

## Dec Group Main Offices



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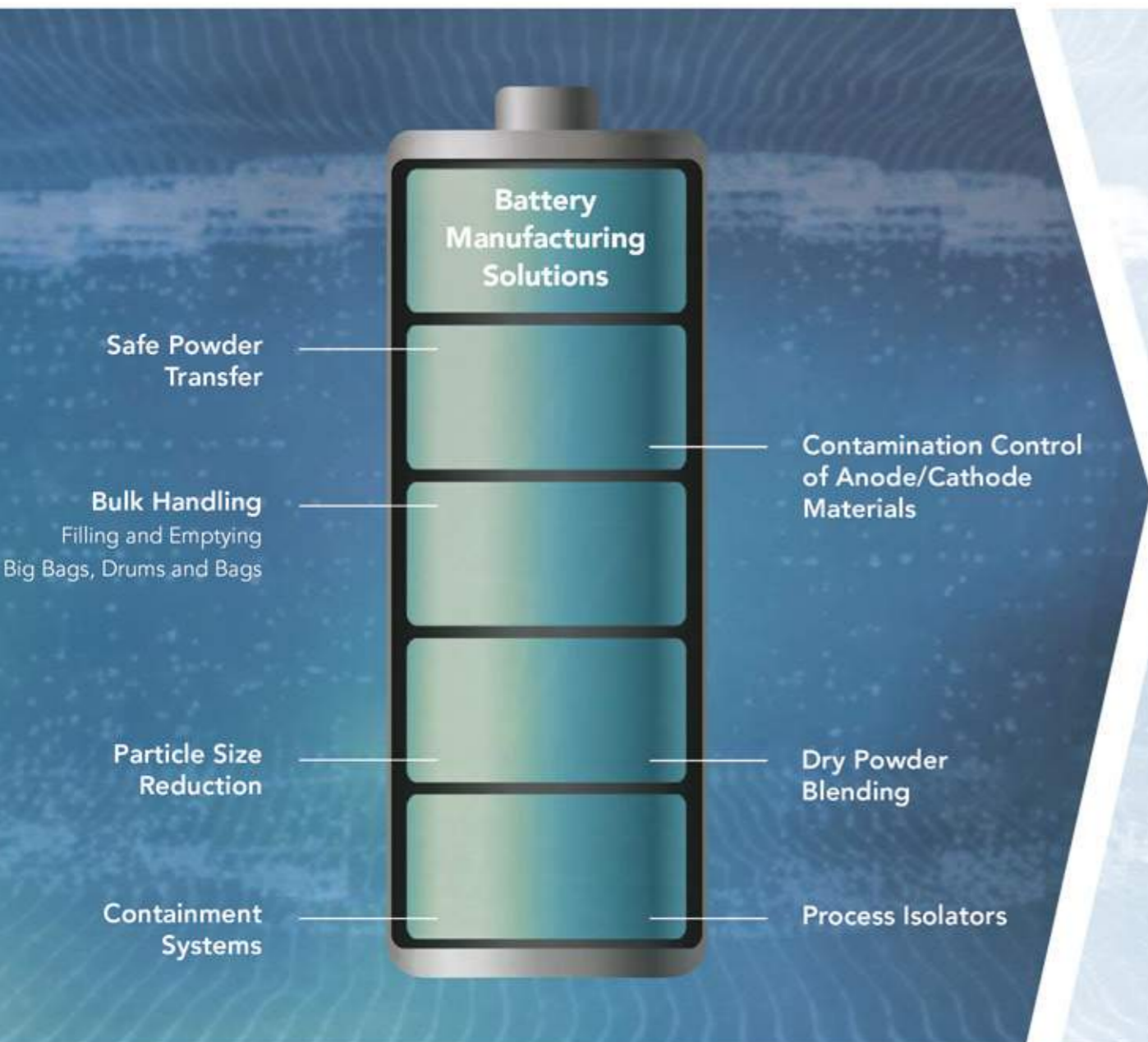
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# Integrated Battery Process Solutions



# Your One-Stop Provider for Battery Powder Handling Solutions

Dec is a leader in developing and providing safe handling and processing systems for NMC and anode materials used in battery manufacturing. These systems play a vital role in protecting operators and ensuring that the ingredients remain uncontaminated. With over 35 years of experience, Dec offers a wide range of safety-focused handling, conveying and processing solutions that cater specifically to the needs of the battery manufacturing industry.



