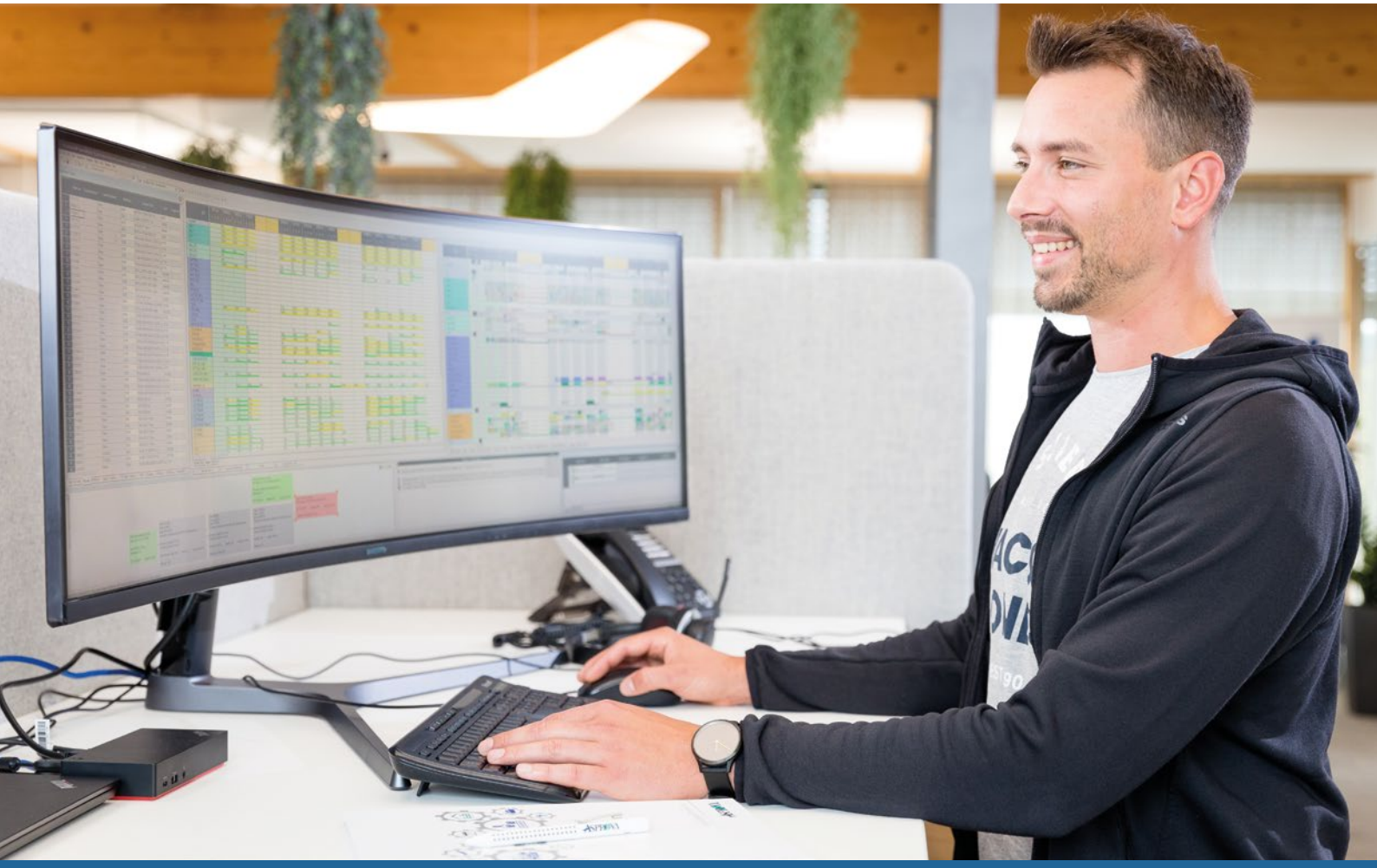
ASPROVA

Think Ahead, Act on Time

APS + SCP

ADVANCED PLANNING & SCHEDULING SYSTEM

SUPPLY CHAIN PLANNING SYSTEM



Orchestrated End-to-End-Scheduling for the

Entire Value-Added Chain

PERFECT PROCESS SYNCHRONIZATION – ORCHESTRATED WITH ASPROVA APS

Asprova APS tackles your scheduling challenges with powerful functionality and a diverse set of evaluation tools.

