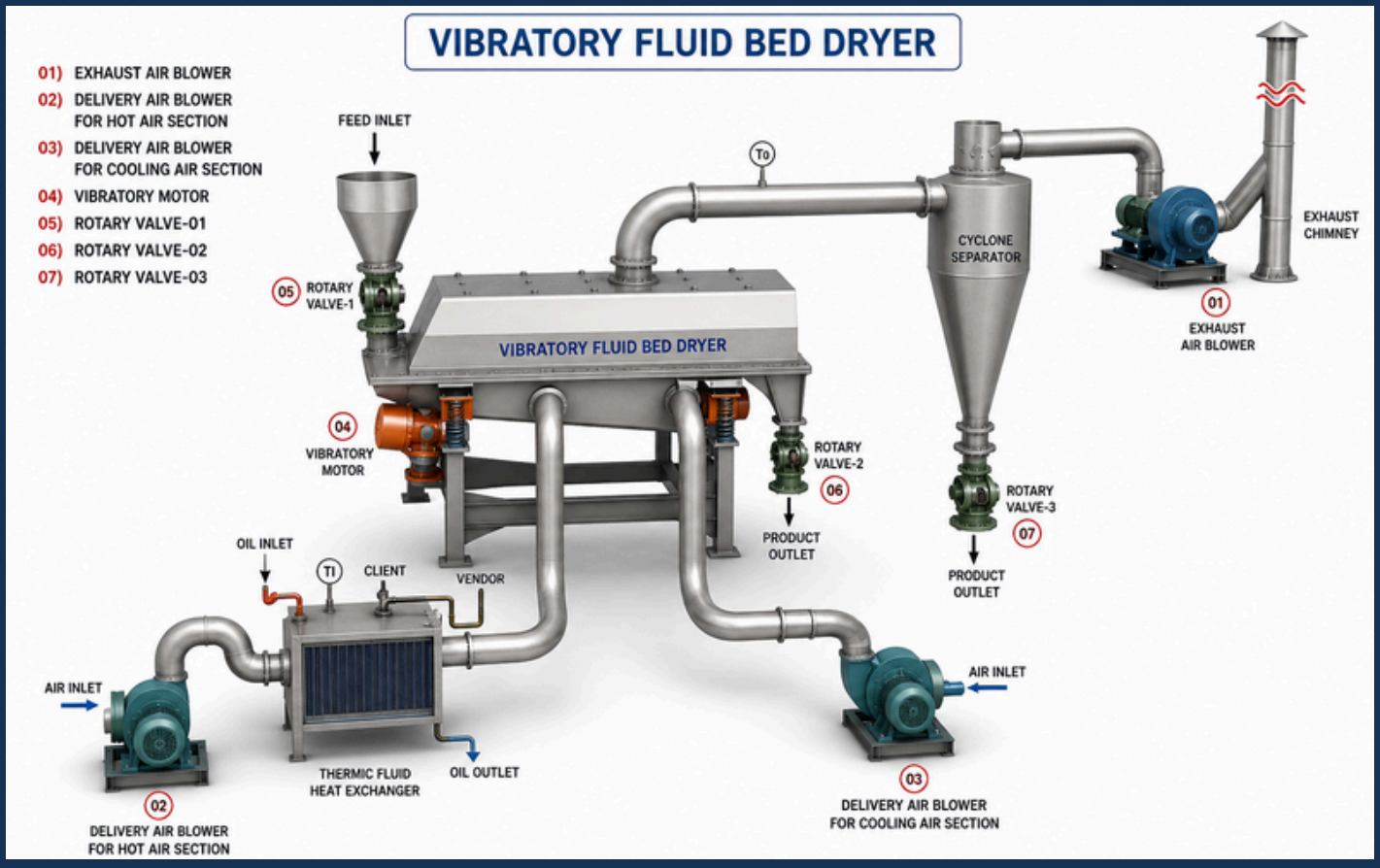
- Customized crushing solutions
- Hydraulic and automated options available
- Reliable and robust design

