

### Fluid Jet Micronizers

#### Fluid Jet mill technology

Forty years of experience in the design and manufacturing of equipment for the pharmaceutical, cosmetic and chemical industries has added to our know-how in the field of powder micronization and related apparatus and makes us the right partner for the supply of integrated and up to date solutions. We engineer systems in our workshop and provide consulting on location by offering the highest technical knowledge and competence. Our team, comprised of experienced engineers, technicians, fitters, and commissioning personnel form the basis of a successful cooperation. On this basis, Tecnologia Meccanica can today offer the most advanced jet mill systems for the micronization of pharmaceutical powders. We have advanced spiral jet mill technology a quantum leap forward, and we consistently continue our work of research & development every day.

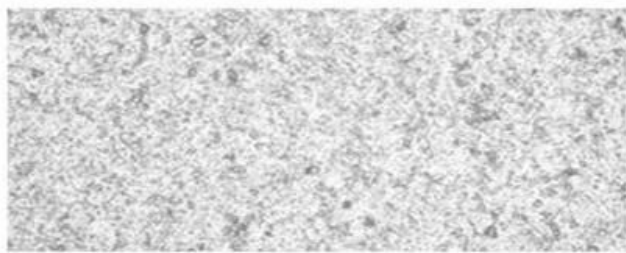
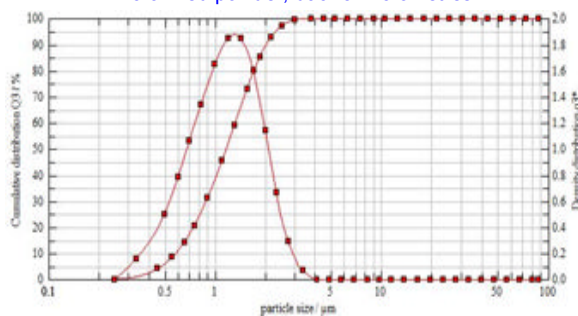
#### Innovations at a glance

- enhanced hi-tech milling chamber geometry
- nozzles designed for laminar jet streams and available with different grinding angles
- optimized static classifier
- elimination of the "caking" of sticky powders
- narrow Gauss curve (particle size distribution)
- lowest gas consumption on the market
- elimination of the "blowback" phenomenon
- optimised gas-solid separation and unique collecting point with yields close to 100%
- balance and control of pressures within the whole micronisation system
- reduction of contact surfaces – rapid cleaning and lower product loss
- easy cleaning and validation operations
- sterilizing system with hydrogen peroxide solution

Fluid Jet mill J-200



Micronized powder, d99<3 micrometres



#### Standard models Available

- J-20 from 0.50 to 100 g/hour
- J-40 from 0.05 to 2.00 kg/hour
- J-50 from 0.05 to 5.00 kg/hour
- J-70 from 0.25 to 7.00 kg/hour
- J-100 from 0.50 to 7.50 kg/hour
- J-125 from 0.50 to 15.00 kg/hour
- J-150 from 0.50 to 30.00 kg/hour
- J-200 from 0.50 to 50.00 kg/hour
- J-300 from 5.00 to 200.00 kg/hour
- J-400 from 10.00 to 350.00 kg/hour

- the productivity indicated is an average level applied to pharma products
- bigger versions are available only for chemical market
- particle size distributions below 5 micrometer

## Working Principle

The powder is fed at subsonic speeds (approximately 50 m/s) into the flat cylindrical milling chamber tangentially through a Venturi system using pressurized air or nitrogen. Once inside the milling chamber the particles are then accelerated by a series of jets around the perimeter to supersonic speeds (300 m/s), in a spiral movement. The micronizing effect occurs when the slower incoming particles and the faster particles in the spiral path collide. While centrifugal force retains the larger particles at the periphery of the milling chamber, the smaller particles exit with the exhaust gas from the center of the chamber. This process works at constant temperature (endothermic) and independently with the lowest consumption of process gas compared to similarly sized units available on the market.

## Options

- Adjustable nozzles angles
- Elliptical milling chamber
- Diaphragm valves
- Point of use filter
- Many different custom models of pharma feeders of our own design
- Many different custom models of cyclone filters of our own design
- Balance line
- Hepa final filtering unit
- Explosion proof execution
- Cryogenic execution
- Rinsing in place
- Washing in place
- Sterilizing in place



## Milestones

- 1974, birth year of the first fluid jet mill for chemicals
- 1980, introduction of the octagonal milling chamber
- 1988, design of the non tangential Venturi entry for pharmaceuticals
- 1994, statistical matrix implementation on computer based software
- 2000, single V clamp execution on all the models
- 2003, birth year of the J-20 laboratory fluid jet mill
- 2005, modular system for J-40 / J-50 / J-70 milling chambers
- 2006, introduction of the elliptical milling chamber
- 2008, J-100 / J-125 / J-150 in plant execution for medium small productions
- 2009, execution for products with high solvent content
- 2010, glass lined process side parts
- 2011, fluid jet combo from r&d up to production capacity on one unit
- 2012, ...

## Our Workshop address:

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The manufacturer reserves the right to modify specifications without prior notice.