Shorten your production lead time, optimize inventory, and improve resource productivity. Surpass your competitors with the best schedule possible.

Inventory Constraints

With Asprova, you can accurately calculate future inventory fluctuations, accounting for existing inventory levels.

Holistic Scheduling

Concurrently run supply, demand, production, purchasing, and delivery plans.

Simulation & Evaluation

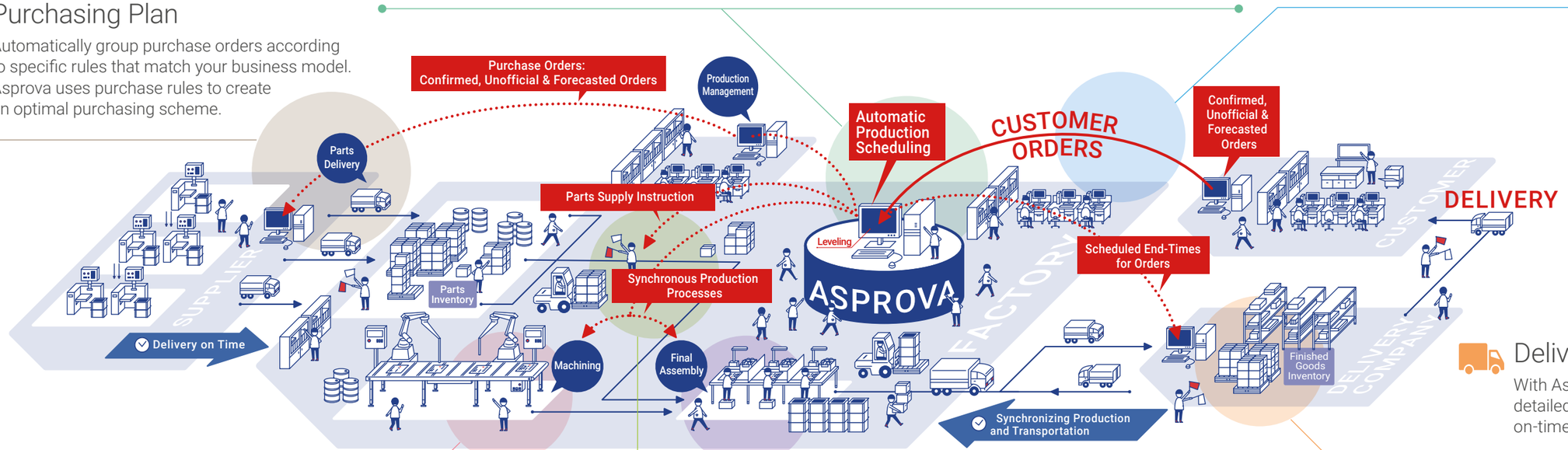
Simulate different scheduling scenarios and use Asprova's evaluation to choose the most effective scheduling strategy.

Supply-Demand Balancing

Produce what you need and no more than what is required at the right times, fulfilling customer demand rapidly.

Purchasing Plan

Automatically group purchase orders according to specific rules that match your business model. Asprova uses purchase rules to create an optimal purchasing scheme.



Delivery Planning

With Asprova, you can map very detailed delivery rules — 100 % on-time delivery is within reach!

Sub-resources

Schedule molds and jigs to ensure there are no interruptions—Asprova considers any secondary resources at finite capacity.

Batch Processing

Automatically optimize the production sequence — run items of the same type in batches, reducing the number of changeovers.

Lot Sizing

Significantly reduce lead times by automatic lot splitting and merging.

Pegging Process

Visualize the entire process flow with transparent and adjustable pegging rules.

