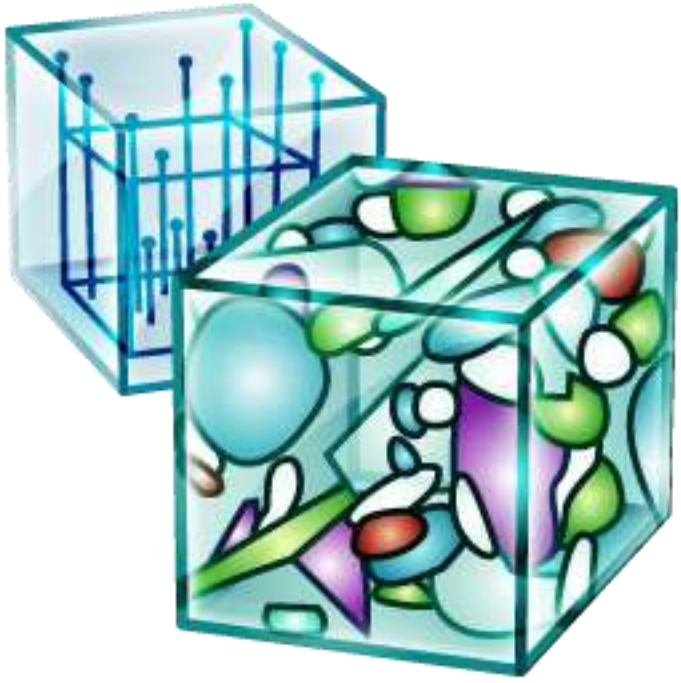
New Features

FracMan 7.40



7.4 New Features

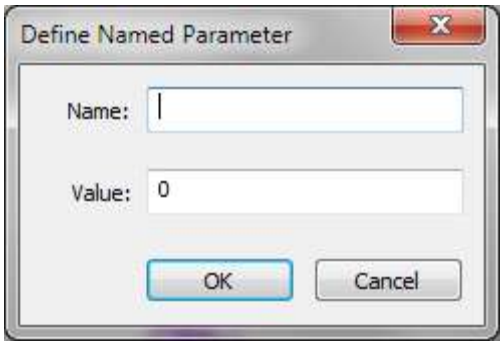
File Import / Export

- ASCII PLY file (also known as the "Stanford Triangle Format") import / export for surfaces, tracemaps and point data sets.
- ESRI Shapefile import / export for surfaces, tracemaps and point data sets.
- Vulcan surface ASCII import/export is complete
- Import / export IRAP, CPS3 and ZMap+ lines files (tracemap objects).
- Large file support for interpolating large ascii files to property values. When this option is selected the file will be parsed and interpolated one line at a time – this allows interpolation of multi-gigabyte ASCII files on a normal class machine. This interpolation is basically linear with the size of the file and can take hours to days to complete.
- New .fro (FracMan Object) file format which supports single/multiple objects/definitions in a binary format for simple exchange between .frd models.
- Progress bar with cancel support has been added to .frd file load

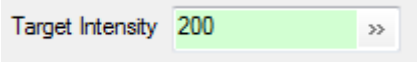
Parameter Sweeping

Named Parameters

You define a named parameter by selecting Tools -> Monte Carlo / Optimization -> Define Named Parameter, giving it a name and specifying a default value.



You can use a named parameter any place you see the new parameter edit box:

