

FIELDVIEW

What's new in FieldView 12.3

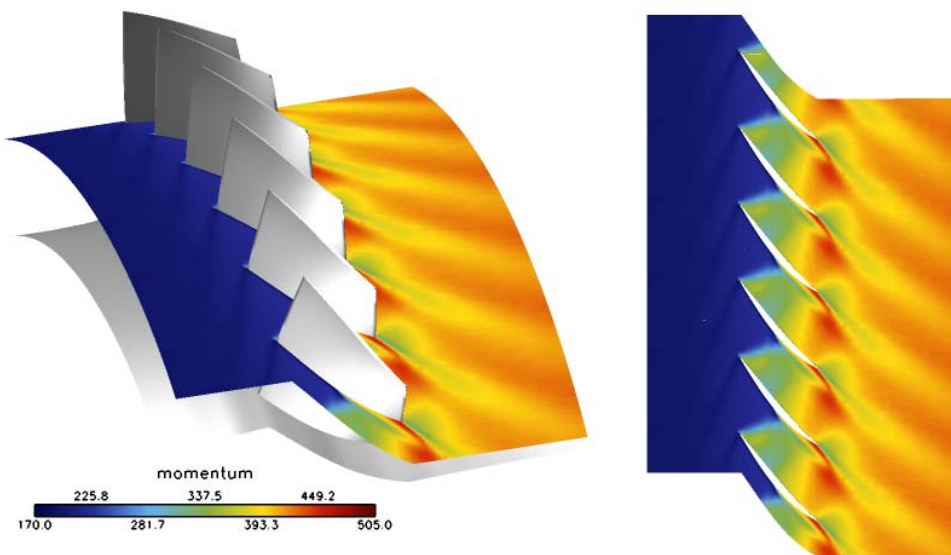
FieldView 12.3 is a point release, bringing together many features to help you get your CFD postprocessing tasks completed more quickly than ever. Simplifications to Parallel, new Batch-Only licensing and expanded Python integration will give you unprecedented control over your workflow automation.

SUMMARY OF NEW FEATURES

- Display unrolled cylindrical surfaces with a single button
- Easily run local FieldView Parallel directly from the FieldView GUI
- Customize your FieldView Parallel set-up with new Server Config options
- Use advanced diagnostic tools to resolve parallel performance bottlenecks
- Save time by reading Boundary Data Only for all unstructured data formats
- Read your complete OVERFLOW-2 data with our comprehensive direct reader
- Run FieldView jobs concurrently using low-cost Batch-Only licensing
- Use substantially increased grid limits & other fixes to easily read very large data
- Use expanded Python integration on all platforms to capture workflow practices
- Handle changing grid, transient data
- Read Pratt Common Files on WINDOWS