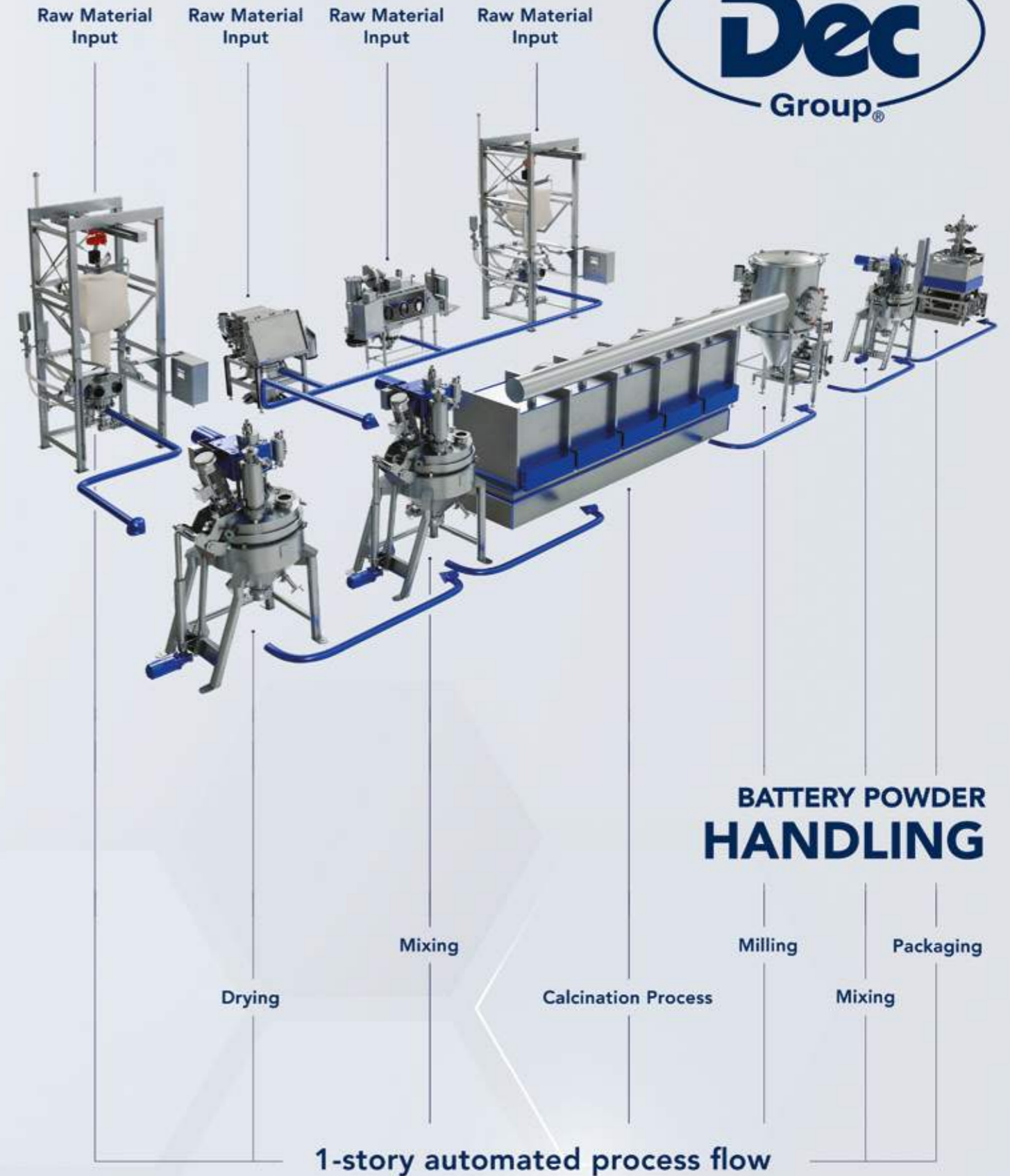
Our advanced system concepts, from the unique PTS Powder Transfer System® to highly complex integrated handling and processing equipment, allow you to increase your productivity while respecting current legal requirements.

# Power Up Your Battery Manufacturing



# IKA®

## ELECTRODE SLURRY MANUFACTURING PROCESS



with the Perfect Partners!

