

Aspen Plus® Dynamics

Dynamic simulation and optimization of chemical processes

Aspen Plus Dynamics extends Aspen Plus steady-state models into dynamic process models, enabling design and verification of process control schemes, safety studies, relief-valve sizing, failure analysis, and development of startup, shutdown, rate-change, and grade transition policies.

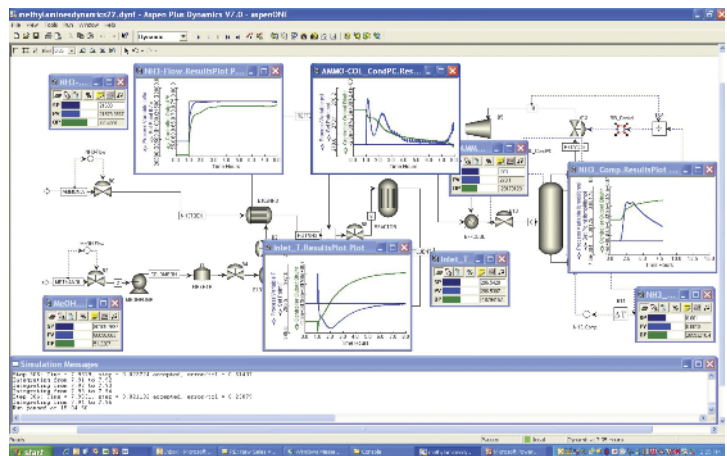
||||||| Improve Collaboration and Understanding of Plant Behavior

The process industries are faced with an increasingly competitive environment and ever-changing market conditions. High levels of productivity and profitability can be achieved by reducing the time to market for new products, increasing the quantity and quality of product, and operating the plant more safely and efficiently. The key to realizing such results is enabling process engineers, control engineers, and process operations to work together.

Aspen Plus Dynamics provides a common platform that can be applied across the process lifecycle, from conceptual design and commissioning to operation and process revamps. Companies are able to meet tighter product specifications through improved understanding of plant operability issues, ensure faster and safer plant start-ups, and avoid unplanned downtimes—resulting in maximum plant availability and productivity.

Reported Benefits

- \$15 million saved through improved start-up procedures
- \$10 million saved capital cost by avoiding over-design of relief systems
- 15% capacity increase in a sold-out plant through improved operability
- Improved safety through better operational procedures, enhanced control system design, and proper relief-valve sizing
- Better design decisions through detailed analysis of the trade-offs between process operability and process integration



A Methyl Amines process was converted from a steady-state model to *Aspen Plus Dynamics*. In this case a step change in the ammonia feed and the corresponding response at different parts of the process is evaluated.

||||||| Key Technical Features

- **Easy conversion** of steady-state *Aspen Plus* models into dynamic models; common look and feel with *Aspen Plus* and *Aspen Custom Modeler*
- **Optional custom modeling** using *Aspen Custom Modeler*, enabling modification of standard unit operations in the *Aspen Plus Dynamics* model library
- **Best-in-class physical properties** through integration with *Aspen Properties*[®]
- **Optimization and estimation tools** enabling parameter fitting, data reconciliation, and steady-state and dynamic process optimization
- **Equation-oriented architecture** allowing simulation of complex, highly integrated processes
- **Flexible Task Language** to define transition schemes or to simulate equipment failures
- **Library of equipment** including rigorous reactive distillation models with hydraulics and a full set of pressure relief models
- **Library of control models** to simulate process control systems including links to *Aspen DMCplus*[®] and *Simulink*[®]
- **Option of flow-driven or pressure-driven simulation** to optimize the model

||||||| Added Value of Integration

Aspen Plus Dynamics is tightly integrated with other *aspenONE*[®] Engineering solutions:

- ***Aspen Model Runner*** is an execution environment that can be used to run process models exported from *Aspen Plus Dynamics*. Use *Aspen Model Runner* to protect intellectual property inside the models and to reduce deployment costs.
- ***Aspen Polymers*** extends *Aspen Plus Dynamics* with a complete set of polymer thermodynamics methods and data, polymerization reaction models, and extensions to the equipment models to track polymer properties.
- ***Aspen Simulation Workbook*** enables easy development of Excel[®]-based user interfaces to *Aspen Plus Dynamics* and allows casual users to access the process models to support decisions for troubleshooting and process analysis.

||||||| aspenONE Engineering

Aspen Plus Dynamics is a key component of *aspenONE Engineering*, an integrated lifecycle solution—from conceptual design through to plant start-up and operations support—enabling you to model, build, and operate safer, competitive, and more reliable process plants. Companies are able to reduce capital and operating costs, increase engineering efficiency and quality, and accelerate time-to-market with payback in months instead of years.

||||||| About AspenTech[®]

AspenTech is a leading supplier of software that optimizes process manufacturing—including oil and gas, petroleum, chemicals, pharmaceuticals 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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