What's New in FieldView 13.2

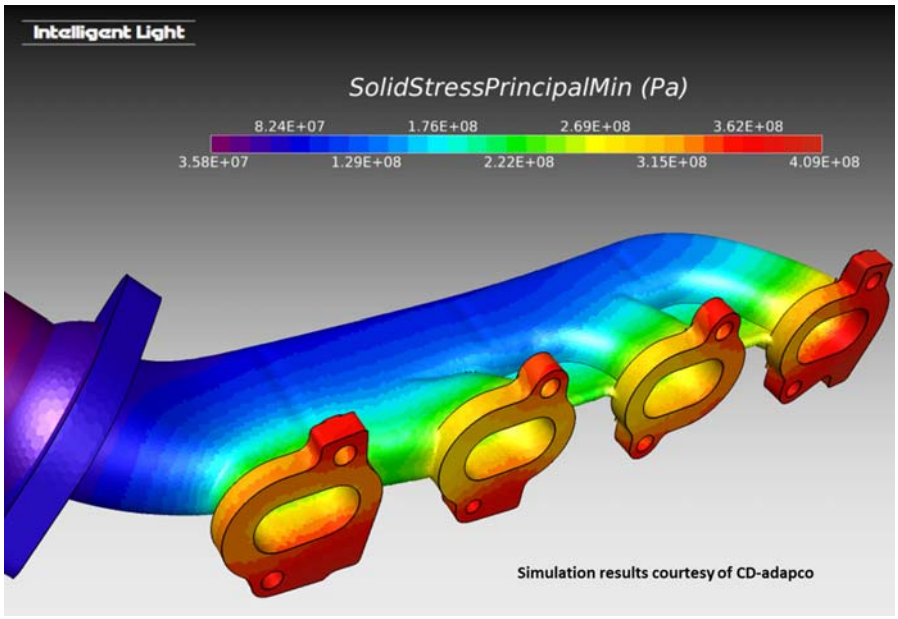
FieldView 13.2 is a point release delivering brand new features based on your **FieldView** 13 feedback. New & improved data readers significantly broaden your data reading capabilities.

Summary of New Features

- **Read *.encas, *.case and *.plt files directly, no re-exporting needed**
- **Read STL CAD data & simulation results in the same postprocessing session**
- **Read FLUENT .cas & .dat files faster and with more consistent variable naming**
- **Read Structured & Unstructured CGNS data with either ADF or HDF5 file formats**
- **Read Wind US 3.0 Common File data with full feature support, including Parallel**
- **Read the latest FLOW-3D® (v 10.0.3) file formats including FLOW-3D/MP files**
- **Create new surface flow visualizations using offset distances**
- **Display complex geometries with up to 20,000 boundary surfaces**
- **Simplify your boundary surface management with a new FVX Utility**
- **Automate image creation using True Batch on MAC platforms**

New Direct Readers

Our Generic Unstructured reader lets you read Ensight Gold (*.encase & *.case) & TecPlot binary (*.plt) file formats directly. If your current CFD workflow uses, or has previously used, either of these formats when exporting from your solver codes, you now have additional options. You can more easily share data between departments, and there is no need to re-export or re-format existing data files.



This reader handles either nodal based data (one scalar/vector per node) or cell centered data (one scalar/vector per element) formats. For cell centered data, nodal interpolation is done during read in by **FieldView** using methods which are consistent with commercial solver codes such as FLUENT (Ansys) or STAR-CCM+ (CD-adapco). A nodal interpolation is applied to a cell centered export from a STAR-CCM+ case in the figure above.

