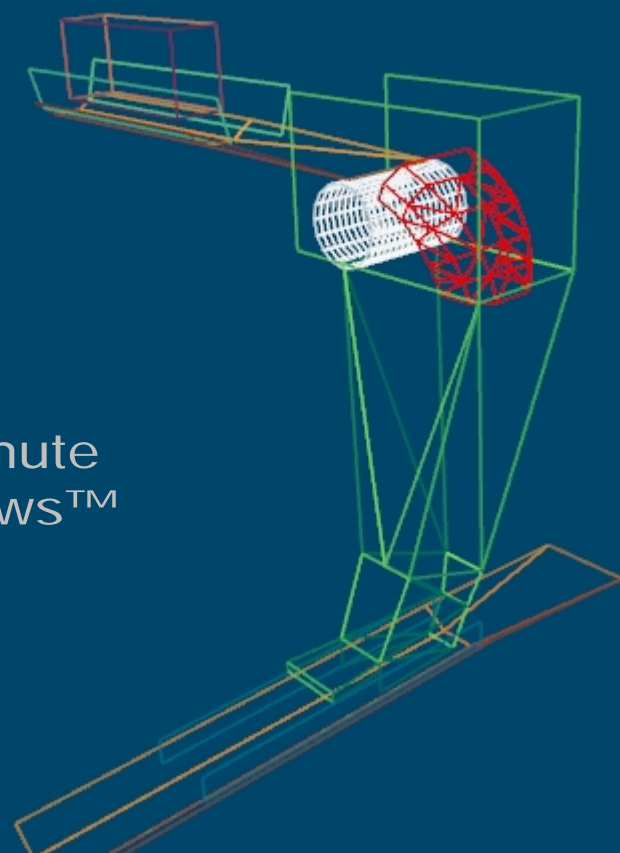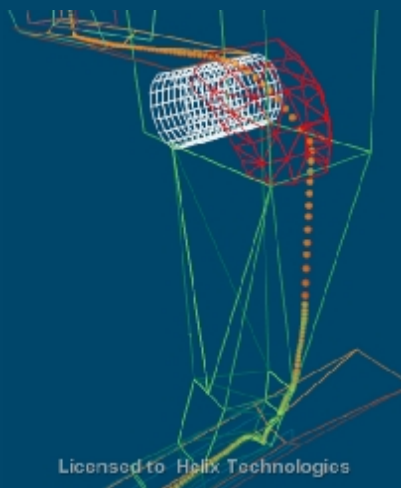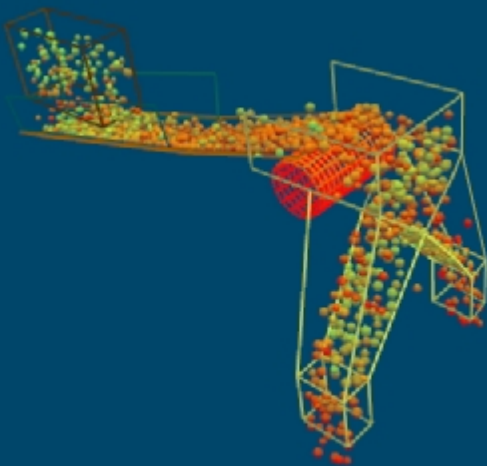# Helix Chute Design Program

DEM Conveyor Transfer Chute Design Software for Windows™

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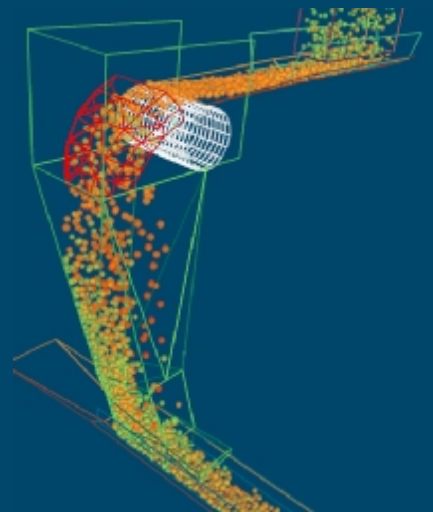
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Helix Chute Design

.... is a powerful computer software package developed to make conveyor transfer chute design more scientific. The program uses the Discrete Element Method, called DEM, to calculate and simulate the path a bulk material follows through a transfer.