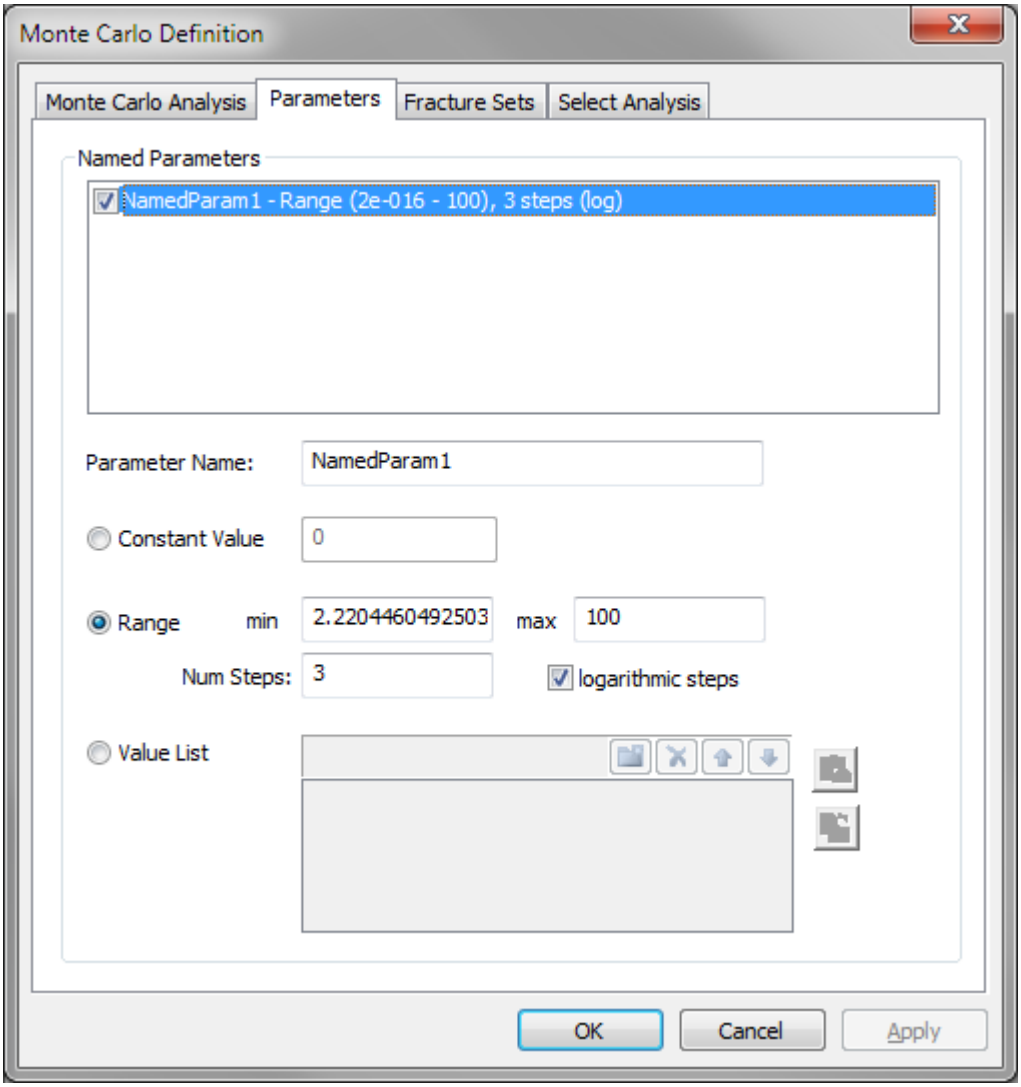


Remember that you can always use a number – but these boxes will also accept a parameter name as well.

When a named parameter is specified, the analysis will use the current (or default) value of that parameter. Named parameters are not currently supported by the macro language.

Parameter Sweep

If you select Tools->Monte Carlo / Optimization -> Define Parameter Sweep / Optimization you can define the sweep range for any named parameters in your model. You can specify a constant value, a min/max/step or a list of discreet values. In place of a standard monte carlo analysis, the selected fracture generation / analyses will be run once for every point in the parameter space defined.



Edit Features

Create point data from objects

This will create a point data set from virtually any object

Copy selected object names

This will copy the names of any selected objects to the clipboard.

UI Improvements

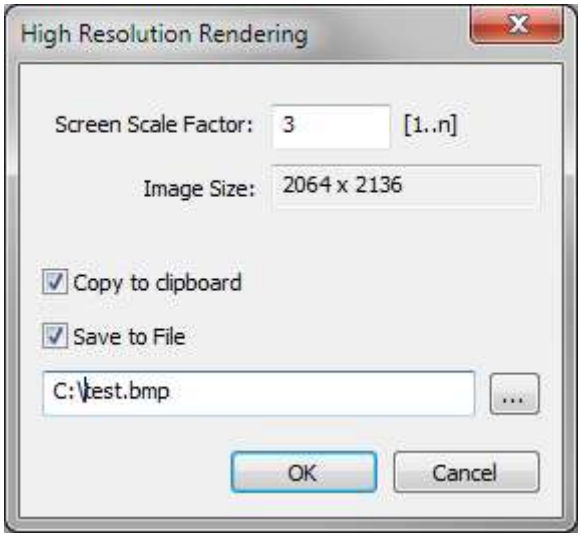
- The objects bar now has autoscroll when in drag and drop
- The objects bar drag and drop supports multi-select
- Added right click menu for copy/paste/delete to well definition dialog
- Added ctrl+C handler to log window
- Added ctrl+G shortcut to add object group
- Improved support for context sensitive help / context specific help “popups”

Create well log subsets from well intervals

It is now simpler to separate well logs into subsets by depth range. If you set up all your intervals of interest as interval sets you can create well logs of those intervals over your entire model in one operation.

