COMPUTER MODELLING GROUP LTD.

WINPROP

Phase Behaviour & Fluid Property Software

Benefits

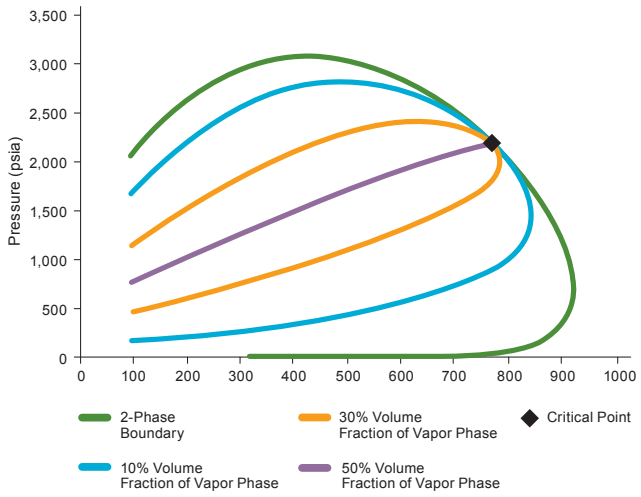
- Tune EoS to accurately match laboratory analysis results and predict fluid behaviour
- Lump pure components to create pseudo-components for simulation
- Understand property distribution within a reservoir fluid system, under different depletion scenarios
- Accurately characterize reservoir fluid to increase accuracy when performing dynamic simulation

WinProp is an integral component in advanced reservoir simulation modelling and is invaluable for multi-phase and special processes, and where compositional variations exist.

WinProp™ quickly solves complex calculations and creates tuned fluid property descriptions for IMEX™, GEM™ and STARS™ to predict fluid behaviour and to improve understanding of the reservoir exploitation process.

- Component characterization
- PVT matching
- Miscibility studies
- Modelling of laboratory experiments (recombination, fluid compressibility, constant composition expansion or volume depletion, differential liberation, swelling or separator tests)
- Prediction of wax and asphaltene production
- Surface separation facilities modelling

The user-friendly graphical interface makes preparing data and interpreting results more effective and efficient.



WinProp™ generated phase envelope showing vapor volumes.

EoS Characterization

Tune EoS to accurately match laboratory results and predict fluid behaviour.

- Analyze two EoS models, one that calculates surface (separator) conditions, while the other calculates reservoir conditions
- Choose from multiple Peng-Robinson and Soave-Redlich-Kwong EoS models (2 and 3 parameter versions) to match lab data
- Linear temperature-dependent volume shift model to accurately match lab calculated density
- Regression on composition and properties to allow for easy matching of lab data
- Automatic parameter selection and built-in parameter bounds simplifies regression process
- Match separator data separately from PVT data gathered at reservoir temperature using differential liberation experiments
- Group parameters for regression and apply varying weights to specify importance of matching distinct parameters

Reservoir Fluid Characterization

Understand property distribution within a reservoir fluid system, under different depletion scenarios.

- Exponential, two-stage exponential, and gamma distribution functions for characterization calculations
- Fraction splitting and component lumping to simplify creation of pseudo-components
- Specify own lumping criteria or let WinProp determine it based on the internal algorithm

Miscibility Prediction

WinProp's multiple contact miscibility option performs calculations under condensing, vaporizing, or condensing vaporizing drives.

- User-friendly component lumping and fraction splitting options
- Extensive library of hydrocarbon and non-hydrocarbon components
- First Contact Miscibility pressure calculation to match data and understand the fluid mixture properties
- Differential evolution algorithm provides more stable search for Minimum Miscibility Pressure (MMP) calculations
- Multiple mixing cell method of Ahmadi and Johns to calculate MMP
- Create ternary diagrams to graphically interpret miscibility mechanisms and calculate how to achieve multi-contact miscibility
- Phase split calculation of Li, Johns & Ahmadi for multi-contact miscibility calculations

Asphaltene & Wax Precipitation Modelling

WinProp allows engineers to save time by quickly characterizing asphaltene and wax deposition fluid models for use in compositional simulation.

- Multi-component solid solubility model is coupled with Equation-of-State (EoS) for descriptions of asphaltene or wax precipitation
- Model up to three fluid phases in equilibrium with the precipitate as a multi-component solid

Aqueous Phase Properties

WinProp models the solubility of CO_2, H_2S, and light hydrocarbons in water of varying salinity. Water content of gases is also predicted accurately.

- Extensive library of geochemical reactions for rock mineralogy interaction with the aqueous phase
- Standard phase property table also includes entropy, enthalpy and heat capacity

Fundamental Calculations

- Isenthalpic flash and multi-phase flash
- Saturation pressure and temperature
- PT, PX, and TX envelopes, with quality lines, available for two and three-phase calculations
- Ternary Diagrams
- Newton iteration for performing negative flashes in difficult regions

Contact

For more information please contact
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R&D Investment

CMG reinvests 20% annual revenue back into R&D, to further innovation and drive technology forward

Superior Software

CMG delivers easy to use software that provides the most accurate results

Dedicated Support

Experienced technical sales & support personnel, deliver high-quality, timely and personalized customer support

Relevant Training

CMG's industry renowned reservoir software training provides the skills to improve productivity and efficiency