Tempest™ Reservoir Engineering

ENABLE
MORE
VIEW
PVTx
VENTURE

VIEW

Pre & Post Processing

Tempest VIEW is the interface for all Tempest modules, in addition to providing simulation post processing to a wide range of 3rd party simulators, and pre-processing to Tempest MORE. It is a fast and memory efficient system, capable of quickly processing results from multiple simulations consisting of millions of cells and thousands of wells.

IN SUMMARY

- Tempest VIEW was first commercialised in 1999 and has been optimised to work with very large data sets.
- Tempest VIEW can be used as a front end to the following simulators: MORE, ECLIPSE 100 & 300*, Nexus /VIP*, IMEX/GEM/STARS* and many proprietary simulators.
- Tempest VIEW is platform independent – both Windows and Linux are supported.
- Tempest VIEW is intuitive and very easy to learn.
- Functionality includes:
  - Integrated 2D & 3D plotting
  - Template graphics
  - By time and by depth plotting
  - Streamlines displays.
  - History match analysis

* Mark of Schlumberger, Landmark and CMG.

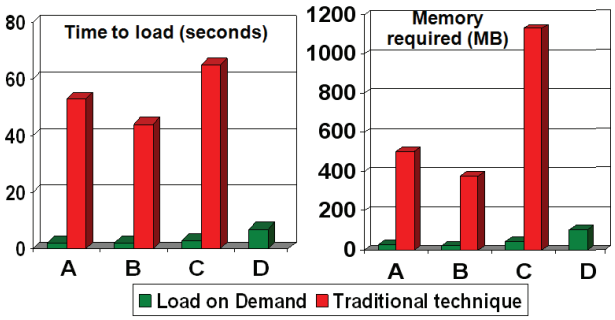
Fast, no matter how large the dataset

'Load on demand' was implemented in Tempest VIEW in 2010. This radical change in data processing was in response to our customers' need to quickly load and visualise projects with millions of cells, thousands of wells, and multiple simulation runs.

The following results are taken from a customer comparison of the 'Load on Demand' and traditional processing methods:

Model	No. Cells (x 10^6)	No. Wells
A	4.75	896
B	1.38	592
C	7.42	607
D	4.75	957

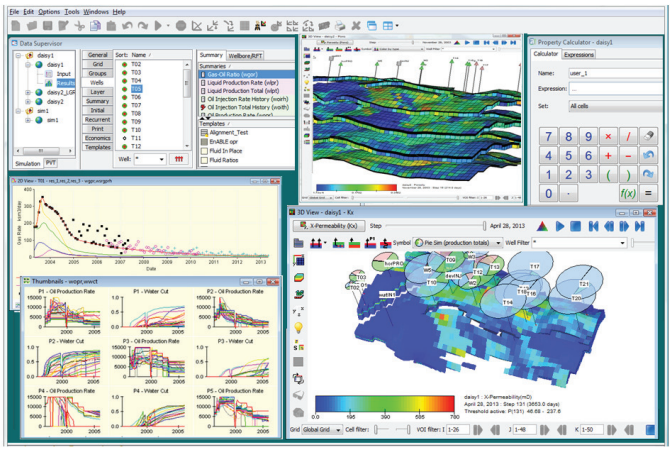
Table showing details of the 4 customer simulation models used in load tests (** Model D does not load with the traditional method).



Graphs comparing traditional data processing method versus Tempest VIEWs 'Load on Demand'.

Modern data mining

Multiple realisations, uncertainty studies, large grids, ever more & complex wells – the days of simple reservoir engineering are long gone. Tempest VIEW allows engineers to immerse themselves in the problem at hand, offering a range of innovative ways to view and sort data.

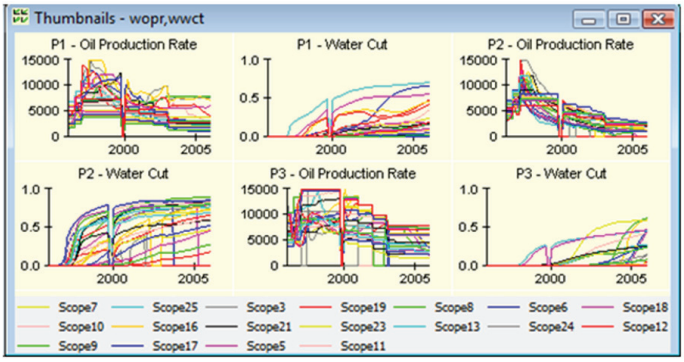


The Tempest VIEW interface, showing the data supervisor, interactive 2D and 3D plots & the calculator.