High resolution screen shots

You can now take screen shots at higher than screen resolution.



These beautiful images are useful for publication where high dpi images are required. Select "High Resolution Screen Capture" and enter a scale factor – the resulting image will be captured at this many times the size of the current window. You can save the image to the clipboard or save it directly to file in a number of different image formats. For best results you should also select "Enable Multisampling" from the "Display Options" page of the options dialog.

Triangulate Points

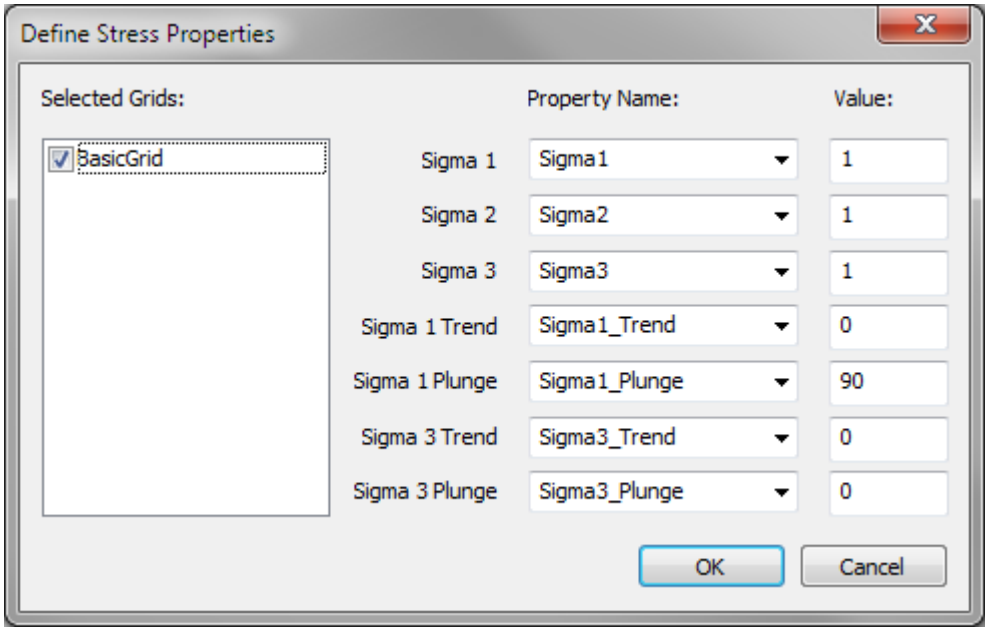
This will generate a surface object out of a set of point data.

Compute Coordinate Frame

This will create a set of coordinate reference frame properties from surface face orientations. It was designed to simplify the use of coordinate reference frames by allowing you to quickly compute the necessary properties based on the normal vectors of a controlling surface. You can then interpolate these property values to a grid in order to have the necessary coordinate reference frame.

