Technical features overview (Windows version)

- Entirely written in C++ (since first edition, 1993)
- Up to 100 different streams with up to 50 components per stream (user can redefine)
- Several compilations of chemical data and BIPs are available, the user can add new components and BIPs
    - Proprietary compilation with data for more than 1600 chemicals and 30000 BIPs
    - flexible database format (support for up to 30 different correlations) works with all majour standards including DIPPR.
- Comprehensive set of thermodynamic models, base version includes
    - Regular
    - Wilson
    - NRTL
    - UNIQUAC
    - UNIFAC
    - Soave-Redlich-Kwong (standard and extended version with parameters calculated for best fitting of vapor pressure, density and enthalpy)
    - Peng-Robinson (standard and extended version with parameters calculated for best fitting of vapor pressure, density and enthalpy)
    - Benedict Webb Rubin (Starling) BWRS
    - Steam Tables IAPWS 95
    - ISO 18453 (GERG 2004)
    - ISO 20765 (AGA 8 model)
    - Lee-Kesler (Plocker) LKP
    - CPA Cubic Plus Association (SRK and PR variants)
    - Hydrates (Cubic Plus Association, Van Der Waals-Platteeuw)
    - additional models as Pitzer, NRTL for electrolyte solutions, PC SAFT (with association), GERG (2008) etc.
- van der Waals and complex mixing rules to combine equations of state with activity models
    - Huron Vidal
    - Wong Sandler (WS)
    - Michelsen (MHV2)
    - Tassios et al. (LCVM)
- Base and Extended EOS versions with parameters calculated to fit experimental data from DIPPR and DDB
- Selectable units of measurement
- Procedure for solving fluid flow including multi phase equilibria and heat transfer
- Procedure for solving staged columns
    - Rigorous solution of distillation columns, fractionations, absorbers, strippers...
- Procedure for calculating hydrate formation temperature and hydrate formation pressure
    - hydrate phase equilibria based on different Van Der Waals-Platteeuw models
- Procedure for solving polytropic compression with phase equilibria
    - Huntington method for gas phase
    - Proprietary method for solving a polytropic process with phase equilibria
- Procedure for solving isentropic nozzle (safety, relief valve with single and two phase flow)
    - HEM, Homogeneous Equilibrium
    - HNE-DS, Homogeneous Non-equilibrium
    - NHNE, Non-homogeneous Non-equilibrium
- Procedure for simulating fluid flow in piping (pipelines) with heat transfer
    - Beggs and Brill and proprietary methods for single phase and multiphase fluid flow with heat transfer
- Procedure for fitting BIP to measured VLE / LLE / SLE data points (data regression)
- Procedure for fitting BIP to VLE values calculated with UNIFAC
- Functions for simulating operating blocks (mixer, gas separator, liquid separator) **
- Functions for accessing component data in database (the user can define mixing rules)
- gas / vapor-liquid-solid fugacity plus derivatives vs. temperature pressure composition
- gas / vapor-liquid-solid enthalpy plus derivatives vs. temperature pressure composition
- gas / vapor-liquid-solid entropy plus derivatives vs. temperature pressure composition
- gas / vapor-liquid-solid molar volume plus derivatives vs. temperature pressure composition
- Flash at Bubble and Dew point specifications and P (or T)
- Flash at given temperature (T) and pressure (P) multiphase vapor-liquid-solid, isothermal flash
- Flash at given phase fraction and P (or T), solves up to 5 different points
- Flash at given enthalpy (H) and P multiphase vapor-liquid-solid, includes adiabatic flash
- Flash at given enthalpy (H) and T multiphase vapor-liquid-solid, includes adiabatic flash
- Flash at given entropy (S) and P multiphase vapor-liquid-solid, includes isentropic flash
- Flash at given entropy (S) and T multiphase vapor-liquid-solid, includes isentropic flash
- Flash at given volume (V) and P multiphase vapor-liquid-solid, includes isochoric flash
- Flash at given volume (V) and T multiphase vapor-liquid-solid, includes isochoric flash
- Flash at given volume (V) and enthalpy (H) multiphase vapor-liquid-solid
- Flash at given volume (V) and entropy (S) multiphase vapor-liquid-solid
- Flash at given enthalpy (H) and entropy (S) multiphase vapor-liquid-solid

- Rigorous (True) critical point plus Cricondentherm and Cricondenbar
- Complete set of properties for different states
    - gas density
    - vapor density
    - liquid density
    - solid density
    - gas Isobaric specific heat (Cp)
    - vapor Isobaric specific heat (Cp)
    - liquid Isobaric specific heat (Cp)
    - gas Isochoric specific heat (Cv)
    - vapor Isochoric specific heat (Cv)
    - liquid Isochoric specific heat (Cv)
    - gas cp/cv
    - liquid cp/cv
    - Gas heating value
    - Gas Wobbe index
    - Gas Specific gravity
    - gas Joule Thomson coefficients
    - vapor Joule Thomson coefficients
    - liquid Joule Thomson coefficients
    - gas Isothermal compressibility
    - vapor Isothermal compressibility
    - liquid Isothermal compressibility
    - gas Volumetric expansivity
    - vapor Volumetric expansivity
    - liquid Volumetric expansivity
    - gas Speed of sound
    - vapor Speed of sound
    - liquid Speed of sound
    - vapor + liquid (HEM) Speed of sound
    - gas Viscosity
    - vapor Viscosity
    - liquid Viscosity
    - gas Thermal conductivity
    - vapor Thermal conductivity
    - liquid Thermal conductivity
    - gas compressibility factor
    - vapor compressibility factor
    - liquid Surface tension

Typical applications

- Fluid properties in Excel, Matlab, Mathcad and other Windows and UNIX (**) applications
- Thermodynamics, physical, thermophysical properties
- Process simulation
- Heat / Material Balance
- Process Control
- Process Optimization
- Equipments Design
- Separations
- Instruments Design
- Realtime applications
- petroleum refining, natural gas, hydrocarbon, chemical, petrochemical, pharmaceutical, air conditioning, energy, mechanical industry