

Grinding / Crushing
High Pressurized Jet Mill

Jet Mill Ultra Fine Grinding System

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- System Integration / Design / Sales / Engineering Support / Powder Processing Service
- Nano Creating (Grinding / Dispersion / Emulsifying / Classification) Systems
 - Powder & Particles Processing Equipment / Systems



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■ Jet Mill Ultra Fine Grinding System Offered by Micromacinazione SA

Micromacinazione SA in Switzerland has wide and many experiences for Ultra Fine Grinding, based on the know-hows through the actual Grinding Services, approved by the governmental authorities in Europe. USA. Japan, and others for Pharmaceutical Industries in the world.

The high quality and performance models with the technical / engineering support are proposed to the customers in the advanced and leading industries in the world, which can support the demands of high-quality powder grinding for food materials, Chemical, Metals, Ceramics, and others

The system is developed and designed for the fine and high quality powders. Especially it is featured for preventing contamination, easy cleaning, simple assembly and disassembly.

This is a dry jet mill pulverizing system, which meet the high requirement for such as quarantine, high quality without contamination, particle sizes, and so on.

■ In addition to the manufacturing and sale of Jet Mill Grinding System, the company has been engaging in the Grinding Service for Pharmaceutical materials under the periodic inspection by the Governmental Authorities like Swissmedic, FDA, and Japanese Ministry of Health, Labor and Welfare, and also the system is corresponding to cGMP.

■ Also the explosion-proof and oil-free motor type, with a high degree of accuracy, and volumetric feeder, and other optional equipment, sub-systems, and various glove box (insulators for gas purge operation or preventing material scattering) have been offered to fill the customer requirement.

■ The performance at sub-micron-and nano level grinding, by laboratory test system, can be assured in the operation by the medium and large production machine.



■ FEATURE OF JET MILL GRINDING

Grindng by High Pressure Air or Gas (using the kinetic energy), without Grinding Media

Ultrafine particles for new structural material can be created with less contamination

Stable continuous grinding is possible.

