

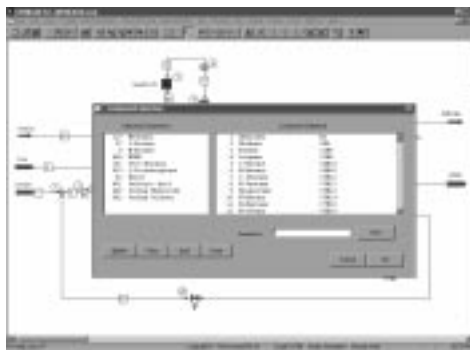
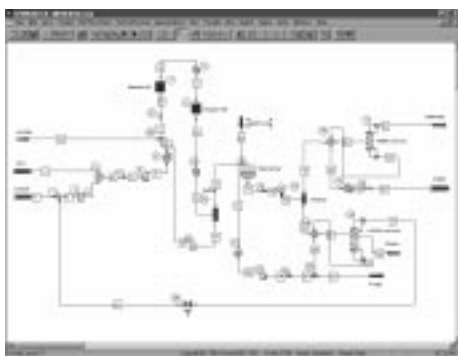
CHEMCAD

Process Simulation Software

The chemical engineering software extension of your thought process.

What can you do with CHEMCAD?

- Increase Productivity by Performing Everyday Chemical Engineering Calculations
- Maximize Profitability by Designing More Efficient New Processes and Equipment
- Reduce Costs and Capital Expenditures by Optimizing/De-Bottlenecking Existing Processes and Equipment
- Comply with Regulatory Agencies by Assessing the Environmental Impact of New or Existing Processes
- Leverage Corporate Information by Maintaining a Central Database of Proprietary and Laboratory Data



How do you actually use CHEMCAD?

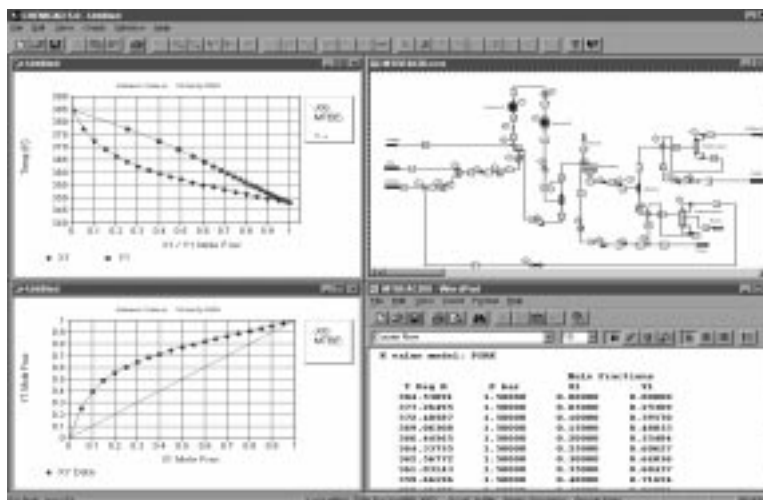
- Draw your flowsheet
- Choose your chemical components
- Choose your thermodynamic model
- Specify your feed streams
- Specify your unit operations
- Run your flowsheet
- Size your equipment
- Investigate cost estimate alternatives
- Assess environmental impact
- Analyze your results/Optimize and repeat as necessary
- Produce Process Flow Diagrams/ Reports

Why should you consider Chemstations?

- Chemstations' mission is to provide the chemical processing industry increased profitability, productivity, and safety via powerful, easy to use engineering software.
- Chemstations' development team is dedicated to creating the best available products through continuous improvement.
- Chemstations' technical support team is willing to stand behind our products and help you achieve your goals.
- Chemstations' global sales and marketing team is positioned to develop long term partnerships by creating opportunities through process solutions.
- Over 400 leading chemical companies have selected CHEMCAD as their primary process simulation software tool, with approximately 90 percent of Chemstations' customers renewing their maintenance agreement year after year.

What are some common applications of CHEMCAD?

