



# Pharmaceutical and Chemical Powder Micronization

NEW

# Micronization at its Finest

With the 4th Generation MC Jetmills®\*

Pharmaceutical ingredients in powder form often need to be reduced into the microscale size range in order to achieve their best effects. Common pitfalls of cleaning issues, heat generation and high particle lower size limits (40 microns) when using mechanical mills can be controlled with Dec's MC Jetmill® range of fluid energy mills.

Dec is considered a pioneer in the field of spiral jet milling. The development of jet milling technology, ie particle size reduction by collision, dates back to the 1960s followed by continuous development over the decades leading to today's high performance 4th generation jet mills serving many industries, notably in the pharmaceutical and chemical sector.



Award winning MCOne® – the smallest jetmill available on the market for R&D applications

The new 4th generation MC Jetmill®\* systems has been developed with Computational Fluid Dynamics (CFD) analysis. The subsequently improved geometry of the grinding chambers and ring integrated nozzles have led to a very narrow PSD (Particle Size Distribution) around 1 micron (Gaussian curve) revolutionizing existing micronizing procedures.

## In-House Testing Capability

Our extensive in house testing facility allows us to test both non-toxic compounds with our standard open range of jet mill systems and now highly toxic compounds using our state of the art high containment micronizing isolation system with fully automated control, gravimetric feeding and dedicated air handling system capable of achieving specific temperatures and relative humidity requirements.

## Micronizing Isolators

MC Jetmill® isolators provide full containment of highly active and/or sterile compounds with both operator and product protection. The MC Jetmill® micronizing and containment range (from MCOne to MC400) is the perfect union of years of experience as user and provider of micronizing and containment technologies.



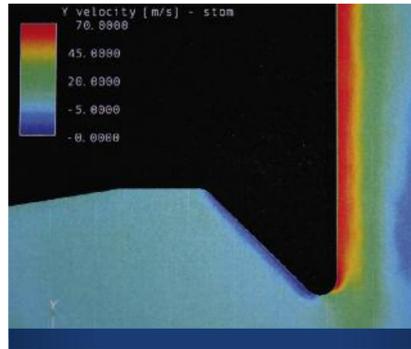
MC Jetmill® 200 Half suit isolator

\* patented technology

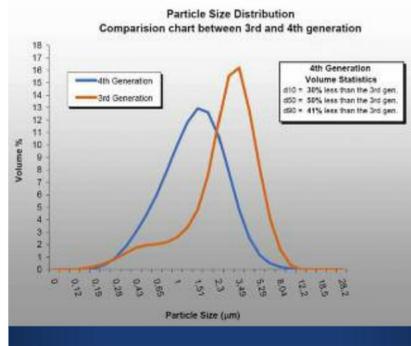


MC Jetmill® 200 Isolator and high containment pack-off facility

## Engineering the 4th Generation



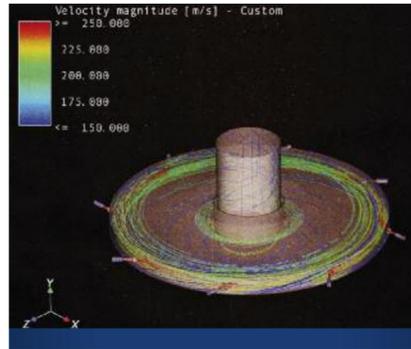
Dec's 4th generation jet mills, re-designed from the ground up using "Smoothflow Jet Technology" - Jet milling technology re-engineered, re-worked and re-invented.



The design team developed and built new micronizing equipment to deal with the most difficult products from sticky to hard and from brittle to soft, while minimizing blow back and product build up which includes the use of alternative materials.

## High Performance and Excellent Scalability

Our ergonomic range of MC Jetmills® offers excellent scalability from R&D to large-scale production units.



To improve ergonomics and flexibility, the DEC MC Jetmill® series can be operated both vertically and horizontally with full SIP and CIP options for sterile production. It also has green credentials as it has an optimized gas flow, therefore less gas consumption than current systems. It can be supplied contained for HPAPIs or non-contained for non-toxic products.