Nitrogen gas purged Grinding is also available

JETMILL



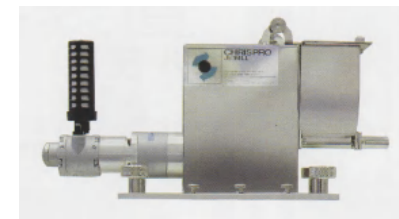
GLOVE BOX TYPE



SMALLEST MODEL

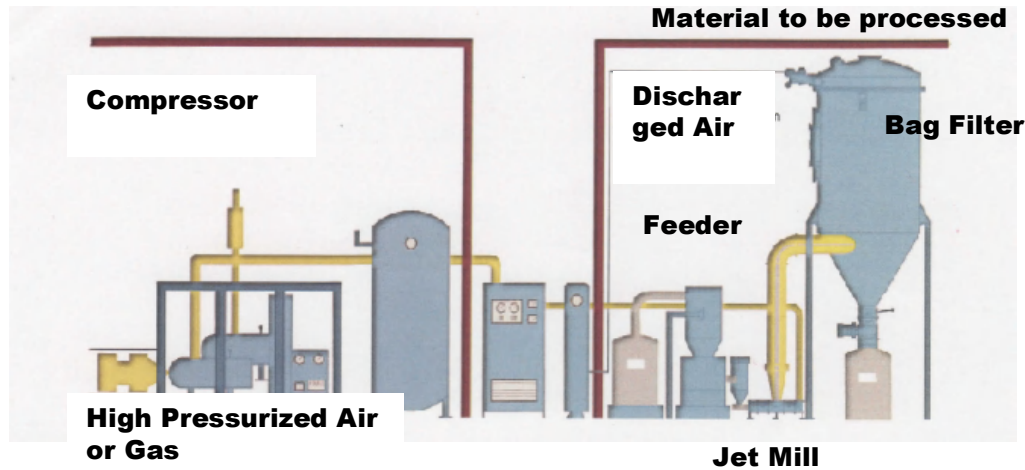


CONSTANT FEEDER



■ JET MILL GRINDING SYSTEM

Basic System Configuration



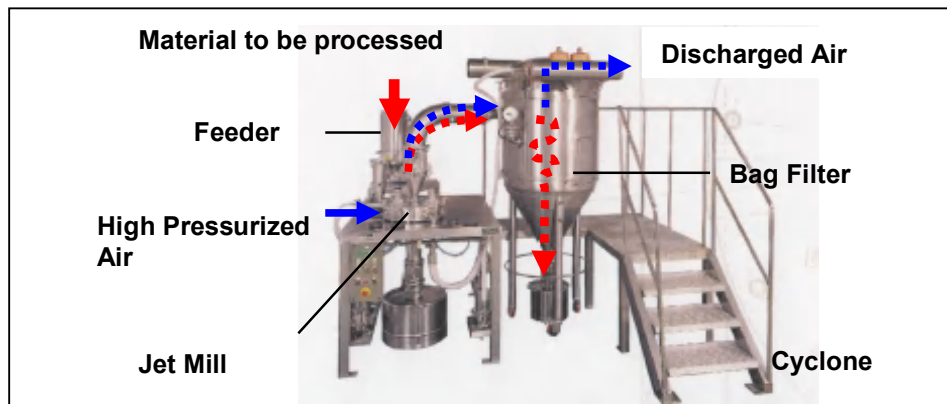
The raw materials are carried into the Jet Mill by the Feeder and supplied to the Grinding Chamber through the Feeding Nozzle.

Pressurized Air or Gas from the Compressor is regulated by the Receiver Tank, and sent to the Grinding Chamber through the Nozzles.

Raw materials are caught up in the high-speed airflow, and ground into nanometer-sized particles by friction, and by the impact caused by the collision of particles.

The particles with lower weight gather in the center of the vortex, and are sucked up in the high-speed airflow and sent to the Cyclone, where relatively larger size of the processed material is separated into the container.

Finer particles, which can not be seized at the Cyclone, are carried into the Bag Filter, and screened at filters. Air passes through filters, and discharged outside.



■ JET MILL GRINDING CHAMBER

THE RAW MATERIALS CARRIED INTO THE MILL ARE **GROUND BY HIGH PRESSURIZED, STABLE CONCENTRIC VORTEX AIR FLOW.**

THE JOULE-THOMSON EFFECT ALLOWS MATERIALS TO BE PROCESSED **WITHOUT UNDERGOING A RIZE IN TEMPERATURE.**

THE IDEAL AIR FLOW REDUCES THE COLLISION OF RAW MATERIALS TO THE WALL, ACCUMULATION OF RAW MATERIALS IN THE CHAMBER, ALSO LESSENS THE CONTAMINATION.

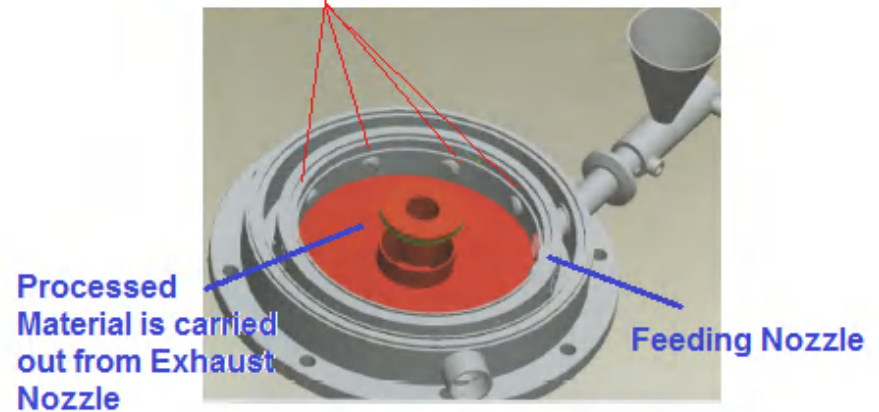
GRINDING NOZZLES AND FEEDING NOZZLE ARE SET AROUND JET MILL, AND MAKES THE **HIGHLY PRESSURIZED, STABLE, CONCENTRIC VORTEX OF AIR / GAS.**

THE RAW MATERIAL IS FED INTO THE CHAMBER THROUGH FEEDING NOZZLE.

