



A Yokogawa Company

Multiflash®

PVT modeling and physical properties software for complex fluids

From reservoir to refinery, Multiflash® software bridges the gap between static fluid assumptions and the dynamic complexity of modern energy systems to deliver reliable phase behavior insights for today's most demanding applications.

Purpose-built for the energy value chain, Multiflash is a trusted thermodynamic and PVT modeling platform that powers upstream, midstream, and downstream oil and gas operations—as well as CCS, chemical processing, and hydrogen systems. It delivers robust fluid property prediction, accurate phase behavior modeling, and seamless integration to help engineers simulate with confidence, consistency, and control across the full lifecycle.

Like solving a balanced equation with half the variables, legacy tools leave gaps that compound into costly errors across planning, performance, and safety. Multiflash masters fluid complexity from molecule to market through a unified, validated thermodynamic platform that minimizes risk, sharpens consistency, and accelerates decision-making with every simulation run.

30+ YRS The standard PVT modeling and physical properties package in Flow Assurance

Bringing
DECARBONIZATION
to Life



Bridging Models With Operations

Multiflash connects rigorous thermodynamic models with day-to-day engineering practice, giving teams clarity and control throughout the asset lifecycle.

Accurate & Comprehensive Modeling

Multiflash implements a broad and validated range of thermodynamic models to accurately evaluate the physical and transport properties of both complex mixtures and pure substances. Applications span from upstream flow assurance and production, to midstream gas plants, and downstream petrochemicals, polymer blends, refrigerants, and specialty chemicals.

Trusted & Embedded

Robustness and proven accuracy have established Multiflash as the industry standard PVT engine, widely embedded across the energy and chemicals industries. It is natively integrated into leading simulation platforms and adopted by operators, service providers, equipment manufacturers, contractors, and chemical companies worldwide.

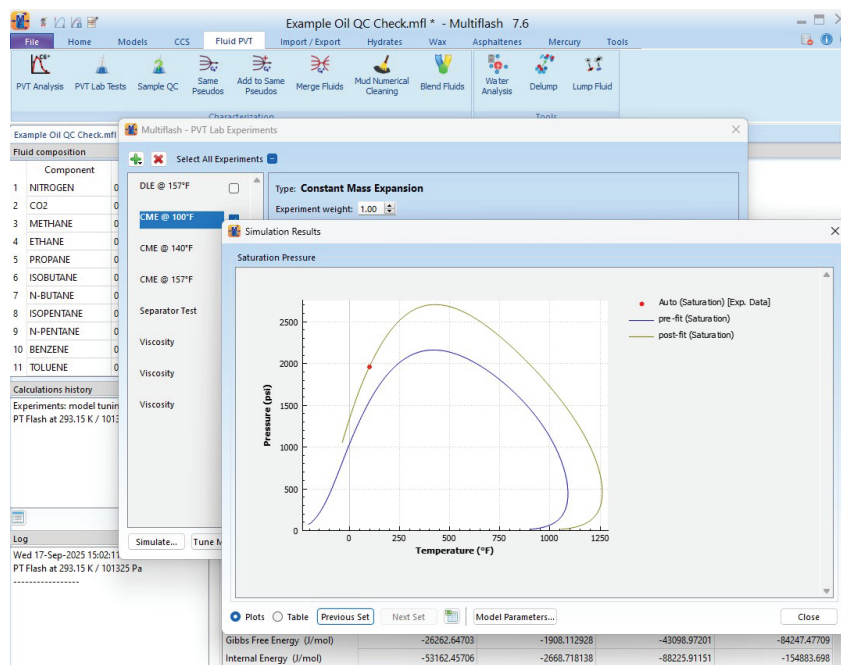
The Best in Flow Assurance

Multiflash's advanced equations of state (EOS) and specialized flow assurance models allow rapid risk assessment, reliable monitoring, and evaluation of mitigation strategies. It can model all critical phases including hydrates, waxes, asphaltenes, and halide scales, as well as track partitioning of potentially damaging substances such as mercury (Hg) and hydrogen sulphide (H₂S).

Seamless Connectivity

Through its interfaces (Excel, CAPE-OPEN, VB, and APIs), engineers can integrate Multiflash into workflows for sizing equipment, simulating processes, and running what-if analyses. Quality, speed, and robustness make Multiflash the only PVT package trusted for both design/simulation and for real-time flow monitoring. Unlike legacy tools that leave blind spots, Multiflash equips engineers to model, test, and mitigate flow risks with speed, stability, and scientific rigor.

Multiflash delivers consistent PVT and thermodynamic modeling across the energy lifecycle to provide a single source of truth from reservoir to reactor. Its advanced and validated models simulate everything from hydrocarbons to next-generation energy systems. The built-in PVT modeling module supports EOS tuning, data quality control, and fluid characterization—even from sparse or contaminated data.



