



Technology That Loves Complexity

Brochure

Aspen PIMS™



Since 1984, Aspen PIMS has facilitated better feedstock selection, business risk management and downtime planning to optimize profitability. Today, the Aspen PIMS family offers the most reliable and robust plans and provides integration with assay management, enhanced scenario analysis and data visualization tools.

The Challenge: Creating Profitable Plans in a Volatile Market

To achieve maximum profitability, planners must be able to make fast, accurate and optimal decisions about feedstock selection, process runs and product mix while considering numerous other factors, such as changing market demands and price volatility.

The AspenTech Solution: The Most Trusted Refinery and Olefins Planning Software

Aspen PIMS is the most trusted refinery and olefins linear programming (LP) planning software, enabling companies to optimize feedstock selection, product slate, plant design and operational execution. Aspen PIMS includes assay management, making it easier to add, modify and re-cut assays, helping refinery planners deliver more accurate plans which deliver greater profitability. Aspen Assay Management is powered with patented molecular characterization technology.

Additionally, upgrading to Aspen PIMS-AO™ ensures your model is accurate, robust and fast. Built on an AspenTech-proprietary solver developed specifically for the most complex refining and olefins optimization problems, Aspen PIMS-AO supercharges your value chain optimization to meet your business objectives.

Introducing Aspen Unified PIMS™

Aspen Unified, a comprehensive Production Optimization environment, will be the home for the next generation of Aspen PIMS.

Aspen Unified has been redesigned to meet the needs of the modern, tech-savvy user, with intuitive interfaces and data visualization. [Learn More](#)

Business-Critical Applications

Aspen PIMS enables companies to quantitatively determine their optimum production planning decisions. For example, in determining which crudes to process, a refinery must consider at least their price and composition, how they affect the refinery's ever-changing production constraints and the yield and price of each potential product.

Refinery and olefins optimization is a very complicated problem, and doing it well is absolutely critical to success in your region and amongst your peers. In addition to delivering excellent tools, AspenTech has the knowledge to train and develop your competencies in production planning to improve performance.

Solving Challenging Problems

Aspen PIMS enables companies to solve challenging business problems by clearly and logically capturing relevant data such as unit operation yields, stream compositions and properties, blending plans, feed and utilities requirements, process limits (constraints) and potential flexibility of cargo sizes. This helps determine operating conditions, secure long-term feedstock purchases, justify capital expenditures—and more.

- Determine optimal operating conditions for a refinery or olefins plant
- Seize spot purchase opportunities
- Secure long-term feedstock purchases
- Identify trading, blending and exchange opportunities for quick profit
- Optimize supply chains and value chains
- Understand and mitigate business risk due to volatility in price or reliability
- Allocate capital expenditure in the most efficient way by evaluating projects economically
- Improve planning accuracy with AI models and results verification



Functions

- Optimize production plans, feedstock choices, product blends and capital investments
- Access technical details of the calculations, matrix and execution logs
- Document decisions and assumptions by using the model as a “snapshot” of operations for that month
- Integrate with other AspenTech and third-party software products. Leverage the same assays, pricing, composition and other data in Aspen HYSYS® or other systems (SAP®, LIMS, Platts, etc.)

Benefits

- Improve margins, profitability, throughput and reliability
- Make decisions faster to respond to opportunities and upsets, such as turnarounds, unplanned shutdowns and weather events
- Improve results over time by reflecting on and adapting decisions based on past results
- Streamline workflows and empower your teams to save time and improve results by incorporating data from different systems



Aspen PIMS-AO

Aspen PIMS-AO (Advanced Optimization) is a layered application for Aspen PIMS that drives companies to make more rapid and profitable planning decisions through enhanced modeling accuracy, robustness and speed.

The most important feature of Aspen PIMS-AO is the proprietary optimization engine (solver) developed by AspenTech specifically for complex refinery and olefins optimization problems.

Accurate

Fundamental to any LP model is getting the right answer. Aspen PIMS-AO has been adopted by more than 180 refineries, chemical plants and engineering companies since its release in 2014, and it is now the most trusted refinery and olefins optimization tool available.

To maintain market leadership, AspenTech routinely evaluates commercially available linear solvers. In AspenTech's testing, the stability and accuracy of these solvers were deemed inadequate, so AspenTech developed its own solver with proprietary algorithms to improve the accuracy and robustness of the solution.

Robust

These proprietary algorithms also contribute to the robustness or repeatability of solutions in Aspen PIMS-AO. Using the software's multi-start capability to solve one case multiple times from different starting points, Aspen PIMS-AO enables users to quickly and easily identify a global optimum.