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Powerful DEM modelling and Calculations

Helix Technologies' research and development of conveyor design software began in 1992 and this Chute Design Program is the culmination of intensive software development by the company. The program uses OpenGL graphics coupled to DEM calculations and 3D Vector geometry developed entirely in-house to provide the materials handling design engineer with a complete design tool for transfer chutes.
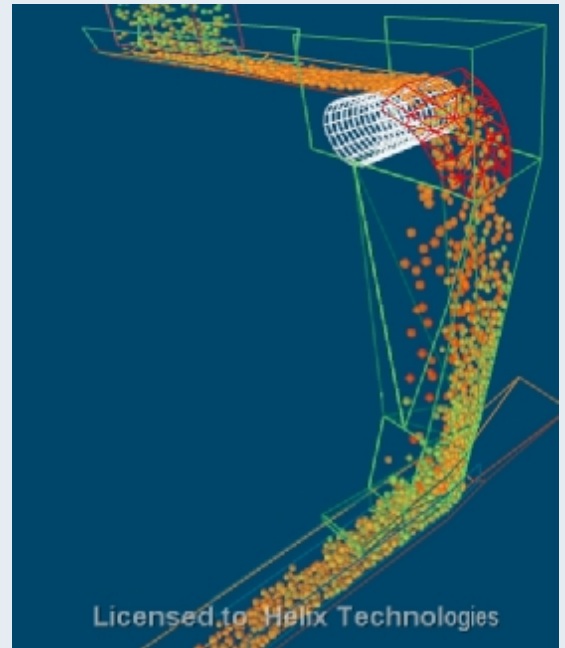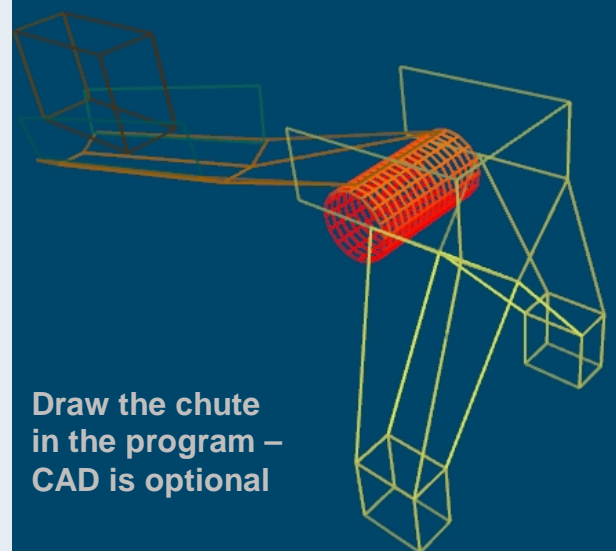
Draw the chute ...

The Helix chute design program has the following main features:

- Draw a 3D model of the transfer station in the program
- Use a CAD drawing program to draw the transfer station (optional)
- Add multiple feed and receiving conveyor belts
- Add multiple feed points with different materials
- Add conveyor pulleys to transfer chute
- Cater for any geometry transfer chute
- Ability to Import transfer chute geometry from CAD drawing programs
- Record the Particle Flow in Windows Media Player .avi movie format
- Export the final design geometry back to a CAD drawing program for incorporation of the design in project drawings

Move chute faces and view the results

Draw the chute in the program – CAD is optional

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Setup Bulk Material properties…

- Setup Material Particle Density

- Enter Particle size range – specify maximum and minimum particle diameter

- Specify Transfer Capacity or throughput in tonnes per hour

- Input material co-efficient of restitution and chute face properties such as restitution and friction

- Add multiple feed points with different materials – allows feeding onto already loaded belts.

