

How to Install and Use Newton Viewer

About Newton Viewer

Newton Viewer is a free program from AC-Tek that allows you to open and view the results of a DEM simulation created using Newton.

The advantage of using Newton Viewer is that, rather than just looking at a series of simulation screenshots sent to you by your client, you can open up real frames of the simulation and view them in full 3D. With Newton Viewer you can:

- Pan, Rotate, and Zoom the model to view the simulation results from any angle.
- Change the Particle Style and Particle Coloring Mode (i.e. you can color the particles by Velocity, Elevation, Particle Size, or even hide the particles completely).
- Change the style and color of each layer in the geometry (i.e. each layer can be set independently to Wireframe, Solid, Transparent, or Hidden).
- Set up clip planes to hide particles or triangles and create sectioned views of the model.
- Take your own screenshots.

With Newton Viewer, you can open both types of Newton playback files (.PBF and .UCM files). A UCM file is an uncompressed playback file. This is the main raw data file that Newton creates when running a simulation, and contains all the simulation data. The UCM file can be any size, from 10 MB to 50 GB, depending on the complexity of the simulation and the number of frames.

A PBF file is a single-frame playback file, which means that the file contains data from only one frame of the simulation (i.e. it is a snapshot of the simulation at one specific time instant). PBF files are created from the main UCM file, and are very small (less than 1 MB). This means they are perfect for emailing. This is the type of file that you are likely to receive from your client.

Installing Newton Viewer

1. Newton Viewer requires Microsoft.NET 2.0 or later. If you are running Windows XP, you may need to download and install .NET from Microsoft's website. If you are running Vista, 7, or 8, a newer version of Microsoft.NET should already be installed on your computer.
2. Download Newton Viewer from the following link:
http://www.actek.com/Newton/Newton_Viewer_Installation.zip
3. Extract both files from the ZIP file and double-click **setup.exe** to install Newton Viewer.
4. Newton Viewer requires the latest DirectX 9.0c drivers. Even if you have a newer version of DirectX, you might still need to install these drivers. If Newton Viewer opens without any errors after installing, then you do not need these drivers. However, Newton might throw a DirectX error at startup, alerting you to download install these drivers from the following link:

http://www.actek.com/Newton/Newton_DirectX.zip

To install the DirectX drivers, double-click the **directx_Jun2010_redist.exe** file inside the ZIP file. You will be asked to extract the files to a temporary folder. After extracting the files, open that folder and double-click **DXSETUP.exe** to update DirectX.

5. You can now start Newton Viewer by clicking on the Newton icon on your desktop, from the Windows start menu, or by double-clicking a Newton playback file (*.PBF or *.UCM).

Using Newton Viewer

To open a playback file with Newton Viewer, you can either double-click the PBF or UCM file to open it in a new instance of Newton Viewer, or click the green “Open” toolbar button and navigate to the file.

When you open a playback file, Newton will recall the camera view, particle settings, and layer settings that were applied when the file was last saved. Figure 1 shows a default view when opening a certain UCM file, with the major elements of the Newton Viewer interface outlined in various colors.