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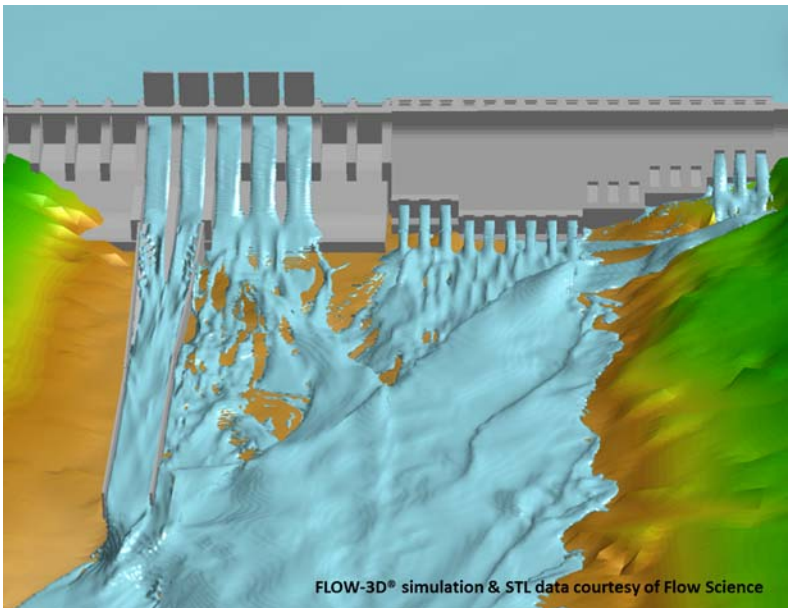
It is now possible to show STL (Stereolithographic) CAD data along with your CFD simulation results in the same postprocessing session. Independent scaling and translation (for any dataset) makes alignment and positioning easy and straightforward as shown in the illustration at right.



A new direct reader for Fluent results, **FLUENT cas/dat [Direct Reader]** is recommended for use over our pre-existing **FLUENT [Direct Reader]**. This upgraded reader delivers the benefits of faster read times, support for arbitrary polyhedra, the ability to read .cas and .dat files with different names and more consistent variable naming. Also, restarts created on FLUENT datasets using the pre-existing **FLUENT [Direct Reader]** can be applied using the "Complete Restart, No Data Read..." restart option after the data has been read with the new reader**.**

A new CGNS Unstructured/hybrid reader has been added to expand our ability to read CGNS datasets. We recommend that this reader should be used to read all CGNS unstructured data. It can also be used to read CGNS structured datasets as well, subject to certain limitations. A major improvement of this new reader is that it supports both ADF and HDF5 file formats and libraries. Another key improvement is that streamline wall marking, which prevents streamlines from incorrectly passing through wall boundaries, is fully implemented.

A new LS-DYNA direct reader has also been added. This reader contains many improvements compared to the pre-existing LS-DYNA State Database Direct Reader, and resolves all known bugs, including some interpolation problems which were present in earlier versions of the third party routines that this reader was based upon.

Also, a reader plugin for the latest Wind-US 3.0 CFD code, provided directly by the **NPARC Alliance**, has been fully integrated into **FieldView**. The reader plugin reads structured and unstructured common files, and parallel is supported for multigrid datasets. All Wind US postprocessing environment variables are supported. The **NPARC Alliance** will maintain this reader plugin, and as updates become available, you can simply copy the latest plugin file into **FieldView** with no loss of functionality. Our older NPARC/WIND reader, which should be used to read Wind-US 2.0 solver output is still fully supported, providing full backward compatability. The formula restart, wind.frm, (which is included with **FieldView** *and* can be used to create additional scalars for Wind datasets) has been significantly expanded.

All of these new readers have full **FVX** and RESTART support. Automatic recognition of transient series, streamline wall marking (where applicable), optimized handling of boundary-only variables and other standard **FieldView** reader features have also been implemented.

