



DYNAFLOW
RESEARCH
GROUP.



What's new in BOSpulse 5.1

10 October 2023

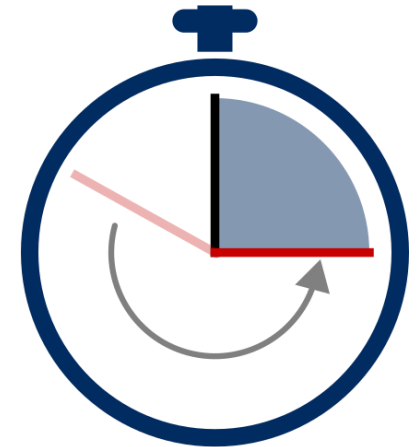
Improved performance

Both the transient (time domain) and harmonic (frequency domain) solution methods have been modified in several ways to reduce the analysis time considerably for most models. In particular, the transient solution method has been improved so that it better handles initial transient effects and that it reduces the number of calculations without lowering the accuracy. The harmonic solution method has been improved by switching to a different procedure for transferring the results to the user interface. Both methods have been improved by reusing the steady state results between different parameter variations. All in all these modifications can reduce the analysis time by several factors, making BOSpulse 5.1 a more effective tool for performing API analyses.

BOSpulse 5.0



BOSpulse 5.1



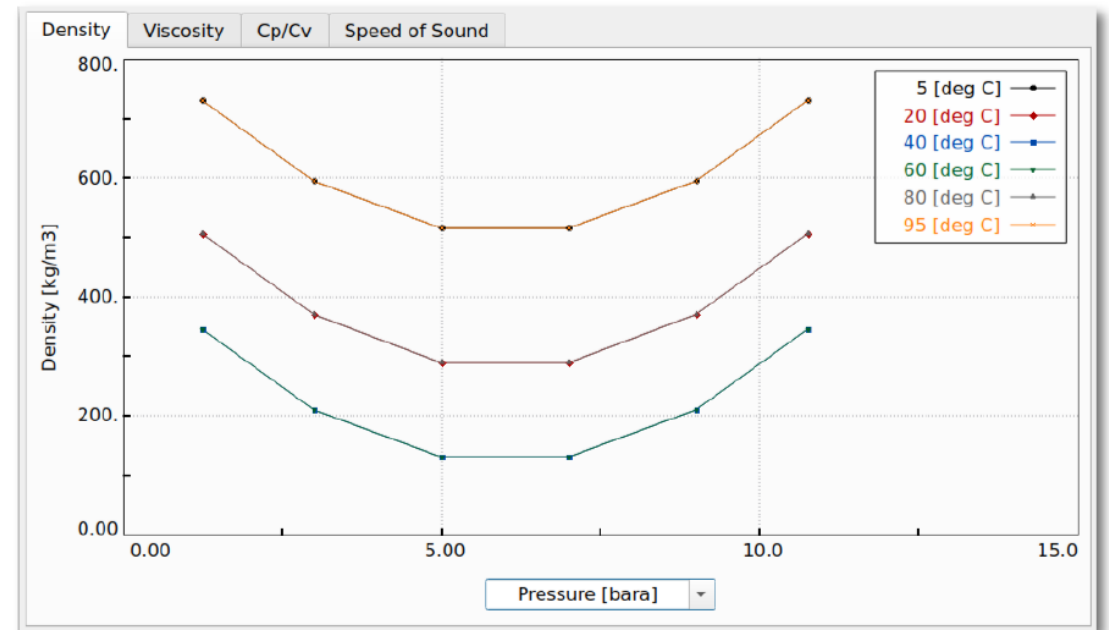
Improved support for modeling gases

Custom Gas

Addition of a new Custom Gas type, for instance, enables you to specify a complete equation of state in the form of a table listing all relevant gas properties as a function of both the temperature and pressure.