	Nominal diameter	Estimated capacity	Batch size	Process gas @ 7 bar
MC One®	33 mm (1.3 inches)	1 g to 50 g/h	0.3 g to 50 g	0.09 Nm <sup>3</sup> /min (3.18 CFM)
MC Two® Jetmill	50 mm (2 inches)	35 g to 200 g/h	1.5 g to 500 g	0.19 Nm <sup>3</sup> /min (6.71 CFM)
MC Jetmill® 50	100 mm (4 inches)	From 0.05 to 5.0 kg/h	3 g to 20 kg	0.45 Nm <sup>3</sup> /min (15.89 CFM)
MC Jetmill® 150	150 mm (6 inches)	From 0.5 to 30 kg/h	200 g to 100 kg	0.73 Nm <sup>3</sup> /min (25.8 CFM)
MC Jetmill® 200	200 mm (8 inches)	0.5 g to 50 kg/h	1 kg to 1000 kg	1.7 Nm <sup>3</sup> /min (61 CFM)
MC Jetmill® 300	300 mm (12 inches)	5 kg to 200 kg/h	5 kg to 2000 kg	4.2 Nm <sup>3</sup> /min (150 CFM)
MC Jetmill® 400	400 mm (16 inches)	10 kg to 350 kg/h	10 kg to 3000 kg	7.1 Nm <sup>3</sup> /min (252 CFM)

\* patented technology

## MC Jetmill® Micronization

- Narrow Particle Size Distribution (PSD)
- Simple and rapid assembly/disassembly
- Limited number of components
- High yields
- Low energy consumption
- Sterile manufacturing
- PSD scalability with all MC Jetmill® models



MC Two® Jetmill



MC Jetmill® 50



MC Jetmill® 150

MC Jetmill® 200



MC Jetmill® 300

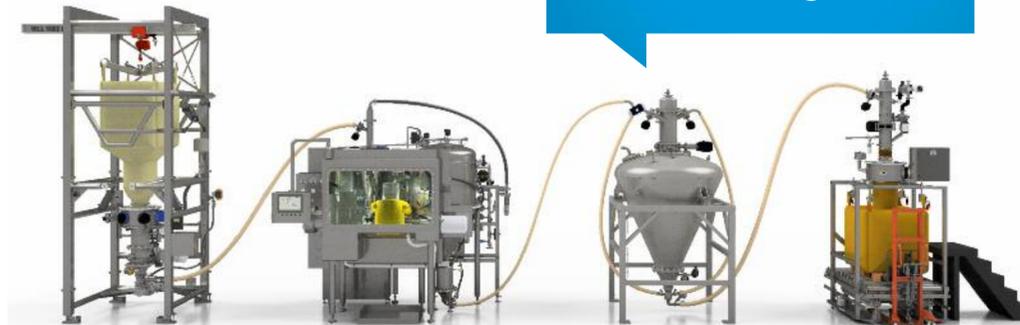


MC Jetmill® 400

\* patented technology

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## cGMP, REACH Aseptic Manufacturing & Process Integration



The MC Jetmill® system range from MCOne to MC400 is supplied in accordance with US/EU Good Manufacturing Practices (GMP) guidelines. All of Dec's jetmill technology is further available for aseptic manufacturing when sterile products are involved and can be easily integrated into an

existing production line. Our proprietary PTS® technology (Powder Transfer System) can transfer, mix and discharge sensitive powders with no leakage, contamination or physical property changes from and towards any process step.

Dec's „Single Pass Jet Milling Technology“ used in the new range surpasses all existing jet milling systems on the market in terms of performance, product recovery and PSD manipulation. **One Pass – One Time.**



MC 150 Micronizing and Conditioning Isolator



Dec Group is a world class global provider of powder handling systems and is recognized as a leading expert in process containment technologies. It has been supplying the pharmaceutical, chemical, food and cosmetic industries for more than 25 years.

Dec Group is headquartered near Lausanne, Switzerland, and has a global presence with subsidiaries and agents worldwide including European subsidiaries in the UK, Ireland, Germany and Poland, together with Asian offices in India and China, as well as a North American subsidiary.

Many companies have successfully integrated more than 4000 Dec systems into their production sites. These include a wide range of patented products that enhance safety and hygiene, containment and productivity.

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