



Product News

More particles...faster with EDEM 2018

Edited by on 3. Oct. 2017

Edinburgh, United Kingdom -

Setting-up Simulations - New Tools The **EDEM Creator** includes new tools that will primarily benefit users designing heavy equipment in the construction, mining, off-road and agriculture industries who are simulating machinery interacting with large beds of material. Engineers typically need to analyze behavior once ground engagement has reached a steady state. This can be the turnover of the soil in the furrow from ploughing, or folding of material from the top of a dozer. In these examples, it is critical to create a bed of material long enough to enable the equipment to achieve the steady state condition but creating long bed of materials can result in longer simulation time. To help users generating large beds quicker and easier, **EDEM 2018** introduces a **Bed Generation Tool** that enables users to make a large bed quickly by copying small blocks of material. The blocks can be re-used, stored and easily transferred between multiple users and simulations which saves both setup time and simulation time. A second key capability that has been added to **EDEM 2018** is the **Dynamic Domain** which makes it possible to create an active domain to only solve contacts in necessary areas. The remaining material bed is frozen until needed so a much larger bed can be used in a far more efficient way. By only solving for the active region, the material bed can be made much bigger without any worries about the computing cost of the simulation. In addition, since determining the right properties to represent the real material can be difficult especially for complex materials such as soils, a new resource called 'Soils Starter

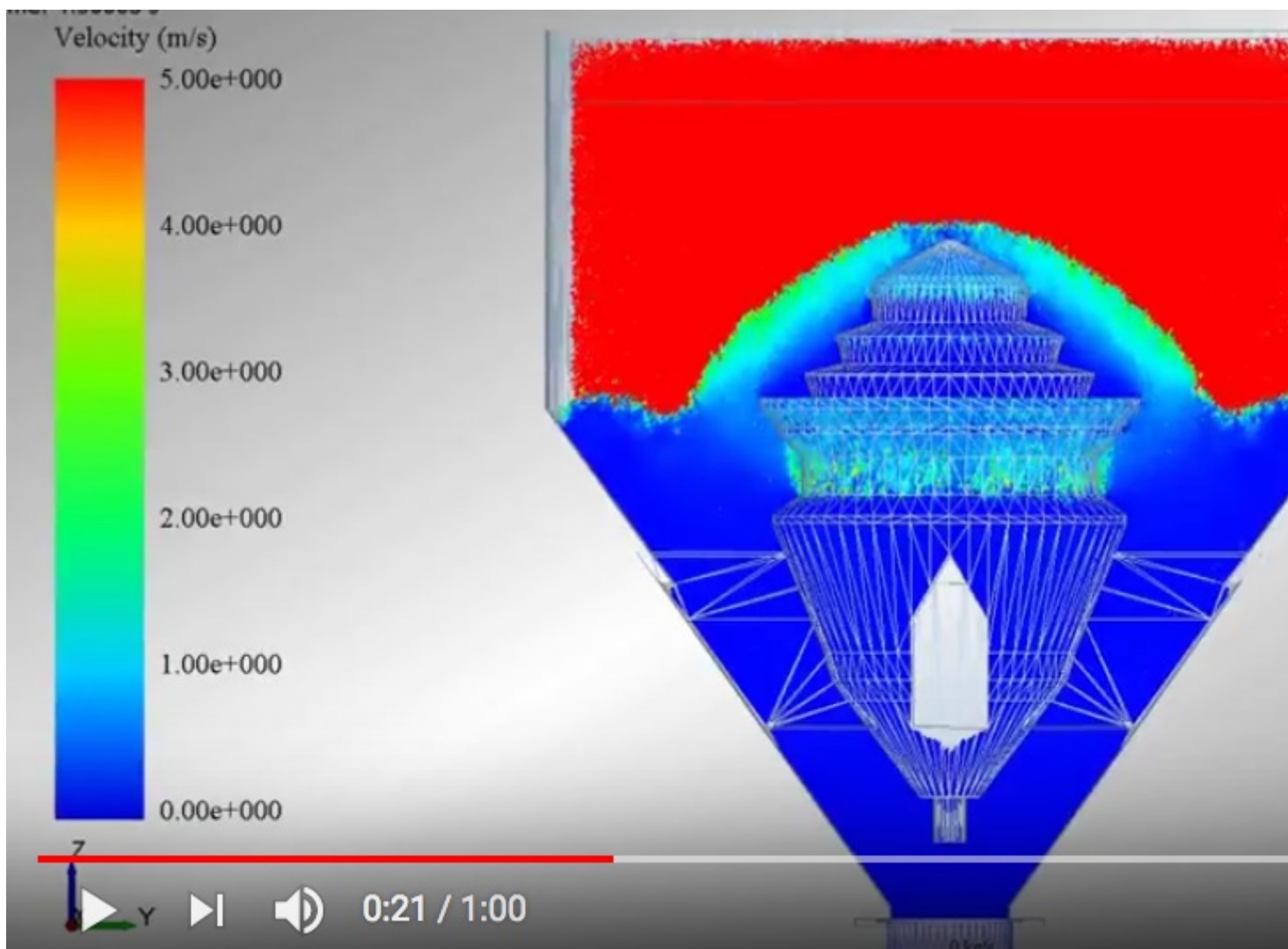
Pack' has been developed. It consists of 8 models for different types of soils exhibiting different types of compressibility and stickiness and ready to be used in a simulation. More information about the Soils Starter Pack is available in this blog post. In parallel, a new contact model for modeling complex cohesive materials such as fine dry powders, organic materials, soil and ore fines is now available as a standard built-in contact model in **EDEM**. This model, called **Edinburgh Elasto-Plastic Adhesion (EEPA)**, offers a solution for cohesive granular solids whose behavior changes depending on the stresses experienced by the material beforehand. It can help realistically simulate applications such as material adhesion to earthmoving equipment, soil-tyre interaction or for instance a cohesive powder compaction process such as tableting.

