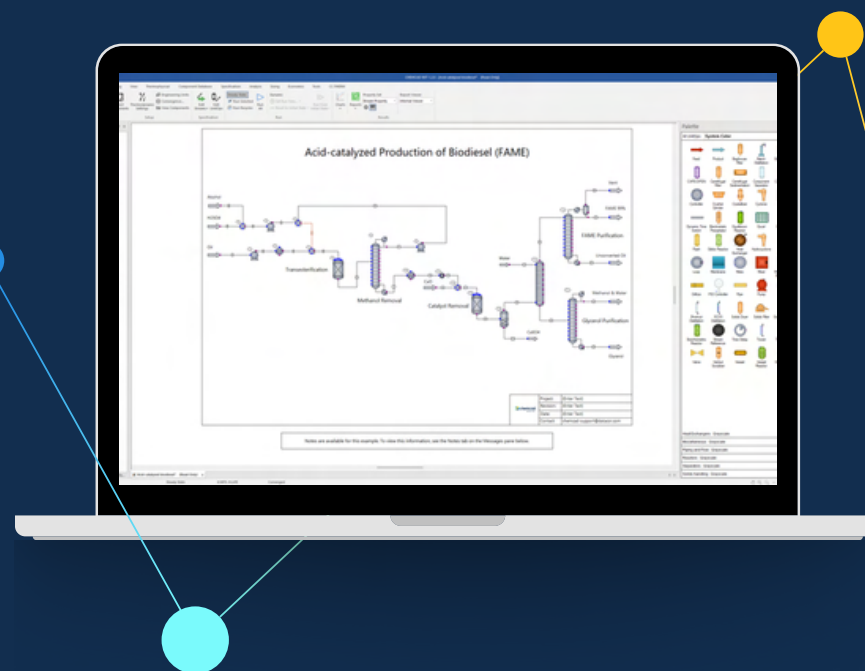




 **chemcad**  
a datacor product



 **datacor**

## Industry Challenges in Process Engineering

Chemical and process industries today face increasing pressure:



Rising Energy & Feedstock Costs



Digital Transformation



CAPEX & OPEX Reduction Pressure



Stricter Regulations



Aging Infrastructure



Sustainability & Decarbonization



Complex & Variable Feedstocks



Faster Project Delivery



**CHEMCAD is a powerful, intuitive process simulation software that enables engineers to:**

- Design and validate complete process flowsheets
- Optimize energy usage and improve yields
- Accurately size equipment
- Perform safety and environmental analyses
- Support digital twin and operational excellence initiatives

**CHEMCAD transforms engineering challenges into data-driven solutions.**



## Industries We Serve:

CHEMCAD is a process simulation software suite that has been developed over the past 40 years, evolving from a U.S. Navy research project into a comprehensive, full-scale simulation platform used across a wide range of industries, including:

- Chemicals
- Specialty Chemicals
- Energy
- Water Treatment
- EPC
- LNG
- Power & Utilities
- Many More

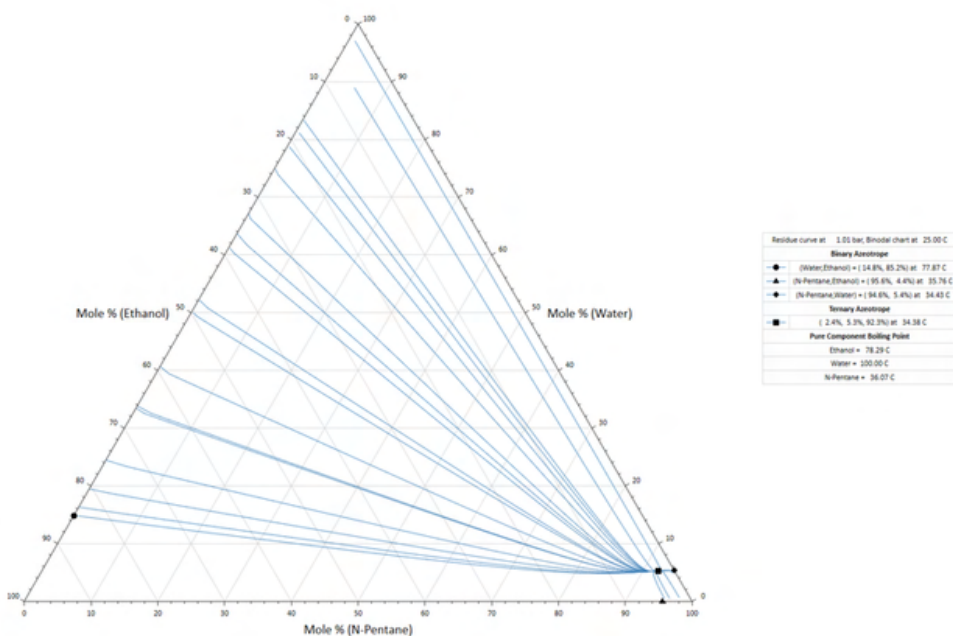


# A Strong Thermodynamics Package for All Applications

CHEMCAD NXT offers comprehensive compound libraries and thermodynamic models to cover a wide range of process and operating conditions:

- DIPPR database of over 2500 chemical components and thermophysical properties forms the foundations of CHEMCAD thermodynamic calculations. Easy to add chemicals based on estimations or lab/plant data
- Robust library of EOS & Activity coefficient models and special models (e.g., glycol dehydration, amine, electrolytes, etc.,) suited to model specialty chemical processes.
- CHEMCAD provides recommendations on the optimal thermodynamic model based on your defined components and operating conditions
- CHEMCAD NIST REFPROP database provide excellent accuracy in vapor-liquid mixtures, natural gas blends and refrigeration systems.
- Leveraging “local thermodynamic settings” you can introduce different thermodynamic models in the SAME FLOWSHEET
- Aqueous electrolyte systems can be modeled with eNRTL models

Ethanol/Water/N-Pentane By NRTL



# CHEMCAD NXT SUITE

The CHEMCAD NXT SUITE brings together **fully integrated** functionalities in one comprehensive package, designed to support a wide range of research, engineering, and industrial process simulation needs.

## Steady State Modeling

Use vast libraries of chemical components, thermodynamic methods, and unit operations to create steady-state simulations of continuous chemical processes from lab to full scale manufacturing.

## Dynamic Modeling

Take the steady-state simulations to the next level of fidelity to track the process changes over time. The possibilities are endless: operability check-out, PID loop tuning, operator training, even online process control and soft sensor functionality.

## Batch Processes

Batch distillation and reaction simulations are easy and intuitive. CHEMCAD is extremely flexible, with many operating modes and the capability to model any number of operating steps and conditions. Include solid formation to simulate crystallization and filtration processes.

## Heat Exchanger Design & Rating

Use multiple international standards to design and rate heat exchangers including shell-and-tube, plate-and-frame, air-cooled, and double-pipe exchangers.

## Flash Calculations

Easily calculate physical properties and phase equilibrium (VLE, LLE, VLLE) for pure components and mixture

## Piping Networks & Safety System

CHEMCAD combines momentum balance with its heat and material balances to rigorously analyze any piping network. It also incorporates the latest methods in two-phase relief-device calculation, rigorous pressure-drop calculation, rigorous physical-property calculation, and rigorous phase-equilibrium calculation to deliver fast, accurate results.





# CHEMCAD NXT Features

## Multi-Core Performance for Demanding Simulations

CHEMCAD NXT parallelizes on multiple levels across all your CPU cores, avoids race conditions, and gets your answers fast. It is built for:

- Large Flowsheets
- Complex Thermodynamics & Electrolytes
- Complex Hydraulic Balancing
- High Fidelity Mass and Heat Transfer Models
- Sensitivity Analyses

## Extensive Library of Example Models

Whether you're just getting started with CHEMCAD or are an experienced user, every installation includes an extensive library of pre-built process models.

These ready-to-use simulations can accelerate learning, serve as proven design references, or be customized to match your specific process requirements.

## On-prem and Cloud Options

CHEMCAD NXT offers both on-prem and Cloud versions.

The cloud version is hosted on Amazon's Appstream service. Users have the flexibility to access their simulation remotely at any time.

## Input, Output and Custom Code

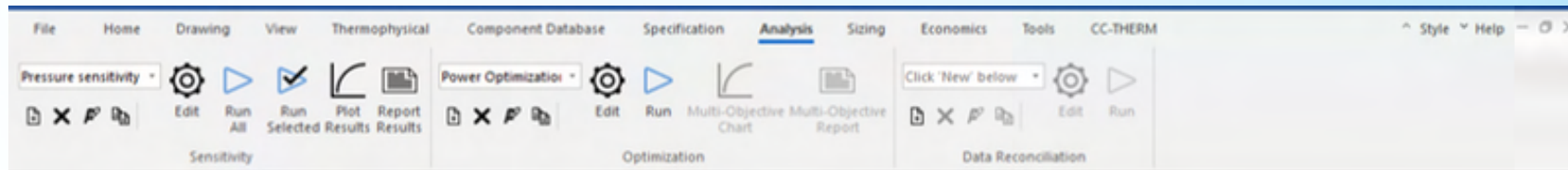
Drive CHEMCAD NXT from programs like Excel or MATLAB. Create input/output spreadsheets or code to easily manipulate inputs or integrate custom calculations.