Dispatching Rule

Flexible, adjustable dispatching rules are indispensable for good scheduling results. Set as many as you need without limit and without programming.

Load Leveling

With load levelling, achieve higher output with fewer resources and reduce your manufacturing costs.

Manual Adjustments

You can make manual changes to priority, sequence, and timing. Asprova will regenerate an optimized schedule based around any manual holds.

Operator Planning

Operator workgroups with specific skillsets can be scheduled optimally according to capacity.

SYNCHRONIZE YOUR SUPPLY CHAIN LIKE NEVER BEFORE WITH ASPROVA SCP

With one shot, Asprova SCP creates a plan for your entire supply chain network — starting at the sales orders all the way through suppliers, production sites, distribution nodes, transportation, and finally to your customers.

Multiple Factories
Automatically calculate production plans for factories corporation wide.

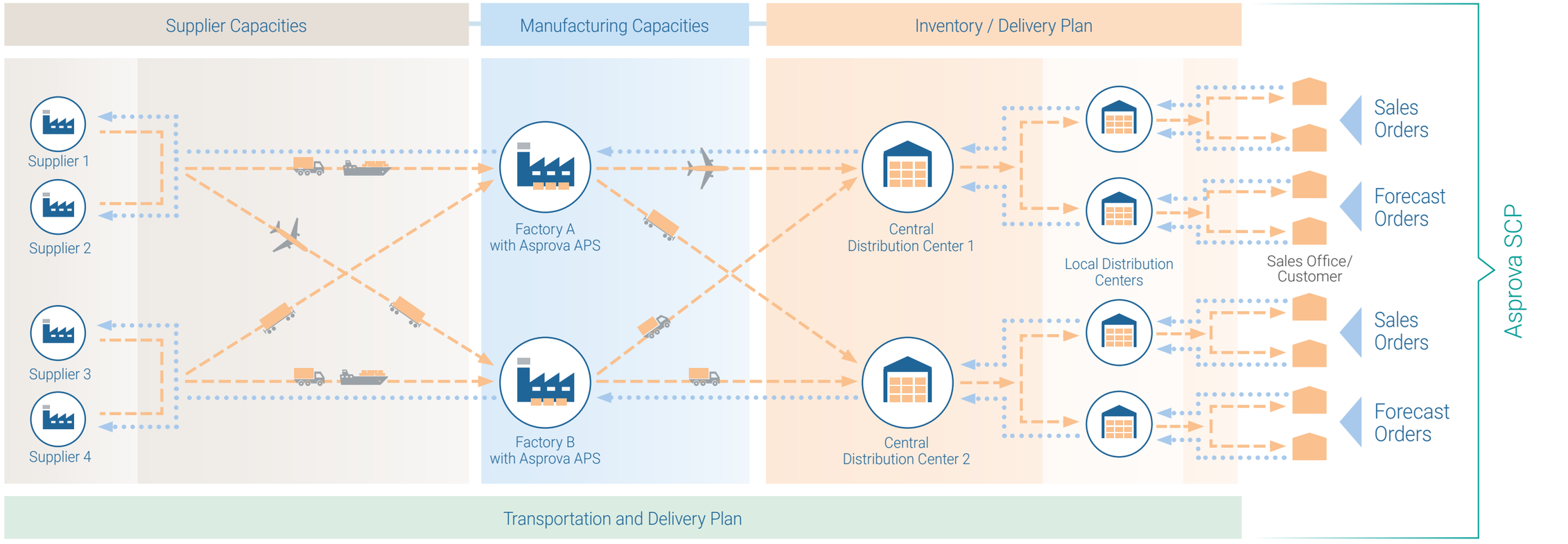
Multiple Logistics Centers
Automatically calculate inventory plans for every single item in logistic centers corporation wide.

Suppliers
Generate supplier purchase plans corporation wide, considering lead times.

Transportation
Calculate transportation routes between factories, suppliers, and logistics centers — including timetables, resource capacities, and costs.

Order Management
Plan different types of orders for the entire value chain — including forecast, customer, inventory, and purchase orders.

