

 Brochure

Aspen Plus®: Process Simulation for Chemicals





Overview

Aspen Plus advances the performance of chemical processes using the best-in-class simulation software for bulk chemicals, specialty chemicals and pharmaceutical industries. This powerful modeling technology enables optimization of throughput, product quality and energy use in processes with batch, continuous, and mixed batch and continuous operations. Innovative features and an intuitive user interface allow you to quickly manage all types of chemical processes within a single environment with the option to use models. Empower your workforce with model-based decision-making.

Challenge

Across the chemical process industries, companies are faced with global economic challenges, dynamic market conditions and competitive pressures to improve quality and reduce time-to-market for new products and processes. Organizations must find innovative ways to reduce capital and operating costs while increasing engineering efficiency to optimize plant performance and maximize profitability.



Better Simulation Streamlines Engineering

Fundamental to improving the performance of a plant is an accurate representation of plant design and operations. Companies need a solution that enables them to model their processes to develop insights to improve designs and optimize performance. Aspen Plus provides the solution to meet this need, solving the critical engineering and operating problems that arise throughout the lifecycle of a chemical process.

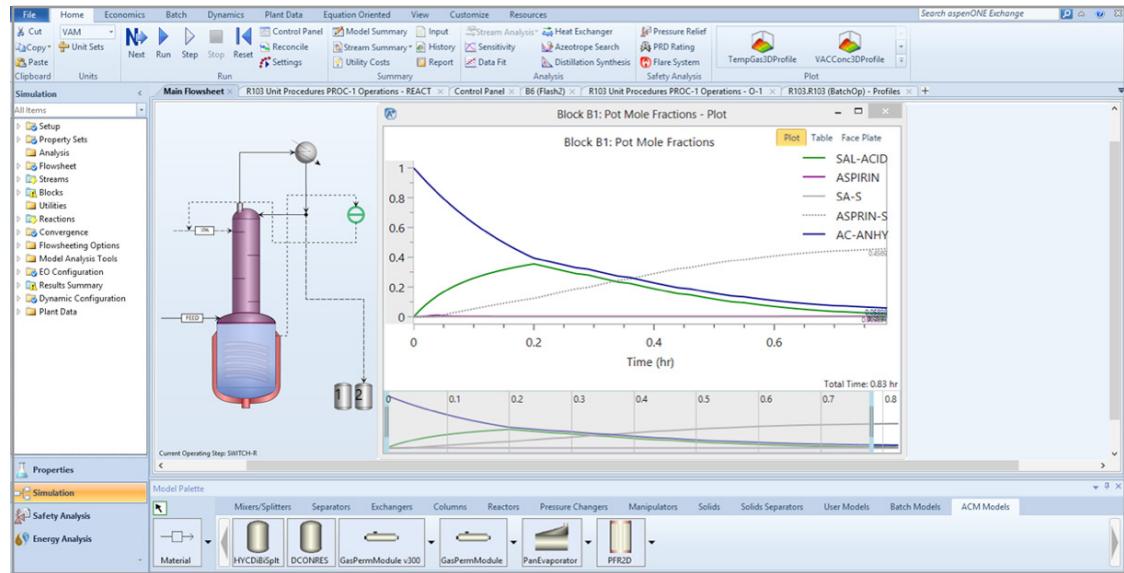
Apply Engineering Solutions in Aspen Plus to Applications including:

- Batch Process Improvement
- Distillation Improvement, Design, and Revamp
- Solids Process Optimization
- Polymer Process Optimization
- Optimization with Custom Equipment
- Environmental & Safety Analysis
- Physical Property Estimation
- Concurrent Conceptual Engineering
- Operations Decision Support

Batch Process Improvement

Simplify Batch Process Development

- Aspen Plus supports design and optimization of batch, continuous, and mixed batch and continuous processes in the same flowsheet.
- Use Batch Modeling within Aspen Plus to combine reaction kinetics with conceptual design, analysis and optimization of batch processes.
- Accelerate new product development for a wide range of batch processes including crystallization, distillation and reactions.
- **Technology — Aspen Plus® Batch**



Integrated

Batch and continuous processes in a single environment

Seamless

Integrated tools from process development to design

Powerful

Backed by the best library of physical properties

[Learn More](#)

Concurrent Conceptual Engineering

Reduce CAPEX With Rapid Optioneering

Activated Economic Analysis

- Assess model-based relative cost estimates during conceptual design

Activated Energy Analysis

- Evaluate design changes to optimize energy use
- Assess utility costs and greenhouse gases
- Compare heat and cooling demand with pinch theory