Use C++ or VBA to create custom unit operations, adding physical properties, menus and thermodynamic models.

COM/OPC interface in CHEMCAD allows to connect to other software/systems (for example plant DCS) to get real-time data.

# CHEMCAD NXT Features

## Optimization, Sensitivity Analysis & Data Reconciliation



### Optimization

Let CHEMCAD NXT help determine optimum design or operating conditions with its powerful optimization engine.

- Quickly set up, run, maintain and rework your optimization.
- Your existing flowsheet defines your process
- Define your objective function, whether a single or multiple objective
- Define which variables can be adjusted and any constraints
- Let CHEMCAD NXT find the global optimum using rigorous, first principles simulation

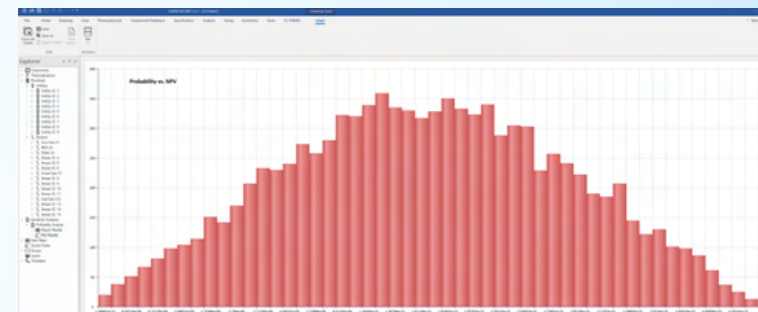
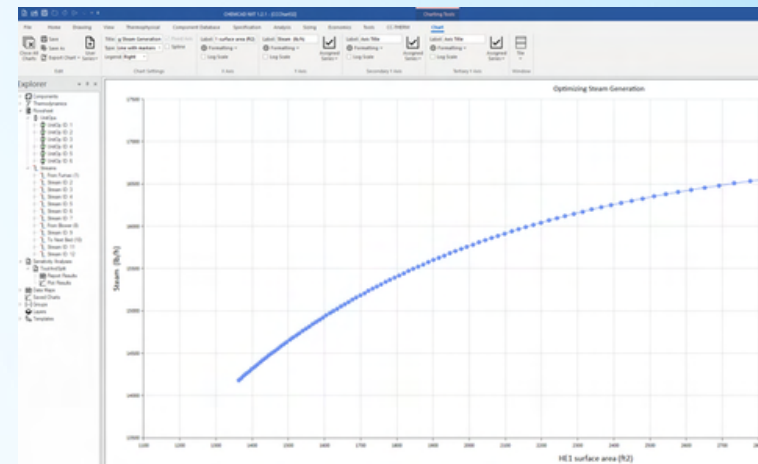
### Sensitivity & Monte Carlo Statistical Analysis

Change and uncertainty are inherent in every project and process. CHEMCAD's Monte Carlo analysis equips you with the insight and confidence needed to move forward with a Final Investment Decision (FID) and beyond.

It enables you to:

- Evaluate the risk and return of a new expansion project
- Prepare for market variability, including feedstock composition and price fluctuations
- Plan proactively for evolving emissions regulations and sustainability requirements

With probabilistic insights, you can make informed, data-driven decisions—before committing capital.



