

Aspen Plant Scheduler™ Family

Generate optimal production schedules to maximize profitability and meet service levels

Aspen Plant Scheduler Family is comprised of a three-tiered scheduling solution designed to address the varying degrees of scheduling complexity. Customers deploying these solutions realize significant benefits in the areas of increased throughput, reduced inventory and expediting costs, and improved customer service.

<ul style="list-style-type: none">• Generate optimal production schedules• Improve on-time delivery performance by up to 5%• Increase throughput by 1-5%• Decrease manufacturing cycle times• Reduce expediting costs• Increase scheduler productivity with an easy-to-use interface	<hr/> Aspen Plant Scheduler Page 2 Provides basic finite capacity production scheduling with rapid implementation
	<hr/> Aspen Plant Scheduler-Extended Automation (EA) Page 4 Optimizes timing and sequence of the production schedule
	<hr/> Aspen Plant Scheduler-Extended Optimization (EO) Page 5 Holistic scheduling optimization for complex dependencies and constraints

||||||| The Challenge: Adapting to Change while Staying on Schedule

Process manufacturers are under pressure to maximize productivity from their assets, making optimal production scheduling a critical necessity to remain competitive. A number of factors must be considered simultaneously—capacity and material limitations, dependencies of sequenced changeovers, and scheduling of preventive maintenance. All of this must be done while keeping inventories to their minimum and ensuring that customer orders are ready to ship on time.

||||||| The AspenTech® Solution: Simulate Production to Keep up with Reality

Aspen Plant Scheduler Family enables companies to effectively simulate production capacity and evaluate production scenarios for meeting total demand. Additionally, the ability to link multi-stage production activities and customer orders provides real-time visibility of demand and manufacturing levels.

An important feature of *Aspen Plant Scheduler Family* is its ability to reconcile the inevitable differences between production plans and reality. It integrates with ERP, in-house systems, and other AspenTech applications to keep the schedule aligned with the most up-to-date information on customer orders, raw material receipts, and production activities.

Each tier of the solution builds upon the previous, so as the business complexity changes, the flexibility of the solution supports a right-fit for the current situation.

Aspen Plant Scheduler

Aspen Plant Scheduler provides basic finite capacity production scheduling with rapid implementation. With an easy-to-use interface, schedulers are able to effectively simulate production capacity and evaluate production scenarios for meeting total demand. Additionally, the ability to link multi-stage production activities and customer orders provides real-time visibility of demand and manufacturing levels.

||||| Planning Board

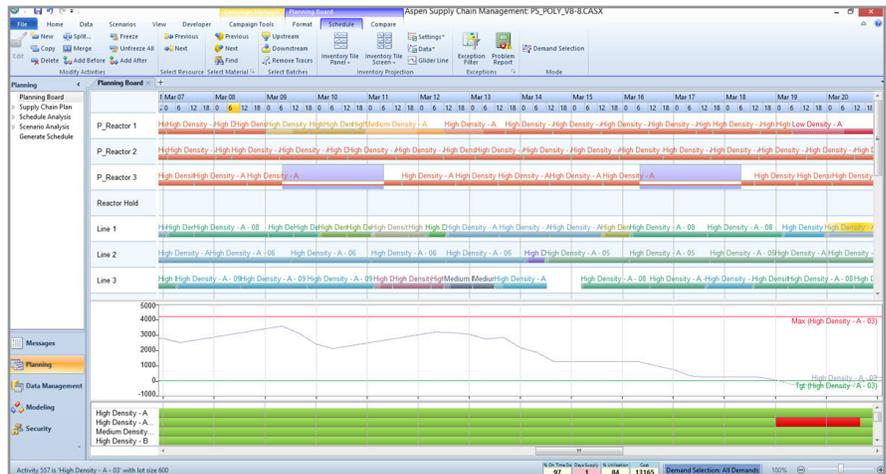
In all the *Aspen Plant Scheduler Family* of products, the schedule is readily viewed and manipulated via an interactive Gantt chart called the Planning Board. Drag-and-drop schedule modifications are accompanied by inventory projections and extensive exception reporting to assist the scheduler in visualizing the impact of changes, especially useful when dealing with non-routine events in real-time, such as unexpected spikes in demand, outages of raw material, or equipment breakdowns.