Discharge Trajectory

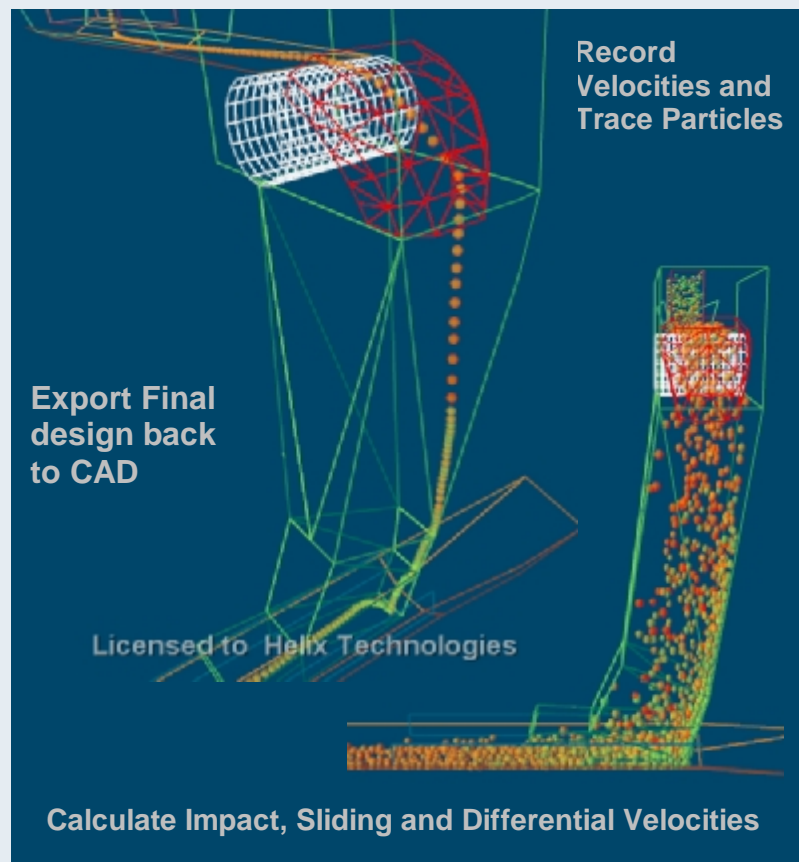## Perform DEM Calculations & make a movie …
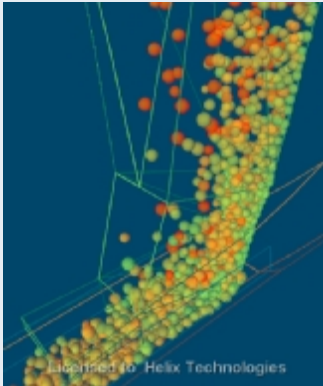
Press Calculate to start the DEM calculations and watch as the particles are created in space and then fall onto the moving feed belt and then flow through the chute.

- Powerful calculations to predict the flow of particles through the chute allows particles to collide with each other and with the chute faces.

- Discrete Element Method (DEM) particle flow modeling

- Adjust the position of belts, pulleys, impact plates, chute liners and skirt plates to optimize the flow thorough the chute.

- Export the trace lines and Trajectories to CAD drawings

Record the calculations and produce trace reports and movies

Press Record …

- Record the Particle Flow in Windows Media Player .avi movie format

- Extract reports showing particle positions at each time step of the calculations

- Reports to show velocity of each particle at each time step, including a breakdown showing the velocity in each 3D axis.

- Trace a single particle trajectory as it collides with other particles and the chute faces, belts and other surfaces in the transfer

- Replay the particle trajectory, one step at a time in order to observe actual collision points with surfaces and rebound trajectories.

