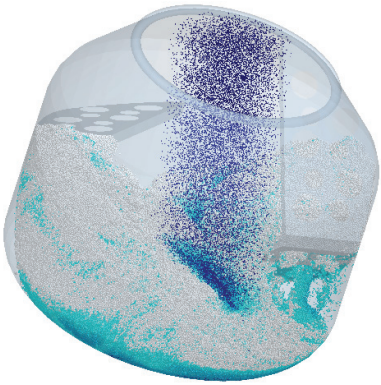
ALTAIR FOR PROCESS MANUFACTURING

altair.com/process-manufacturing

The use of computer simulation in the process manufacturing industries can help improve understanding of processes and provide key insight into operations otherwise difficult or sometimes impossible to obtain. This can result in increased process efficiency, improved product quality, reduced testing costs and innovation in product design.

MIXING

Altair EDEM™ can simulate the mixing process of powders, tablets, aggregates, and other granular materials. It provides fundamental information such as the particle velocities and trajectories and allows for the prediction of mixing and segregation rates as well as the identification of dead zones. This enables operators to make informed decisions on the optimal process operational parameters for their equipment regarding the impact of speed, fill level, tilt angle, etc., and to assess mixing efficiency.



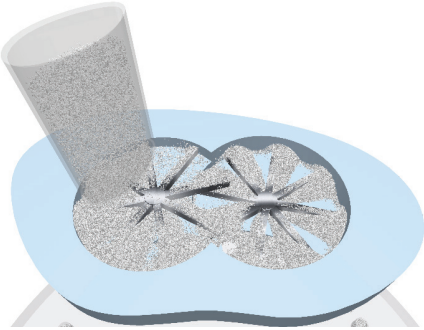
Simulation of a wet mixing process using EDEM software

TABLET COATING

Coating uniformity is of critical importance for the tablet-coating process. With EDEM it is possible to obtain key parameters such as the residence time of the tablets under the coating spray, intra-tablet coating variability, and tablets velocities pattern – many of these are difficult or even impossible to get by experimentation. EDEM can also be used to investigate how the shape of a tablet, the drum's speed, and the fill level are influencing the coating process.

DIE FILLING

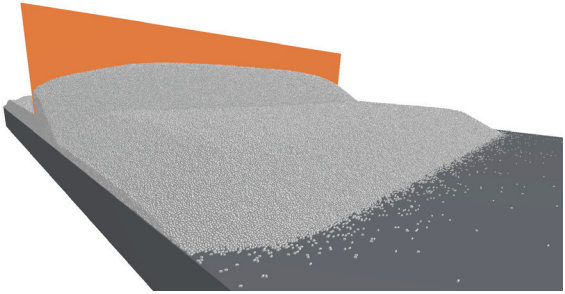
Die filling is a common step in many industries including pharmaceuticals and powder metallurgy. A consistent and uniform process is very important as it influences the quality of the final product or component. EDEM can be used to assess the effect of various key parameters, understand micro-macro dynamics of particles inside the feed frame, and visualize segregation inside the feed frame and during die filling.



Simulation of die filling for pharmaceutical powders using EDEM software

POWDER SPREADING AND RAKING

The powder spreading process in additive manufacturing (AM) has a major impact on the characteristics and quality of the final product. EDEM can be used to simulate that process and investigate the impact of different operational parameters such as roller speed on the quality of the powder bed as well as evaluating powder spreading uniformity. EDEM can be applied to various aspects of the AM process including powder delivery, spreading, and cleaning operations.



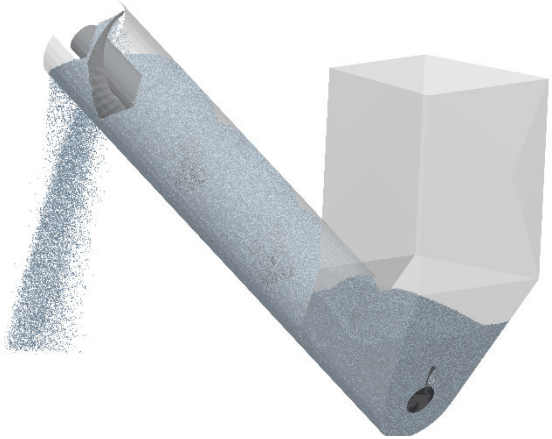
Simulation of the powder raking process in additive manufacturing

FLUIDIZED BEDS

Fluidized beds are commonplace in industry – particularly in chemical processing – and are used in a wide variety of processes such as freezing, cooling, heating, and coating. By coupling computational fluid dynamics (CFD) with discrete element modeling (DEM) using Altair AcuSolve™ with EDEM companies can accurately simulate fluidized beds and other particle-fluid systems. DEM-CFD provides key information and can be used to assess the quality of fluidization and to understand mixing and segregation phenomena.

CONVEYING EQUIPMENT

Screw conveyors are frequently used in a range of industries to transport granular materials. With EDEM, companies can analyze the flow rate of different materials in the conveyor and get information on the forces and wear on equipment. EDEM can be used to predict any risk of blockages, assess the mixing and compression of the material, and obtain information on system capacity and power requirements



Simulation of screw auger discharging powder using EDEM software

HELPING THE INNOVATORS INNOVATE, DRIVE BETTER DECISIONS, AND TURNING TODAY'S PROBLEMS INTO TOMORROW'S OPPORTUNITIES.

ALTAIR TRENDING IN:

Additive Manufacturing
Autonomous & ADAS
Big Data
Cloud Computing
Data Transformation
Digital Twin
e-Mobility
Exascale
GPU Solutions
Lightweighting
Machine Learning
Mechatronics
Smart Product Development
5G

"The deployment of EDEM modeling in Pfizer drug product development has accelerated the decision-making process —

by predicting, before process scale-up, the performance of commercial tablet shapes at process scale."

William Ketterhagen and Mary T. am Ende,
Pfizer Worldwide Research & Development

ALTAIR

Altair is a global technology company that provides software and cloud solutions in the areas of product development, high performance computing (HPC) and data analytics. Altair enables organizations across broad industry segments to compete more effectively in a connected world while creating a more sustainable future.

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