The Gantt chart provides drag-and-drop re-scheduling with active user assistance, giving the scheduler real time feedback on the feasibility of a schedule change. A color coded exception report on the lower portion of the screen alerts the user to any problems in the schedule, such as inventory target violations and stock outs, and displays a graph of material inventory levels and their changes as the production schedule advances.

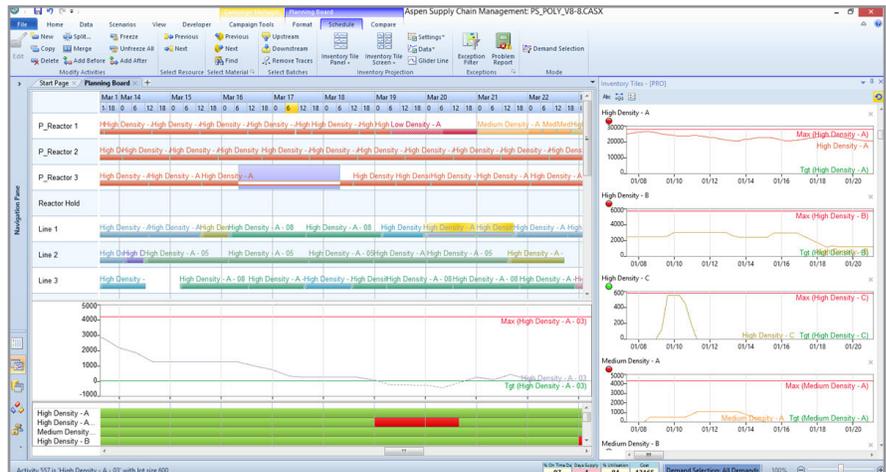
Material flow between multiple stages of production and the demand they fulfill are visualized on the Planning Board with the touch of a button. Production can be easily added, modified, or deleted and the schedule is instantaneously re-simulated to reflect updated timings and projected inventory positions.

||||| Inventory Projection Tiles

Aspen Plant Scheduler allows process manufactures to visualize inventory levels in real-time using highly customizable inventory tiles. These tiles allow for agile personalization of multiple inventory projections in order to facilitate the resolution of day to day business problems such as inventory run-outs. Schedulers can use the inventory tiles to eliminate the time consuming hunt for data and instead focus on optimizing their production.



The **Planning Board** enables schedulers to visualize the schedule at a glance as well as drill down into the details of each production activity. Problems in the schedule are easily identified via a color coded grid and active user assistance provides guidance on feasible schedule adjustments.



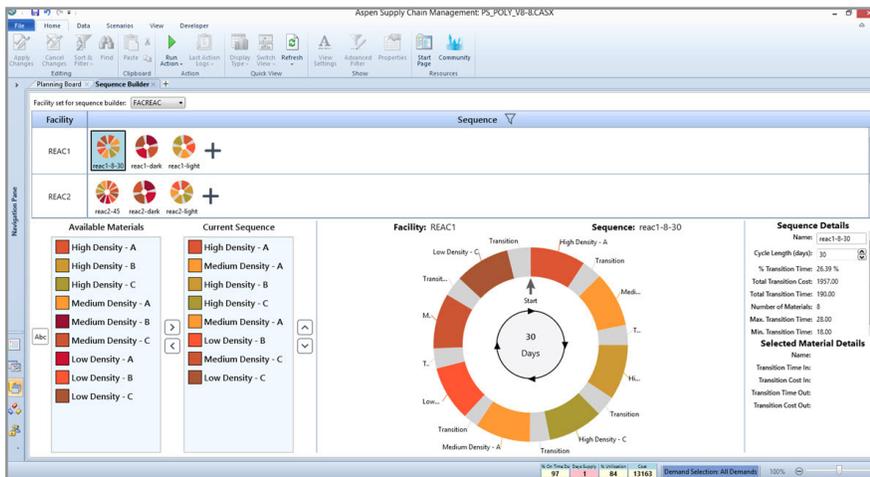
View inventory levels for specific products such as materials with problems, non-scheduled materials, raw materials, or warehouse space.

Aspen Plant Scheduler - Extended Automation (EA)

Aspen Plant Scheduler-EA generates detailed plant production plans using advanced heuristics and solvers, creating an optimal short-term schedule of operations. While minimizing changeover, production, and inventory costs, Aspen Plant Scheduler-EA determines the precise timing and sequence of production activities throughout the plant. It works in finite capacity, so the production plans generated are feasible from both a capacity and material flow perspective, and are consistent with the strategic production plan.