Activated Exchanger Design and Rating

- Specify or design rigorous heat exchanger models based on process constraints
- Optimize and troubleshoot exchanger performance without leaving the simulator environment
- Enable process engineers and thermal and mechanical specialists to collaborate effectively



Scalable

Design tools built on volumetric economic modeling

Robust

Consider CAPEX as you design

Seamless

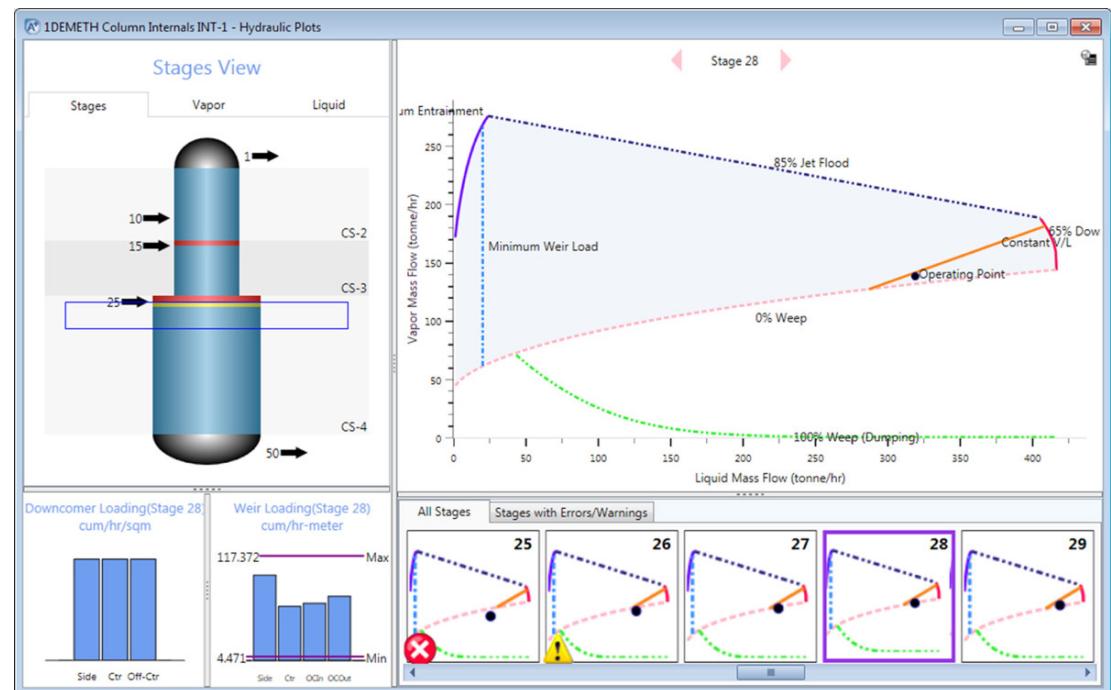
Integrated tools that reduce iteration time

[Learn More](#)

Distillation Improvement, Design and Revamp

Restore Smooth and Optimal Column Performance, Optimize Column Designs for Economics and Energy

- Using hydraulic visualization for distillation, gain the unique insights necessary to quickly evaluate how changes to design and operating conditions affects column performance
- Conduct column design and rating with a built-in library of trays and packings and trusted correlations.
- Technology** — Column Hydraulic Analysis in Aspen Plus, Rate-Based Distillation in Aspen Plus