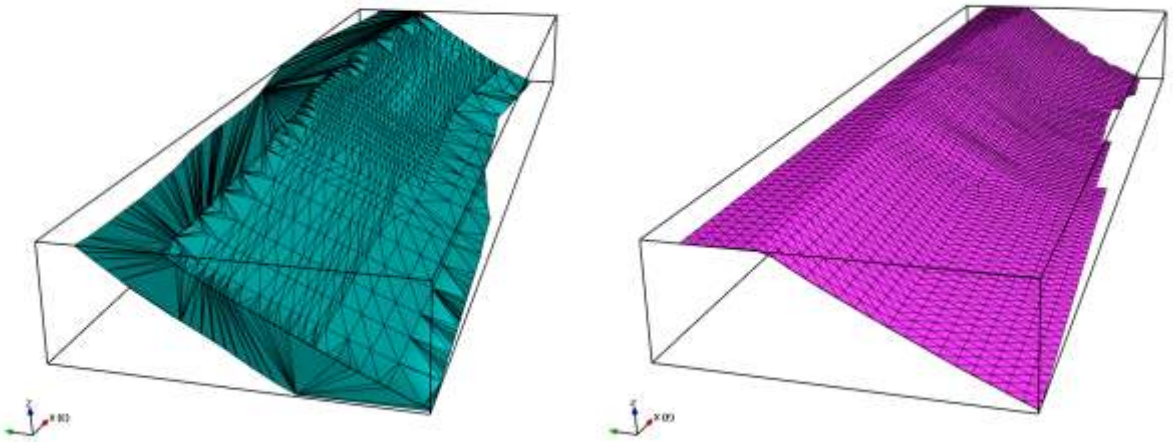
Define Stress Properties

This feature simplifies the definition of the stress field properties used by the Critical Stress Analysis and the Stress Propagation fracture generation. You can select existing property names for each of the principal values or enter your own as well as specifying a constant property value.



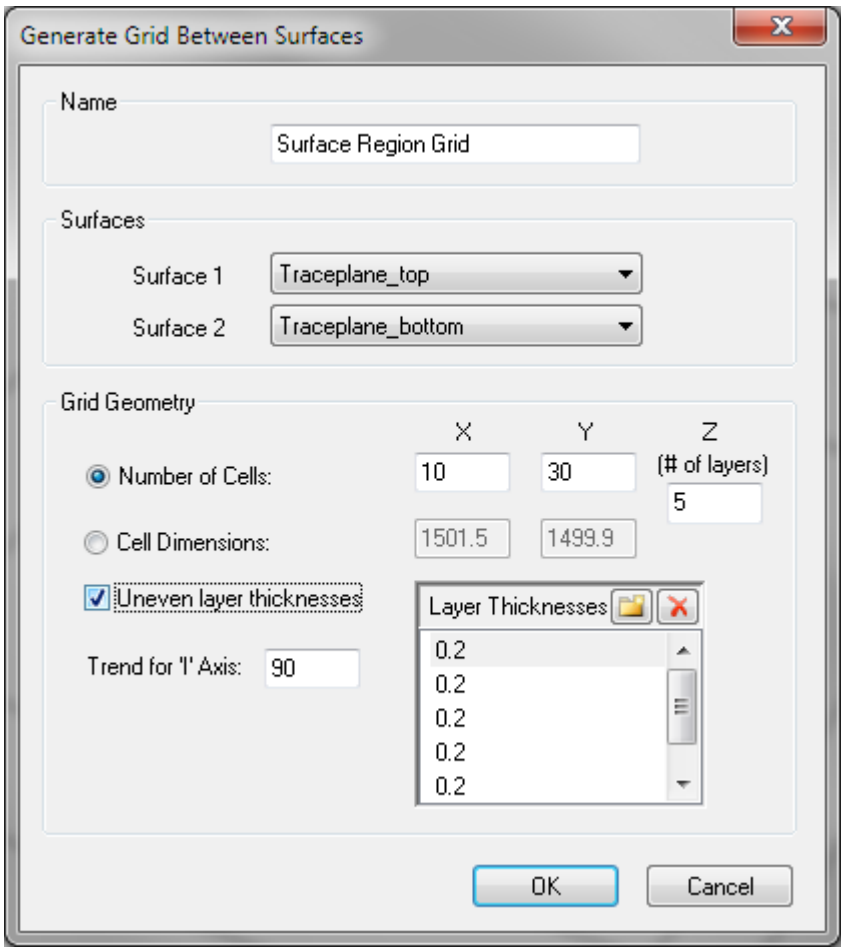
Surface decimation 2D hull outline option

Closed surfaces don't have outer edges that we use to bound the surface decimation. This option will compute the 2D convex hull of the object (projected in the selected direction) to enable surface decimation of these objects.



