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Aspen PIMS™

Make fast, accurate, and profitable decisions about plant operations, feedstock selection, market responses, and production decisions

Since 1984, *Aspen PIMS* has facilitated better feedstock selection, downtime planning, and risk and inventory management to optimize profitability. Today, the product offers not only reliable plans, but also assay management, enhanced scenario analysis with visual tools—and with PIMS-AO—advanced optimization.

- Make profitable crude purchase decisions
- Generate optimal production plans
- Increase throughput
- Respond quickly to market changes
- Share assays and targets with Aspen Petroleum Scheduler and Aspen Refinery Multi-Blend Optimizer

||||||| The Challenge: Creating Profitable Plans in a Volatile Market

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

||||||| The AspenTech Solution: Dynamic Planning for Optimum Results

Aspen PIMS is a scalable planning system that helps companies optimize feedstock selection, product slate, plant design, and operational execution. aspenONE® PIMS Platinum is a part of the PIMS application that combines planning data output with sophisticated analytics for a whole new way to make refining decisions. Planners can easily modify the plan directly from the flowsheet. Now, Aspen PIMS includes assay management, making it easier than ever to add, modify, and re-cut assays, helping refinery planners deliver more accurate plans to yield greater profitability. Aspen Assay Management is powered with patent-pending molecular characterization.

Additionally, Aspen PIMS-AO allows the use of both linear and non-linear modeling and constraints to create an accurate representation of their plants and operations. Industry-leading Aspen PIMS and Aspen PIMS-AO also share production targets, assay data and sub-models, blend model libraries and optimum recipes, with Aspen Petroleum Scheduler and Aspen Refinery Multi-Blend Optimizer to create powerful synergies among planning and operations to reduce margin leakage.

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Aspen Assay Management

Aspen PIMS is now complete with Assay Management—powered with patent-pending molecular characterization. Perform all assay related workflows from within 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 PIMS with easy assay modifications and automated updates to your PIMS tables. Aspen PIMS facilitates assay acquisition from any data source with new downloading capabilities. Generate more accurate plans with enhanced property prediction and more flexible assays and indices.
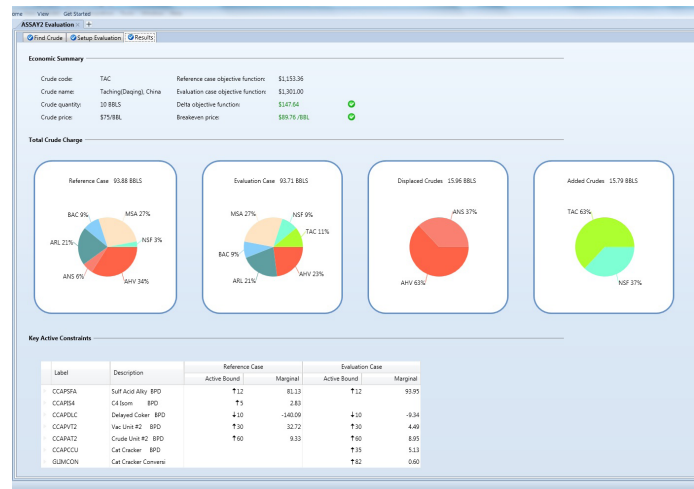
||||||| Spot Crude Evaluation

Aspen Assay Management provides powerful spot crude evaluation capabilities. Traders and planners can quickly and 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 your assay, buy, and distillation 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

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

||||||| Molecular Characterization

Based on the industry's only patent-pending approach to assays, molecular characterization. Aspen PIMS alone boasts assay management driven by fundamental science, instead of the traditional approach. Planners can now better characterize their crudes for a more accurate property prediction, resulting in better crude purchase decisions add enhanced profitability.

Aspen Assay Management

Function

- Add, modify, and re-cut assays from within PIMS – with automated updates to PIMS tables
- Manage assays based on the fundamentals of science (molecular characterization) – instead of traditional analytics

Benefit

- Make crude evaluations faster and easier
- Streamline planning with more accurate results
- Leverage the same assays in Aspen HYSYS for common data

aspenONE PIMS Platinum

aspenONE PIMS Platinum is a whole new way to plan and visualize results. By viewing the plan and schedule side-by-side, you can react faster to discrepancies and more effectively exploit optionality to make smarter, more profitable decisions in your supply chain.

||||||| aspenONE PIMS Platinum

aspenONE *PIMS Platinum* changes the planning game—once again. Providing the world's first web-based flowsheet environment for planning, aspenONE PIMS Platinum enables companies to access the refinery plan and schedule safely and securely anytime, anywhere on any browser-enabled device without the cost of maintaining client-side software. Additionally, a customized view of the refinery flowsheet allows planners to view and manipulate key constraints while seeing the immediate impact of any changes. aspenONE PIMS Platinum also facilitates profitable refining decisions through customizable layouts and 2D and 3D charts for easy identification of issues and opportunities.