Visualization

Bright, Informative Hydraulic Plots

Streamlined

One tool with guided workflows

Validated

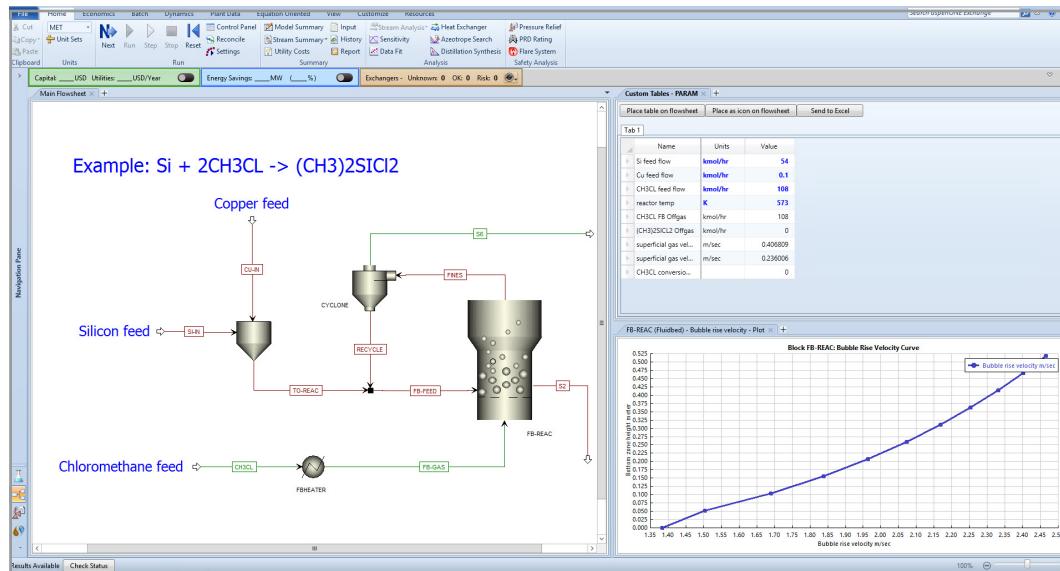
Correlations tested against vendor tools

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Solids Process Optimization

Deliver Consistent Quality of Solids

- Built-in solids modeling software supports rigorous descriptions of solids processing steps
- Aspen Plus incorporates a comprehensive library of solids unit operations, such as dryers, granulators, crystallizers, fluidized beds, crushers, gas/solid and liquid/solid separators, classifiers, and conveying systems
- **Technology — Solids Modeling in Aspen Plus**



Accessible

Models that grow with your expertise

Accurate

Rigorously handle PSD and drying

Comprehensive

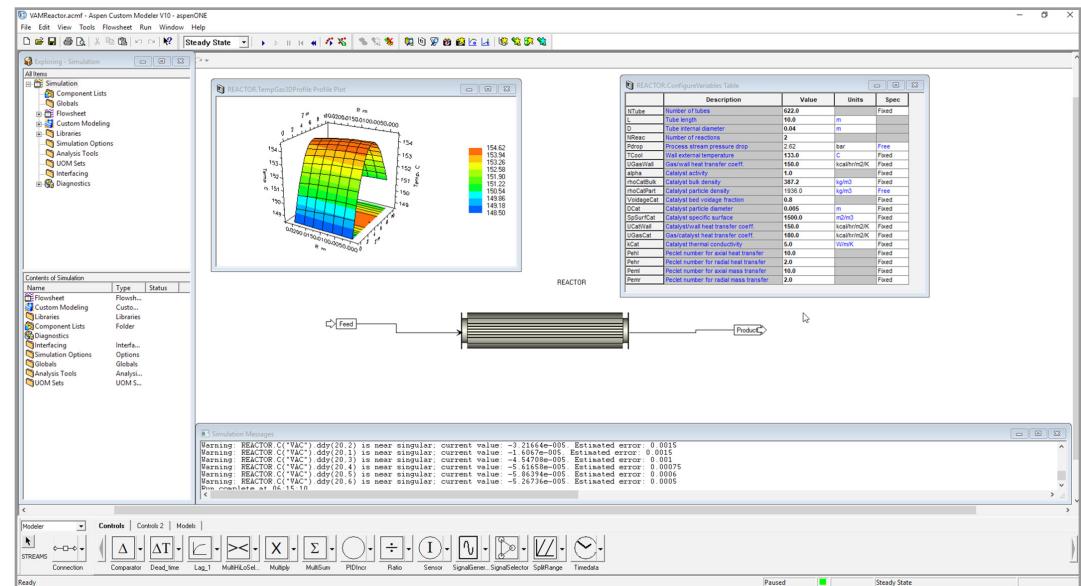
Breadth and accuracy of equipment models

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Optimization with Custom Equipment

Optimize and Design Special Processes and Equipment

- Wide library of models for solid, liquid, and gas processing equipment
- Equipment-based models enable easy transition from conceptual design to high fidelity rating
- Build your own libraries using Aspen Custom Modeler or programming languages
- **Technology** — Aspen Custom Modeling and Aspen Plus



Flexible

Powerful modeling language designed for chemical engineers

Versatile

Use as a standalone solution or inside Aspen Plus or HYSYS

Powerful

Backed by the best library of physical properties.

