

Multiflash® 7.1 release note

Multiflash® is a powerful and versatile PVT (pressure, volume and temperature) and physical properties modelling software package dedicated to:

- PVT modelling of reservoir fluids phase behaviour
- Flow assurance and production
- Evaluation of the fluids physical properties for design and process simulation

Multiflash provides a complete and reliable solution for the evaluation of the phase behaviour of complex fluids across the whole equipment and plant design process and during operations and enables engineers with quantitative information and data to rapidly assess options, make choices and prevent or forecast potential problems.

What's new?

Following the release of version 7.0, Multiflash 7.1 aims at the consolidation and refinement of functionalities introduced in 7.0 and at the introduction of new tools and functionalities to enhance and simplify the workflows of production and flow assurance engineers. In version 7.1 we continue with the **progressive coverage of thread-safe models**, initiated with Multiflash 6.2 and 7.0. Upon completion of the process, all the models initially coded in Multiflash will be available for thread-safe simulations and parallel computation.

In MF 7.1 we also extend our range of modelling capabilities, including new variants (Twu) of the most common cubic equations of state, Peng-Robinson and Redlich-Kwong-Soave, including Peneloux volume shift and a new formulation for the fitting of vapor pressure of pure components. We also introduce a **high accuracy model for water and inhibitors** and **started the development of water-oil emulsions** to use in flow and production assurance simulations.

Version 7.1 includes also extensions to enhance and simplify engineering workflows, allowing **automatic import and export to process simulation software** (e.g. Hysys, UNISIM and Petro-SIM) and tuning of the Peng-Robinson EoS with Costald liquid density (standard in process simulation).

For subsurface and reservoir engineering, Multiflash 7.1 includes the **simulation of slim tube experiment**, that completes the set of standard and EOR PVT experiments EOR and regression of EoS.

Specific highlights for this release

- Modelling and architectural
 - Twu variants of PR and RKS EoS (*Fluid Phase Equilibria, Vol. 69, 1991, pp 33-50*) with volume shift and fitting of vapor pressure
 - New high accuracy water model for flow assurance simulations
 - Pal and Rhodes emulsion viscosity model
 - DTU variant of the CPA (Cubic Plus Association) EoS
 - New Sutton model for surface tension

- Accuracy improvements
 - Re-tuning of Hydrates and inhibition model's parameters to new experimental data
 - Re-tuning of Mercury model's parameters to new experimental data

- PVT modelling
 - Simulation of the slim tube experiment
 - Tuning of PR (Peng-Robinson) EoS variant with Costald liquid density
 - Fluids weaving
 - Tuning of common pseudos waxy fluids

- User experience and workflows
 - Import/Export to process simulation
 - Creation or reports from PVT experiments regression and calculation trails
 - Customization of plots and phase diagram
 - Extensions (CGR, WGR, OGR etc.) to Multistage flash tool
 - Extensions of the fluid library