Improvements to existing Plug-in Readers

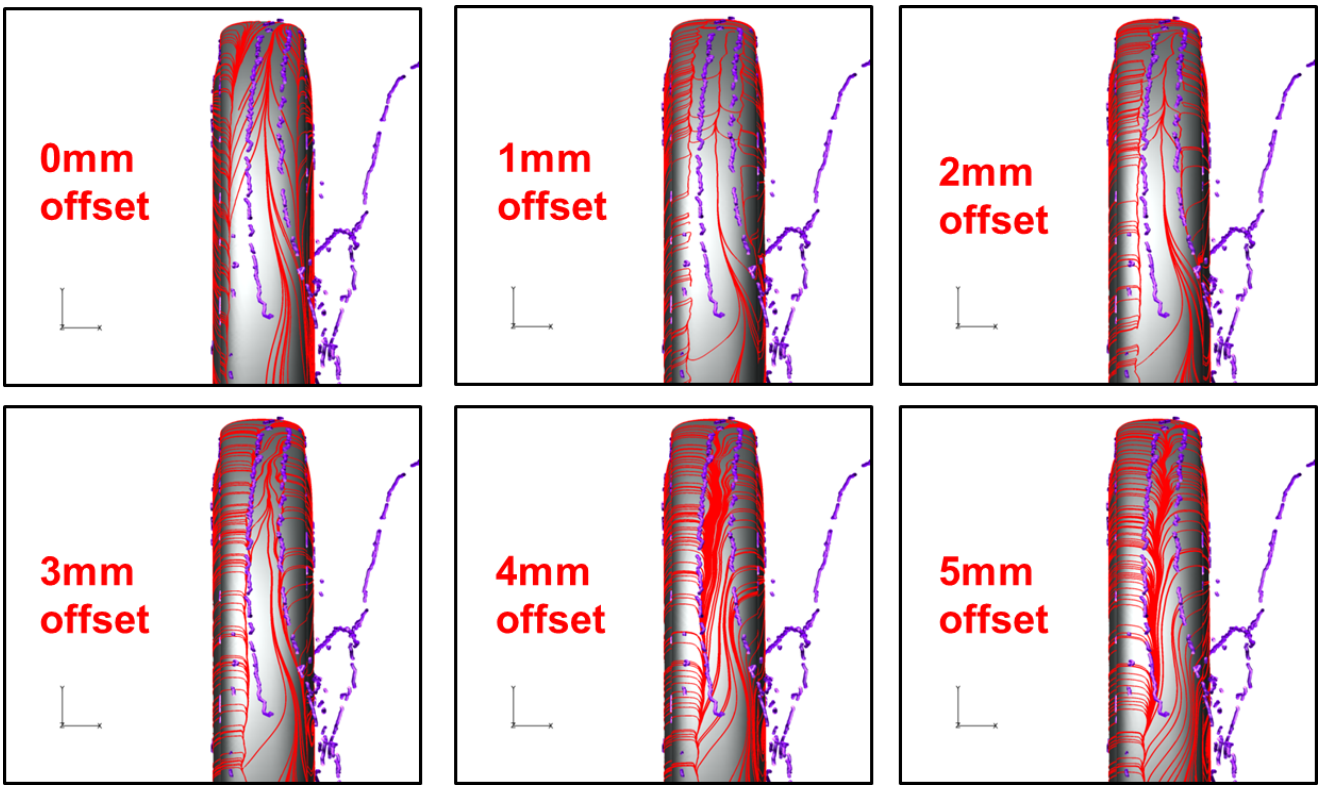
When an OpenFOAM dataset is read, all time steps are available for selection, including the "initial" time step. This removes the previous limitation of being able to read just the time steps that have solver results. This change allows us to handle cases having either only positive or positive and nega-

tive time steps. Several additional fixes to known problems, reported by our OpenFOAM users, have been included.

For our FLOW-3D users, we have updated our reader to be able to read results from the latest FLOW-3D release, version 10.0.3. This update resolves all known problems. The reader is also capable of reading data generated from FLOW-3D/MP. Finally, RESTARTS and **FVX** files are fully backward compatible with this reader update.

Offset Surface Flows

This feature gives you a new way to calculate surface flows (or surface streamlines), resolving a limitation of the “no-slip” based surface flow calculation for boundary surfaces with non-zero velocities. With this new method **FieldView** samples the velocity field at a specified offset distance from all of the boundary surfaces and uses this for calculating surface flow streamlines. This lets you display ‘near-surface’ flow patterns for datasets with rotating fans or turbine blades, blowers and wheels.