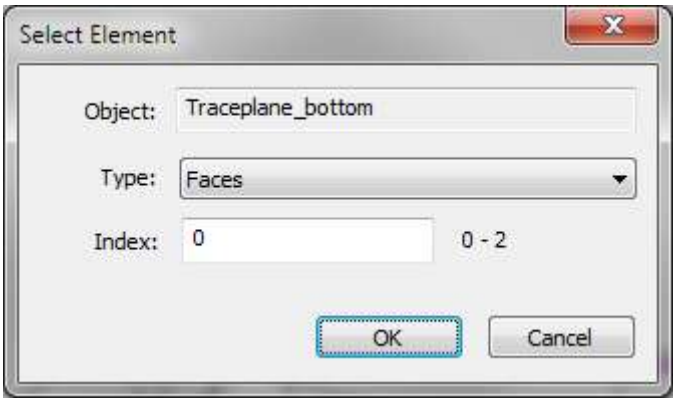
Variable Thickness Layers in Grid Between Surfaces

When generating a grid between two surfaces you can now specify non-uniform layer thicknesses. Select “Uneven layer thicknesses” and specify the fractional layer width of each layer (0 – 1). The total must add up to 1.0.



Select Element by Index

This feature allows you to select an object element (cell, vertex, face) by index enabling you to inspect properties, location etc.



Fault movement improved with non-stretch option

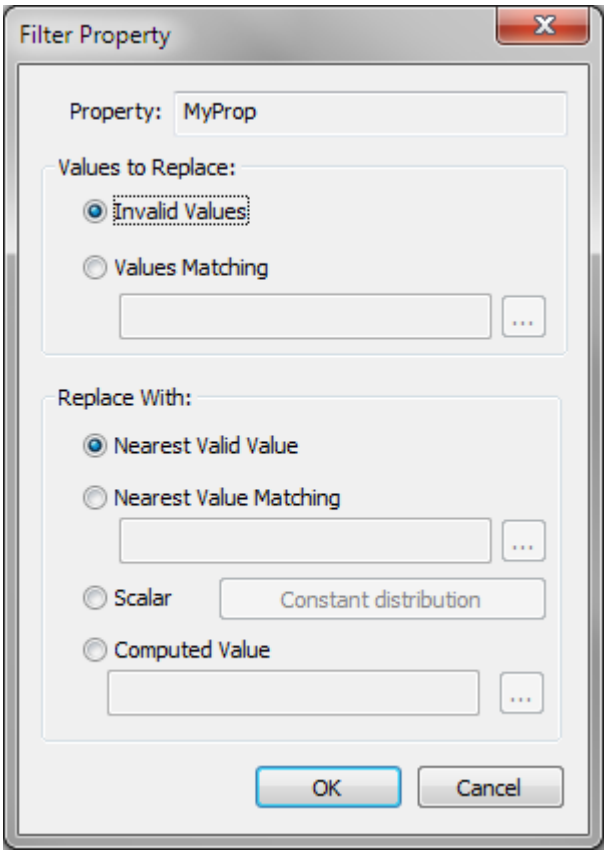
The fault movement feature has been improved with an option that allows the original "stretch" option (vertices along the fault only were moved) as well as a new method where all vertices on the offset side of the fault are moved creating a more standard fault operation

Merge Surfaces

In some cases multiple surfaces will in fact make up a single surface object – select the surfaces you want to merge together and a new object will be created that is the union of both originals.

Filter Property Values

In order to fill in missing data or substitute values in particular ranges with other values you can now select "Filter Values" from the property edit dialog.



Values to Replace

- Invalid Values – the property will be scanned for invalid flagged values and replaced.
- Values Matching – the entered function will be evaluated at each element and non-zero values will be replaced

Replace With

- Nearest Valid Value – Flagged values will be replaced with the nearest non-invalid value from the object
- Nearest Value Matching – the entered function will be evaluated at each element and flagged values will be replaced by the nearest value where the evaluated function is non-zero.
- Scalar – Flagged values will be replaced by a random number.
- Computed Value – Flagged values will be replaced by the value of the entered expression

Fracture Generation

Update P32 for Truncated Distributions

This is an automated version of the P32Cutt spreadsheet which calculates a p32 reduction factor based on any truncated distributions used in the fracture set definition.

Improved Tessellated Fracture Sets

Tessellated fracture sets now have a smaller memory footprint and performance of stratigraphic/tracemap generation.

Stored Generation Seed

The seed value that was used to generate a fracture set is now stored during generation and displayed in the attributes window. These seed values can be used to recreate a given fracture set for a single version of FracMan – seed values are not generally conserved between releases.

Improved Spatial Bootstrapping

New bootstrapping options include selecting a random point weighted by distance or distance squared.

