

Aspen Polymers™

Conceptual design and optimization of
polymerization processes



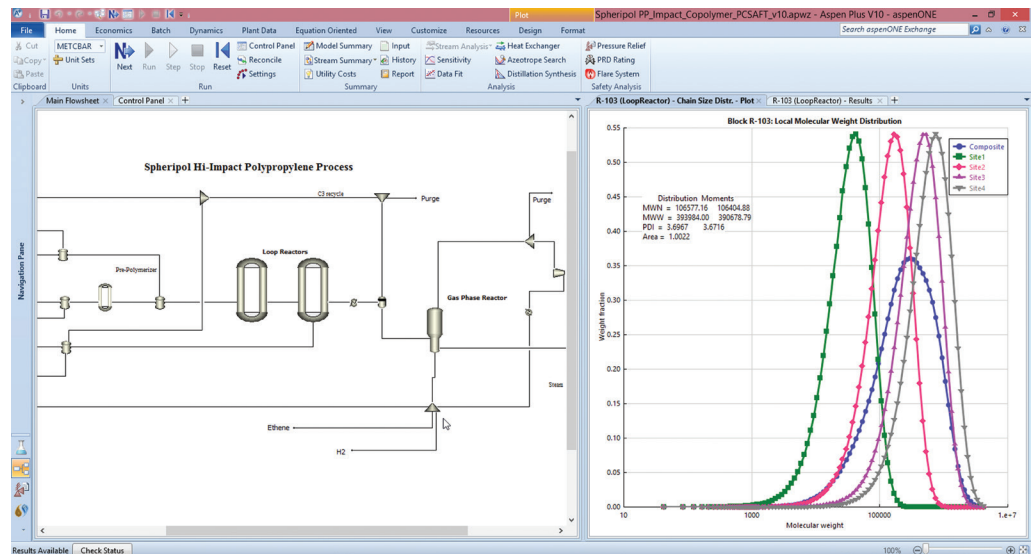
Aspen Polymers accelerates new product innovation and enables increased operational productivity for bulk and specialty polymer processes.

Aspen Polymers is the market-leading technology for accurate and reliable design and optimization of polymer processes. It is fully integrated with industry-standard simulators including Aspen Plus®, Aspen Plus® Dynamics and Aspen Custom Modeler®.

Use Polymers Modeling Technology to Remain Competitive

Global competition, pricing pressure and volatility of raw material and energy prices are some of the challenges facing the polymer industry. In order to remain competitive, companies must continually develop new and innovative products and optimize existing plants and processes.

Aspen Polymers accelerates new product innovation and enables increased operational productivity for bulk and specialty polymer processes. By capturing all the process know-how in one place, Aspen Polymers can enable companies to run plants in a more efficient manner and produce higher-quality products.



Aspen Polymers extends Aspen Plus to simulate all types of batch and continuous polymerization processes. Use powerful optimization features to increase production rates while meeting product specifications. The models can also be used with Aspen Plus Dynamics to study grade and rate transitions and to evaluate process control strategies.

Summary of Key Benefits:

- Reduce experimentation in bench-scale and pilot plant units.
- Increase capacity by 2-10% and profit by \$1-\$15 million USD per year.
- Conduct reactor runaway and shutdown safety analyses when used with Aspen Plus Dynamics.
- Minimize transition time and off-spec product.

Key Benefits

- **Research and development:** Reduce experimentation in bench-scale and pilot plant units, enabling faster time-to-market for new products.
- **Engineering:** Identify optimal operating conditions for a 2-10% increase in capacity and profit improvements of \$1-\$15 million USD per year.
- **Safety:** Conduct reactor runaway and shutdown safety analyses when used with Aspen Plus Dynamics.
- **Operations:** Use models in Aspen Polymers as online soft sensors to monitor process operations, as well as offline engineering tools to evaluate grade transition policies in order to minimize transition time and off-spec product.