Synchronization
Synchronize the production and purchase plan, raw material and finished goods inventory plan, and transportation plan.



SCP & APS
Asprova SCP communicates with Asprova APS installed in various factories and synchronizes the supply chain plan with the production schedules.

Transparency
See every corner of the supply chain with unprecedented clarity. Suppliers and factories are connected with your customers like never before.

Finite Capacity Plan
The resources of the entire value-added chain are planned in finite capacity — modelling all processes usefully and effectively.

Predictive KPI
Past KPIs are commonplace, but Asprova provides predictive KPIs, enabling you to make proactive business decisions.

High-Speed Engine
Asprova creates schedules in minutes or seconds, even when calculating for the entire supply chain.

Demand
Supply Chain
Logistics Center
Sales Office/Customer

WHY ASPROVA HAS EARNED THE TITLE BEST IN CLASS

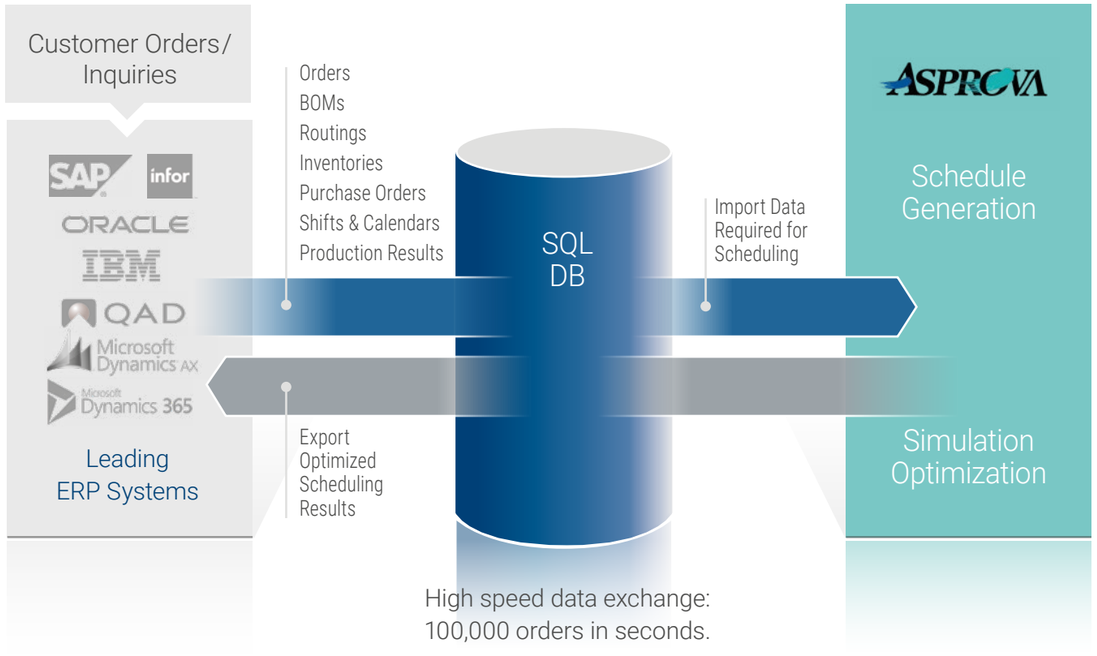
Asprova has, for the past 30 years, been living and breathing lean manufacturing. We developed at the GEMBA of top lean companies — those with the highest level of efficiency requirements.



With Asprova, you not only synchronize the production processes, but all organizations throughout the factory, which significantly increases total efficiency company wide.

EFFORTLESS INTEGRATION WITH YOUR IT ENVIROMENT

Asprova comes with interface tools, including Windows' ODBC-providers, and it is easy to connect to the required systems, whether ERP, MES, MDA, or others.



Compatibility

- Easy deployment in heterogeneous system environments.
- Supports flat files for legacy systems if needed.

