

SOLUTIONS FOR FLASH DRYING & CALCINING

THERMAJET™

Flash Drying Systems



FLUID ENERGY

PROCESSING AND EQUIPMENT COMPANY

The World Leader in Powder Processing Solutions

THERMAJET™

Flash Drying Systems

EXCEPTIONALLY EFFICIENT FLASH DRYING AND DEAGGLOMERATION IN A SINGLE SYSTEM

The ThermoJet system produces a discrete, dry product from any raw feed, including wet powder, slurry, centrifuge or filter cake.

Automated system operation and high thermal transfer maximize product quality and drying efficiency. Systems are engineered for laboratory, pilot and full-scale production from 50 grams to 100,000 lb/hr.

The ThermoJet's wide range of operational temperatures and drying gases provide safe processing of all materials including heat-sensitive and reactive products. Higher pressures can be used when a combination of drying and grinding is required.

APPLICATIONS

HARD, ABRASIVE MATERIALS:

fillers • abrasives • minerals

HEAT-SENSITIVE MATERIALS:

pigments • resins • biologicals

SANITARY, STERILE APPLICATIONS:

pharmaceuticals • foods • cosmetics

SYNTHETIC MATERIALS:

plastics • polymers • rubber

CHEMICAL APPLICATIONS:

precipitates • intermediates • silicates

RECYCLED MATERIALS:

sludges • fibers • catalysts

AGRICULTURAL MATERIALS:

fungicides • herbicides • pesticides

VOLATILE MATERIALS:

propellants • explosives • oxidizers



The Model 4 ThermoJet was designed with rotary valve feed, electric air heater and cyclone collection.

OPERATING PRINCIPLE

Low-pressure air, steam or inert gas is heated and introduced into the ThermoJet manifold. Nozzle locations, sizes and angles are engineered to develop a controlled evaporative circuit.

Drying and deagglomeration begin as the wet feed enters this high-velocity gas circuit in the drying chamber. The turbulent flow maximizes inter-particle collisions and deagglomeration. The continually increased surface area reduces drying time and protects particles from overheating.

The material is conveyed into a separate classification zone, where properly sized dry product is removed by the frictional drag of the exiting gases. Heavier, moist particles are recycled to the drying chamber.



The Model 26 ThermoJet was designed to dry zeolite filter cake from an initial moisture content of 40% to a final moisture content of 10%, at a rate of 8000 lbs./hr.

Flash Calcining: The ThermoJet is an effective flash calciner in applications where dehydration or chemical reactions occur at less than 1500°F.

The turbulent environment in the drying chamber provides instant and uniform heating of particles. This treatment yields a fine deagglomerated, calcined product. The low residence time and immediate system response allow instantaneous calcining refinements to optimize the product. Calcining applications include:

- calcining metallic carbonate to oxide
- calcining pure metal to oxide
- dehydration of a variety of materials

High Thermal Efficiency: The ThermoJet allows efficient drying at lower outlet temperatures due to the greater surface area of the deagglomerated product.

Flexible Feed Capability: Slurries, sludges, filter cakes and moist solids containing up to 95% water or solvent can all be dried in a single ThermoJet system.

Compact Configuration: From benchtop models to high-capacity production designs, ThermoJet systems require

much less space than conventional spray or flash drying systems.

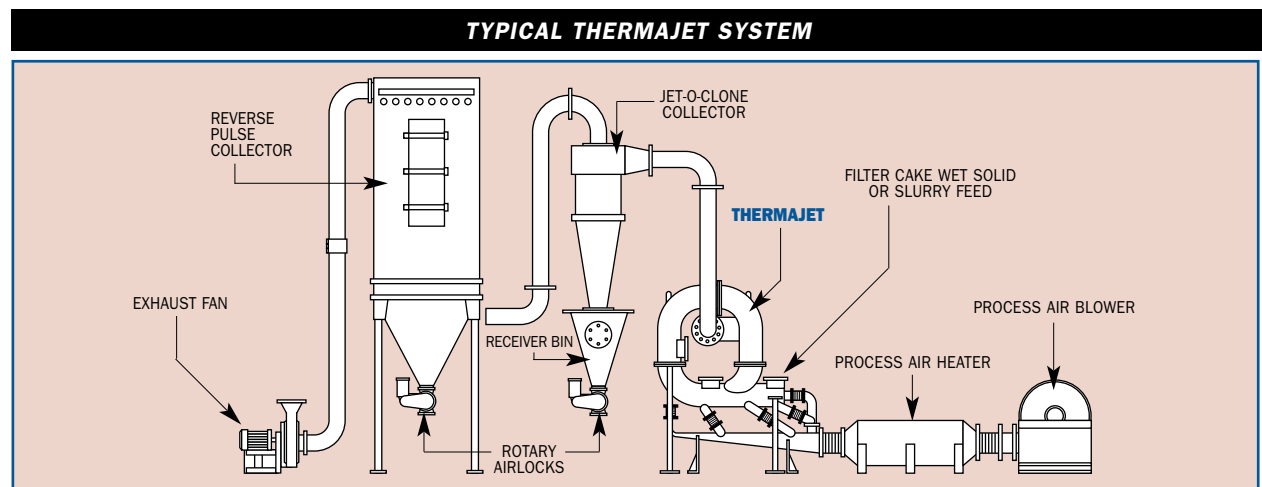
Safe Processing of Heat-Sensitive Materials: Short retention time and evaporative cooling are employed to safeguard heat-sensitive materials.