Fast

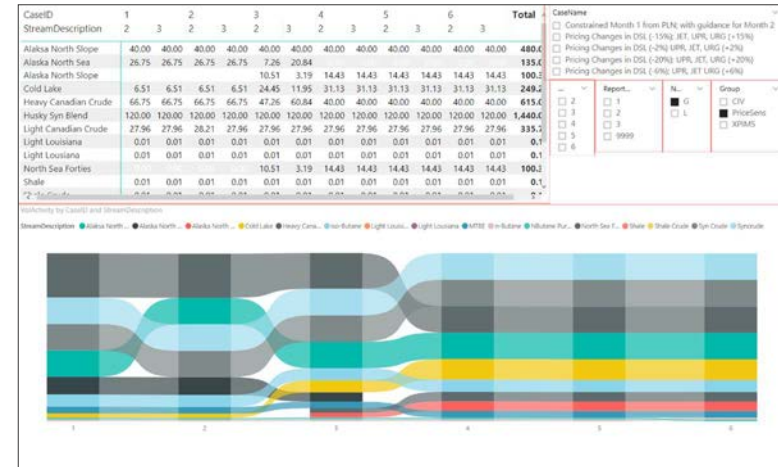
Additionally, you can run more cases and evaluate more scenarios faster than ever with Aspen PIMS-AO's multi-core processing. In addition to using multi-core processing, parametric analysis is another feature that automates case creation and runs cases even faster. This is commonly used by planners to do detailed sensitivity analysis—for example, analyzing feedstock prices or step-testing key process constraints.

Other key capabilities for improving decision-making include goal programming, which introduces secondary goals in addition to maximum profit objective functions, and feedstock basket reduction, which automatically reduces the number of different feeds in the slate. Fewer feeds means fewer feed switches, which results in more stable operations and higher margins.





Run multiple cases dramatically faster with Aspen PIMS-AO.



Analyze different feedstock choices with Aspen PIMS, accelerated with Microsoft Power BI or other business intelligence tools.

Functions

- Find global optimum while avoiding potentially costly false positives (local optima)
- Provide solution-ranging for visibility into the entire solution space and the range of its validity for feedstocks, unit capacities and product slates
- Increase speed dramatically with parallel processing, which is typically four to eight times faster than traditional single-core processing
- Leverage nonlinear and external models
- Visualize more scenarios and run more cases
- Verify plan results with AI by comparing to all past plans
- Update planning models using AI combined with first-principles

Benefits

- Identify the solution that maximizes overall profitability, eliminating the necessity for multiple runs
- Reduce number of crudes in the slate while improving inventory and tank management, as well as crude scheduling
- Mitigate business risk by running more scenarios to understand impact of uncertain variables, like price and capacity
- Address difficult operational requirements
- Improve model accuracy with detailed engineering models, olefins yield models, nonlinear equations and more
- Increase operational stability and reduce the number of crude switches using crude basket reduction
- Prevent costly mistakes and save time reviewing plans
- Improve model accuracy to make better decisions and save time updating models

Aspen Assay Management

Aspen PIMS has an integrated assay manager included at no extra cost. Aspen Assay Management includes proprietary molecular characterization technology for better distillation modeling. Perform all assay related workflows from within Aspen PIMS, making it easier than ever to yield more accurate, profitable plans.

Assay Management

Aspen PIMS streamlines planning workflow by facilitating all assay management workflows from within Aspen PIMS with easy assay modifications and automated updates to your Aspen PIMS tables. Aspen PIMS facilitates assay acquisition from any data source with downloading capabilities. Make better decisions with enhanced property prediction and cut-point optimization.

Spot Crude Evaluation

Aspen Assay Management provides quick and powerful spot crude evaluation capabilities. Traders and planners can easily calculate the breakeven cost of a new crude. They can also make faster economic comparisons of new scenarios with an efficient, tightly integrated workflow.

Spot crude evaluation enables you to:

- Easily calculate the breakeven cost of a new crude
- Add new spot crude data to ASSAY and BUY tables with a single click
- Better determine which crudes in the base case would be displaced by the spot crude
- Quickly evaluate any major bounded variables in your refinery in reference to a new crude