Powder Handling Excellence

# Bulk Handling Technologies



## Big Bag Discharge & Filling Stations

Dec offers a wide variety of big bag handling solutions based on a modular design. Our filling and discharging stations designed for big bags of various sizes and construction with a range of docking systems and accessories, cater to diverse handling requirements, different product characteristics and containment needs.



## Docking Systems

From the simple dust-free connection to the SafeDock® system for simplified and fast operation, to the DCS® Docking system for highest containment requirements, we can provide you with the right connection for your needs.



## Suction Hoppers

From the standard suction hopper to models with lumpbreaking functions with or without fluidization, Dec has a range of different suction hoppers specially adapted to your process requirements and powders with different flow properties.

# Emptying or Filling Drums

The simple solution to high containment issues

## DCS® Drum Containment System

- High containment (< 1µg/m<sup>3</sup>) with primary and secondary containment
- Emptying or filling of single or double liner drums of various sizes
- Protects operator and environment
- Works in combination with the PTS Powder Transfer System®
- Optimal visibility inside the drum due to the top window
- Compact and mobile
- ISO 6 class internal for product protection
- No drum lifting or tipping required
- Partial emptying of drums and accurate dosing possibilities when using load cells
- Easy cleaning procedure



## Contained and safe discharge of bags

Emptying bags inside a chamber. These stations can be equipped with an integrated delumper, waste port for empty bag removal, liner compactors or a weighing system for accurate dosing.

## Sack-Tip Cabinet

- Dust-free bag emptying
- Pre-filter, filter wash and back-flush options
- Pneumatic vibrator options
- Clean-in-Place (CIP)



# Transfer Technologies

The advanced PTS technology enables seamless and secure interconnection of multiple process steps, ensuring both safety and complete enclosure. It not only protects the operators and the working environment, but also ensures that the properties of the conveyed materials remain unaltered throughout the process.



## PTS Powder Transfer System®

- Using both vacuum and pressure to move materials
- Low velocity transfer (1 - 3 m/s), continuous dense-phase flow
- Handles a large variety of different powders and quantities, from mg to tons
- Eliminates gravity charging
- Enhanced capacity due to its unique flat filtration design
- Reliable and safe handling of very fine (< 1 micron), cohesive and wet powders (above 50% humidity)
- Highly contained process (< 1 µg/m<sup>3</sup>), easy to clean and safe handling of explosive materials (MIE < 1 mJ)
- Conveying under high temperature (150 °C)
- Explosion proof
- Fully CIP



## PTS Cleaning

- Cleaning in place by transferring liquid (CIP)
- No disassembly required
- Rapid system drying by means of vacuum
- Possibility to add a spray nozzle in the chamber for non soluble and sticky products

# Continuous Conveying & Dosing

Powderflex allows for continuous conveying and dosing of small to medium quantities of materials. Powderflex handles powder in the same manner as a peristaltic pump handles liquid.

## Powderflex

- System for conveying and dosing powder with high precision (+/- 1-2%) over a distance (> 50m)
- Automatic adjustment of the transfer capacity
- Highly reliable, few moving parts, requires little maintenance, hence can be operated non-stop 24h
- Economical system allowing to create dosing stations with many different products
- Compact, mobile, easy to dismantle
- Easy to clean, CIP/SIP



Whether you require precise dosing of materials from or into FIBCs and IBCs, bags, drums, or process equipment, Dec offers a comprehensive selection of efficient dosing and automated multiproduct dispensing systems that guarantee high accuracy and minimal cross-contamination from tons to milligrams.

## Dosing / Dispensing

- Loss in weight
- Positive weighing
- Powderflex, continuous dosing
- DosiValve/PTS combination
- DosiFlex, fine dosing down to gram level (1g)
- Microdosing