Key Technical Features

- **Efficient workflow** for process design, equipment sizing and preliminary cost estimation within one environment through integration with other aspenONE® Engineering tools, including Aspen Process Economic Analyzer™ cost modeling software and Aspen Exchanger Design & Rating heat exchanger design tools.
- **Online deployment of models** as part of an open-loop operator advisory system or as a soft sensor in advanced process control applications when used with Aspen OnLine® and Aspen Simulation Workbook™.
- **Polymer characterization** using patented technology from AspenTech to fully characterize polymers and oligomers and track the evolution of molecular weight distribution for most types of polymers.
- **Industry-leading physical properties that employ** state-of-the-art polymer activity coefficient models and equations of state, such as extensive databases of polymer segments, initiators and phase equilibrium parameters.
- **Polymerization kinetics** include the most comprehensive set of polymerization kinetic schemes available on the market. User-defined reactions can be included to account for new or unusual chemistries.
- **Particle properties** are available for polymers below their melting point — allowing for visualization of particle size distributions (PSD) and the use of solids unit operations such as dryers, centrifuges and crystallizers.

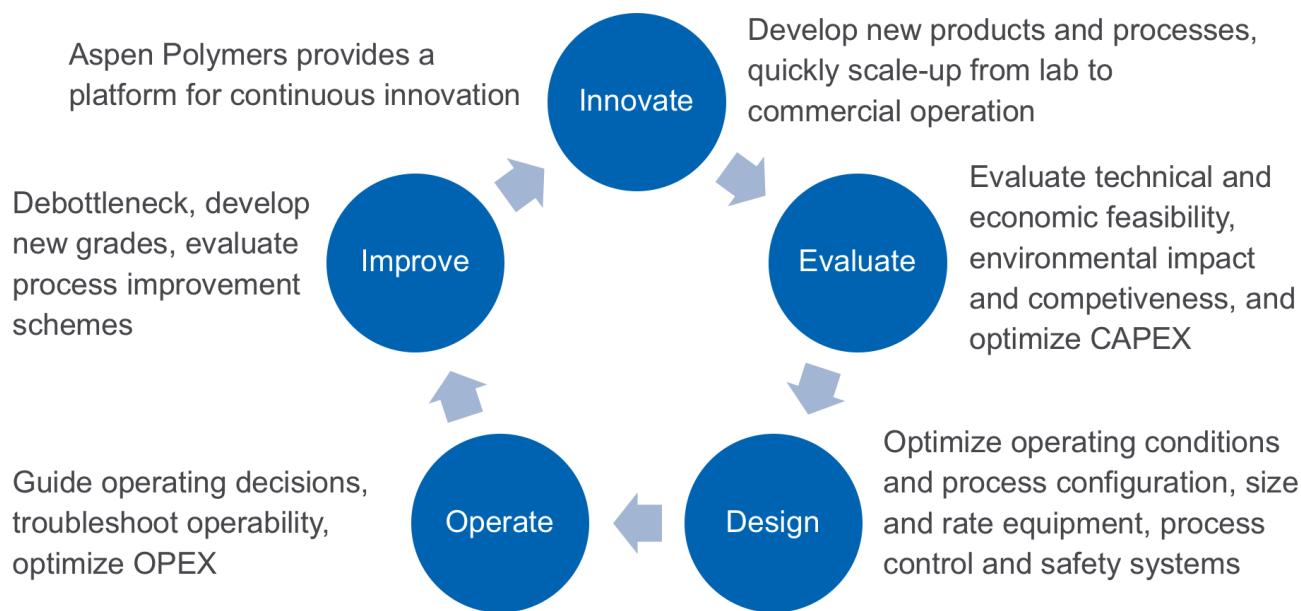
Extending the Value of Process Models

Aspen Polymers can be used for steady-state process simulation inside Aspen Plus or dynamically with Aspen Plus Dynamics or Aspen Custom Modeler:

- **Aspen Plus Dynamics** is used to carry out safety and controllability studies, examine reactor dynamics in detail, size relief valves, optimize transition policies, and develop startup and shutdown policies for polymerization plants.
- **Aspen Custom Modeler** is used to develop custom models of polymerization processes or equipment, such as reactors and extruders. These equipment models can also be re-used inside Aspen Plus.

Aspen Plus Dynamics and Aspen Custom Modeler environments are intrinsically equation-oriented, making them ideal platforms for simulating gas-phase polyolefin processes or other polymerization processes involving high recycle rates and/or complex flowsheets.

Process Simulation Provides Benefits Throughout the Engineering Lifecycle



For more information on Aspen Polymers, please visit:

<http://www.aspentech.com/products/engineering/aspen-polymers/>

AspenTech is a leading supplier of software that optimizes process manufacturing — for energy, chemicals, 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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