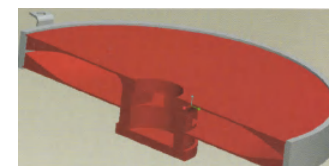
THEN PROCESSED MATERIAL IS CARRIED OUT FROM THE EXHAUST NOZZLE.

Grinding Nozzles
(Pressurized Air
or Gas supply)

Material
+ Pressurized
Air or Gas



Pressurized Air or Gas



■ Major Models

Model No.	Capacity per hour		Volume per Batch	
	minimum	maximum	minimum	maximum
MC 12 "ALGOL"	5 g	50 g	5 mg	
MINIMICRO	10 g	600 g	3 g	
MC 50	50 g	1000 g	5 g	5 g
GLOBE BOX 50				
MC 100	500 g	5000 g	20 g	20 g
LU 100 IR				
GLOBE BOX 100				
MC 200	1 kg	30 kg	1 kg	100 kg
GLOBE BOX 200				
MC 300	5 kg	100 kg	5 kg	300 kg
MC 400	8 kg	300 kg	20 kg	500 kg
MC 500	10 kg	500 kg	50 kg	1,000 kg
MC 600	15 kg	700 kg	80 kg	2,000 kg
MC 750	20 kg	1,000 kg	150 kg	5,000 kg
MC 800	30 kg	1,500 kg	200 kg	15,000 kg



MC44 R&D TYPE



MC300 UPPER COLLECTION TYPE

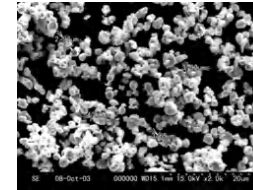
■ APPLICATIONS

ACRYLIC RESIN	COMPLEX OXIDES	IRON POWDER	PLATINUM
ACTIVATED CARBON	COPPER	LAVENDER	POLYESTER
ADH (ADIPIC ACID DIHYDRAZIDE)	COSMETIC INGREDIENTS	LCD	POLYESTER RESIN
AG POWDER	CRYSTAL GLASS	LCD RED	POTASSIUM PERCHLORATE
ALUMINA	CUPROUS OXIDE	LEAD CHROMATE	P-SF
ALUMINUM CHLORIDE	DRUG MATERIAL	LEAD DIOXIDE	PZT
AMINE EPOXY CURING AGENTS	DRY EGG WHITE	LEAD OXIDE	RESIN
AMINO ACID DERIVATIVE	DRY TOFU REFUSE	LIMESTONE	RESIN POWDER
APATITE	EPOXY POWDER COATING	MAGNESIUM OXIDE	RICE BRAN
BARIUM CERAMIC POWDER	FENOLE	MANGANESE DIOXIDE	RUBBER
BARIUM NITRATE	FERRITE MIX POWDER	MANGANESE OXIDE	SILICA
BIRCH	FILLER	METAL ALLOY	SILICA
BISMUTH TRIOXIDE	FISH POWDER	METAL OXIDE	SILICA GEL
BLACK COAL	FLUORORESIN	METAL POWDER	SILICON
BLACK LCD	FOOD ADDITIVES (AMINO ACID)	METAL POWDER (IRON)	SILK
BORON	FORSTERITE	MINERAL DEPOSIT	STRONTIUM NITRATE
BORON CARBIDE	FOUNDATION	MODIFIED AMINE CURING AGENTS	TALC
BRAN	FRS STONE	NACL	TEA
CALCIUM CARBONATE	FULLERENE	NICKEL OXIDE	TIN
CALCIUM PYROPHOSPHATE	GERMANIUM	ORGANIC PIGMENTS	TITANIUM OXIDE
CARBON	GLASS	ORGANIC ZINC SALT	TOURMALINE
CARBON FLUORIDE	GLASS CULLET	PART	TULC FIRING
CARBON MATERIAL (RUBBER)	GRAPHITE	PEAT	WHITE CLAY
CARBON RESIN MIXTURE	GREENSCHIST	PENOL RESIN	WOOD CHIP
CATALYST	GRINITE	PESTICIDE	ZINC OXIDE
CEDAR	HAIR DIE	PETROLEUM COKE	ZIRCON
CERAMICS	HYDRATED LIME	PFA	ZIRCON + AG
CERIUM OXIDE	INORGANIC MATERIALS	PHARMACEUTICAL RAW MATERIALS	ZIRCONIUM CHLORIDE
CHARCOAL	INORGANIC OXIDES	PHOSPHATE	ZIRCONIUM OXIDE
CHLORIDE PHOSPATE	INORGANIC PARTICLES	PIGMENT	
CO-BASE ALLOY	IRON OXIDE	PIGMENT TYPE SILICA GEL	