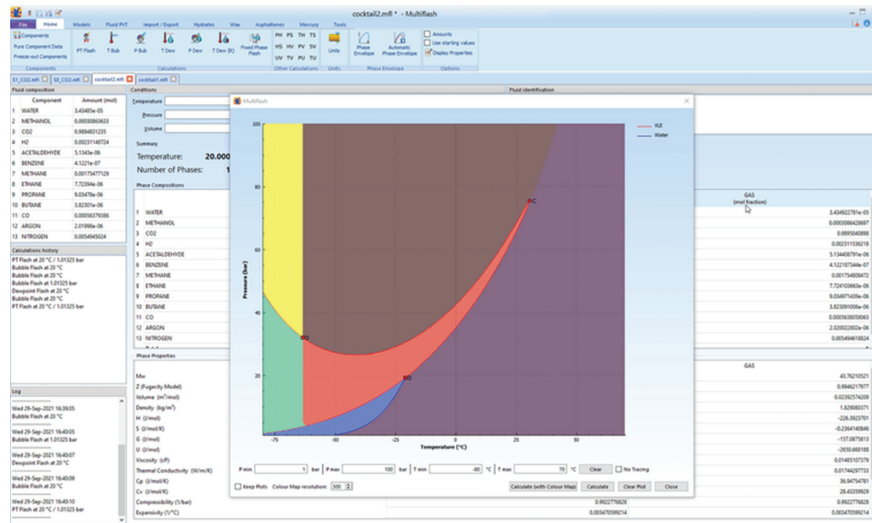
Regression of PVT experiments to model reservoir fluids.

Advanced Parameter Tuning & Regression

ThermoBuilder, within Multiflash, expands the software's tuning and data regression capabilities to offer engineers a common, accurate, and customizable PVT engine for process and production optimization, assisting the industry in the journey to net zero.

Engineering the Future

Multiflash ensures thermodynamic consistency across the value chain, supporting next-generation systems such as CCS, hydrogen, and complex electrolytes alongside traditional hydrocarbons. Fully integrated with KBC's digital ecosystem, Multiflash is scalable and flexible for both R&D and operations, turning fluid properties into actionable insights that help shape a low-carbon future with confidence.



Consistent PVT and thermodynamic modeling across the energy value chain.

Unified across disciplines

Ensures thermodynamic consistency from upstream to downstream, across teams and project phases.

Built for complexity

Supports CCS, hydrogen, chemical, and petrochemical applications with advanced models for non-ideal systems.

Deployed anywhere

Available on-premise or in the cloud, fully integrated with KBC's digital ecosystem.



Ideal For

Multiflash streamlines thermodynamic modeling across the industry to support consistent, high-fidelity insights from reservoir to refinery.

- **Flow assurance engineers** predict hydrate, wax, and asphaltene risks in pipelines and production systems
- **Process engineers** simulate phase behavior and fluid properties in complex fluids
- **CCS and hydrogen engineers** design and optimize CO₂-rich or hydrogen transport systems
- **Production engineers** optimize fluid handling, separation, and artificial lift strategies through accurate fluid characterization
- **Upstream/midstream/downstream operations teams** seek integrated workflows

Why Multiflash

Multiflash brings precision to complexity, equipping engineers with the capabilities they need to model emerging energy systems, mitigate risk, and optimize performance across the asset lifecycle.

It delivers advanced tools for simulating CO₂-rich mixtures, hydrogen blends, and other next-generation fluids critical to the energy transition. By combining rigorous thermodynamics with seamless integration into existing workflows, Multiflash helps engineers design safer CO₂ transport networks, optimize hydrogen infrastructure, and assess new decarbonization technologies with confidence.

From supporting CCS projects to advancing hydrogen economy initiatives, Multiflash provides the accuracy, flexibility, and speed needed to make low-carbon solutions practical and commercially viable. This is how we are Bringing Decarbonization to Life®.

Market Problems	Products Features
Enhanced CCS Modeling	
Conventional tools struggle to model CO ₂ -rich systems accurately, increasing risk in CCS design.	Improves thermodynamic consistency, phase equilibrium and transport property prediction for better CCS system simulation.
Electrolyte and Aqueous Systems Modeling	
Engineers lack fast, accurate tools for evaluating electrolyte systems for water chemistry and acid-base reactions.	Streamlines electrolyte analysis and acid-base equilibrium modeling for greater speed and accuracy.
High-Fidelity PVT Modeling	
Conventional PVT tools often fall short when modeling complex reservoir fluids resulting in inaccurate phase behavior and suboptimal development planning.	Delivers high-fidelity PVT modeling and advanced tuning options. It supports complex fluid characterization, and EOS tuning for accurate simulation of reservoir fluids across upstream, midstream, and CCS applications.
Advanced Parameter Tuning & Regression	
Engineers need a reliable tool for parameter tuning. Excel-based tuning is slow, error-prone, and vulnerable to failed calculations.	Powered by ThermoBuilder, Multiflash provides advanced model parameter tuning and pure component temperature-dependent property regression, with automated variable selection and intuitive controls for faster and more reliable fitting.
Accurate Flow Assurance Modeling	
Unreliable models miss hydrate, wax, or asphaltene risks, exposing operators to costly downtime.	Delivers accurate predictions of flow assurance risks and mitigating strategies using advanced thermodynamic models tailored to real fluid and field conditions.
Advanced Modeling for Complex Fluids	
Standard tools do not accurately simulate polymers or reactive systems, causing inaccurate predictions.	Enables more reliable simulation through advanced models for polymers and other complex fluids associated in process environments.
Seamless Integration Across the Simulation Ecosystem	
Limited interoperability between tools creates data inconsistencies and workflow inefficiencies.	Integrates seamlessly with leading simulation tools via its GUI, Excel plugin, native DLL access, APIs (Python, C++, Fortran, VB) and CAPE-OPEN interface—enabling consistent, high-fidelity fluid modeling across production, flow assurance, and process workflows.

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