PULSIMSUITE®
PULSATION AND VIBRATION CONTROL SOFTWARE

TNO innovation for life

Pulsations or pressure waves are flow dynamic phenomena that can cause various kinds of problems in installations in the process industry, the power industry and the oil and gas industry. API Standards 618 and 674 describe design rules to avoid these problems. To comply with these standards TNO has developed PulsimSuite®, a versatile engineering toolbox for solving pulsation and vibration issues in the design stage.

The knowledge of over 40 years experience in doing API 618/674 projects has been laid down in TNO's software tools, part of which is now released to third parties as PulsimSuite. Use PulsimSuite to avoid issues such as:

- Vibration and fatigue in piping and fluid machinery (reciprocating compressors)
- A decrease of the efficiency of running equipment (increase of power consumption or reduction of capacity)
- Damage to fluid machinery (e.g. compressor valves)
- Errors in flow meter readings and process control systems
- Increased noise levels.

With PulsimSuite, the TNO pulsation and vibration software for complying with the API 618/674 Standard requirements has become available to all engineers.

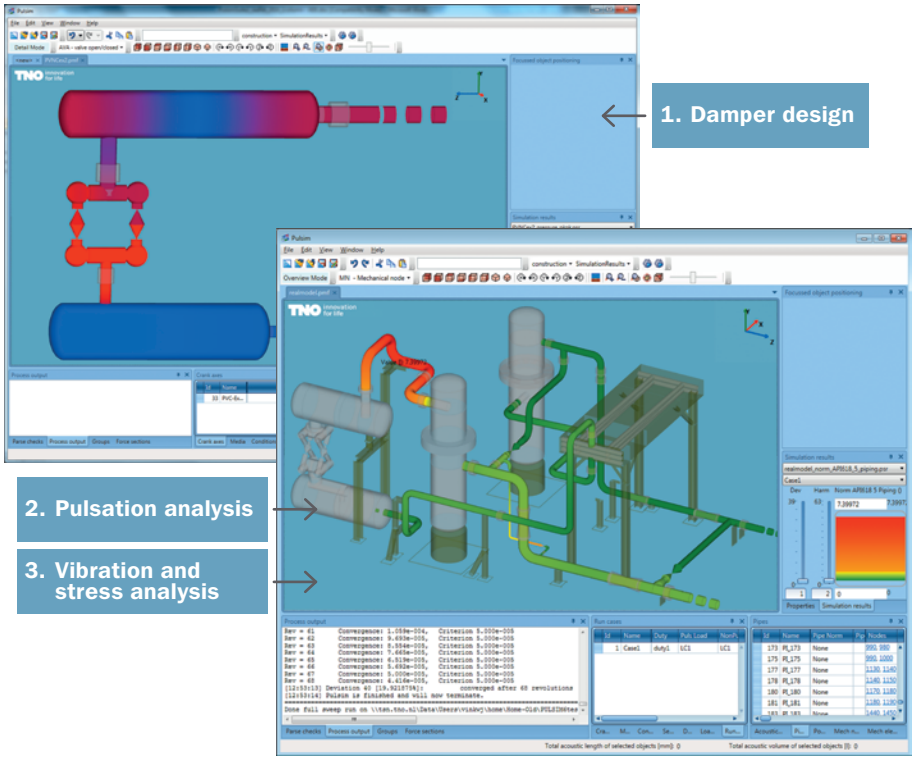
PULSIMSUITE2: THE NEXT GENERATION

PulsimSuite2 comprises a major upgrade, providing improved workflow, usability, and ease of analysis.

This new version improves the user experience of PulsimSuite even further:

- fully Graphical User Interface control (no more need for scripting)
- validity checking as you work
- user selectable unit systems
- results displayed as colors on your pipe system, with automatic code check
- easy identification and visualisation of worst-case standing waves/resonances with the 'hover-and-click' function.

API ANALYSIS IN THREE STEPS



1. DAMPER DESIGN

API 618 specifies a damper check to be done as a first step in a pulsation study. The PulsimSuite2 GUI enables you to optimise your dampers. Damper sizing, but also the location of cylinder and line connections, baffles, and chokes can be carried out. In this stage you will also optimise your compressor performance.

2. PULSATION ANALYSIS OF THE PIPING

With the PulsimSuite CAD import functionality, PCF-format files that are generated by a Plant Design Management System or by a pipe stress program can be read directly into PulsimSuite. But hand-modelling also works efficiently, with the modern 3-D modeling techniques. Analysing results has become a pleasure, with the automatic display of maximum pulsations, and the hover-and-click functionality for finding standing waves.

3. VIBRATION CONTROL

The vibration control analysis requires the modelling of a piping system, with its supporting structures and all other flexible parts, e.g. nozzle flexibilities, pipe racks, etc., in a finite element program.
In PulsimSuite, all these elements can be modelled. Extensive databases of predefined pipes, flanges, beams, etc. make it easy to create a model of a system, as far as it is not imported from CAD directly.

PulsimSuite generates an ANSYS finite element model that couples with the acoustic model. The vibrations and cyclic stress levels are calculated by performing a mechanical response calculation combining the PULSIM acoustic solver results with the ANSYS mechanical solver, all controlled from PulsimSuite.

Hover-and-click functionality in maximum results view

WHY YOU SHOULD USE PULSIMSUITE2

- Thoroughly validated models, with an extensive track record in consultancy projects
- API 618/674 Damper Check, Pulsation Analysis, and Mechanical Response Analysis are run from one user-friendly graphical user interface
- CAD import of piping systems
- Automatic code checking for both acoustic and mechanical response results (e.g. according to API 618/674)
- Hover-and-click function helps you to identify standing waves and vibration modes in a mouse click
- Support from the PULSIM group, with 40 years experience in the field
- One single model calculates both the pulsations and the vibrations/stresses
- User-selectable unit systems

TNO.NL

CONTACT
Wilbert Vink
Product Manager PulsimSuite
T +31 88 866 86 09
E wilbert.vink@tno.nl

TNO
Stieltjesweg 1
2628 CK Delft
The Netherlands

P.O. Box 155
2600 AD Delft
The Netherlands

TNO.NL/PULSIM

JRV150909-01