Simple Field-Mapping and Filtering

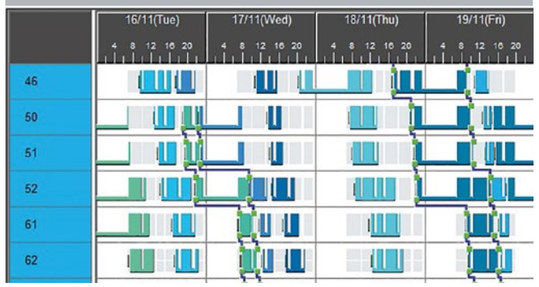
- Specify merge and filter rules for whole tables.
- Depending on the occasion different rules may be applied to the same table.

Flexibility

- If deploying an intermediate database, choose from MS SQL, Oracle, or another RDB.
- Easy access from multiple data sources such as Access, Excel, and text files.
- Included functions can filter and convert data.
- Cloud or client: run Asprova locally or host on a server.

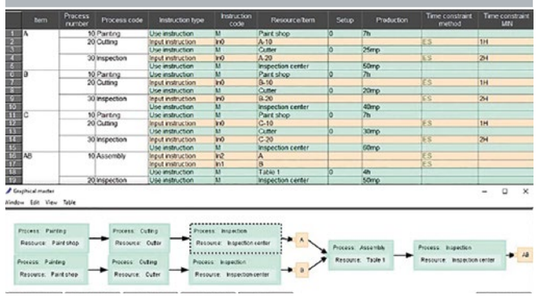
ALL THE FEATURES YOU NEED IN ONE PACKAGE

RESOURCE GANTT CHART



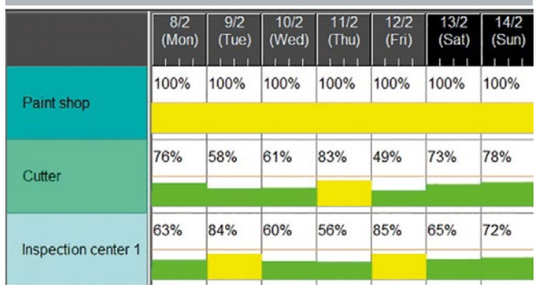
Displays the schedule for each resource. Customer, production, purchase orders, and inventory are pegged.

INTEGRATED MASTER EDITOR



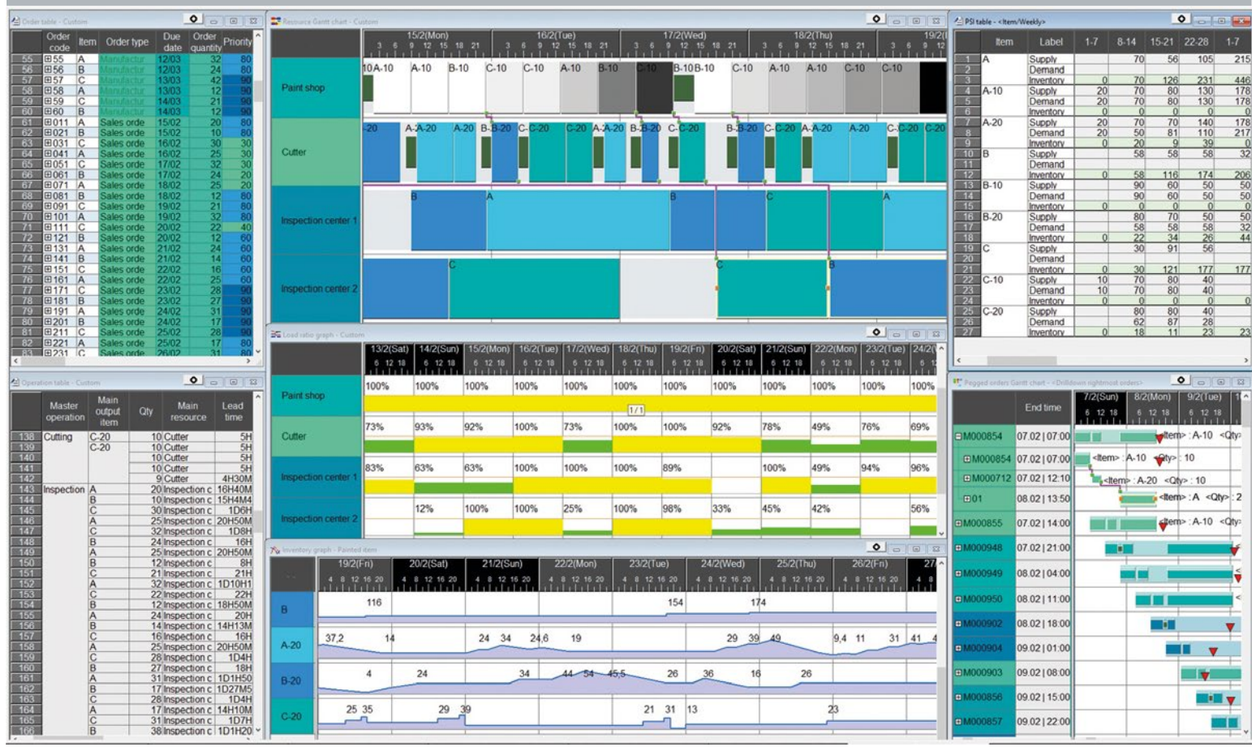
In one table, you can manage all routing and BOM data, whether static, dynamic, or parametric, to any degree of complexity.