Flow Diagrams to Overview






ALFATECH SPIN FLASH DRYER SYSTEM
1) EXHAUST BLOWER
2) F.D. BLOWER
3) SPIN MOTOR
4) SCREW CONVEYOR
5) ROTARY VALVE 1
6) ROTARY VALVE 2
To
CYCLONE
INSTRUMENT AIR
DRYING COLUMN
FEED
BAG FILTER
EXHAUST CHIMNEY
STEAM IN
CONDENSATE OUT
SCREW CONVEYOR
4
FRESH AIR INLET
STEAM HEAT EXCHANGER
3 SPIN MOTOR
5 ROTARY VALVE 1
1 EXHAUST BLOWER
2
F.D. BLOWER
PRODUCT OUT
6 ROTARY VALVE 2
PRODUCT OUT


VIBRATORY FLUID BED DRYER
01) EXHAUST AIR BLOWER
02) DELIVERY AIR BLOWER FOR HOT AIR SECTION
03) DELIVERY AIR BLOWER FOR COOLING AIR SECTION
04) VIBRATORY MOTOR
05) ROTARY VALVE-01
06) ROTARY VALVE-02
07) ROTARY VALVE-03
FEED INLET
To
CYCLONE SEPARATOR
EXHAUST CHIMNEY
05 ROTARY VALVE-1
VIBRATORY FLUID BED DRYER
01 EXHAUST AIR BLOWER
04 VIBRATORY MOTOR
ROTARY VALVE-2
06
ROTARY VALVE-3
07
PRODUCT OUTLET
PRODUCT OUTLET
OIL INLET
TI
CLIENT
VENDOR
AIR INLET
AIR INLET
THERMIC FLUID HEAT EXCHANGER
OIL OUTLET
02
DELIVERY AIR BLOWER FOR HOT AIR SECTION
03
DELIVERY AIR BLOWER FOR COOLING AIR SECTION

User Industries

Chemical Industry

Food Processing

Pharmaceutical

Dairy Industry

Paper Industry

Mineral Industry

Sugar Industry

Agricultural Industry

Cosmetics Industry

Arena Of Site Activities

Alfatech Engineering Systems Pvt. Ltd. provides comprehensive site services to ensure smooth execution, installation, and successful commissioning of all projects. Our experienced team ensures that every stage of on-site activity is carried out with precision, safety, and adherence to project timelines.

Scope of Site Activities

Complete site execution including inspection & preparation, equipment erection, piping & utility integration, electrical & instrumentation work, structural fabrication, insulation, and final commissioning with trial runs. Operator training is also provided for smooth plant operation.

Safety & Quality Commitment

Strict adherence to safety standards, proper supervision, and use of PPE to ensure safe, reliable, and high-quality project execution.

Controls & Instrumentation

At Alfatech Engineering Systems Pvt. Ltd., our Control & Instrumentation systems ensure precise control, safe operation, and efficient performance through advanced automation and reliable instrumentation.

Key Features

PLC-Based Automation – Fully automated systems using industrial PLCs for accurate control of process parameters and seamless plant operation.
SCADA / HMI Integration – User-friendly interface for real-time monitoring, control, and visualization of the entire process.
Accurate Process Measurement – High-quality sensors and instruments for temperature, pressure, flow, and level measurement to ensure precise control.
Advanced Control Logic – PID-based control loops for maintaining critical parameters such as inlet/outlet temperatures, pressure, and flow rates.
Data Logging & Reporting – Continuous recording of process data for analysis, validation, and compliance requirements.
Alarm & Safety Systems – Built-in alarms, interlocks, and safety features to prevent system failures and ensure safe plant operation.

Cleaning in Place

Alfatech Engineering Systems Pvt. Ltd. offers advanced Cleaning-in-Place (CIP) solutions designed to ensure complete hygiene, operational efficiency, and compliance with stringent industry standards in food, dairy, and pharmaceutical processing plants.

Our CIP systems enable automatic cleaning of pipelines, tanks, spray dryers, evaporators, and other process equipment without dismantling, ensuring minimal downtime and consistent cleaning quality.

Key Features

- Fully Automated Operation - PLC-based control system with customizable cleaning cycles for repeatable and reliable cleaning performance.
- Multi-Tank CIP System- Configurations available with caustic, acid, hot water, and rinse water tanks for effective multi-stage cleaning.
- Optimized Chemical & Water Usage - Designed to reduce consumption while maintaining high cleaning efficiency, lowering operating costs.
- Temperature & Flow Control - Precise control of temperature, flow rate, and cleaning time ensures effective removal of residues and contaminants.
- Hygienic Design - All components are designed as per sanitary standards to prevent contamination and ensure food safety.
- Data Logging & Monitoring - Real-time monitoring and recording of cleaning parameters for validation and audit purposes.