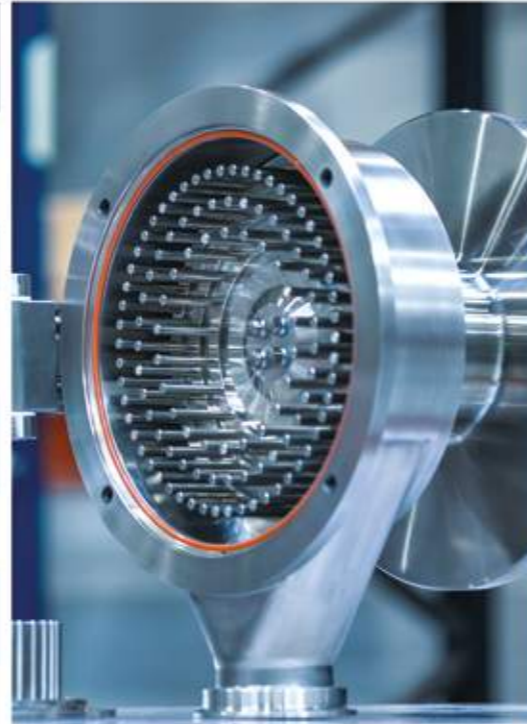


# Particle Size Reduction

UMS DecMill® offers a high degree of flexibility and only requires a minimal area for maximum product recovery. The mill can be adapted to different customer requirements and is available in a closed through-the-wall version.

## UMS DecMill® - Universal Milling Solution

- Narrow Particle Size Distribution (PSD) due to higher tip speed
- Capacity up to 500 kg / h
- Improved drive due to high-speed electric motor (no belt)
- Interchangeable grinding media (turbine and pin disk)
- Real-time temperature monitoring
- Easy assembly/disassembly with clamp connections
- Clean-in-Place (CIP)



## MC DecJet® Spiral Jet Mills

- 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
- Effortless to assemble, no tools required
- Easy integration into glove boxes and isolators
- Easy to clean
- Capacity up to 800 kg/h
- Clean-in-Place (CIP)



# Blending / Homogenizing

Dec's blending technology offers exceptional flexibility, enabling the rapid and seamless mixing of powders with diverse characteristics, resulting in the formation of homogeneous blends.

## PTS Batchmixer®

- High containment powder mixer
- No rotating or moving parts
- Handles toxic and explosive powders
- Efficient mixing < 0.1 %
- Self-filling, full discharge
- High turn down ratio
- Minimal maintenance
- Active powder transfer to and from the mixer
- CIP
- Various options available: load cells, mobile unit, etc.
- Clean-in-Place (CIP)



# Sampling

Dec offers a range of sampling methods for various needs. These options include the vacuum type MPTS, which allows for online sampling directly from the process, as well as mechanical systems that can draw samples from drums and other containers.

## MPTS Sampling

- Homogeneous, representative online sampling
- No rotating or mechanical parts
- No particle attrition or segregation
- No particle damage
- Total containment
- Clean-in-Place (CIP)



# Contained and Safe Discharge of Bags and Drums

Extensive range of isolator technologies and containment systems which allow flexible and safe handling of powders and a simple integration into multiple production processes.

## Isotube

- High containment (< 1 µg/m<sup>3</sup>)
- Perfect for lumpy products
- Simple to operate, mobile, ergonomic
- Easy to clean



## Isocharge

- Fast operation for multiple bag/drum emptying
- Containment levels to up to < 0.1 µg/m<sup>3</sup> with closed version
- Fast operation for multiple drum emptying
- Charging multiple receiving systems with one single unit
- Clean-in-Place (CIP)



Contained environment for the safe handling of powders in dispensing, weighing, sampling, or subdivision operations

## Downflow booth

- Available in epoxy coated zintec steel, 304/316L stainless steel or a combination of both
- Various heights and widths (up to 6m) are available
- Custom filtration designs with a minimum of fine dust and then HEPA filters in either the technical stack or the ceiling plenum
- Single pass/once through airflow systems used in applications where solvent vapors are present
- Incorporation of roller conveyors, rapid roller doors and turntables



We offer an extensive range of isolator technologies that provide both flexibility and safety in processing environments. Our isolators are designed to seamlessly integrate into the production process.

## Process Isolators

- Micronizing / Milling isolators
- Dispensing Isolators
- Sampling Isolators



## Services



### 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.

## Short facts

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 acquisitions of advanced containment and aseptic solution provider Extract Technology and AWL, specializing in continous manufacturing solutions 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 Factories, Sales Offices and Representatives





-  Factories
-  Sales Offices
-  Representatives for 60+ countries

#### Industries

- Chemicals** 
- Pharma** 
- Cosmetics** 
- Food** 
- Advanced Materials** 

#### Certificates

-  ISO 9001
-  ISO 14001



**10,000+**  
Delivered Projects Across our Product Divisions

- PHT** Powder Handling Technologies
- PST** Particle Size Technologies
- FST** Filling Solutions Technologies
- CST** Containment Solutions Technologies
- CPT** Continous Processing Technologies

**Employees**  
**800+**