AGA 8 Gas

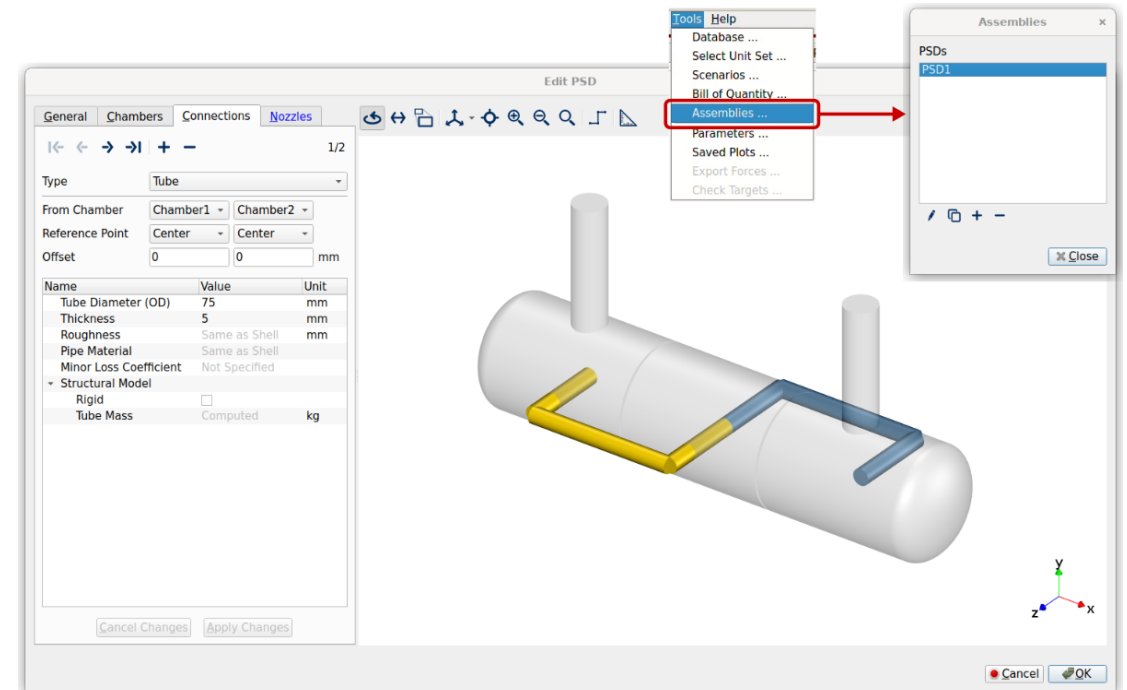
The AGA Report No. 8 Part 1 equation of state has been replaced by the AGA Report No. 8 Part 2 equation of state. The latter involves the GERG-2008 method that covers a larger range of pressures and temperatures.



Improved support for modeling PSDs

Pulsation Suppression Devices (PSDs) are commonly used in gas compression systems to reduce the pressure pulsations due to reciprocating equipment. While BOSpulse has enabled one to build accurate models of PSDs, this has been a manual process involving the detailed specification of all elements making up a PSD. BOSpulse 5.1 simplifies this process significantly by providing a new, dedicated PSD Editor.