Interactive 2D and 3D plotting

The 2D and 3D windows offer an intuitive, fast and highly flexible way to display and interrogate data. Features include:

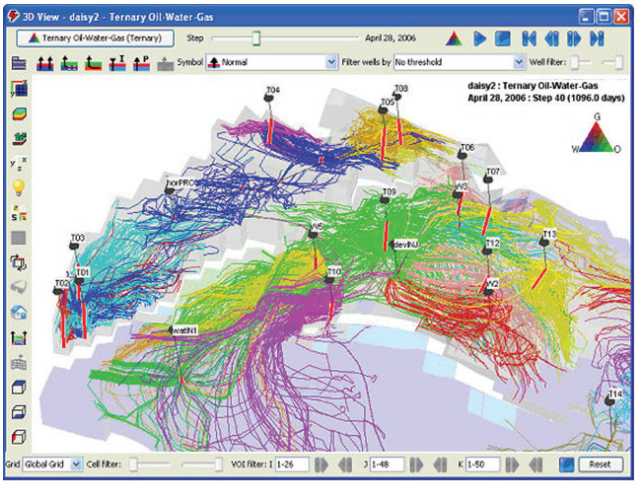
- Thumbnail plots to visualize multiple results by case, region & well.
- Intuitive editing of plot elements like line colours and axes units.
- Exaggeration, flattening and exploding of 3D grids.
- Close interrogation with cell probe & history and well probe.
- Cross sections, including well to well and individual completions.



Thumbnail plots allow a quick view and flexible way to interrogate data by case, group/well or summary.

Streamlines analysis

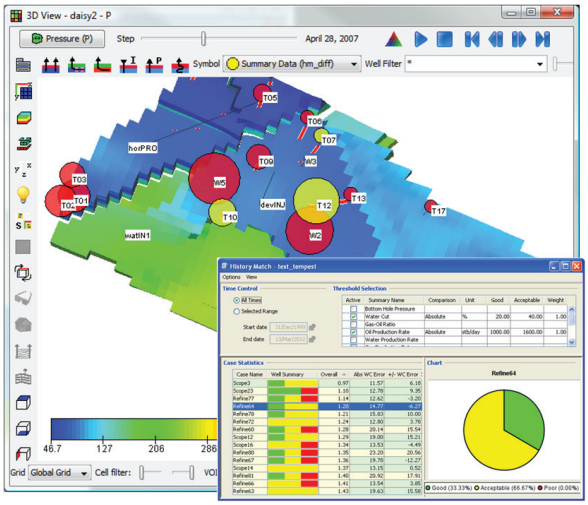
Tempest VIEW's full physics streamline analysis tool, depicts separate oil, gas & water streamlines. It offers excellent scalability on parallel multithreaded hardware, giving good interactive performance to 1 million+ cells.



Streamlines can be filtered by phase, well and time to producer or injector.

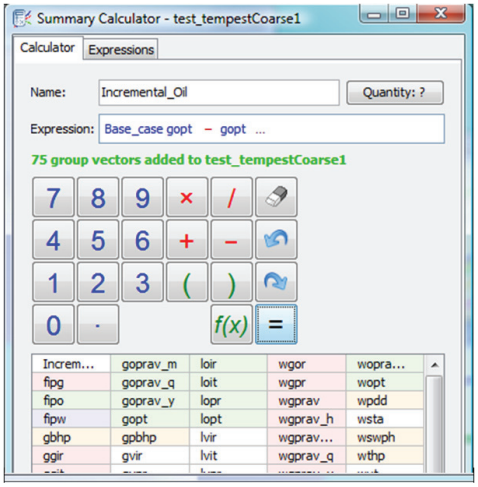
History Match Analysis

Tempest VIEW allows very fast history match analysis across multiple cases, groups and wells. These are ranked as good, acceptable or poor with the results displayed as difference plots and sortable lists in the 3D viewer and as test or spreadsheet reports.



History match analysis panel with corresponding 3D view showing history match quality at well locations.

2D & 3D calculator



The Tempest VIEW calculator, a highly visual tool, with access to all 2D & 3D data (simulated and observed). Calculations can be performed for all simulation runs concurrently.

For further information on Tempest VIEW please contact us at tempest@roxar.com or go to our website www.roxarsoftware.com.

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