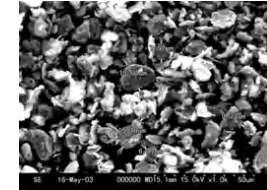
RESULTS OF GRINDING

NAME	MATERIAL (μm)		PRODUCTS (μm)	
	D ₅₀	D ₉₀	D ₅₀	D ₉₀
ACETAMINOPHEN	450.00		0.70	5.00
IBUPROFEN	28.60		2.77	19.00
NICKEL	5.80	11.00	1.47	3.29
ALUMINUM OXIDE	2.75	24.00	1.35	3.42
IRON OXIDE	2.00	11.64	0.39	1.24
FERRITE	5.27	56.00	3.16	23.00
TITANIUM DIOXIDE	2.72	9.17	0.20	0.40
FUEL BATTERY CELL MATERIAL	50.00		0.94	3.00
SILVER	1.05	4.01	0.49	1.3
GLASS	1.80	4.65	1.01	2.51
COBALT ALLOY	12.00		0.90	4.00
CALCIUM CARBONATE	4.24	9.91	1.55	3.22
			1.00	1.94
PIGMENT	25.90	38.51	0.88	1.93
CERAMICS	163.80	397.00	0.60-0.90	1.68
COPPER	46.90	123	0.91	6.33

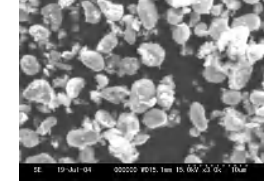
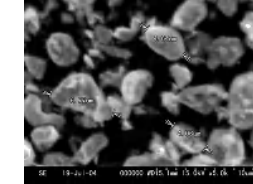
COPPER



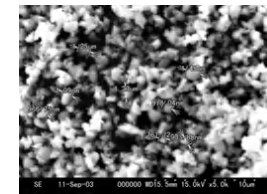
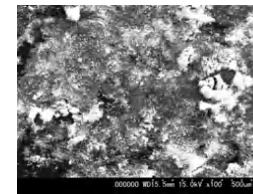
ALUMINUM



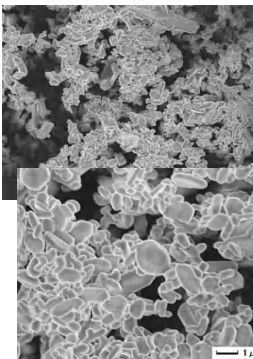
COBALT ALLOY



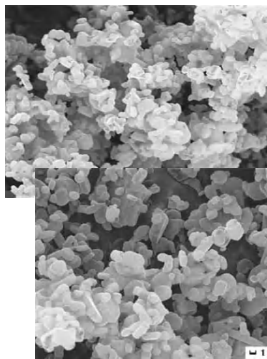
FUEL BATTERY CELL MATERIAL



ACETAMINOPHEN

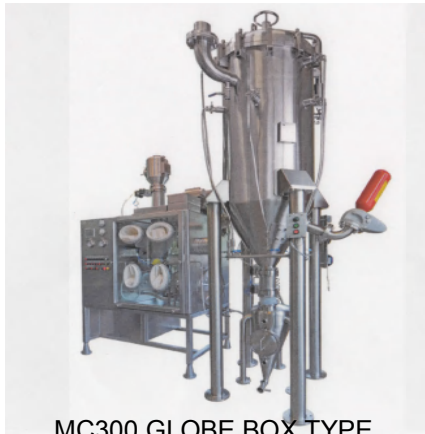


IBUPROFEN



■ GROVE BOX FOR JET MILL OPERATION

For the field of pharmaceutical raw materials, Globe Box (Isolator) is offered to prevent fine powder scattering, and isolating materials from the outside air.