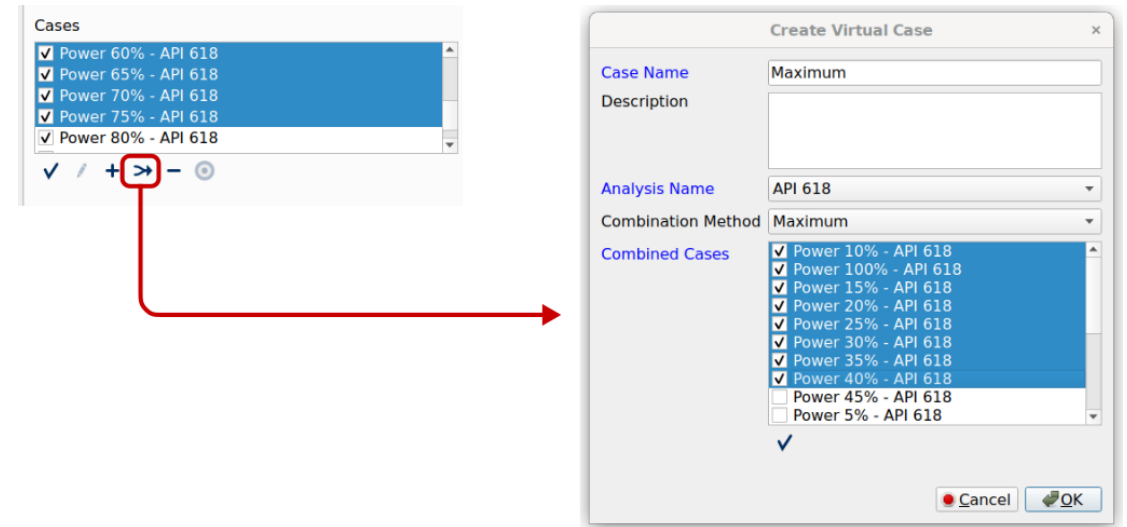
While editing a PSD Assembly, the PSD Editor will show what the PSD will look like within the piping model. This can help you verify that the specified parameters are correct before the PSD Assembly is instantiated.



Improved comparison of scenarios

Virtual simulation cases

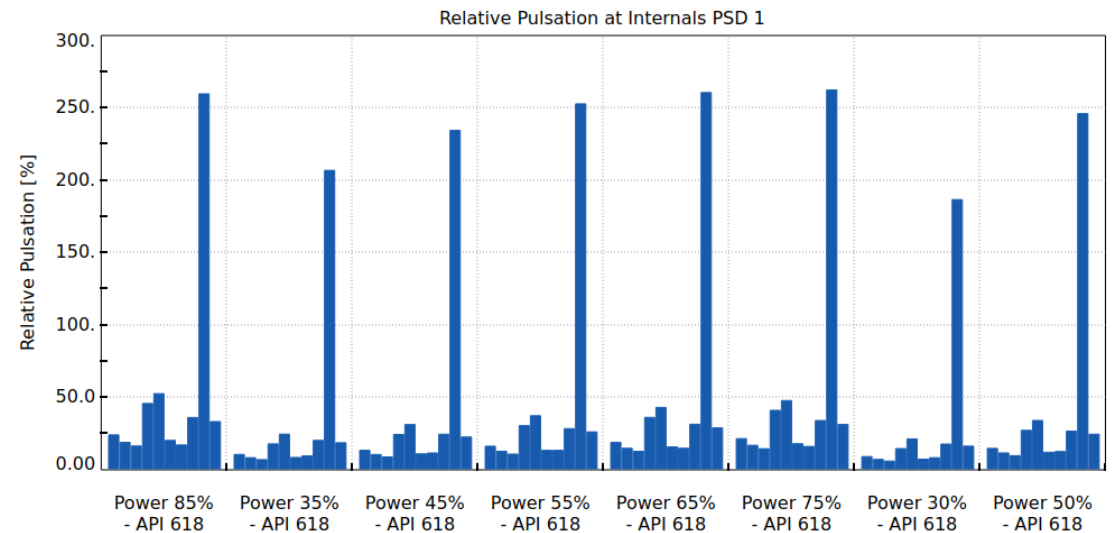
A virtual simulation case combines the data sets associated with two or more regular cases to obtain a new collection of data sets. A virtual case therefore makes it possible to combine the results from multiple scenarios to determine the response of complex piping systems that can operate in multiple configurations. Consider, for instance, a system involving multiple compressors that can be in operation on an individual basis. Instead of creating scenarios for all possible combinations of working compressors, you could define a scenario for each compressor and then combine the results by means of a virtual case to estimate the worst-case response of the system.



