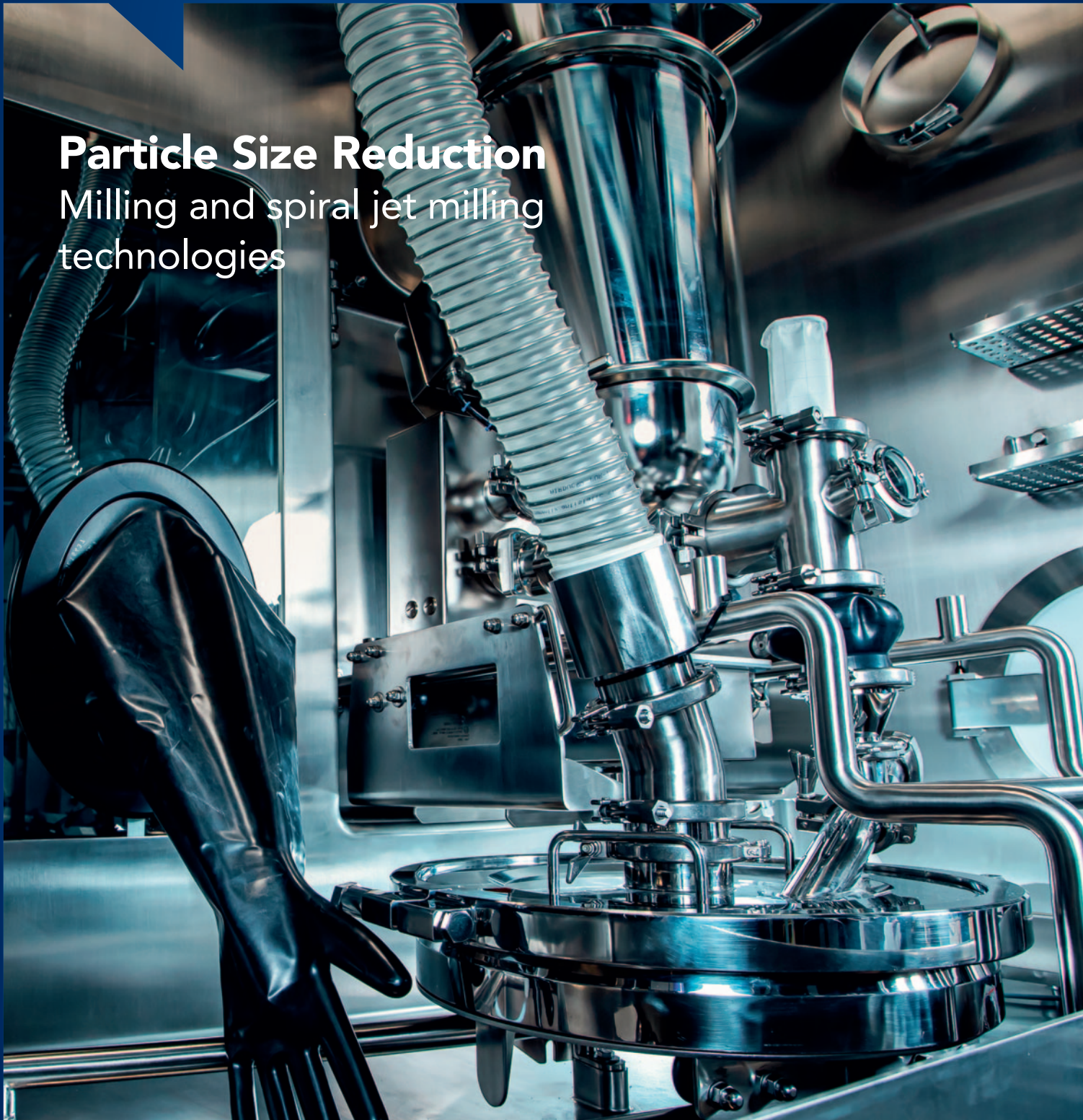




Particle Size Reduction

Milling and spiral jet milling technologies



Solutions for laboratories and small scale manufacturing, right through to full size production.



Dec can integrate a number of milling equipment into their process solutions including Dec's crusher, Co-Mill, hammer mill, UMS DecMill® and the MC DecJet® spiral jet mill range. Whatever concept best suits your needs, our solutions focus on high safety and containment, increased productivity and streamlining processes.

Our core expertise lies in milling powder in the low range, typically below 100 microns down to 1 micron, either by using UMS DecMill® or our MC DecJet® jet mill line.

Dec's flexible, multi-format jet milling equipment is designed to satisfy a full range of high requirements. Available in open and highly contained arrangements our patented 4th generation MC DecJet® jet mills provide the ability to micronize difficult and hard to handle products thus serving many applications throughout the pharmaceutical, chemical, cosmetics and food industries.

Our micronizing systems can be supplied in different versions for sterile, toxic or sterile-toxic applications with the great advantage of being 100% scalable.