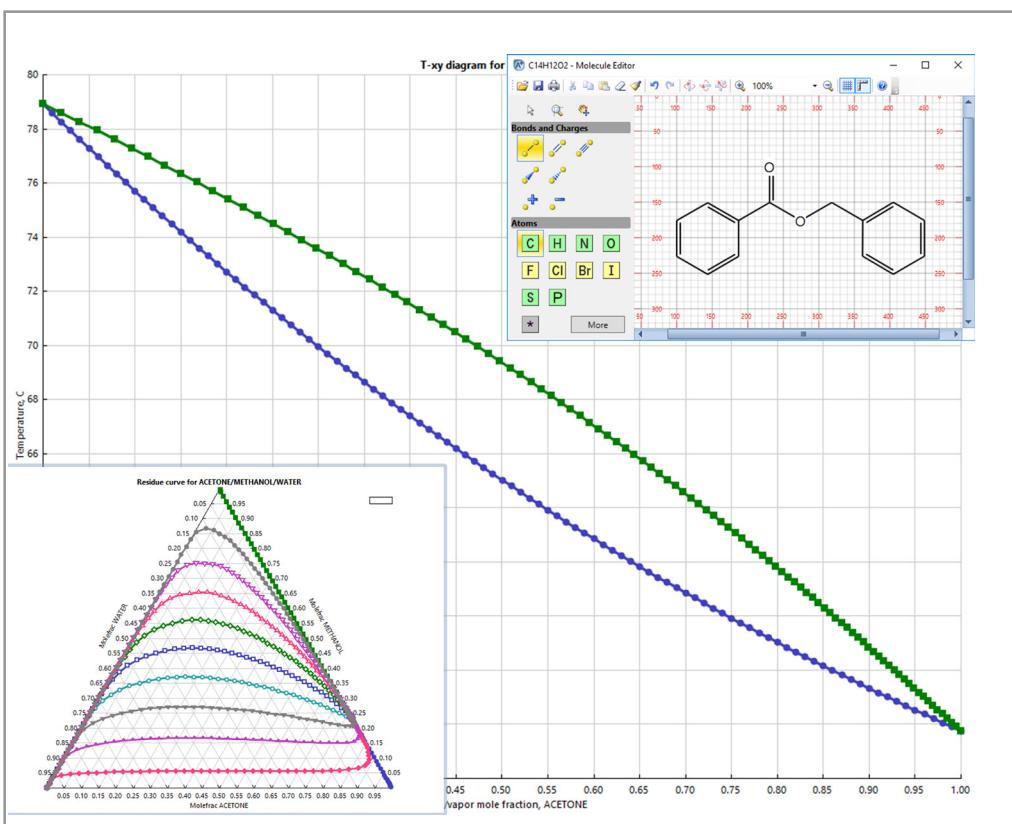
[Learn More](#)

Physical Property Estimation

Create Process Models on a Solid Foundation

- Aspen Plus is known throughout the chemical industries to have the most complete set of physical properties data, built in collaboration with the National Institute of Standards and Technology (NIST).
- With reaction kinetics, thermodynamic data, and rigorous equipment models, engineers can simulate actual plant behavior while saving months of time and improving engineering accuracy. Physical properties data used across aspenONE® Engineering products is the recipient of the prestigious R&D 100 award for innovation in software from R&D Magazine.

