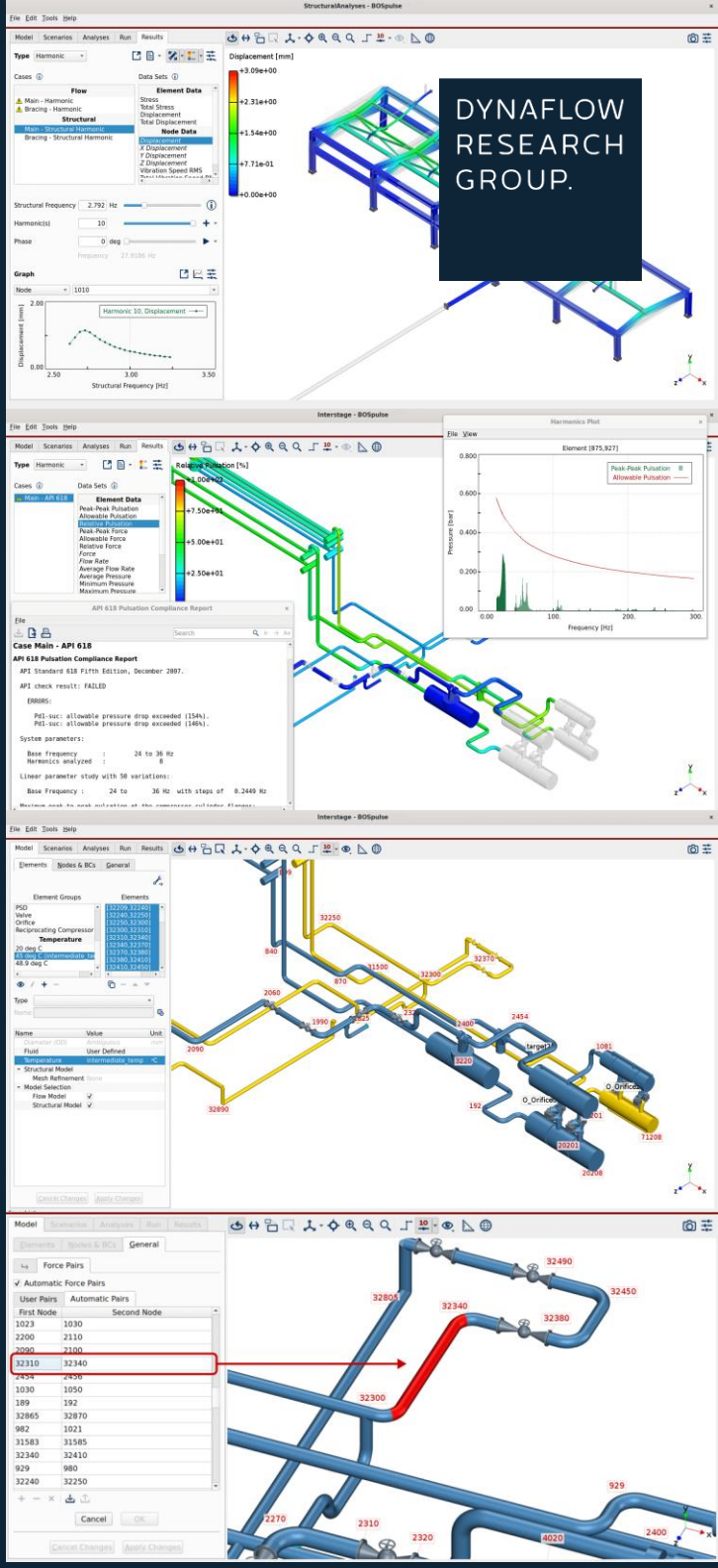
BOSpulse: Pulsation Analysis Made Simple



Software Brochure | **2025**

BOSpulse is a comprehensive software solution for performing **pulsation analyses of piping systems** involving reciprocating equipment such as **reciprocating compressors** (API 618) and **reciprocating pumps** (API 674).