Campaign Manager

Aspen Plant Scheduler-EA includes the new Campaign Manager that allows you to easily define and save a preferred sequence or product wheel for each asset. This sequence becomes part of the “library” of product wheels that can be added or removed from the schedule in its entirety. Eliminate the inefficiency of manually creating the preferred sequence one activity at a time by automating a repeatable task. The Campaign Manager can be used to build the schedule for each asset and as an advanced starting point for powerful sequencing algorithms.



Quickly and easily create a schedule with your ideal production sequence

Aspen Plant Scheduler-EA

Function

- Campaign Manager layered on top of Aspen Plant Scheduler
- Easily define and save a preferred sequence or product wheel for each asset
- Can be used as an advanced starting point for powerful sequencing algorithms

Benefit

- Improve scheduler efficiency with advanced campaign management tools and visualization
- Reduce off-spec production and transition costs by 20%
- Quickly see the impact of changes to the schedule

Aspen Plant Scheduler - Extended Optimization (EO)

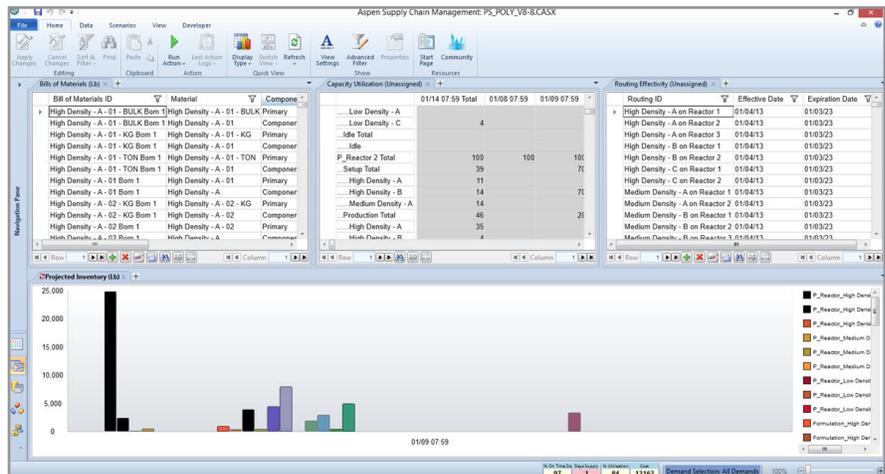
A requirement to creating optimal production schedules and sequencing is an understanding of a plant's supply and demand balance. *Aspen Plant Scheduler-EO* utilizes this unique perspective to create the optimal short-term plan and schedule of operations in the midst of numerous bottlenecks and constraints. Using both Mixed Integer/Linear Programming (MILP) optimization and advanced heuristics and solvers, Aspen Plant Scheduler-EO allows for the consideration and tradeoffs needed to deliver an economically optimal plan within the physical constraints of a particular production facility.

Aspen Plant Scheduler-EO generates an optimal short-term schedule for unit production that is consistent with the longer term group production plan in order to address the inevitable variability in actual versus forecasted customer orders. The solution is developed at the end-item level (e.g., a shippable, billable item), scheduled by start and stop times, or shift, day, or other finite time period.

||||| Planning Framework

In *Aspen Plant Scheduler-EO*, the planning framework synchronizes the planning model with the real-world situation inside your organization by importing data from various sources that describe your current operating conditions.

Data import uses standard integration to the *Aspen Supply Chain Data Repository* and collects items such as inventory status, current production, open orders, and schedule status.



Optimal schedule generation using Mixed Integer Linear Programming (MILP) can be added for full schedule generation or for optimization of a specific aspect of the schedule, e.g. trim optimization, blend recipe optimization, tank selection, etc.

Aspen Plant Scheduler-EO

Function

- Dynamic optimization capability layered on top of Aspen Plant Scheduler-EA
- Addresses the wide range of scheduling problems including complex setups and transitions
- Optimizes specific aspects of a schedule such as blend recipes or tank selection
- Considers routing and batch sizing problems
- Distribution scheduling capability linked to production scheduling

Benefit

- Gain competitive advantage by adopting dynamic supplychain management practices
- Generates an optimal, capacity balanced initial schedule
- Out-of-the-box scheduling optimization capable of addressing high process and scheduling complexity
- Ensures synchronization between the business processes for agility to respond to changing market conditions