Deagglomerated Product: The ThermoJet produces deagglomerated products with high surface area and greater uniformity. The need for grinding equipment after drying is eliminated.

Maximum Productivity: The automated ThermoJet system is designed for simple, continuous operation. With no moving parts, the ThermoJet requires minimal maintenance and has unsurpassed reliability.

Simple Clean-up and Changeover: For batch lots and materials that require cleaning between runs, the ThermoJet allows fast, convenient access to all product contact surfaces.

Heat and Control Options: All ThermoJet systems can be incorporated with either direct fired heaters, electric heaters or heat exchangers. Control panels can be provided with PC or PLC-based operation or hard wired relay logic.



Sanitary quick disconnect designs are available for pharmaceutical, cosmetic or food industries.

TYPICAL THERMAJET SYSTEM

REPRESENTATIVES CAPACITIES

(based on feed at 25% H₂O)

Each ThermoJet system is designed and optimized for the required evaporation capacity. The following is a representative range of models available:

1200°F INLET 180°F OUTLET				
MODEL	HP	FEED RATE LB/HR	EVAPORATION LB/HR	TOTAL INPUT BTU/HR
1	1	50	12	16,700
10	30	5,000	1,200	1,713,000
25	185	25,000	6,000	8,565,000
50	800	125,000	30,000	42,830,000

500°F INLET 160°F OUTLET				
MODEL	HP	FEED RATE LB/HR	EVAPORATION LB/HR	TOTAL INPUT BTU/HR
1	1	20	5	7,200
10	35	2,000	500	754,000
25	200	12,000	3,000	4,524,000
50	850	60,000	15,000	22,620,000

APPLICATION ENGINEERING

Fluid Energy Processing & Equipment Company operates a complete test facility to demonstrate the performance of our equipment using your raw feed. Complete raw feed and finished product analyses are conducted in our Quality Control Lab. Engineering and process data are accumulated to develop a total system architecture for your application.

Whether your needs involve large-scale production control or basic benchtop convenience, our expert engineering and complete project coordination ensure efficient, cost-saving solutions to your critical application challenges.

SPECIAL SERVICES

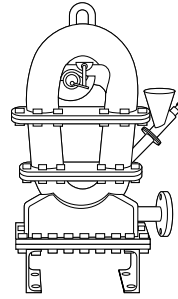
Rental Systems: Most of Fluid Energy's advanced systems are available on a rental basis to fulfill your immediate processing requirements.

Custom Processing: Fluid Energy maintains two facilities for coarse and fine grinding of your material on a contractual basis. Other services include blending, drying and packaging. The fully equipped QA laboratory in each facility is available for moisture, particle size and custom analyses of your products.



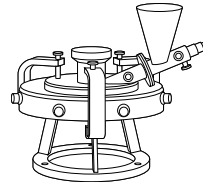
Fluid Energy is the world's largest jet mill supplier, representing over fifty years of experience in jet milling and flash drying technologies.

This strong background, combined with aggressive ongoing product development, makes Fluid Energy an innovative leader in the design of fine material processing systems and specialized equipment.



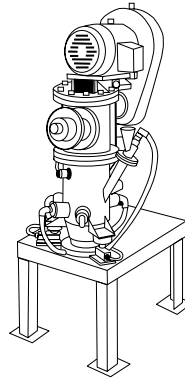
JET-O-MIZER

A unique design makes the JET-O-MIZER the most versatile of our product line, grinding dry materials to the 0.5-45 micron range. This vertical jet grinding mill ensures easy operation, consumes less power and produces a narrow particle size distribution.



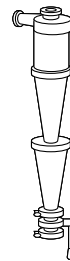
MICRO-JET

The MICRO-JET is a complete line of horizontal grinding mills capable of producing ultra-fine material down to 0.5-45 micron averages. Replaceable liners and nozzles provide effective grinding of sticky and abrasive materials. An innovative design allows for rapid disassembly and cleaning.



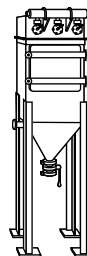
ROTO-JET

The ROTO-JET is a grinding mill that utilizes a sophisticated grinding technology yielding more controlled size distribution. With the advanced design of the integrated, adjustable classifier, particle size distribution can be more easily controlled. Efficient compressed air usage and total system automation ensure manufactured product is of the highest quality.



JET-O-CLONE

The JET-O-CLONE is a line of custom-designed cyclone separators that can provide primary collection of micron and sub-micron particles at 98%+ efficiency. These separators are commonly used in conjunction with our grinding and drying equipment.



DUST COLLECTORS

Fluid Energy applies its comprehensive processing experience to offer a complete line of DUST COLLECTORS. These advanced systems provide 99.99% effective particulate capture and are designed to ensure compatibility with our grinding and drying systems.