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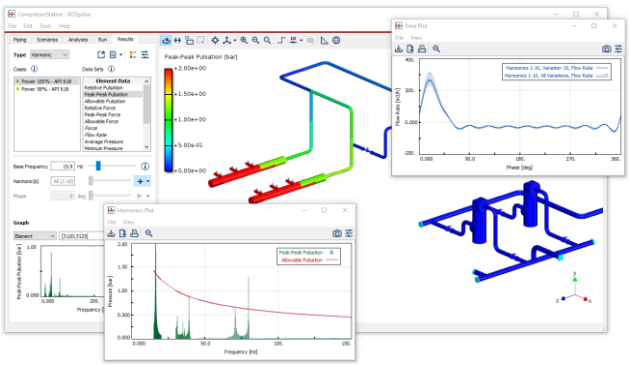
User friendly pulsation analysis tool for your API 618 and API 674 studies

Are you a pipe stress engineer or acoustic flow engineer who needs to assess the impact of pressure pulsations on your piping system?

BOSpulse® might be the tool you are looking for. BOSpulse® is a software solution for performing pulsation analyses of piping systems involving reciprocating pumps or compressors. It is an intuitive and effective tool for studying periodic pressure pulsations in piping systems and for comparing those pressure pulsations with the allowable pulsation amplitudes stated in the API 618 and API 674 standards.



FEATURES

- ✓ API 618, API 674, and custom code checks
- ✓ Pressure pulsation assessment
- ✓ Shaking force assessment
- ✓ Compressible steady flow analyses
- ✓ Acoustic modal analyses
- ✓ Combined fluid-structure analyses
- ✓ Accurate time domain and frequency domain solvers
- ✓ Fast simulations using parallel processing
- ✓ Component database for materials, liquids, gases, equipment, and pipe schedules
- ✓ Intuitive user interface
- ✓ Interactive 3-D viewer
- ✓ Compressor and pump models
- ✓ Structural solver interface
- ✓ Ariel Compressor data import
- ✓ CAESAR II® import & export
- ✓ Extensive post-processing capabilities
- ✓ Customizable reports
- ✓ Versatile and powerful scenario management

APPLICATIONS

- ✓ Reciprocating compressor and pump plants
- ✓ Positive displacement devices
- ✓ Vibration root cause analysis
- ✓ Analysis of Flow Induced Pulsations (FIP)
- ✓ Design of compressor bottles
- ✓ Accumulator sizing
- ✓ Design approach 2 and 3 according to the API

Model Building Is Simple

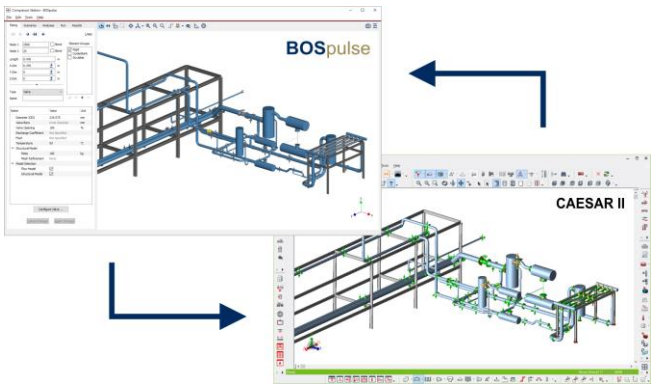
The model building procedure used in BOSpulse® is intuitive, with a graphical user interface that includes an interactive 3-D representation of the piping model. The model is created by defining nodes and elements. A collection of special flow elements enables you to build realistic models of piping systems. These flow elements include reducers, orifices, valves, vessels, storage tanks, and reciprocating pumps and compressors. A BOSpulse® model can also include supports and structural steel. This means that you only need to build one model that can be used both for flow and structural analyses. This greatly reduces the need to build and maintain two different models in different software applications.