- Distillations/Extractions (Batch & Continuous)
- Reactions (Batch & Continuous)
- Electrolytic Processes
- Thermo-Physical Property Calculations
- Vapor/Liquid/Liquid Equilibrium Calculations
- Equipment Sizing
- Heat Exchanger Networks
- Environmental Calculations
- Safety Analyses
- Cost Estimations
- Flare Header Systems
- Utility Networks



Visit our website at:
www.chemstations.net



Process Simulation Software

GENERAL FEATURES

- Graphical user interface
- Customized reports and PFDs
- Interactive operation
- Composite heat curve pinch analysis
- Hydrate prediction
- CO₂ prediction
- Distillation curve assay analysis
- Interfaces to Lotus 1-2-3, Excel, and AutoCAD, (or compatible)
- Users may add their own unit operations, thermodynamics, components and/or graphics symbols
- In-line "C" language interpreter
- Users may add their own DDLs
- Steady-state, Unsteady-state, Batch and Dynamic Process Stimulation

THERMODYNAMICS' GENERAL FEATURES

- Vapor phase association
- Different K-Values and/or enthalpies for different units or trays
- Different BIP's for different units or trays
- Vapor-liquid and liquid-liquid equilibrium
- Physical properties estimation of undefined components

K-VALUE OPTIONS

- Hydrocarbons: Peng-Robinson, Soave-Redlich-Kwong, API Soave, Grayson-Streed, Maxwell-Bonnel, BWRS, K-Charts, Regular Solution
- Chemicals: NRTL, UNIQUAC, Wilson, UNIFAC, Margules, Van Laar, Chien-Null, 4-parameter equation of state
- Polymers: UNIFAC for polymers, Florry-Huggins
- Special Systems: amines, sour water, methanol, ethane-ethylene, propane-propylene, partial pressure (ionic)
- Others: Henry's Gas Law, vapor pressure, User K tables
- Polynomial K-values, user subroutine
- Equation of state for hydrogen-bonding compounds

ENTHALPIES

- Hydrocarbon and Petrochemical: BWRS, Peng-Robinson, Soave-Redlich-Kwong, APIS, Redlich-Kwong, Lee-Kessler
- Chemicals: Latent heat, integral heat of solution
- Water: Steam tables
- Other: amines, polynomial, H tables, user subroutine, mass balance only

REGRESSION

- Pure component physical properties regression
- Multiple component VLE and LLE regression
- Regression from UNIFAC
- Regression from infinite dilution data
- Regression of electrolyte data
- Regression of reaction rate data **

ENGINEERING DATA

- Physical properties databank for pure components
- BIP database for activity coefficient equations
- Electrolytes database
- Vapor phase association databank
- Interface to corporate databases

ELECTROLYTES

- The Pitzer and MNRTL methods for strong and weak electrolytes are available. These methods have been modified to include temperature dependent interaction parameters.
- Binary and ternary interaction parameters for these methods are stored in a database.
- Electrolyte reaction equilibrium data are stored in the databank of the most common industrial systems. Equilibrium is calculated using Gibbs free energy when data is absent.
- Expert system assistance in setting up the electrolyte chemistry.

SOLIDS HANDLING

- Crystallizer
- Centrifugal filter
- Cyclone
- Washer
- Venturi Scrubber
- Baghouse filter
- Screen
- Hydrocyclone
- Vacuum filter
- Electrostatic Precipitator
- Dryer
- Sedimentation separator
- Crusher, grinder

REACTORS

- Stoichiometric
- Equilibrium
- Kinetic (PFR or CSTR)
- Gibbs
- Up to 100 simultaneous reactions
- Flexible rate form
- Water-gas shift data
- Methanation data

DISTILLATION

- Short cut and rigorous
- Simple to complex, multiple column arrangements
- Flexible specifications
- Choice of algorithms
- Rigorous three phase distillation

REACTIVE DISTILLATION

- Reactions may be specified as equilibrium or kinetic equations
- Flexible rate form
- Purity and temperature specifications
- Up to 20 reactions

DYNAMIC UNIT OPERATIONS

- Batch distillation *
- Batch reactors **
- PID controller **
- Control valve **
- Dynamic vessel **
- Discrete event manager **
- Time delay module **

OTHER UNIT OPERATIONS

- Heat exchanger
- Expander/Turbine
- Compressor
- Pump
- Mixer
- Divider
- Component separator
- Flash
- Rigorous three-phase flash
- Fired heater
- Valve
- LNG Heat exchanger with pinch analysis
- Controller
- Stream reference
- Liquid-liquid extraction
- Line sizing
- Calculator

EQUIPMENT SIZING

- Rigorous equipment sizing routines with spec sheets are available for the following equipment:
 - Trays (Sieve, Bubble cap, Valve)
 - Packing (Random and Structured)
 - Pipes
 - Shell & Tube Heat Exchangers ***
 - Pressure Vessels
 - Orifices
 - Control Valves
- Relief Valves (DIERS)

EQUIPMENT COST ESTIMATION

- Calculation of the purchase and installed cost of major pieces of plant equipment.

HARDWARE REQUIREMENTS

- Windows 95, 98 and NT
- Network version available

* Requires a CC-Batch License

** Requires a CC-ReACS License

*** Requires a CC-Therm License



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