New 4th generation MC DecJet® jet milling range advantages:

Single pass technology, narrow Particle Size Distribution (PSD), designed to reduce issues with sticky products, optimized product recovery rates, integrated nozzles prevent errors during installation and/or leaks during process, easy to clean, easy to assemble, no tools required, easy integration into glove boxes and isolators

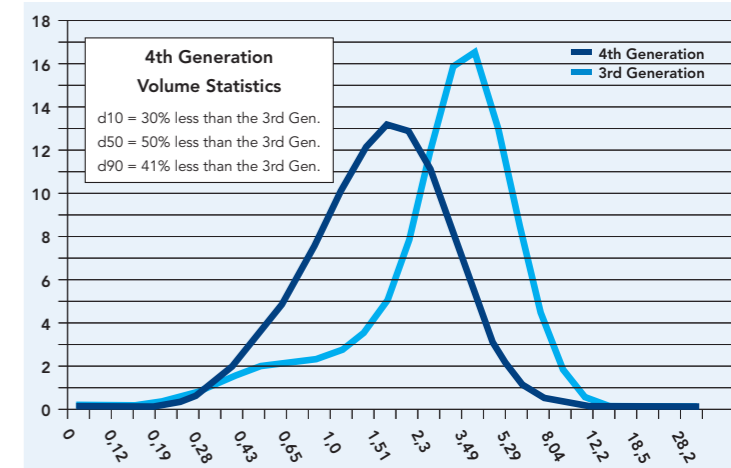
R&D		
Size	Capacity	Configuration
MC DecJet® 30	0.2 g – 50 g/h	Bottom Discharge
MC DecJet® 50	35 g – 200 g/h	Bottom Discharge
Pilot Production		
MC DecJet® 100	50 g – 5 kg/h	Top/Bottom Dis.
MC DecJet® 150	500 g – 30 kg/h	Top Discharge
Full Scale Production		
MC DecJet® 200	500 g – 80 kg/h	Top Discharge
MC DecJet® 300	5 – 200 kg/h	Top Discharge
MC DecJet® 400	10 – 400 kg/h	Top Discharge
MC DecJet® 500	20 – 800 kg/h	Top Discharge

Throughput depending on powder characteristics and final particle size

Advanced Micronizing Technology:

A primary aid in Dec's development has been the use of Computational Fluid Dynamics (CFD), allowing mill performance to be studied dynamically across a range of operating parameters.

CFD modelling thus reflects the design of Dec's MC DecJet® spiral jet mill range able to micronize corticosteroids such as fluticasone while maintaining a very tight PSD curve with a typical measurement of d50 < 1,5 µm and d90 < 3,0 µm. This represents a 50% improvement in terms of cumulative distribution compared to standard jet mill technology as well as impeccable scalability from research to production models. The carved chamber MC DecJet® version with low-friction inserts is also the product of CFD-assisted research.



Particle Size Reduction

Dry Powder Inhalation Production
Isolator integrated MC DecJet® 150



Contained Micronization

Powerful substances require a hazard and risk-based approach in ensuring safe handling methods and high containment. Dec's micronizing isolators provide a safe enclosure around the micronization process and therefore high containment of potent and/or sterile compounds for both operator and product protection (up to OEB7 products <math>< 10 \text{ ng/m}^3</math>)

Dec can offer highly complex integrated and completely contained solutions from the handling of the incoming powders, to micronization and micro-dosing within the isolator for inhaler filling operations for example.

Years of experience and deep-rooted expertise have made Dec a world leader in both micronization and process containment technologies, from simple standard isolator solutions to highly integrated systems allowing high flexibility and interchangeability between different types of equipment.

Universal Milling Solution

UMS DecMill® provides the ultimate in flexibility, taking up a minimum area for maximum product recovery. The milling systems are highly versatile and adaptable to various customer and product requirements.

Its easily accessible and interchangeable grinding media mills at an adjustable speed up to 500 kg per hour. The degree of product fineness depends upon a number of factors such as the physical nature of the product, the feed rate to the mill, the product to air ratio, the type and configuration of the grinding media as well as the rotational speed of the same.

Product size reduction typically ranges from 500 to 30 microns and below, depending on the application.

Standard Dimensions

Turbine Screen	Pin Disk	Motor Size	Applications
UMS DecMill® 50 ø 50 mm	ø 60 mm	0,55 kW	Research and development
UMS DecMill® 100 ø 100 mm	ø 110 mm	2 kW	Pilot plant
UMS DecMill® 150 ø 150 mm	ø 165 mm	5,5 kW	Production plant
UMS DecMill® 200 ø 200 mm	ø 230 mm	7,5 kW	Production plant
UMS DecMill® 300 ø 300 mm	ø 300 mm	15 kW	Production plant



Universal Milling Solution
UMS DecMill®



Aseptic/Sterile Processing

Aseptic processing is an important method in the manufacture of sterile pharmaceuticals without subjecting the products to terminal sterilization. It allows the products being micronized in a sterile environment, thus maintaining their whole effectiveness.