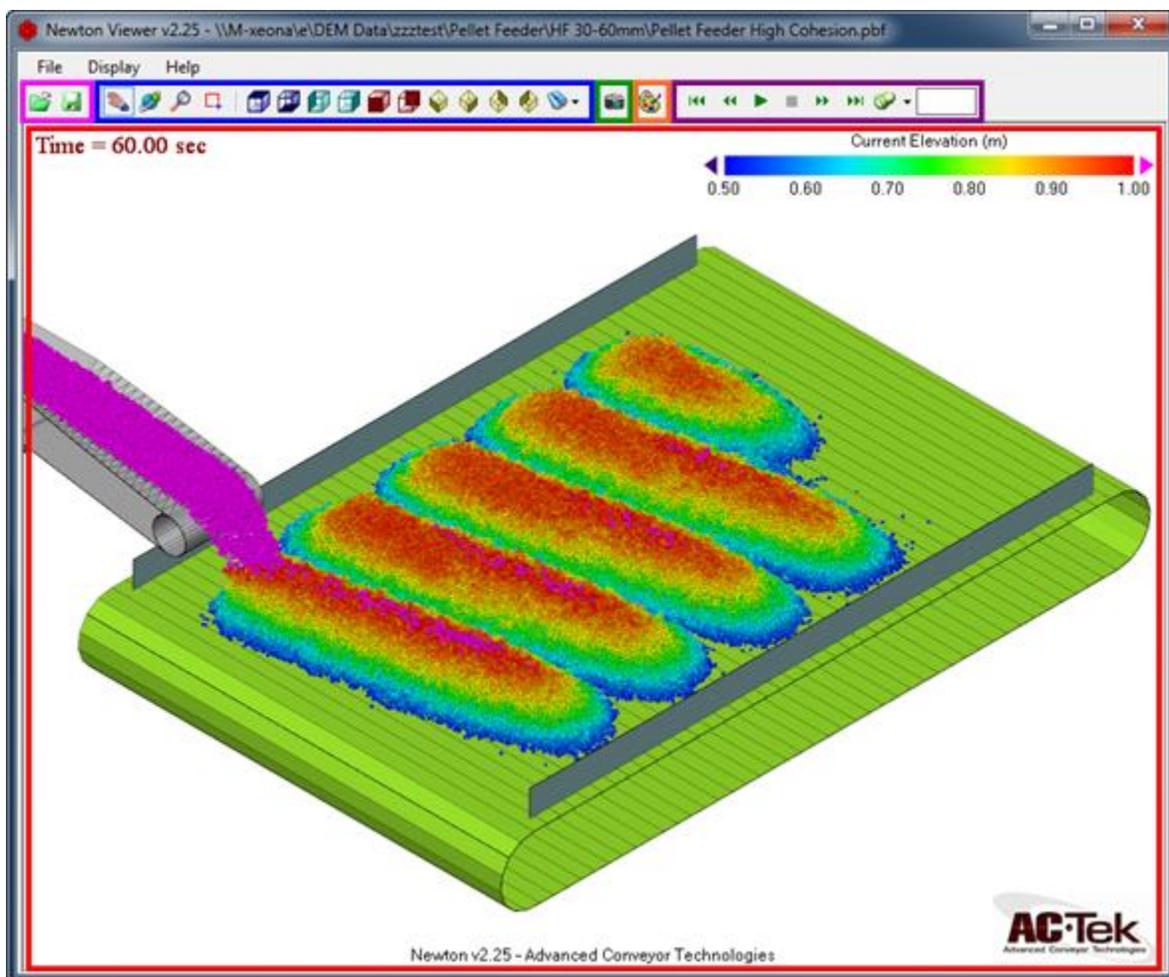


Figure 1 – Newton Viewer Main Interface

Rendering Window – This is the main viewing window where the model is rendered. If you right-click in the rendering window, a context menu will appear that contains shortcuts to many settings. All of these settings are also available in the “Display” menu, on the main toolbar, or in the SMV Window.

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Open/Save Buttons – Click the Open button to open a playback file. Click the Save button to save a new playback file using the current camera view, particle settings, and layer settings.

View Buttons – These are the standard buttons for manipulating the camera view of the model.

Screenshot Button – This button allows you to capture a screenshot of the rendering window. The resolution of the screenshot is based on the size of the rendering window. To save a bigger or smaller screenshot, resize the main window accordingly.

UCM Buttons – If you opened a UCM file (which contains multiple frames) these buttons allow you to scroll through the frames, play and pause playback, or jump to specific points in the playback file. If you opened a PBF file (which contains only a single frame of data) these buttons will not be shown.

SMV Window Button – This button opens the Surface and Material Visualization (SMV) Window. This is the main window that you will use to manipulate the layer and particle view settings, shown in Figure 2.

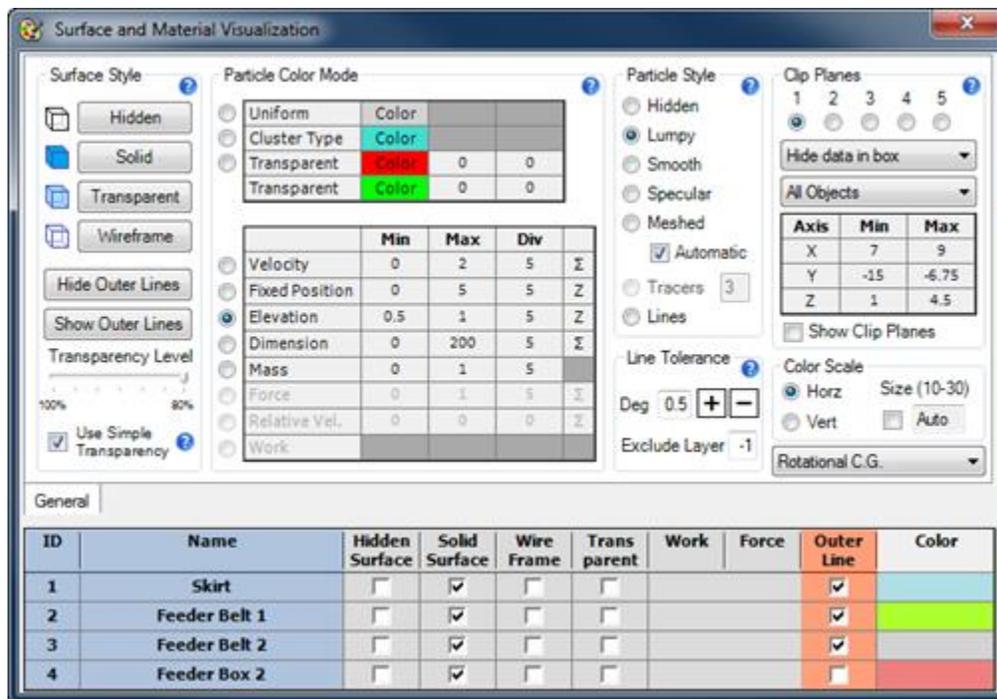


Figure 2 – The SMV Window, used for controlling layer and particle settings

A full User Manual is available by clicking “Help” -> “User Manual.” You must have Adobe Reader installed in order for this shortcut to work. Otherwise, the User Manual is stored in the main Newton Viewer installation directory, and can be opened with any program that can read PDF files.

The User Manual is intended for the full version of Newton, so it documents all the Newton features (most of which are unavailable in Newton Viewer). The relevant sections for Newton Viewer are:

- **Section 3.3:** Discusses the main toolbar buttons.
- **Section 3.4.3:** Discusses the options in the “Display” menu.
- **Section 5.2.2:** Discusses the options in the rendering window right-click context menu.
- **Section 5.3:** Discusses the controls on the SMV Window.

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