CONVAL® 9 New Features

CONVAL 9 is compatible with Microsoft® Windows® 7 and Windows 8 (32 and 64-bit).

General, Comprehensive Enhancements Compared To CONVAL 8

Operations & User Interface

Language support for English and German (further languages soon to come) CONVAL is now fully supporting Unicode. Text and comments can be typed in in any character set of any language, e.g. Asian, east European or symbol character sets.

We simplified the user interface by introducing a new file menu and revised toolbars.

An examples section is accessible through the new file menu, allowing you to quickly explore documented examples. This facilitates starting to use CONVAL and exploring the enhanced features of CONVAL 9.
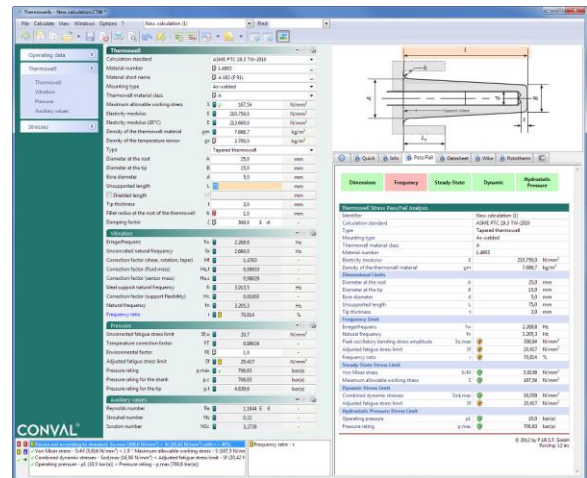
Clear presentation of detailed calculation information by new "info views":
- Display of several different info views giving you various perspectives, depending on your interest in the special case.
- Info views contain help, error and information messages as well as hints and support finding a solution by traffic light color coding.

Visual navigation between info views and the calculation data:
- Info views containing drawings with dimensioning allow you to click a dimension to navigate to the corresponding data field in the calculation.
- Changing to a data field in the calculation related to a dimension in a drawing will mark the dimension there.
- Parameters, messages and help information navigate you to the corresponding data fields in the calculation.

The usability of dependency charts is improved:
- Active dependency charts will be displayed in list.
- Dependency charts are now assigned to and will be saved with a calculation.
- Dependency charts will automatically recalculated for printing
- There are extensible templates for popular dependency charts.

Licensing

There are more flexible licensing options using Sentinel HASP from Safenet. Existing Hardlock license modules of CONVAL 8 are still supported and can be used after an update from earlier CONVAL versions.

Fluid Property Calculation

Improved calculation of the isentropic exponent for those gases from the database, which are not based on thermodynamic equations of state.

Mixtures compositions off any substances in the database can be defined. The property calculation is based on approximation methods.

Calculation of gas mixtures:
Any for CONVAL 9 relevant mixture properties can be calculated (assuming sufficient data for all components).

Calculation of liquid mixtures:
Mainly the mixture density will be calculated. An estimation of the lowest vapor pressure will be given.

For liquids, aside of the mass flow and volume flow at operating conditions, you can also enter volume flow at standard conditions can be entered.

New Calculation Modules

Rupture Discs
Sizing and calculation of rupture discs according to the flow resistance method and the coefficient of discharge method.

Calculation of the maximum allowable working pressure in consideration of the maximum working pressure, manufacturer range, burst tolerance, backpressure and maximum pressure operating ratio.

Rough estimate of the temperature dependency of the burst pressure.

Sizing and calculation is done according to the following standards:
- AD 2000
- Merkblatt A1
- ISO 4126
- 1:2004
- API 520:2008
- ASME:2004 Section VIII

Rupture discs can be selected form a manufacturer database, filtered by size, conditions, temperature and pressure limits.

Thermowells
Sizing and selection according to the following standards:
- ASME PTC 19.3 2010
- ASME PTC 19.3 1974

Level Transmitter Calibration
Calculation of the differential pressure and the output signal at the transmitter for any level.

Option to simulate the startup of a boiler.

Enhancements in Various Modules

Control Valves
Introduction of the Key Performance Indicator "Ri." It is the base of an expert system with detailed alarms, warnings and hints in order to improve the overall reliability of a valve solution for liquid, gas and steam applications.
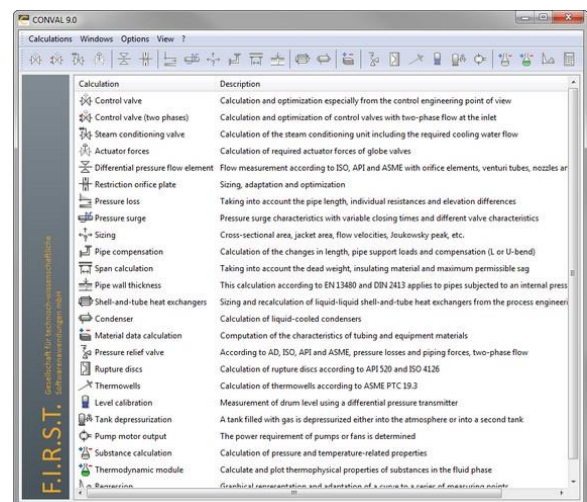
Here we check and predict the possible impact on the valve reliability caused by the combination of multiple influencing factors, such as cavitation, flashing, flow velocity, noise level, differential pressure, energy conversion, corrosion, abrasion ... and more.

Enhanced calculation of valves by allowing a more detailed specification and use size and type specific valve recovery factors (FL, xFz, XT, Fd).

Enhanced usability and comfort allowing either the input of p_2 or Δp.

Implementation of noise prediction for multistage trims according to IEC 60534-8-3:2010

Improved noise prediction for downstream resistance structures (Silencer, Multi-hole baffles) by a modified calculation according to IEC 60534-8-3 respectively IEC 60534-8-4.

Control Valve Database
Update of several type series in the manufacturer database for various vendors.

Assessment of additional parameters for a more detailed calculation, analysis and prediction of the reliability index ("Ri").

Differential Press Flow Elements
Additional standards supported by the module:
- AGA 3 / API MPMS 14.3
- 2003
- ASME PTC 19.5
- 2004

Sizing and indication of the dimensions for venturi tubes.

Enhance calculation for rectangular venturi nozzles and venturi tubes.

Orifice Plates
Enhanced noise prediction for restriction orifice plates by the adapted calculation according to IEC 60534-8-3 respectively IEC 60534-8-4.

Pressure Relief Valves
Fire case calculation for the subsequent flow according to API 521.

The calculation of an upstream rupture disc is provided.

Aside of the option to select relief valves out of a database with manufacturer devices, there is now an option to select relief valves according to API 526.

Pressure rating for the flanges of the relief valves according to:
- EN 1092
- 1:2007
- ASME B16.5
- 2009
- API 526

Enhanced filtering in the relief valve database for easier relief valve section.