Aspen Plus®

Process modeling environment for conceptual design, optimization, and performance monitoring of chemical processes

Aspen Plus has a proven track record of providing substantial economic benefits throughout the process engineering lifecycle, from conceptual design and engineering to production. It brings the power of process simulation and optimization to the engineering desktop, and delivers a unique combination of modeling technology and ease of use. *Aspen Plus* enables companies to rapidly design new processes, deliver new products to market faster and optimize production.

Aspen Plus is a proven, industry-standard solution with over thirty years of success.

- Improve engineering efficiency by up to 30%
- Reduce capital costs by 10-30%
- Reduce energy consumption by over 10%
- Increase production capacity by up to 11%
- Lower other variable costs by 2-5%

The Challenge: Improve Engineering Efficiency, Lower Overall Costs

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. Companies must find innovative ways to reduce capital and operating costs and increase engineering efficiency so as to maximize plant and business performance and profitability.

The AspenTech Solution: Better Simulation Streamlines Engineering

Fundamental to improving performance of the plant is an accurate representation of the basic processes. 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.

Aspen Plus predicts process behavior using engineering relationships such as mass and energy balances, phase and chemical equilibrium, and reaction kinetics. With reliable physical properties, thermodynamic data, realistic operating conditions, and rigorous equipment models, engineers are able to simulate actual plant behavior. Applications include:

- Improving engineering productivity and reducing costs
- Reducing energy consumption and greenhouse gas emissions
- Improving product yields and quality
- Minimizing capital and operating costs
- Optimizing designs for large-scale integrated chemical plants
- Optimizing plant operations

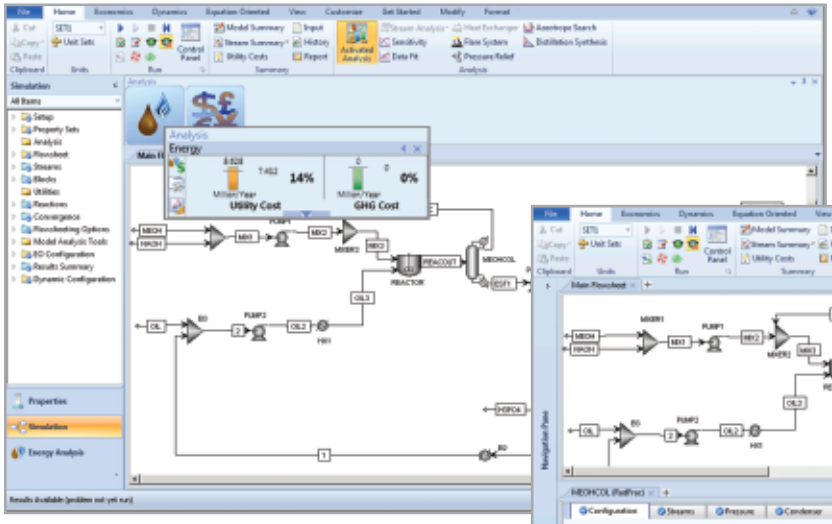
Aspen Plus Options*

The power and flexibility of *Aspen Plus* is further enhanced through a number of optional add-on applications:

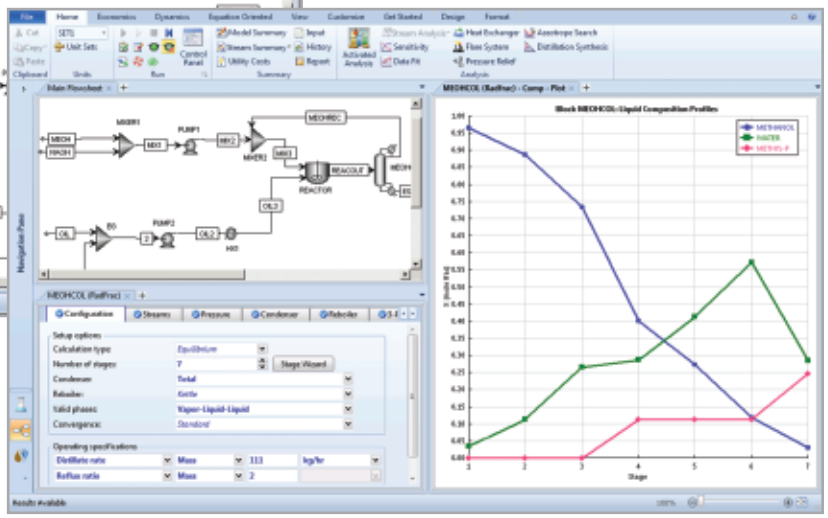
- **Aspen Plus® Dynamics:** Conduct safety and controllability studies, size relief valves, and optimize transition, startup, and shutdown policies
- **Aspen Rate-Based Distillation:** Predict column performance accurately over a wide range of conditions
- **Aspen Batch Modeler:** Model batch reactors and columns that can be used stand alone or inside *Aspen Plus*
- **Aspen Polymers:** Extends *Aspen Plus* 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:** Engage in visualization and analysis of conceptual design and troubleshooting of distillation schemes for complex mixtures
- **Aspen Energy Analyzer:** Evaluate energy efficiency and optimize heat exchanger network design
- **Aspen Custom Modeler:** Develop rigorous models of special process equipment and use them inside Aspen Plus or Aspen Plus Dynamics

Aspen Plus Related Products

- **Aspen Simulation Workbook:** Integrate seamlessly between Microsoft Excel® and AspenTech simulators, including *Aspen Plus*. Applications include supplementary design calculations and deployment of models in plant operations for decision support
- **Aspen Online Deployment:** Deploy models in real-time online applications, data reconciliation, equipment monitoring, and operator advisory
- **Aspen Exchanger Design & Rating:** Rate existing heat exchanger performance or find the optimal design for new exchangers
- **Aspen Process Economic Analyzer:** Evaluate conceptual designs for capital and operating costs rapidly, resulting in economic optimization of designs early in the project