Unrolled Cylindrical Surfaces

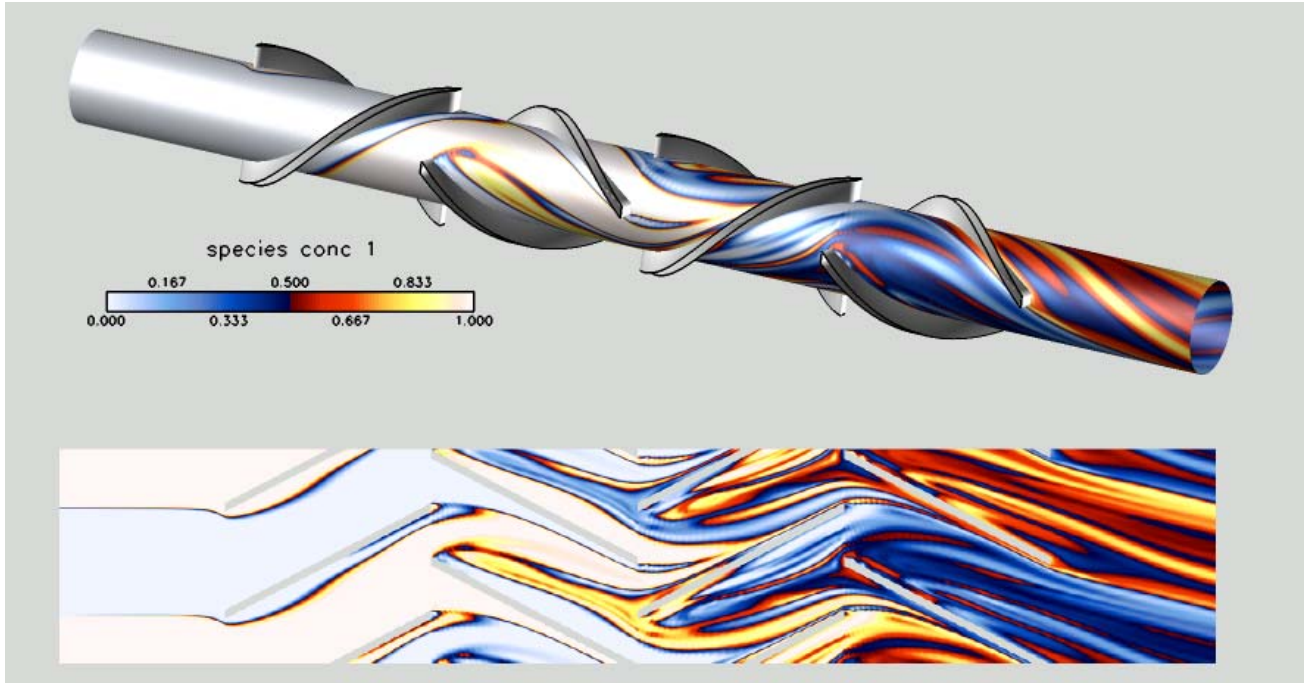
This release contains the first delivery in a series of features designed for turbomachinery postprocessing. With this release we deliver the ability to unroll cylindrical iso-surfaces, automatically placing them flat to the screen.



Unrolled surfaces will be drawn using the rotational duplication settings for both the dataset and region hierarchical levels. In the illustration at left, the blade passage is shown with six rotational copies applied at the dataset level.

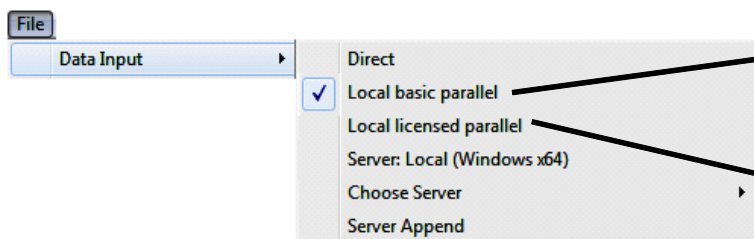
Specially designed transform controls let you independently scale the horizontal and vertical dimensions of the unrolled surface, and rotate it in

within the plane of the screen. Notably, unrolled surfaces are not limited to turbomachinery applications. In the illustration below, unrolling the iso-surface within this static mixer case lets you see the variation in concentration on the side facing away from you.



Parallel Ease and Visibility

We have made three significant changes to FieldView parallel, aimed at making this feature more accessible and easier for you to use. Two new entries have been added to the Data Input menu for all systems capable of running parallel locally, including WINDOWS, in shared memory mode. The first option, called **'Local basic parallel'**, will let you run FieldView Parallel using the 'three-for-free' parallel licensing which is a standard part of FieldView. If your system has four cores for example, FieldView Parallel will run three parallel processes, giving you a **2X** speed-up on most operations (for FieldView Parallel compatible datasets). If you have a FieldView Parallel license, it will be possible for you to directly select the **'Local licensed parallel'** option. When you choose this option, we first check your hardware to see how many local shared memory cores are available to run FieldView. Next we check for your licensed amount. So, if you have a 16 or 32 parallel license, but, your current system has only



**Runs 'three-for-free' parallel
[shared memory]**

**Runs least of either number of
local CPUs or licensed processes
[shared memory]**

8 cores available, FieldView will be started to run on those 8 cores only. As a reminder, you should expect to see a **5X** speed-up on a system with 8 cores.