- Export the trace lines and Trajectories to CAD drawings

- Particle velocities are displayed by colour gradient as well as recorded

Record Velocities and Trace Particles

Export Final design back to CAD

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**Calculate Impact, Sliding and Differential Velocities**

Program Documentation & Software Support ...

The Helix Chute Design program is supplied with a comprehensive Help file which has detailed instructions on how to draw your chute, input the material, perform the calculations and record your results.

- On demand context sensitive Help file
- Step by Step instructions
- Getting Started section
- DEM Theory and formulae

Technical Support and Software Maintenance is available directly from Helix Technologies
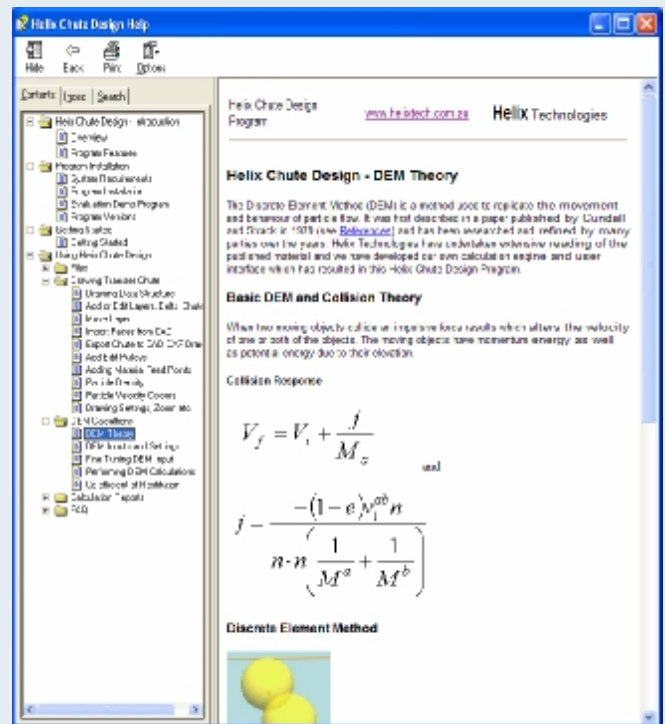
System Requirements
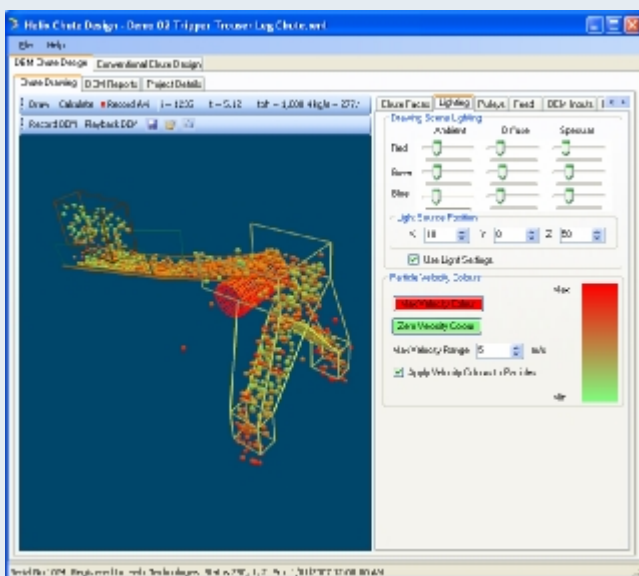
To run the Helix Chute Design program you need a PC running Windows 2000® or Windows XP® or Vista®.

- PC with Pentium IV processor or better
- Windows 2000, XP or Vista 32 or x64 bit
- At least 256kb RAM - 512kb or more is better.
- Video card screen resolution of at least 800 x 600 pixels - 1268 x 1024 or better preferred
- Microsoft .Net version 2.0 - free download
- Hard disk with about 8Mb free space
- Windows Media Player - for playing recorded avi Movie files
- CAD drawing program such AutoCAD® which can read and save .dxf files, is optional.

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