API 618 and API 674 Code Compliance

Pressure pulsation amplitudes and shaking forces can be checked against the design limits stated in the API 618 or API 674 standards and against custom limits. The API 618 and API 674 design limits are defined automatically based on the piping layout and you are provided with many postprocessing options to evaluate conformance with the code. In addition to that, BOSpulse® provides support for performing parameter studies in which any model parameter can be varied.

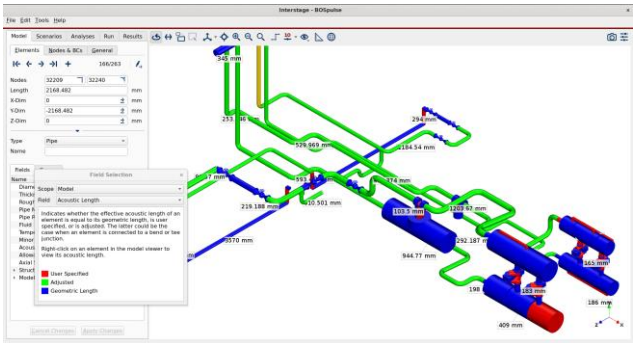
Import and Export Features

Because BOSpulse® piping models are 3-D models, exchanging models with pipe stress packages is relatively straightforward. In particular, BOSpulse® provides a bi-directional interface with Hexagon's pipe stress analysis software CAESAR II®, eliminating redundant work processes and thereby improving the quality of both pipe stress and fluid flow calculations. BOSpulse® can also import models from various other file formats, including Piping Component Files (PCF) model files, and supports XML configurations from the Ariel Performance Program. In addition, the geometry of a BOSpulse® model can be updated from an external model.



Accurate Time-Domain and Frequency-Domain Solvers

With BOSpulse®, you have a choice between a time-domain and a frequency-domain solver. While traditionally the time-domain solver has been considered to be more accurate, the frequency-domain solver has seen significant improvements that bring its accuracy practically on par with the time-domain solver. As a consequence, you can speed up many pulsation analyses dramatically by switching from the time-domain to the frequency-domain solver.



Structural Solver Interface

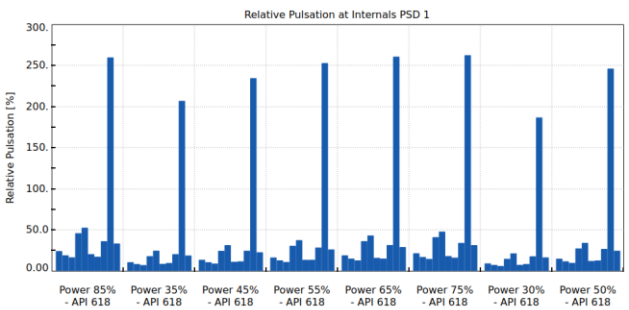
BOSpulse® includes a structural solver interface that makes it possible to perform a mechanical response study without leaving the BOSpulse® interface. This requires the availability of a supported structural solver such as ANSYS. If a supported structural solver is not available, you can export the calculated shaking forces to packages such as Hexagon's CAESAR II or Bentley's AutoPIPE to continue the analysis.

Experienced and Rapid Support

Dynaflow Research Group uses BOSpulse® extensively for pulsation analyses within our own consulting projects. Should you need any advice on how to get the best out of the software, the specialists of Dynaflow are always available to provide the best possible support. In addition, the software team is always working to add additional features, often based on customer suggestions, to make your analysis even easier.

Flexible Post-Processing Capabilities

The powerful graphical interface of BOSpulse® presents you with an instant overview of all the pulsation results. In this interface you can quickly point and click, or use the toolbar sliders to identify if there are any critical areas. BOSpulse® also supports multiple types of graphs to show results in the time or frequency domain, and fully customizable text reports. User preferences can be saved for use in subsequent simulations for consistent comparisons of results.



Get in touch

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