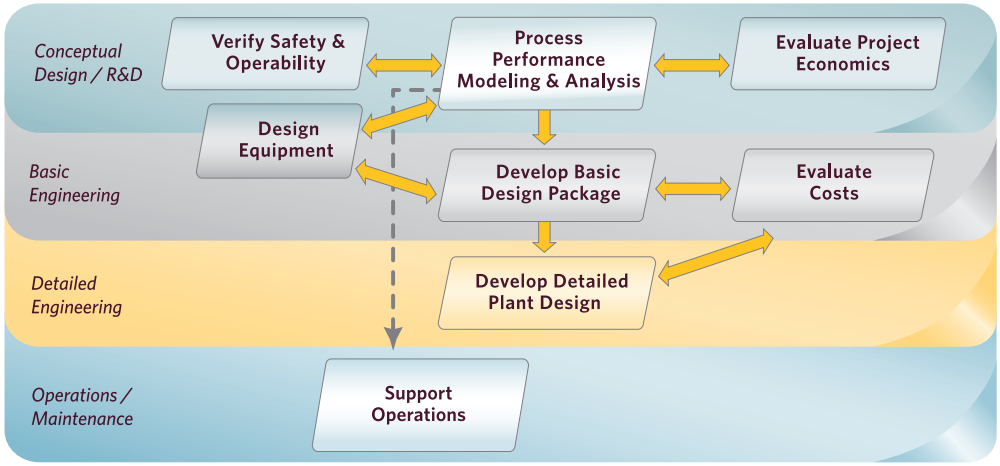
Evaluate the environmental and economic implications of every design decision immediately with ***Aspen Plus*** Activated Energy and Economics.



Use the customizable multi-panel workspace for quick access to data and results, as well as faster and easier plotting.

*These are the options available with V7.3.2 (Feb 2012) and higher.

Function	Benefit
Streamlines Workflow	
• Streamlines process design, heat exchanger design and rating, and preliminary cost estimation with other *aspenONE® Engineering* tools	• Reduce project cycle time • Improve accuracy and cost-effectiveness of designs • Heighten communication between engineering and operations for better decision making
Physical Property Models	
• World's largest database of pure component and phase equilibrium data for conventional chemicals, electrolytes, solids, and polymers • Regularly updated with data from U. S. National Institute of Standards and Technology (NIST) • Remotely access pure component properties using *Aspen Properties Mobile™*	• Generate accurate simulation results • Improve efficiency by providing quick and easy access to the best available experimental property data and parameters • Simulate a wide range of processes "out of the box" • Enable the user to make reliable decisions whenever and wherever necessary
Energy & Environmental Solutions	
• Develop improved heat integrated designs • Calculate greenhouse gas emissions • Accurately design distillation equipment used for cleaning greenhouse gases	• Reduce operating, capital, and design costs while minimizing energy-related emissions • Generate greenhouse gas reports for internal or external use • Improve investment decisions and ROI
Comprehensive Library of Unit Operation Models	
• Addresses a wide range of solid, liquid, and gas processing equipment • Build your own libraries using *Aspen Custom Modeler®* or programming languages • Simulate particle-based processes using solids models	• Model a wide range of industrial processes including power, chemicals, specialty chemicals, polymers, metals and minerals, etc. • Simulate a wide range of special equipment for continuous batch and semi-batch processes
Activated Energy and Activated Economic Analysis	
• Assess capital cost and cost associated with utilities and greenhouse gases with each model run • Evaluate design changes to optimize energy use • Individually assess utility and equipment costs • Compare heat and cooling demand with pinch theory	• Determine the economic impact of design decisions immediately • Identify opportunities for energy savings throughout the design process • Cut costs throughout the process without losing time
Workflow Automation	
• Automate tasks by linking process models to Microsoft Excel® using *Aspen Simulation Workbook* or Microsoft Visual Basic®	• Enhances the speed and consistency of the routine aspects of simulation, costing, and sizing
Open Environment for Third-Party Integration	
• Links to other widely used tools such as electrolyte and ethylene models from OLI and Technip • Compatible with CAPE-OPEN-compliant equipment models within *Aspen Plus*	• Provide the ability to leverage past investments with AspenTech tools • Allows customers to use custom or third-party models inside an *Aspen Plus* simulation



aspenONE® Engineering addresses each phase of the process lifecycle, enabling companies to develop the most economical and reliable projects.

Empower Your Company to Succeed

aspenONE Engineering is an integrated lifecycle solution—from conceptual design through plant startup and operations support—enabling you to model, build, and operate safer, more efficient and more competitive process plants. AspenTech's Engineering Professional Services helps ensure that your project achieves its maximum potential by leveraging our unparalleled industry expertise to design, analyze, debottleneck, and improve plant performance. Combined with our world-class 24/7 technical support service, flexible training options, including online training from within the software, proprietary search engine to locate and re-use models and data, and local language product availability, AspenTech provides the resources to enable your company to meet and exceed its business objectives.

About AspenTech

AspenTech is a leading supplier of software that optimizes process manufacturing—for energy, chemicals, pharmaceuticals, engineering and construction, and other industries that manufacture and produce products from a chemical process. With integrated aspenONE® solutions, process manufacturers can implement best practices for optimizing their engineering, manufacturing, and supply chain operations. As a result, AspenTech customers are better able to increase capacity, improve margins, reduce costs, and become more energy efficient. To see how the world's leading process manufacturers rely on AspenTech to achieve their operational excellence goals, visit **www.aspentech.com**.

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