- Technology — Aspen Properties**



Trusted

Industry gold-standard

Comprehensive

Extensive set of experimental data and methods

Customizable

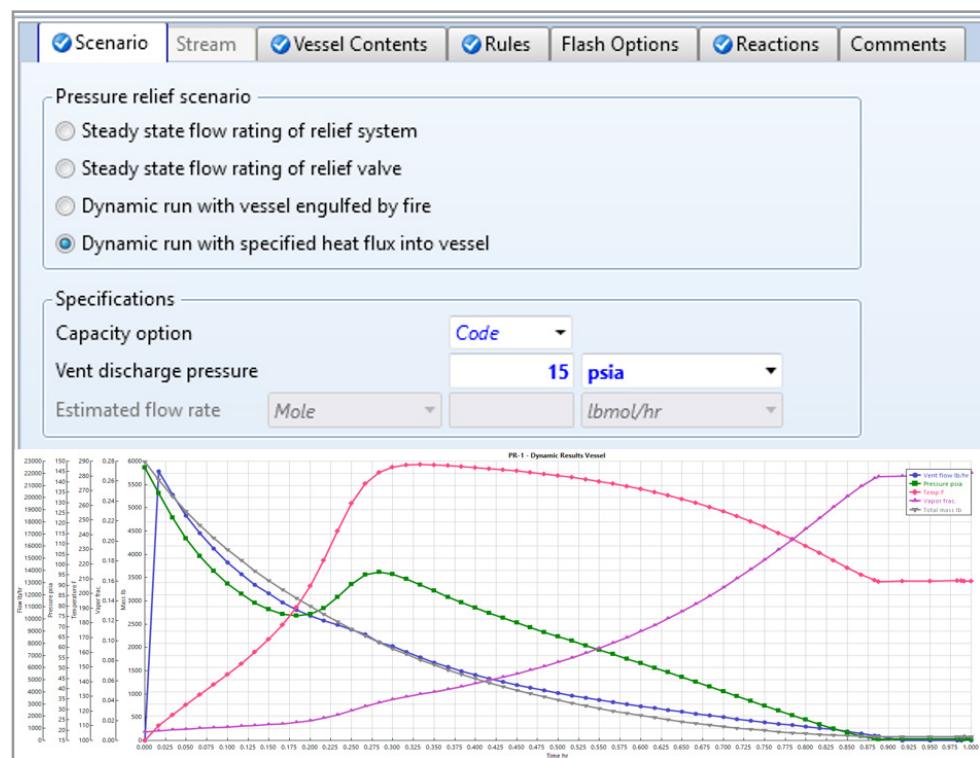
Extend built-in libraries with in-house data

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Environmental and Safety Management

Reduce Emissions and Mitigate Incidents

- Understand transient behaviors for smoother startups, shutdowns and operational changes
- Develop improved heat-integrated designs and calculate greenhouse gas emissions
- Accurately design and rate distillation equipment used to minimize process emissions.
- **Technology** — Aspen Plus Dynamics, Activated Energy Analysis



Accurate

Rigorous, validated calculations

Streamlined

Eliminate manual data transfer between tools

Intuitive

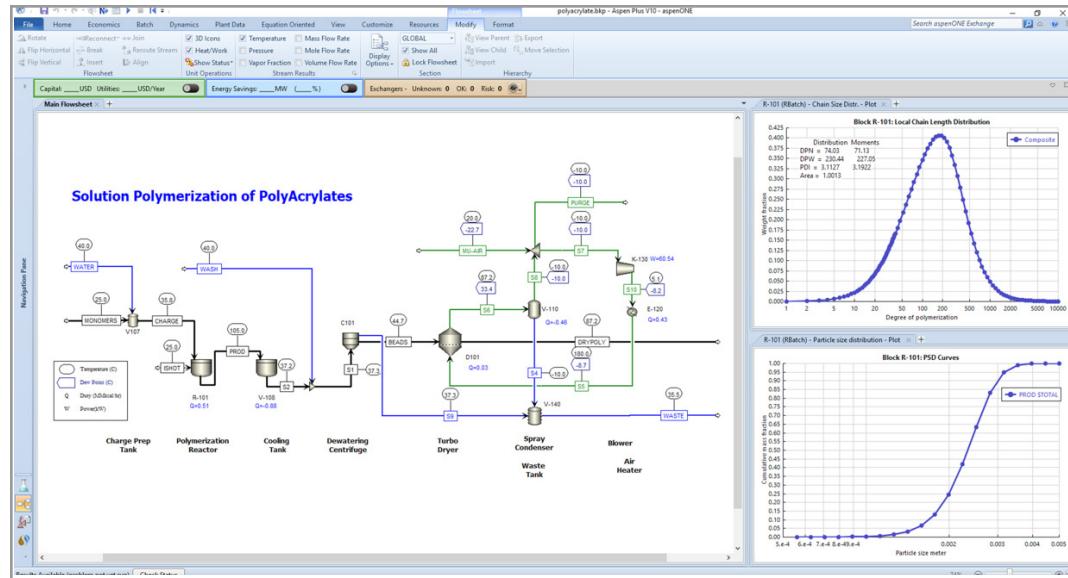
Workflow validated through customer testimony

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Polymer Process Modeling

Optimize Production and Rapidly Develop New Grades

- Access a complete set of polymer thermodynamic methods and data, rate-based polymerization reaction models and a library of industrial process models.
- Technology — Aspen Polymers and Aspen Plus**