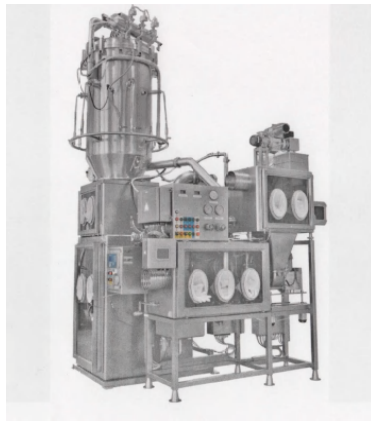
MC300 GLOBE BOX TYPE



MC50 GLOBE BOX TYPE



MC200 GLOBE BOX TYPE



MC200 GLOBE BOX TYPE



Inquiry Sheet

Please fill your requirement / Information & return to us.

Customer	Company			Dept. Position				
	Address			Phone				
	Name			E-Mail				
Required System & Request	Category	A) Grinding B) Dispersing / Emulsifying C) Classification / Sifting D) Feeding / Transportation E) Separation / Concentration F) Drying G) Others						
	System	A) Cavitation Mill Dispersing System B) Beads Mill Ultra Fine Grinding System C) Jet Mill Ultra Fine Grinding System D) Grinding Mill Powder Pulverization System E) Super Micro Sieve F) Hydro-Cyclone Classification System G) Vibration Sifter H) Micro Powder Air Classifier I) Constant Micro Feeder J) Others						
	Request	A) Sales Material B) Proposal C) Test D) Process Service E) Rental F) Others						
Materials & Target	Name			Properties Y or N	Bulk Density		Moisture	
	Condition	A) Powder B) Particle C) Solid D) Others			Hygroscopic		% if Yes	
	Particle Shape	A) Spherical B) Unspecified C) With Protrusion D) Single Particle E) Aggregates F) Unknown			Abrasiveness		Aggregation	
				Solvent	Viscosity		Adhesion	
	Size	Original Powder	Required		A) Water B) Ethanol C) IPA D) MEK E) Acetone F) Toluene G) Xylene H) Ethyl Acetate I) Others			
	D ₅₀			Slurry	Density wt%		Viscosity cps	
	Top							
	Others			Detergent				
Test & Work	Required Volume	Test sample			Production			
	Test / Work Schedule					Attendance		
Remarks								

Excel version is available at <http://www.ftajapan.com/inquiry.xls> , if required.

■ Major Systems & Services offered by FTA



Grinding / Crushing / Dispersing / Emulsifying

Dispersing / Emulsifying / Mixing Wet Operation
Cavitation Mill Nano Dispersing System

Nano Grinding / Crushing / Dispersing / Mixing Wet Operation
Beads Mill Nano Grinding System

Grinding / Crushing Dry Operation
Jet Mill Ultra Fine Grinding System

Dispersing / Emulsifying / Mixing Wet Operation
Ultrasonic Processor Nano Forming System

Grinding, Crushing Dry Operation
Grinding Mill Powder Pulverization System



Classifying / Sifting

Classification / Sifting Dry & Wet Operation
Super Micro Sieve & Screen

Classification/Separation/Concentration Wet Operation
Hydrocyclone Classification System

Sifting / Screening / Classifying Dry & Wet Operation
Powder & Particles Vibration Sifter

Classifying Dry Operation
Micro Powder Air Classifier



Other Powder Processing Systems & Services

Concentration
Screw Decanter Concentration System

Constant Feeding
Powder & Particles Constant Micro Feeder