If you would like to run FieldView Parallel on a cluster or in your own custom environment, you will need to create a Server Configuration file. Improvements in FieldView 12.3 let you directly specify

things like the server type, port forwarding and/or choice of remote shell from a simplified list of choices, server configuration files can be created and understood far more easily.

To even further simplify running FieldView Parallel, we have added a brand new wrapper program, **fvrunsrv**. This can be used in place of other server configuration specifications, and a major benefit of this feature is to make the set-up and testing of new configurations easier. Running, in manual mode, you can use the fvrunsrv wrapper program as follows:

```
fvrunsrv -np 4                Runs FieldView shared mem parallel server, local, 4 processes

fvrunsrv -np 4 -hosts myhostA,myhostB:2
                             Runs cluster (p4) FieldView Parallel, remote, 4 processes
                             AND, builds a temporary machine file with:

                             myhostA
                             myhostB:2
```

Finally, we have added two new environment variables. The first of these, **FV_DEBUG_AUTOSTART**, can be used to send detailed debugging information on your server configuration file to your console window, thereby helping us to deduce any parallel set up problems quickly. The other environment variable, **FV_TIMING**, is used to provide full diagnostic timing information at the Client, Master and Parallel slave levels for a full range of FieldView operations such as reading data and creating surfaces. We anticipate that the instrumented timing information will be extremely useful in identifying system environment problems which could prevent FieldView Parallel from running as expected.

Batch-Only Licensing

The intent of this feature is to provide you with the ability to run several instances of FieldView in a **low cost, batch-only** mode of operation. By running in this way it will be possible to carry out concurrent postprocessing. The key restriction is that a batch mode license will not allow you to run FieldView interactively. With such a license you can run a FieldView script or FVX program as follows:

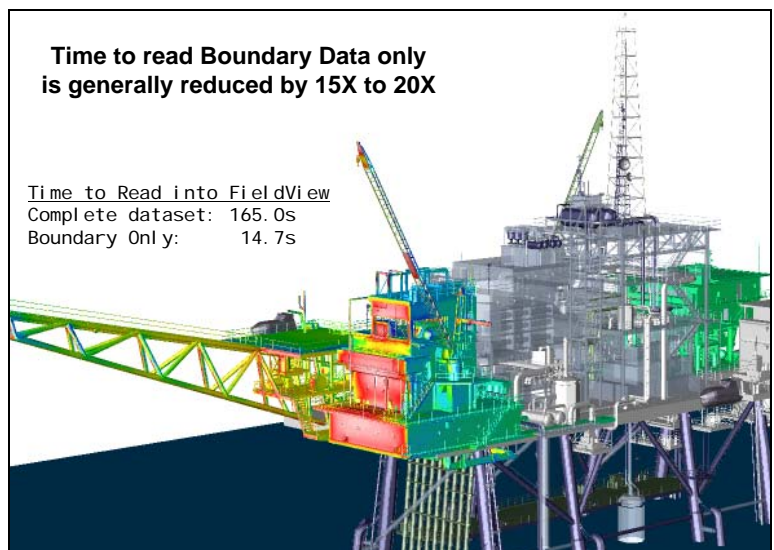
```
fv -fvb -s my_script.scr    OR    fv -fvb -fvx my_program.fvx
```

The command line option, **-fvb**, is used to specify two things. First, that FieldView will be run in batch mode, and, second that it will use a batch only license for this run.

Batch-only operation requires new passwords and certain licensing restrictions will apply. For those who are interested, please contact your local sales representatives.