Now Available: Chevron Assay Database

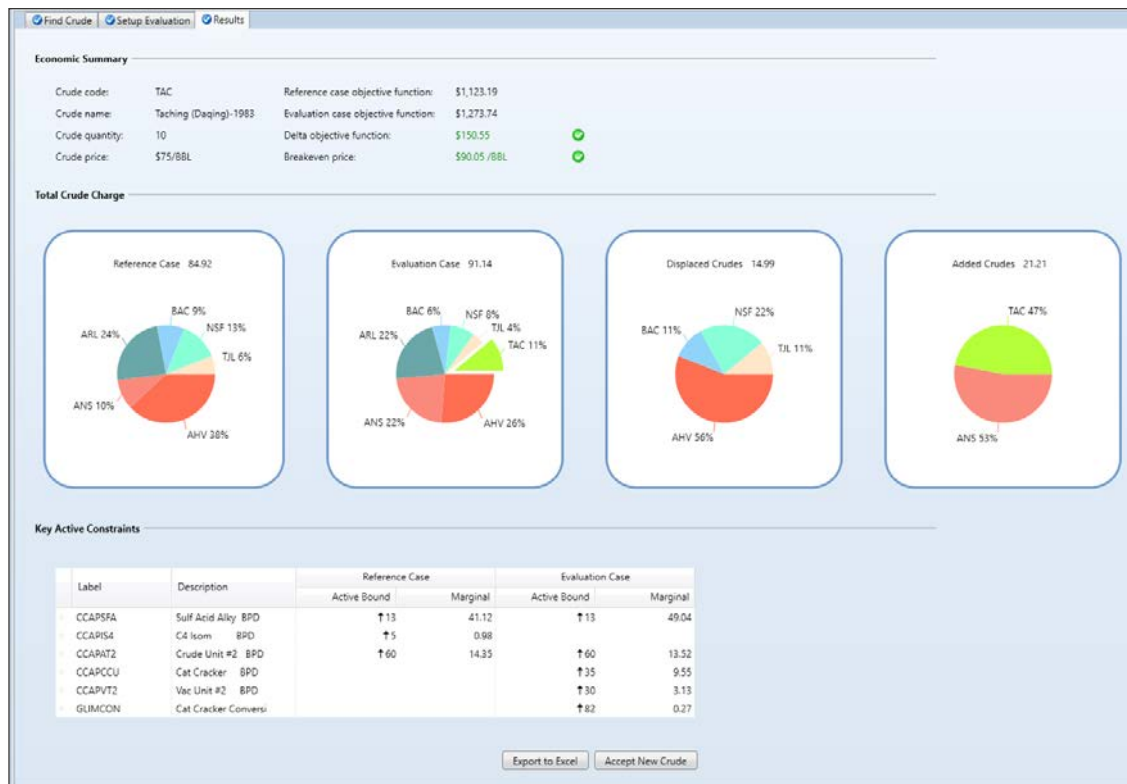
**Technology: Aspen Assay Manager with Partner
Equinox Software and Services Pvt. Ltd.**

Capabilities

- Over 1000 unique crudes with over 2800 assays and over 60 physical and chemical properties
- All major globally traded crudes are represented by multiple assays
- Updated regularly
- Contact your Aspen Sales representative for more information



[Learn More](#)



Turn spot crude opportunities into profit with Aspen PIMS spot crude evaluation.

Functions

- Add, modify and re-cut assays from within Aspen PIMS with automated updates to Aspen PIMS tables
- Manage assays based on the fundamentals of science (molecular characterization)
- Easily evaluate a new crude, including break-even cost, substituted crudes and impacted constraints

Benefits

- Improve decision-making through more accurate assays and cut-point optimization
- Make crude evaluations faster and easier
- Streamline planning with the guided spot crude evaluation tool
- Leverage the same assays in Aspen HYSYS for common data

Feature Comparison: Aspen PIMS-AO and Aspen PIMS

Industry-leading Aspen PIMS and Aspen PIMS-AO are layered applications that share several features. See the chart below to easily identify the capabilities available in each product.

| Features | Aspen PIMS-AO | Aspen PIMS |
|--|---------------|------------|
| Proprietary AspenTech solver developed especially for complex refinery optimization problems | ✓ | |
| Global optimization—finds global optimum while identifying locally optimal answers | ✓ | |
| Parametric analysis to streamline case creation and solving, enabling more powerful and nuanced scenario analysis | ✓ | |
| Nonlinear equations and external models to increase accuracy for better decisions | ✓ | |
| Parallel processing to run multiple scenarios simultaneously | ✓ | |
| Solution-ranging—test feasibility of maximum and minimize of variables, like feeds and process limits | ✓ | |
| Use artificial intelligence (AI) in Aspen Verify to prevent errors and check your plan against historical examples before publishing | ✓ | |
| Use AI “hybrid models” with first-principles in Aspen HYSYS to improve accuracy in planning models | ✓ | |
| Easy connection with Microsoft Power BI and other business intelligence toolkits for powerful data analysis and visualization | ✓ | ✓ |
| Assay management for better property prediction powered by molecular characterization | ✓ | ✓ |
| Assay and target sharing with Aspen Petroleum Scheduler (and Aspen Refinery Multi-Blend Optimizer™) to streamline workflow and reduce margin leakage | ✓ | ✓ |
| Spot crude evaluation highlighting break-even price for easier assessment of opportunity crudes | ✓ | ✓ |



Technology That Loves Complexity

About Aspen Technology

Aspen Technology (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 safer, greener, longer and faster. Visit AspenTech.com to find out more.

www.aspentech.com

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