Increased Performance and Accuracy On the processing side, **EDEM** has continued to advance its GPU solver engine and incorporated many of the requests made by users since its first introduction, including increased performance and accuracy results and access to the features found in other areas of **EDEM**. In **EDEM 2018** the GPU solver is now fully double precision, which provides maximum stability and accuracy to simulations even for very small particles. In addition, users making use of **EDEM**'s highly versatile **Application Programming Interface (API)** will be able to use the GPU solver with their custom models, hence benefiting from a performance increase even for advanced and complex applications.

Enhanced Post-processing A range of enhancements have been applied to the **EDEM Analyst** for faster and advanced visualization and analysis. A new feature enables pre-defined queries to be exported while the simulation is being calculated - enabling users to review results without having to wait until the end of the simulation or stop the simulation. The speed of data export has also been significantly improved as well as the speed of graphing. New analysis methods have been added including sensors for velocity profile, total mass, segregation and bulk density, providing quicker access to commonly used analysis methods. On the visualization side, a range of enhancements have been included enabling users to make more realistic and dynamic videos. This includes notably the possibility to track a geometry with the camera as it moves, switching views automatically at a specified time, adding realistic textures to particles and geometries, changing opacity of particles as well as the capability to have different views and graphs side by side using the multi-view window.

CAE Integration - new coupling solutions **EDEM** partners with leading CAE companies including **ANSYS**, **MSC Software** and **Siemens PLM Software** to offer a range of co-simulation solutions with Finite Element Analysis (FEA), Multi-body Dynamics (MBD) and Computational Fluid Dynamics (CFD) tools. New partnerships with **Simulia** and **FunctionBay** now enable the coupling of **EDEM**

with Abaqus and RecurDyn. This means users can transfer realistic bulk material loads from **EDEM** to their FEA and MBD tool of choice, resulting in greater insight into equipment performance. **Mark Cook**, **EDEM** Product Manager, commented on the release: *“With EDEM 2018 we are introducing innovative tools for simulating large beds of materials, which is critical when designing agriculture, construction and off-highway equipment. We have continued our work on the GPU solver to enable our customers to simulate large and complex particle systems faster. We have also worked extensively on the post-processing side to enable our users to perform advanced analysis and to analyze their simulations faster as well as creating high quality and very realistic videos. Finally we are pleased to introduce new coupling solutions with leading FEA and MBD tools thanks to strong partnerships with Dassault Systemes and FunctionBay”*. **EDEM** users can find the full list of enhancements in the Release Notes available on the **EDEM** website. New to **EDEM**? Check our eLearning portal and start our free **‘Introduction to EDEM 2018’** video course. [A short teaser video can be found by clicking here.](#)



EDEM 2018

About EDEM EDEM is the market-leading **Discrete Element Method (DEM)** software for bulk material simulation. **EDEM** simulation technology is used for 'virtual testing' of equipment that handles or processes bulk materials in the mining, equipment manufacturing and process industries. Companies worldwide use **EDEM** to optimize equipment design, increase productivity, reduce costs of operations, shorten product development cycles and drive product innovation. **EDEM** is a global company established in 2003 as **DEM Solutions Ltd.** and headquartered in Edinburgh, UK with offices in USA and Japan and supported by a network of channel partners in South America, South Africa and Asia-Pacific.