Hydro Fracture

Smooth Outline

This option will cause generated hydro fracs to have a more rounded appearance.

Other HF improvements?

MAFIC

Import MAFIC Particle Tracking

MAFIC particle tracking files (tracks.pcl) can now be imported as point data sets from the File -> Import -> Point Data menu or from a MAFIC definition by selecting “Import Particle Track(s)” from the Mafic Definition menu.

Import for MAFIC Timesteps

Any/all timesteps can be imported by selecting “Import Timestep Pressures” from the MAFIC definition menu.

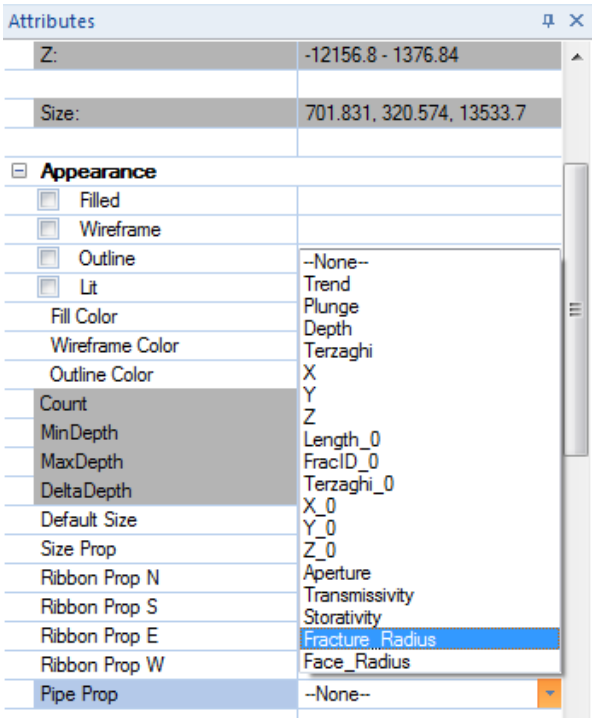
Interface for Edmesh mesh cleanup

A basic Edmesh mesh cleanup / operation can be applied (after meshing is complete) by selecting “Optimize Mesh” from the MAFIC definition menu. This operation will run Edmesh’s “Merge and Remove Floaters” function which will merge nodes closer than 1e-4 and will remove invalid triangles with area less than 1e-10. These are the most common Edmesh operations – additional operations can be applied by running Edmesh from the command line directly.

Visualization

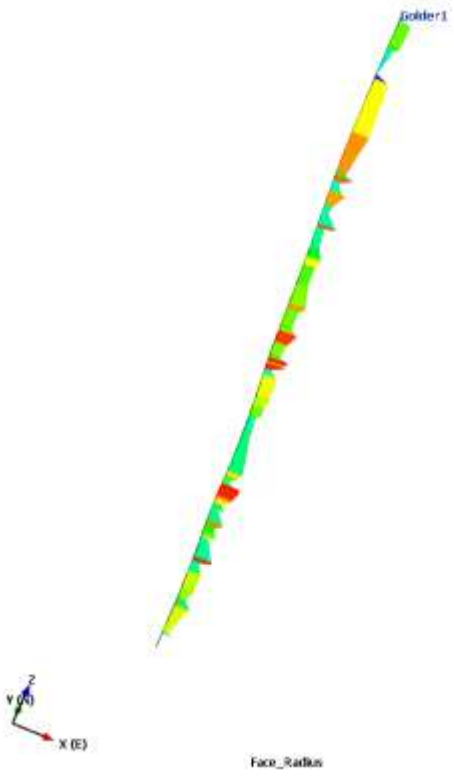
Well Log Lathe display

This is a display that shows the well log as a 3 dimensional “pipe” of varying radius along the well. When the well log is selected, select a property from the “Pipe Prop” pull down in the attributes window. You can adjust the size of the pipe by changing the value specified in “Default Size”. This mode will also color by any property selected in the color map.



Well Log Ribbon display

This mode shows the well log as a 2 dimensional "Ribbon" of varying size along the well trajectory. You can visualize up to 4 different properties at a time (1 for each compass direction). This mode will also use the color property specified by the Legend bar.