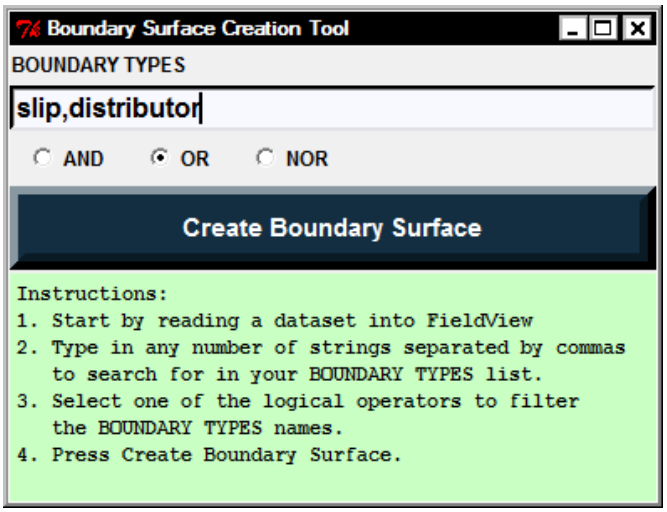


In the illustration above, offset flows are calculated at successively increasing distances from the trailing edge of a wheel with a constant rotational velocity. The offset surface flows are shown in red, and the vortex cores in the surrounding volume are shown in purple. A strong correspondence between the two vortex cores immediately behind the wheel and the surface flows can be seen, particularly at offset distances of 4mm or 5mm. This feature delivers unprecedented control in the examination of near wall flow effects.

Other Important Improvements

- The **FieldView for MAC** port now supports the **True Batch** feature which lets you generate images and animations in a fully automated process which can be run in the background.
- A problem with the clipping of the Surface Probe panel (on the MAC platform ONLY), which hid the function output, is now fixed.

- Two problems resulting in the inability to create a **2D plot,** one concerning an issue when specifying the content of the right axis, and the other when attempting to create a plot with an empty scalar register, have been resolved.
- A problem where **FieldView** was closing after an attempt to create a **very large iso-surface** has been fixed.
- A **FieldView** crash, encountered when attempting to read two successive **OVERFLOW-2** datasets has been fixed.
- A new **FVX utility** automates the creation of Boundary Surfaces for datasets with hundreds or thousands of Boundary Types. After specifying substrings, all Boundary Type Names are searched and matching lists are generated using one of three logical operators: AND, OR or NOR.



FVX Utility: Boundary Type Manager

- Some issues encountered when attempting to use the **evince** PDF Viewer have now been fully resolved.
- On some systems, it was possible for the GUI buttons on surface and rake panels to become squished. This issue is now fixed.
- The limit on the number of Boundary Surfaces which can be created in **FieldView** has been increased to 20,000. Also, the limit on the number of Boundary Types present in a dataset has been increased to 20,000 as well.
- A situation in which the Guide **FVX** file, written during a Complete Restart, could fail for cases with more than 200 surfaces has been resolved.
- Fixes have been made to the sliders on the surface and rake panels to overcome problems for which either the slider extents are not showing the expected values or the sliders can become pinned causing **FieldView** to freeze.
- A problem with the smooth shading of a boundary surface from an XDB Data Import is now fixed.
- An error for the specification of the PLOT3D 2D Qfile multiple grid format is now fixed.
- An error on the num_nodes specification for the **FieldView** plugin reader is now fixed.
- Documentation for the **FVX** command `read_dataset()` has been expanded to include information on the data_format `'append_sampled_data'` .
- The ability of the point probe operation to return face data results is now documented.
- A description of how to specify the scalars and vectors for inclusion when creating **XDB** files has been expanded to cover the the xdb_vars and .xfn techniques.
- It is now documented that face-based results, or [BNDRY] variables, are not exported to XDB files.
- Previously undocumented elements of the toolkit API have been added.
- Information on how to configure **FieldView** to work with versions of Python other than those supplied with **FieldView** have been updated, and moved from the Reference Manual, Chapter 5, to the Installation Guide.
- Various aspects of the operation of 2D plotting and import/export operations have been clarified.
- Documentation regarding the requirements for **Dataset Comparison** have been clarified.
- It has been documented that the imported **FieldView** Particle Path display type is not limited to the Display Type: Complete.
- A detailed explanation has been added to address the operational issue where **FieldView** jobs competing for graphics resources may yield black or incomplete images.