Dec's aseptic solutions allow micronization in a highly controlled environment achieved by isolator technology. The process is thus constantly monitored for air quality and potential bacterial access. Thanks to the aseptic design version of the PTS Powder Transfer System®, Dec can provide complete production suites including mixing, dosing and filling operations.



Dry Powder Inhalation (DPI) Production

In DPI manufacturing particles need to be reduced in size to within the diameter range of <math>< 1-5 \mu\text{m}</math> in order to reach the lung airways.

For this purpose, Dec's patented MC DecJet® technology achieves controlled particle size reduction by using air or nitrogen at very high pressure.





Milling Micronization Consultancy

With so many micronization variables affecting the quality of products, expert consultation on optimum milling process parameters and particle size distribution curve manipulation can be highly valuable.

Dec assesses PSD characteristics, conducts initial laboratory analysis and then shapes a fully developed and optimized process for full production level, recommending the best milling machine for the production rates required. At the same time, the strategy can include appropriate isolation and containment solutions as well as cGMP compliance.

Dec R&D Center of Excellence and In-House Testing

Understanding the importance of operational and regulatory challenges our customers face, Dec has always been committed to improve process efficiency, productivity and safety. Our R&D Center of Excellence with a size of over 2,000 sqm includes state-of-the-art testing equipment to ensure innovation, high performance as well as regulatory compliance.



Technical Support, Maintenance, Training & Workshops

At Dec, customer service is an important part of every project. We accompany our customers over the entire life cycle of their project. Dec's support team will provide professional support to any problem worldwide.

All Dec equipment is designed for optimal performance and durability. However, parts of every machine are subject to wear and tear. We offer spare parts and various maintenance models to enhance production efficiency and productivity.

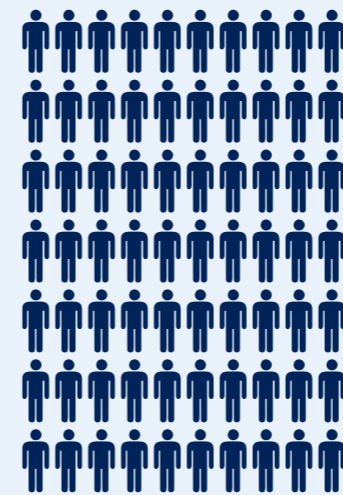
Dec provides various training sessions from workshops on existing workplace equipment to teach operators how to effectively do their job to inhouse seminars or convenient webinars.

The depth of Dec's knowledge and their ability to develop innovative new technologies make them an invaluable partner for both multinationals and specialist organizations. With true worldwide coverage through subsidiaries in Switzerland, Germany, Great Britain, Ireland, Netherlands, Poland, USA, India, China, its recent acquisition of advanced containment and aseptic solution provider Extract Technology as well as agents covering more than 60 countries, the Dec Group provides its customers with global expertise in process containment technologies and a reliable network for local support.

Dec Worldwide Offices and Representatives

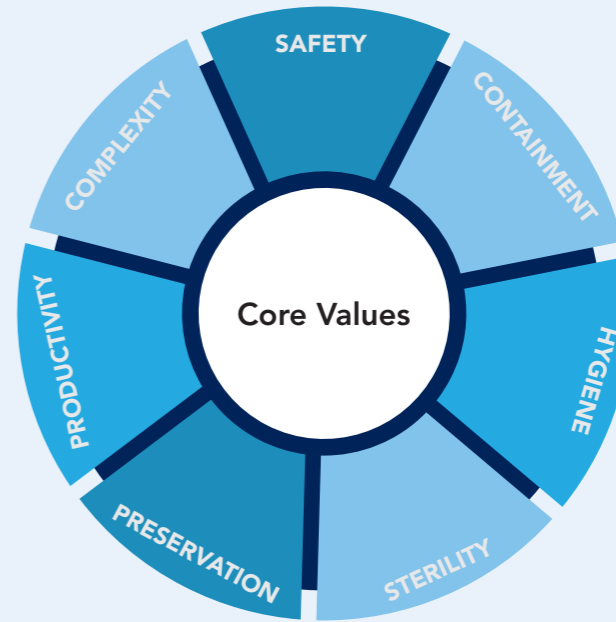


Employees 700



Certificates

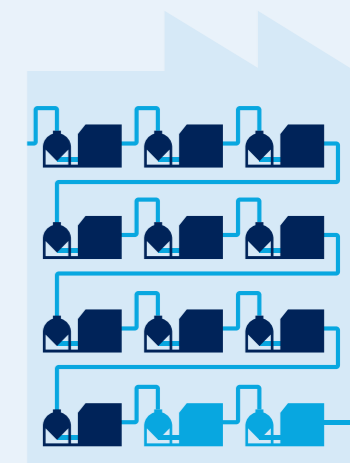
- ✓ ISO 9001
- ✓ ISO 14001



Installed JetMills 600+



Delivered Projects 10,000+



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