Improved comparison of scenarios

Cases Plots

The Cases Plot type shows results as a function of the simulation cases and/or parameter variations. This type of plot shows a bar for each case and parameter variation. The height of the bar indicates the maximum value within the selected data set over all selected harmonics. If desired, then the bars associated with different parameter variations can be collapsed into a single bar representing the maximum value over all variations. The Cases Plot type can show you at a glance which cases do not meet the API allowable limits and require further attention.



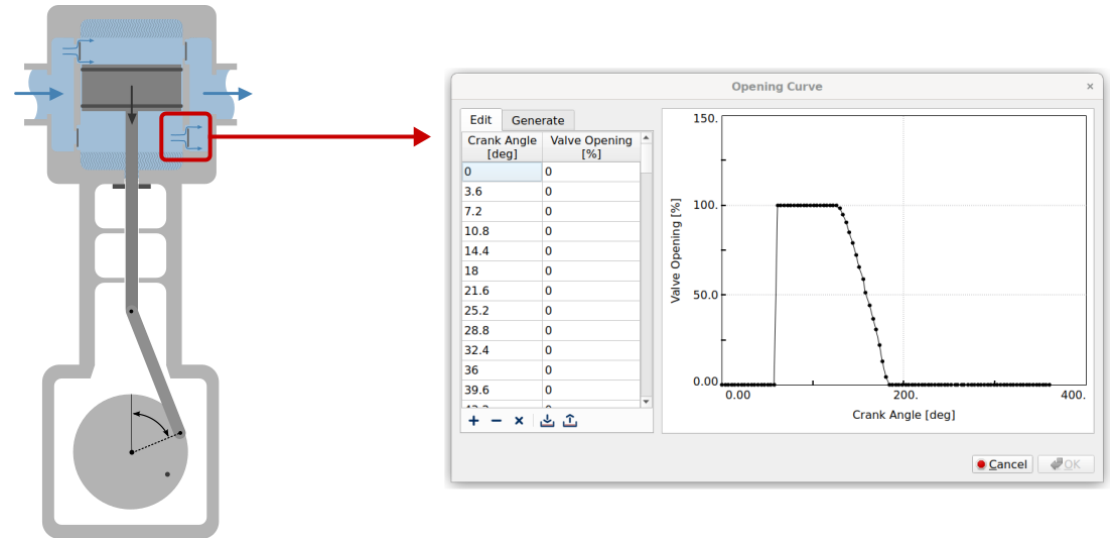
Extension of reciprocating compressor model

Support for regulated valve operating modes

Specify the opening curve of a reciprocating valve as function of the crank angle to model the behavior of actively regulated valves of which the motion is not governed by the pressure difference. Use this mode, for instance, to model slide valves that are connected mechanically to the crankshaft or use this mode to model valves that are regulated by means of actuators.

