Dec provides high quality powder handling and process containment solutions for the pharmaceutical, chemical, food and advanced materials industries. These include a wide range of patented products for many different applications, engineered to meet your needs.

The depth of Dec’s knowhow and their ability to develop innovative, high performance powder containment solutions are the cornerstones of their technology. As a result, more than 5000 systems have been installed worldwide in pharmaceutical and chemical companies.

With over 100 sales offices and 10 subsidiaries worldwide (Germany, Great Britain, Ireland, Poland, USA, India, China), the Dec Group provides its customers with global expertise in process containment technologies and a reliable network for local support.

Powder Handling Excellence

www.dec-group.net

**Pharmaceutical and Chemical Powder Micronization**

Pharmaceutical ingredients in powdered form often need to be reduced into the micron scale 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 DecJet® range of jet mills.

Dec is considered a pioneer in the field of spiral jet milling. The development of jet milling technology, 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.

The new 4th generation MC DecJet® systems have 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.

**Micronizing Isolators**

MC DecJet® isolators provide full containment of highly active and/or sterile compounds with both operator and product protection. The MC DecJet® micronizing and containment range (from MC DecJet® 30 to 400) is the perfect source of proven experience in over 60 years of micronizing and containment technologies.

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**In-House Testing Capability**

MC DecJet® 200: Half suit isolator

Our extensive in-house testing facility allows us to test both non toxic compounds with our standard open range of jet mill systems and highly toxic compounds using our state of the art high containment micronizing solutions system with fully automated control, gravimetric feeding and dedicated air handling system capable of achieving ±0.5°C temperatures and relative humidity requirements.

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**Powder Handling Excellence**
Micronization at its Finest
With the 4th Generation MC DecJet® spiral jet mill range

Dec provide high quality powder handling and processing solutions for the pharmaceutical, chemical, food and cosmetic industries. These include a wide range of patented solutions for powder containment, safety systems, equipment, reliably and productively.

The depth of Dec’s understanding and their ability to develop new technologies and applications sets them apart. As a result, over 5000 systems from Dec have been implemented across a range of industries worldwide.

With four manufacturing operations in Germany, Great Britain, Ireland, Poland, USA, India, China and agents covering over 40 countries, the Dec Group provides its customers with global expertise in process containment technologies and a reliable network for local support.

Pharmaceutical and Chemical Powder Micronization

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 DecJet® range of fluid energy mills.

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The new 4th generation MC DecJet® systems have 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 Particle Size Distribution (PSD) around 1 micron (Gaussian curve) revolutionizing existing micronizing procedures.

MC DecJet® isolators provide full containment of highly active and/or sterile compounds with both operator and product protection. The MC DecJet® micronizing and containment range (from MC DecJet® 30 to 400) is the perfect union of years of experience as user and provider of micronizing and containment technologies.

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

In-House Testing Capability

MC DecJet® 200 Half suit isolator

Our extensive in house testing facility allows us to test both new toxic compounds with our standard open jet mill systems and highly toxic compounds using our state of the art high containment micronizing isolators systems with fully automated control, gravimetric feeding and dedicated air handling systems capable of achieving specific temperatures and relative humidity requirements.
The MC DecJet® system range from MC DecJet® 30 to MC DecJet® 400 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 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.

Our ergonomics design of the MC DecJet® models offer excellent scalability from R&D to large-scale production units.

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 at the same time.

To improve ergonomics and excellent scalability, the MC DecJet® series can be operated both vertically and horizontally with full SIP and CIP options for sterility maintenance. All process powder gas consumption than current systems can be supplied commercially in 400s or can be compared by two mass constants.

 Engineering the 4th Generation

<table>
<thead>
<tr>
<th>Nominal Diameter</th>
<th>Estimated Capacity</th>
<th>Batch Size</th>
<th>Process Gas @ 7 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC DecJet® 30</td>
<td>33 mm (1.3 inches)</td>
<td>0.1 g to 50 g/h</td>
<td>0.09 Nm³/min (3.18 CFM)</td>
</tr>
<tr>
<td>MC DecJet® 50</td>
<td>50 mm (2 inches)</td>
<td>35 g to 200 g/h</td>
<td>0.19 Nm³/min (6.71 CFM)</td>
</tr>
<tr>
<td>MC DecJet® 100</td>
<td>100 mm (4 inches)</td>
<td>From 50 g 5.0 kg/h</td>
<td>0.412 Nm³/min (14.55 CFM)</td>
</tr>
<tr>
<td>MC DecJet® 150</td>
<td>150 mm (6 inches)</td>
<td>From 0.5 kg 30 kg/h</td>
<td>0.73 Nm³/min (25.8 CFM)</td>
</tr>
<tr>
<td>MC DecJet® 200</td>
<td>200 mm (8 inches)</td>
<td>1 kg to 40 kg/h</td>
<td>1.59 Nm³/min (56.36 CFM)</td>
</tr>
<tr>
<td>MC DecJet® 300</td>
<td>300 mm (12 inches)</td>
<td>5 kg to 200 kg/h</td>
<td>3.89 Nm³/min (137.37 CFM)</td>
</tr>
<tr>
<td>MC DecJet® 400</td>
<td>400 mm (16 inches)</td>
<td>10 kg to 300 kg/h</td>
<td>6.99 Nm³/min (246.85 CFM)</td>
</tr>
</tbody>
</table>

Table 1: MC DecJet® Specifications

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

We at MC DecJet® promise seamless integration into your production line and continuous process improvement solutions with seamless equipment transfers and cost-effective patented technology.

MC DecJet® - patented technology

High Performance and Excellent Scalability

Powder Handling Excellence

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The MC DecJet® system range from MC DecJet® 30 to MC DecJet® 400 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 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.

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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. It includes the use of alternative materials.

To improve ergonomics and flexibility, the MC DecJet® 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.

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The MC DecJet® Micronization System has the following advantages:

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

In addition, our DEC technology features a unique design concept and is suitable for small-scale production units up to large-scale production systems. The system is designed to be modular and can be integrated into existing production lines, making it ideal for pharmaceutical and other industries requiring high quality and flexibility.

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**Pharmaceutical and Chemical Powder Micronization**

Dec provides high-quality powder handling and process containment containment solutions for the pharmaceutical, chemical, food and cosmetics industries. These include a wide range of patented products for handling high-quality powder, especially with respect to hygiene and safety.

The depth of Dec’s knowledge and their ability to develop innovative technologies and product solutions make them a leading player in the industry. As a result, Dec has won numerous awards for their products and services, including the highest rating for their performance, comparison worldwide.

With our network of subsidiaries in Germany, Great Britain, Ireland, Poland, USA, India, China and agents covering over 40 countries, the Dec Group provides its customers with global expertise in containment technologies and a reliable network for local support.

**Pharmaceutical Ingredients in Powder Form**

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Micronization at its Finest
With the 4th Generation MC DecJet® spiral jet mill range

Dec provide high quality powder handling and process containment solutions for the pharmaceutical, chemical, food and cosmetic industries. Their range of patented fluid energy particle size reduction systems is completely reliable and productivity enhancing.

The depth of Dec’s knowledge and their ability to deliver innovative, high performance jet milling systems has been in development for over 40 years. As a result, over 50,000 systems have been installed in over 100 countries producing a wide range of products.

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