In addition to this, the planner can drill down into units and follow streams from the FCC unit to the blending tank to storage. Planners can perform a one-time setup to create a flowsheet view of the entire refinery, including highlighted active constraints.

aspenONE *PIMS Platinum Features:*

- Ability to view plan and schedule together
- Customized views of the refinery
- Highlighted constraints can be altered with an immediate view to refinery impact
- Ability to create 2D and 3D charts for easier decision making

Align the plan and schedule together with aspenONE PIMS Platinum

aspenONE PIMS Platinum

Function

- Visual and Customizable analytics
- Access plan and schedule with no software installation
- Generate a flowsheet view of the refinery
- Easily share the plan with key stakeholders
- Better align planning and operations and perform closer to targets
- Highlight key constraints
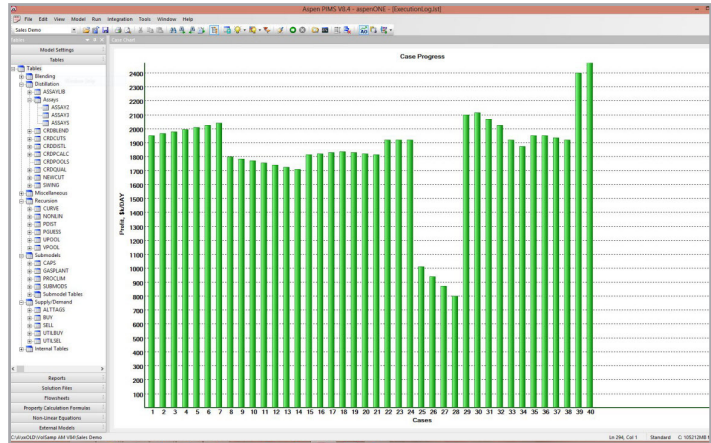- Easy-to-use aspenONE interface

Benefit

- Reduce the learning curve for less experienced planners
- Reduce margin leakage
- Plan on the fly—anytime, anywhere
- Reduce cost of maintenance
- See immediate impact to the plan
- Better exploit optionality

Aspen PIMS-AO

Aspen PIMS Advanced Optimization (PIMS-AO) is a layered application for Aspen PIMS which drives companies to make more rapid and profitable planning decisions through enhanced performance and operational stability.

||||||| Ensure Superior Performance and Optimal Results

The latest version of Aspen PIMS-Advanced Optimization provides a new solver tool to prevent the shutting down of pool flows in the refinery planning solution, which can cause optimization to be trapped in local solution spaces. With this new algorithm, Aspen PIMS-AO imposes a minimum value for all pool flows, helping to obtain the global optimum with a single run. Additionally, you can run more cases and evaluate more scenarios faster than ever with Aspen PIMS-AO's multi-core processing, enabling companies to run multiple cases dramatically faster than using PIMS alone. This efficiency is coupled with Aspen PIMS-AO's multi-start capability to run one case and solve it multiple times from different starting points, allowing users to quickly and easily identify a global optimum.

Run multiple cases dramatically faster with Aspen PIMS-AO

||||||| Operational Stability

PIMS-AO also empowers companies to simplify their crude slate, thereby improving operational stability with several key capabilities. Ranging analysis allows users to find the minimum and maximum limits of feedstocks, products, and capacities with an allowed reducing of the objection function, helping to determine flexibility and usability of materials and how they can be interchanged. Companies can also determine the minimum number of crudes to run—reducing crudes logistics complexity—with Feedstock Basket Reduction.

Aspen PIMS-AO

Function

- Finds global optimum while identifying potential locally optimal answers

- Provides solution ranging for visibility into the entire solution space and the range of its validity for feedstocks, unit capacities, and product slates

- Uses multiple CPUs on a single computer to run multiple scenarios in parallel – increasing number of scenarios and speed

- Defines secondary and tertiary objectives

- Visualize more scenarios and run more cases with aspenONE PIMS Platinum and PIMS-AO

Benefit

- Identifies the solution that maximizes overall profitability, eliminating the necessity for multiple runs

- Reduces crude slate while improving inventory and tank management, as well as crude scheduling

- Supports the evaluation of more scenarios in less time

- Addresses difficult operational requirements

Other key capabilities for improving operational stability include Parametric Analysis, for evaluating the effects of varying costs and prices over a given range, and Goal Programming, which introduces secondary goals in addition to maximum profit objective functions. Additionally, companies can keep their competitive edge with PIMS-AO's speed and stability by lessoning the learning curve with a simpler and easier interface with aspenONE PIMS Platinum.

Feature Comparison: Aspen PIMS-AO and Aspen PIMS

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

Features	Aspen PIMS – AO	Aspen PIMS
Global Optimization – finds global optimum while identifying locally optimal answers	✔	
Accommodation of Linear and Non-Linear Equations for enhanced "what if" scenarios	✔	
High Performance Computing - multiple CPUs on a single computer to run multiple scenarios in parallel	✔	
Solution Ranging – identifies optimal range of values for each analyzed variable and describes deviations from the base optimal slate	✔	
Platinum for quicker and easier analysis of the data	✔	✔
Assay management for better property prediction powered by molecular characterization	✔	✔
Assay and target sharing with APS (and MBO) to streamline workflow and reduce margin leakage	✔	✔
Spot crude evaluation highlighting break even price for easier assessment of opportunity crudes	✔	✔

aspenONE® Petroleum Supply Chain

aspenONE Petroleum Supply Chain is part of AspenTech's integrated aspenONE suite for energy companies. AspenTech's aspenONE solutions are designed to align with key industry business processes, providing manufacturers the capabilities they need to optimize operational performance, increase profitability, make real-time decisions, and synchronize the refinery and supply chain.

Empower Your Company to Succeed

aspenONE Supply Chain Management delivers an integrated supply chain solution that increases customer service levels, reduces inventory, and reduces overall supply chain costs. AspenTech's Professional Services team helps customers maximize benefits by effectively deploying solutions and best practices in demand management, planning and scheduling, and distribution. Unparalleled industry knowledge combined with comprehensive solution expertise has allowed AspenTech to deliver thousands of successful implementations, driving increased margins for our customers. Combined with our world-class 24/7 technical support service, flexible training options, and local language product availability, AspenTech provides the resources to enable your company to meet and exceed its business objectives. To learn more, visit www.aspentech.com/pro_services.

About AspenTech

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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