

Off-Road Equipment Simulation and Modeling Workshop

Altair and Iowa State University (ISU) are pleased to host a virtual workshop dedicated to the Heavy Equipment industry. This event is aimed at equipment manufacturers across a range of industries including agricultural, construction, mining, and off-highway.

Join us for 3 half-day sessions where we will show how Altair simulation tools can be used in the design of heavy and off-road equipment looking at combining bulk material simulation with Computational Fluid Dynamics and Multibody Dynamics to get key insight into machine-soil interactions and to better understand particle-fluid systems.



IOWA STATE UNIVERSITY
Department of Agricultural and Biosystems Engineering



Please be advised that, this workshop requires attendees to complete the following online trainings prior to the event:

- [Introduction to EDEM eLearning](#)
- [MotionView/MotionSolve Introduction v2020](#)

Time (EDT)	Tuesday, June 8th	Wednesday, June 9th	Thursday, June 10th
10:00	Introduction to Altair EDEM and Physics models	Virtual Tour: Seed Conditioning and Processing Concepts – Separation Principles	Altair EDEM and MotionSolve
10:30		Presentation: Simulation and modeling of soil-crop-machine systems	
11:00		Virtual Tour: Soil Machine Dynamics Laboratory	
11:30	EDEM Application Programming Interface (API) and Introduction to EDEMPy	Altair EDEM Calibration	Altair EDEM and AcuSolve
12:00			
12:30		Altair EDEM Applications	
13:00	Presentation: Introducing Altair PM-FlexTire Soil Material Model		Presentation: ISU Feed Mill & Grain Science Complex – Facilities and Programs

AGENDA

EDEM Sessions

- Introduction to EDEM software and EDEM Physics models – 1.5 hours
- EDEM Application Programming Interface (API) and introduction to EDEMPy – 1.5 hours
- EDEM Calibration – 1 hours
- EDEM Application presentation – 1 hour

EDEM + AcuSolve Session

- Overview of CFD and AcuSolve
 - Overview of CFD
 - Capabilities of AcuSolve
 - Modeling approaches for granular multiphase flows



- Coupling EDEM with AcuSolve
 - How the governing equations are coupled
 - Key features of AcuSolve-EDEM coupling
 - Different coupling approaches available
- Applications of AcuSolve-EDEM coupling
 - Combine harvester
 - Seed throwers
 - Pneumatic conveying
 - Cyclone separators
 - Fluidized bed
 - Mixing

EDEM + MotionSolve Session

- Overview of MotionSolve
 - MotionSolve in Inspire Motion
 - MotionSolve in MotionView
 - Defining motions and forces with MotionSolve
- MotionView/EDEM co-simulation
 - General concept
 - Interface setup and simulation parameters
 - Running the simulation
- Applications/Examples of MotionSolve+EDEM co-sim
 - Excavator
 - Tractor and Liner Rake
 - Pharmaceutical Sieve
 - Vehicle traction control