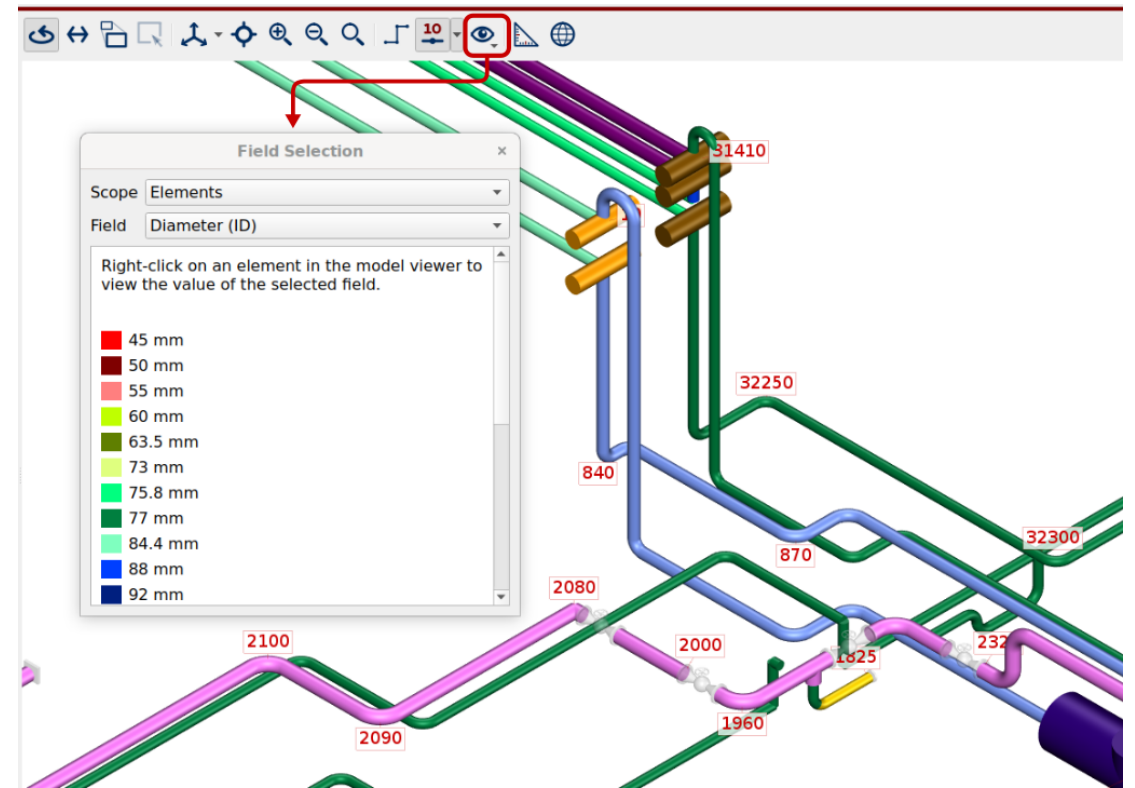
Calculation of the indicated power

The Reciprocating Compressor configuration window has been extended with information about the indicated power associated with a cylinder. This information is obtained by calculating the area enclosed by the P-V diagram. The indicated power is also listed in the new standard Reciprocating Power report.



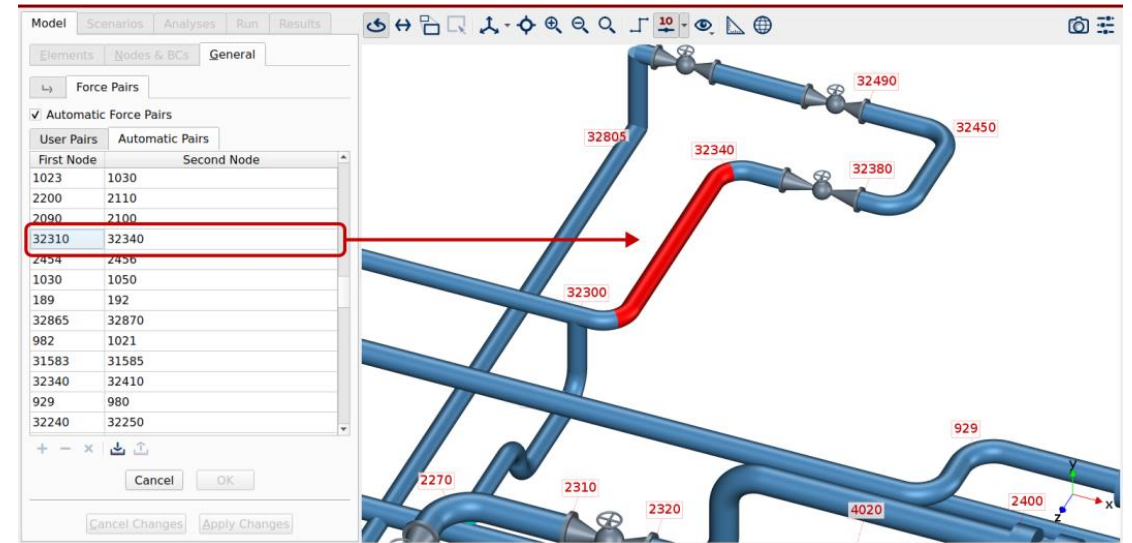
Improved support for model verification

BOSpulse 5.1 brings improved support for verifying a model in a visual way. In particular, it can show, by means of colors and labels in the model viewer, the nominal pipe size, the pipe schedule, the inner pipe diameter, the force pairs, the element lengths, and other element properties. It can also show node properties, including elevations, flow boundary conditions and restraints.