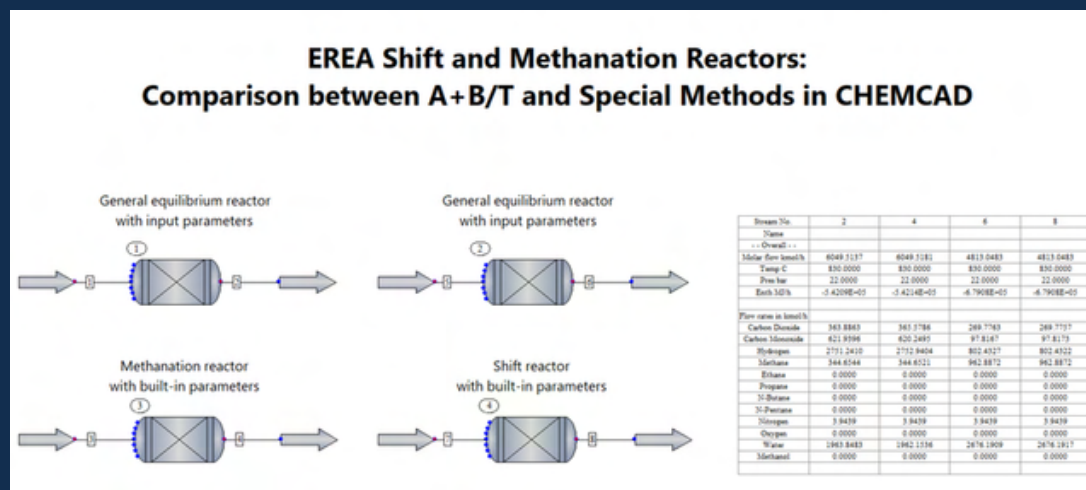


## CHEMCAD is Built with Chemical Reactions in Mind

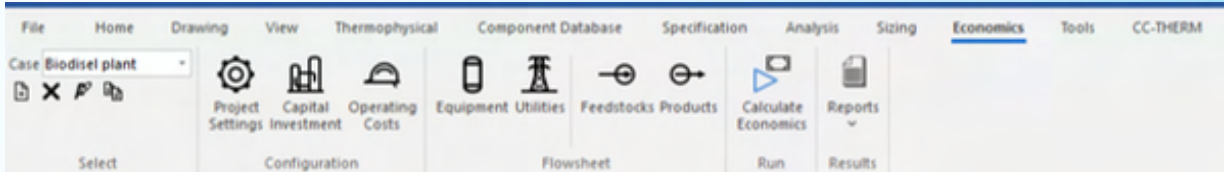
CHEMCAD can effectively simulate reactions in a variety of reactor models and reactive distillation. Leveraging strong component and thermodynamics, many specialty chemicals processes can be accurately modeled.

CHEMCAD does rate regressions to determine reaction orders from available experimental or literature data.

Additionally, custom reaction equations can be defined in CHEMCAD.



# Evaluate economic viability with confidence before committing to a Final Investment Decision (FID)



## Equipment Costing

Quickly generate reliable equipment cost estimates across a wide range of unit operations using proven textbook methodologies enhanced with current cost indices, user-defined inputs, and live process data. Fully integrated within the UnitOp specification dialog, this tool streamlines early-phase concept screening and produces detailed, professional-grade equipment cost reports.



## Economic Scenario Modeling

Easily create and compare multiple economic scenarios by integrating equipment costs, flowsheet results, cost factors, and user-defined inputs to evaluate ROI, profitability, and overall financial performance across the project lifecycle. Built-in financial methods support early-phase project assessments and generate comprehensive reports covering capital investment, operating costs, and detailed cash flow projections.



# Accelerating Sustainable Process Innovation with CHEMCAD NXT

Elevate your sustainable process design capabilities with CHEMCAD NXT—break through technical barriers, accelerate innovation, and bring new processes and products to market faster and more efficiently.

CHEMCAD is a versatile tool to model sustainability pathways such as:

- Carbon capture rates
- Using leading industry amine systems
- Hydrogen production and transfer
- Blue hydrogen & SMR
- Cryogenic compression & cold box
- Biofuel production from biofeedstock
- Fermentation reactions
- Trans-esterification reactions
- Plastic Recycling
- Dissolution processes
- Pyrolysis reactions



A man with glasses and a headset is smiling and giving a thumbs up. He is wearing a light blue button-down shirt. In the background, there are other people in an office setting, slightly out of focus.

## CHEMCAD Customer Support Included in the License Agreement

CHEMCAD's customer support is widely recognized across the industry for its expertise and responsiveness. Whether you're troubleshooting complex models, refining workflows, or integrating with external tools, our experienced support engineers are ready to provide the guidance and solutions you need.

Take advantage of:

- Phone and email access to our customer support engineers
- Gain access to our customer portal with robust knowledge base
- Access the ticketing system to track feature requests and software improvements
- Accelerate your learning and maximize your proficiency by participating in our industry-focused training programs, available at both introductory and advanced levels



Datacor provides enterprise management and engineering solutions for a wide range of industries. For decades, manufacturers have relied on **CHEMCAD** and our **Fathom**, **Impulse**, **Arrow**, and **xStream** hydraulic modeling tools to design, scale, and operate efficient, reliable, and safe facilities.