Proven

Complete set of Polymer reaction models

Capable

Handle solid polymers with extensive equipment models

Powerful

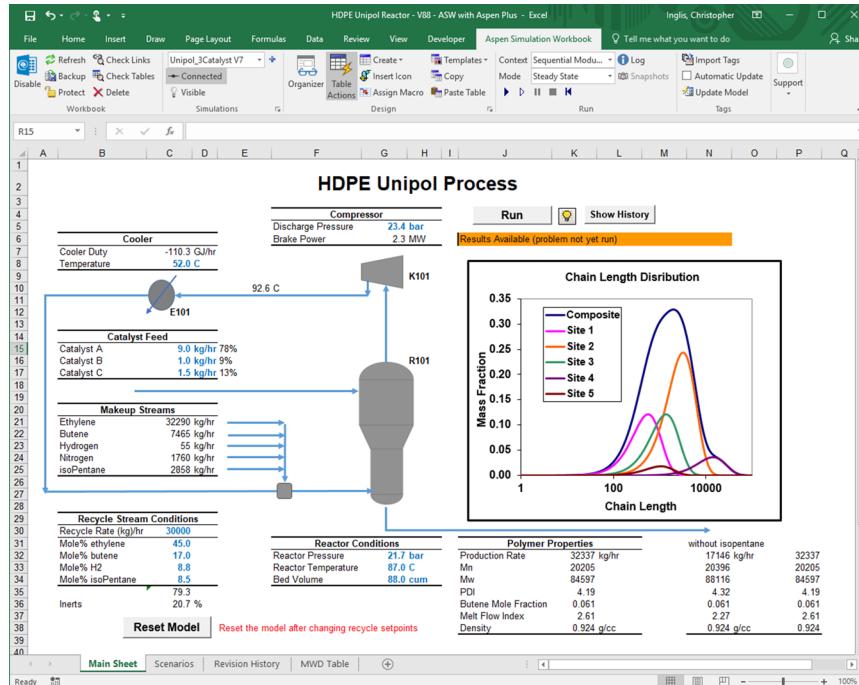
State-of-the-Art models for polymer properties

[Learn More](#)

Operations Decision Support

Improve Operational Decisions with Model-Backed Intelligence

- Make models that match reality by calibrating models to plant data for improved design and revamp with process understanding through validation with historical data
- **Technology** — Aspen Plus, Aspen Simulation Workbook, Aspen OnLine



Integrated

Model rigorous heat exchangers in larger process

Innovative

Comprehensive set of rigorous HX

Data-Driven

Use Equation Oriented Modeling to compare to live data

[Learn More](#)



Solution 2: Software Options

The power and functionality of Aspen Plus is further enhanced with features including:

- **Aspen Plus® Batch:** Accelerate new product development for a wide range of batch processes including crystallization, distillation, and reactions.
- **Column Analysis in Aspen Plus™:** Conduct column design and rating with a built-in library of trays and packings and trusted correlations. Easily identify and communicate hydraulic issues with visualization.
- **Aspen Plus® Dynamics:** Conduct safety and controllability studies, size relief valves and optimize transition, startup and shutdown policies.
- **Aspen Rate-Based Distillation™:** Predict column performance accurately over a widerange of conditions.
- **Aspen Basic Engineering Datasheets:** Streamline basic engineering and deliver significant improvements in productivity, agility and time-to-delivery using one central location for FEED data.
- **Aspen Polymers™:** Access with a complete set of polymer thermodynamic methods and data, rate-based polymerization reaction models and a library of industrial process models.
- **Aspen Distillation Synthesis:** Visualize and analyze azeotropic and three-phase distillation processes to establish feasible separation schemes for complex mixtures.
- **Aspen Energy Analyzer™:** Evaluate energy efficiency and optimize heat exchange network designs.
- **Aspen Custom Modeler®:** Develop rigorous models of special process equipment and use them inside Aspen Plus or Aspen Plus Dynamics.



Technology That Loves Complexity

AspenTech is a leading software supplier for optimizing asset performance. Our products thrive in complex, industrial environments where it is critical to optimize the asset design, operation and maintenance lifecycle. AspenTech uniquely combines decades of process modeling expertise with machine learning. Our purpose-built software platform automates knowledge work and builds sustainable competitive advantage by delivering high returns over the entire asset lifecycle. As a result, companies in capital-intensive industries can maximize uptime and push the limits of performance, running their assets faster, safer, longer and greener.

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