Crush bulk material simulation

Altair EDEM™

AMD

New to EDEM?

Altair EDEM™ is a specialized Discrete Element Method (DEM) software application for bulk and material simulation. It provides engineers with crucial insight into how soil, ores, rocks and powders will interact with their equipment. It is typically used by engineers in the heavy equipment, mining, metals, and process manufacturing industries. The software can be used with all major third party CAE technologies such as Finite Element Analysis (FEA), Multi-Body Dynamics (MBD) and Computational Fluid Dynamics (CFD). EDEM has support for up to 4 GPUs.

How to accelerate EDEM

The Discrete Element Method is particularly suited to scaling across a high number of GPU cores. EDEM GPU is completely double precision based, written using OpenCL™. The double precision accuracy of EDEM is particularly important as errors are reduced. As such, an ultra-fast double precision (FP64) GPU is recommended to simulate solvers faster and reduce waiting times. The powerful, yet affordable Radeon™ Pro VII GPU offers this, supercharged with HBM2 and ECC as standard.

The secret of larger workloads

The Radeon™ Pro VII GPU is unique in that it brings extreme amounts of memory bandwidth to EDEM engineers. The exceptional 1TB/s of bandwidth when combined with ultra-fast PCIe® 4.0 (x16) support ensures that many of today's complex particle simulation bottlenecks are crushed.

"The Radeon Pro VII offers good compute performance for Altair EDEM™ software with 16GB of memory and PCI-E Gen 4 support for quick data transfer. EDEM simulation results rely on good data handling speed as well as pure number crunching so the latest standards offer significant benefits."

Mark Cook, EDEM Product Manager, Altair

Image kindly supplied by Altair Engineering, Inc.

Multiple GPU acceleration

Up to 4x individual GPUs are supported for when an extremely large simulation needs to be accelerated. Increasing the GPU memory pool allows for an increased number of particles, number of contacts and the simulation's physical size, ultimately spreading the workload. In these situations, the challenge is having fast GPU memory as much as it is to have lots. The Radeon™ Pro VII easily answers this challenge, with the GPU's architecture being used in some of the world's fastest supercomputers.

The new standard for simulations

Powered by the 7nm "Vega" architecture, 16GB of high-speed HBM2 memory, and support of up to six display outputs, the AMD Radeon™ Pro VII GPU delivers exceptional double precision calculation enabling greater DEM simulation interaction playback. The AMD Radeon™ Pro VII workstation graphics card is purpose-built to deliver outstanding double precision performance at a reasonable price.

AMD RADEON PRO VII

Support for remote working

The Radeon™ Pro VII supports the GPU-accelerated experience of AMD Remote Workstation[2]. Allowing you to access your physical workstation virtually anywhere, with the remote workstation IP built into AMD Radeon™ Pro Software for Enterprise driver. This driver delivers enterprise-grade stability, security features, and innovative features, including high-resolution screen recording.

amd.com/RadeonProSoftware

OVER
1 TB/s
BANDWIDTH FOR MEMORY INTENSIVE WORKLOADS

UP TO
16GB HBM2
MEMORY FOR LARGE SIMULATIONS

SUPPORT FOR
6x Panels
VIA MINI-DISPLAYPORT™ 1.4

SUPPORT FOR
PCIe® 4.0
OFFERING WORKLOAD ACCELERATION

RELATIVE PERFORMANCE IN IDENTICAL WORKLOADS[1].		100%
HOPPER DISCHARGE TEST:	Hopper emptying into container with fixed size (0.003m) distribution of 1000000 nParticles.	UP TO 68% SLOWER
POWDER MIXER TEST:	With fixed size (0.0005m) distribution of 1000000 nParticles.	UP TO 42% SLOWER
SCREW AUGER TEST:	With fixed size (0.001m) distribution of 1000000 nParticles.	UP TO 50% SLOWER
MILL TEST:	With fixed size (0.005m) distribution of 1000000 nParticles.	UP TO 58% SLOWER

Benchmark overview

The "Vega" chip architecture of the Radeon™ Pro VII GPU offers an excellent compute engine with affordable double precision performance, helping Altair EDEM to perform quicker under heavy simulation workloads. Combined with support for ultra-fast PCIe® 4.0, I/O bottlenecks are crushed.

RTX 5000
NVIDIA Quadro® RTX 5000 with Optimal Driver for Enterprise (442.5).

Radeon Pro VII
AMD Radeon™ Pro VII with AMD Radeon™ Software for Enterprise 20.Q2 Pre-Release version.

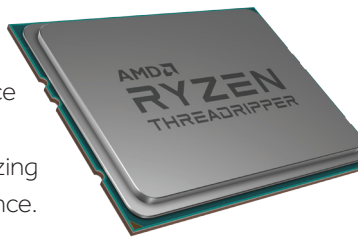
Why AMD:

AMD is proud to power the graphics behind many world-class workstations and mobile solutions, be at the heart of major games consoles beloved for gameplay and streaming video entertainment, to powering some of the world's fastest supercomputers for research, to driving business laptop performance. AMD already touches many areas of your life.

amd.com

Looking for a CPU too?

AMD processors are an excellent choice for powerful workstations, with Ryzen™ Threadripper™ processors offering blazing fast, multi-core workstation performance.



[1] Testing as of April 29, 2020 by AMD Performance Labs on a production test system comprised of an Intel® Xeon® W-2125, 32GB HBM2 RAM, Windows® 10 Pro for Workstations, 64-bit, System BIOS 1.11.1, AMD Radeon™ Pro VII, AMD Radeon™ Software for Enterprise 20.Q2 Pre-release version/NVIDIA Quadro® RTX, NVIDIA Quadro® Optimal Driver for Enterprise (ODE) R440 U6 (442.5) using AMD Internal Benchmark for ALTAIR EDEM™. Results may vary. RPW-319

[2] Learn more at https://www.amd.com/en/technologies/remote-workstation.

To learn more about AMD professional graphics visit:
amd.com/RadeonPro