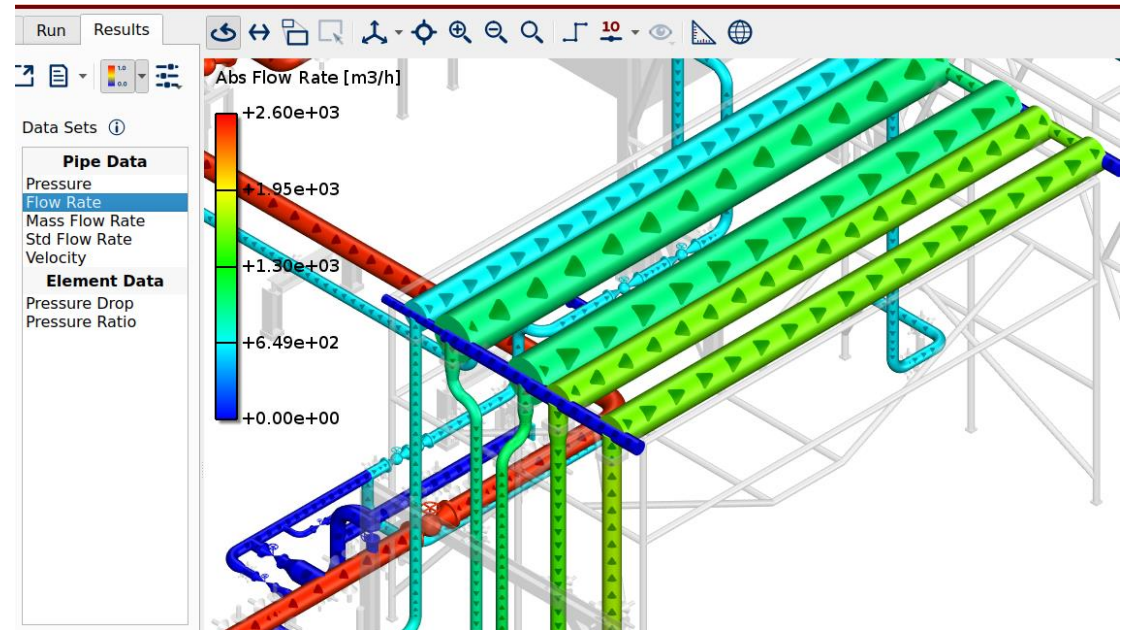
Improved user interface

Many small and large improvements to the user interface that make BOSpulse even more efficient and versatile. For instance, many dialog boxes for entering model parameters are embedded in the main BOSpulse window instead of being shown in separate windows. This makes it possible to interact with the model viewer while the dialog box is active. In particular, when entering a reference to an element or a node, you can simply select the target item in the model viewer.



Improved user interface

The model viewer can optionally show the orientation of pipe elements by means of direction markers. Those direction markers can also be used to indicate the flow direction in the Results tab page. This means that you no longer need to know the element orientation in order to determine the flow direction.



Head Office

Laan van Oversteen 20
6th floor
2289 CX Rijswijk ZH
The Netherlands
+31 (0)85 058 00 46
Reg nr. 27320315

USA Office

2929 Allen Parkway
Suite 200
Houston, TX 77019
United States of America
+1 713 412 9733
Fed Tax ID No. 92-2944161

Middle-East Office

Preatoni Tower, Unit 2504
Jumeirah Lakes Towers, Cluster L
P.O. Box 73001, Dubai
United Arab Emirates
+971 (0)4 447 4479
DMCC license no. JLT-67987

info@dynaflow.com
www.dynaflow.com

DYNAFLOW
RESEARCH
GROUP.