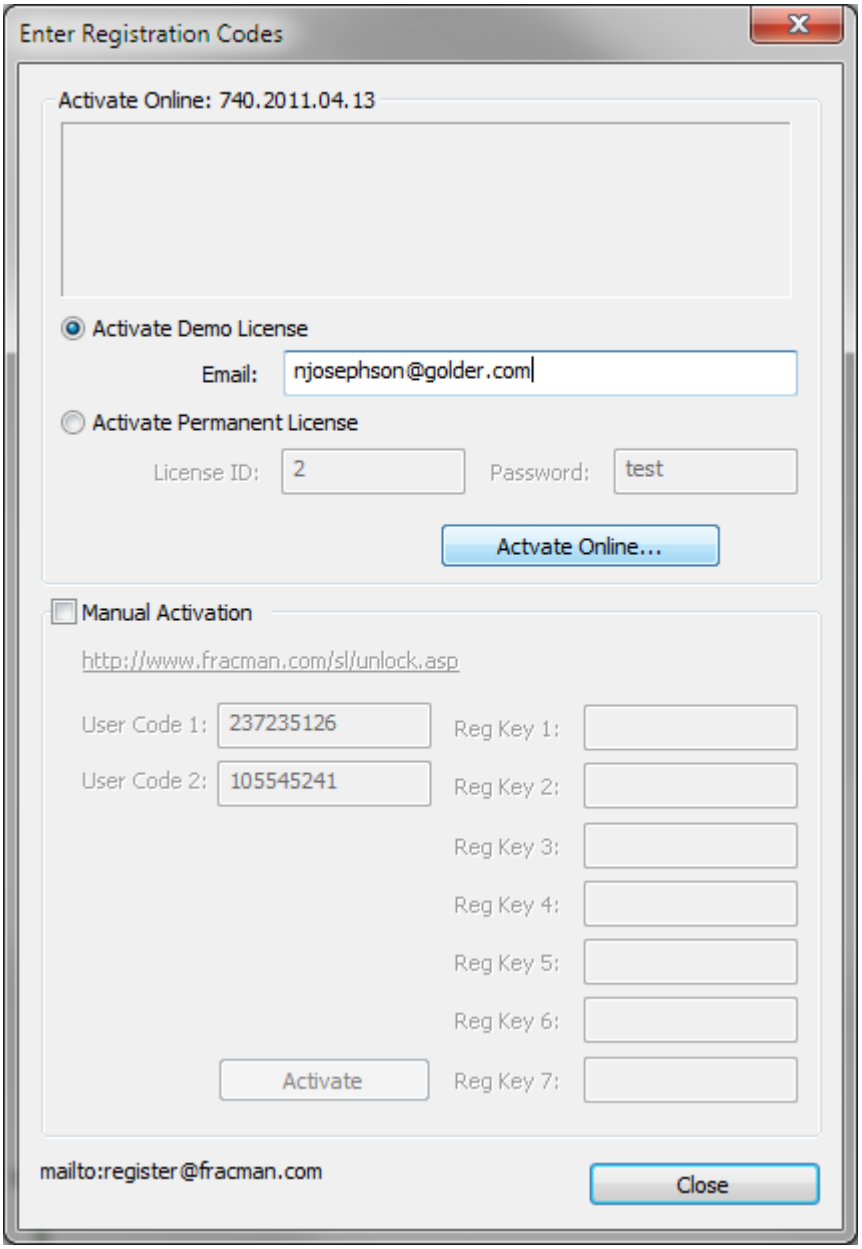
Point Data Display Percent

You can improve performance by displaying only a selected percentage of a point data set. Enter the desired display percent in the attributes bar.

License System

Online Demo activation

Demo licenses are now activated online using the registration dialog box. The user enters their email address in the box provided and presses “Activate Online”.



Demo activation from special USB dongle

This provides the ability to activate a demo license using specially encoded “workshop” dongle.

USB dongle update from online system

Updates to USB dongle based licenses can now be applied from the online system

FlexLM license system

Available by special request only

Other

Improved Curvature calculation

The curvature calculation has been improved to interpolate curvature values along surface edges from nearby non-edge vertices.

Well Log Interval Properties

Intervals now have properties that provide the xyz coordinates of the interval top and bottom points, these properties can be exported, visualized, etc.

Grid Layer Property report

this will report the mean/min/max/count of all properties of a grid, layer by layer. Select a grid object in the objects bar and select “Grid Layer Property Report” from the Static Analysis -> Grid menu. The report will exclude inactive and invisible cells.