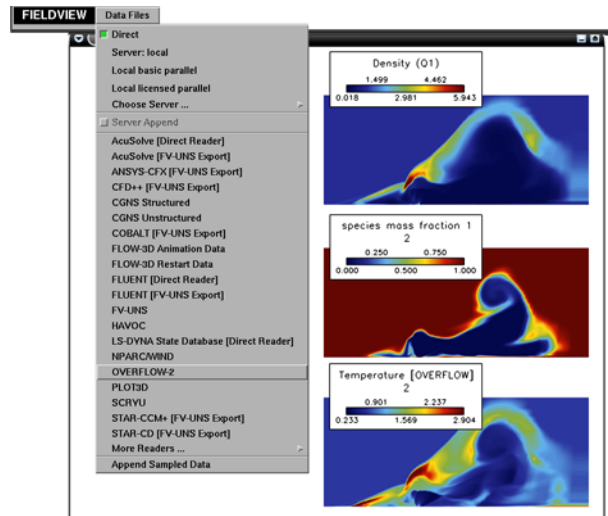
Reading Boundary Data Only

Often it is useful to review only the boundary surfaces and their associated scalar data for a given simulation. By reading in just the boundary data, a significant reduction in read time can be realized. Reading Boundary Data only is enabled by selecting a checkbox on the data input panel for all FieldView Unstructured data and most of the direct readers (i.e. AcuSolve, FLUENT, LS-DYNA and SCRYU). This feature is completely compatible with FieldView Parallel, and for partitioned file parallel data. Full support has been provided for FVX and RESTARTS as well.



OVERFLOW-2 Direct Reader

A new direct reader for OVERFLOW-2 lets you read your modified PLOT3D solution files generated by this solver. All additional Q files, including variable gamma, are handled correctly by this reader. To be more fully compatible with the solver output, a new transient naming convention has been implemented. Support for brk.restart files has also been included and the transient naming convention has been extended to cover bkr.### transient files as well. The OVERFLOW-2 reader is completely compatible with FieldView parallel, and support for partitioned file parallel is also present.



Python Improvements

Python support is substantially extended with this release of FieldView. We are now optionally installing a version of Python (2.6.4) as part of the standard FieldView distribution. For those users who already have a version of Python installed, you can expect FieldView to run correctly with your version - we are compatible with the current Python 2.x and 3.x releases. Two significant operational changes have also been added. First, it is now possible to launch a Python program interactively from a new entry in the Tools menu. And, second, you can now run a python program from the command line (similar to FVX) when starting FieldView. Finally, our platform coverage now includes all currently supported WINDOWS platforms.

Other Important Improvements

- The Pratt & Whitney Common File format reader has been ported to all currently supported WINDOWS platforms.
- Many new colormaps have been included in this release - see FV_HOME/data/colormaps
- An updated server config file template, and several new example server config files have been included in this release - see FV_HOME/sconfig
- The previous **grid limit** of 3000 for a single dataset has been increased to **10000**.
- **Transient** structured datasets that have **changing grid counts** for each time step can now be read. A .fvbnd file for each time step is a requirement.
- **2D plots** such as XYZCurvePlot will now work correctly with **dynamic clipping**, both visually and when exported.
- FORTRAN unformatted **records** of up to approximately **666MB** can now be read.
- Several problems relating to stale or inverted **colormap issues** for RESTARTS and transient sweeps have been fixed.
- Problems with **large files** failing to show up in **file browsers** for local or remote operation have been fixed.
- A problem showing nodes with **non-finite scalars** at unstructured boundaries has been fixed.
- Error handling for datasets containing arbitrary polyhedra which exceed internal limits has been improved.
- **Environment variables**, which were previously only passed to the FieldView Client are now passed to **parallel servers**.
- An **EWOLDBLOCK** socket error has been fixed for Solaris 10 (64bit).
- Improved error handling has been implemented to correctly handle the current feature limitation that sampled data cannot be read using FieldView Parallel.