Advantages

- Reduces manual cleaning effort and downtime
- Ensures consistent and repeatable cleaning quality
- Improves plant hygiene and product safety
- Enhances equipment life and performance

Our Approach

We design CIP systems based on plant layout, process requirements, and product characteristics. Our solutions are customized to ensure effective cleaning with optimal resource utilization, helping clients achieve high productivity and compliance with international hygiene standards.

Experience

Global Presence – Trusted Across Continents

With installations and clients spread across 20+ countries, Alfatech Engineering Systems Pvt. Ltd. stands as a reliable partner for advanced spray drying solutions.

Our 30+ years of experience reflect our commitment to innovation, consistent performance, and customer satisfaction on a global scale.

Our Satisfied Clients

CMG BIOTECH PVT. LTD.
Hari Orgochem Pvt. Ltd.
Daries agro limited
Bharat GROUP
DHARMAJ CROP GUARD LIMITED
Foods & Inns
MEGHMANI GROUP
MEGHMANI ORGANICS LTD
zydus Dedicated To Life
TOTA Legacy Of Trust
indofil
Jaishil Sulphur & Chemical Industries
C. J. GELATINE PRODUCTS LIMITED
STERLING GELATIN
JDMResearch
Nicholas PIGMENTS & INKS The Advanced Chemistry
NEOGEN CHEMICALS LTD.
Konark
WILLOWOOD Harvesting Dreams
ANKIT SILICATE
TASTEMASTER
RACCOON CALCHLOR INDUSTRIES LLP
Krishna Dyestuff Company
Syntans & Colloids Trusted Speciality Leather & Textile Chemicals
Arvind & Company
Bodal Chemicals Ltd. COLOURS. INTEGRATION. INNOVATION.
Svarn herbals inspired by nature
Sudeep Pharma Limited
CERADECOR Bringing colors to life
NEBULA Healthcare Limited
DCM SHRIRAM Growing with trust
Aero Agro Chemical Industries Ltd
COTEX CHEM PVT.LTD. An ISO 9001:2015 certified company
Aadvik
Reliance Industries Limited
SOM PHYTOPHARMA
VCA HEALTHCARE NATURE SCIENCE HEALTH
ZIRAN India
Canberra Chemicals
AMBE Natural
AGROCEL INDUSTRIES PVT LTD
CLSL CROP LIFE SCIENCE LIMITED
Universal Carbons
SSPL SANTOSH STARCH PRODUCTS LTD.
LUPIN
SID'S FARM
CHEMLEY Innovation For Excellence
NESSO
altM
Infizar
SHREENATH MARKETING

Alfatech philosophy

At ALFATECH, we recognize that every process is unique—defined by its own challenges, performance demands, and operational goals. This understanding forms the foundation of our engineering philosophy.

We go beyond conventional approaches by deeply analyzing both the stated and underlying requirements of our clients, transforming them into highly efficient, reliable, and application-specific solutions. Our strength lies in seamlessly integrating process knowledge with engineering excellence to deliver systems that perform consistently under real-world conditions.

From concept to commissioning, every detail is approached with precision. No requirement is too complex, and no detail is too small—because true engineering excellence lies in mastering both.

ALFATECH STANDS COMMITTED TO DELIVERING INNOVATIVE, DEPENDABLE, AND PERFORMANCE-DRIVEN PROCESS SOLUTIONS THAT CREATE LASTING VALUE.

Solutions We Deliver

Dryer:
- Nozzle Spray
- Atomizer Spray
- Spin Flash
- Flash
- Vibratory Bed Fluid

Mixers:
- Paddle
- Blenders

Evaporators:
- Falling Film
- Forced Circulation

Bio-Technology:
- Flue Gas Spray Scrubber
- Wet Scrubber
- Bag Filters
- Multi Dust Collectors

Turnkey Plants:
- Milk Powder
- Whey Powder
- Herbal Powder
- Coffee Powder
- Starch Powder
- Fruits / Foods
- Egg Powder
- Sulphur Powder
- Chemicals
- Beverages

AESPL™

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