LOAD GRAPH



Bottlenecks can be identified, and you can adjust your shift model and production strategy months in advance.

APS DASHBOARD



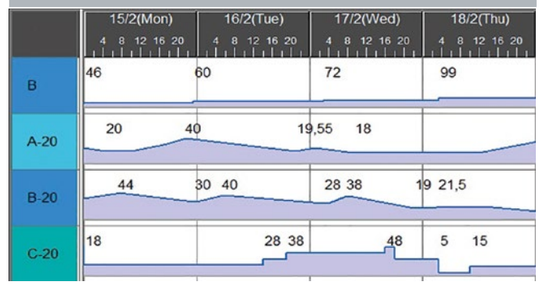
APS engine and GUI are running in parallel — when updating a formula or value, the other corresponding display data update instantly.

DISPATCHING VIEW

		Paint shop			
	Date	Operation	Start time	End time	Item
130	03/15	M000976:10	15/03 21:00	16/03 04:00	C-10
131	03/16	M000970:10	16/03 04:00	16/03 11:00	C-10
132		M000971:10	16/03 11:00	16/03 18:00	C-10
133		M000972:10	16/03 18:00	17/03 01:00	C-10
134	03/17	M000979:10	17/03 05:00	17/03 12:00	C-10
135		M000980:10	17/03 12:00	17/03 19:00	C-10

Work orders and sequence are displayed for each resource, from where they can be easily adjusted.

INVENTORY GRAPH



View stock fluctuation per item or group and predict shortages well in advance.

PSI TABLE

	Item	Target Inventory	Max Inventory	Label	2/2	3/2	4/2	5/2
1	Product A	4000	20000	Supply		10000	10000	
2				Demand			20000	
3				Inventory (Total)	0	10000	0	0
4	Granulate X	0		Supply	420			
5				Demand	100	100	200	
6				Inventory (Total)	320	220	20	20
7	Granulate Y	0		Supply	500			
8				Demand		200	200	100
9				Inventory (Total)	500	300	100	0
10	Granulate Z	0		Supply	800			
11				Demand	375	75	100	100

Demand, supply, and inventory changes are displayed on a daily, weekly, or monthly basis, with custom calculations.

Rich Standard Functions

- An unlimited number of parameters are available as you need them to model your production realistically.
- Properties are easy to map, making the system very stable, and implementation fast.

Efficient planning

- The powerful, automatic scheduling system supports reacting quickly to sudden changes.
- With automatic scheduling, planning time is drastically reduced.

Rich Visual Features

- Potential late delivery, overload, or shortages can be recognized at a glance in charts and graphs.
- Proactive front-load management can take place weeks in advance to avoid costly problems.

Easy to Use

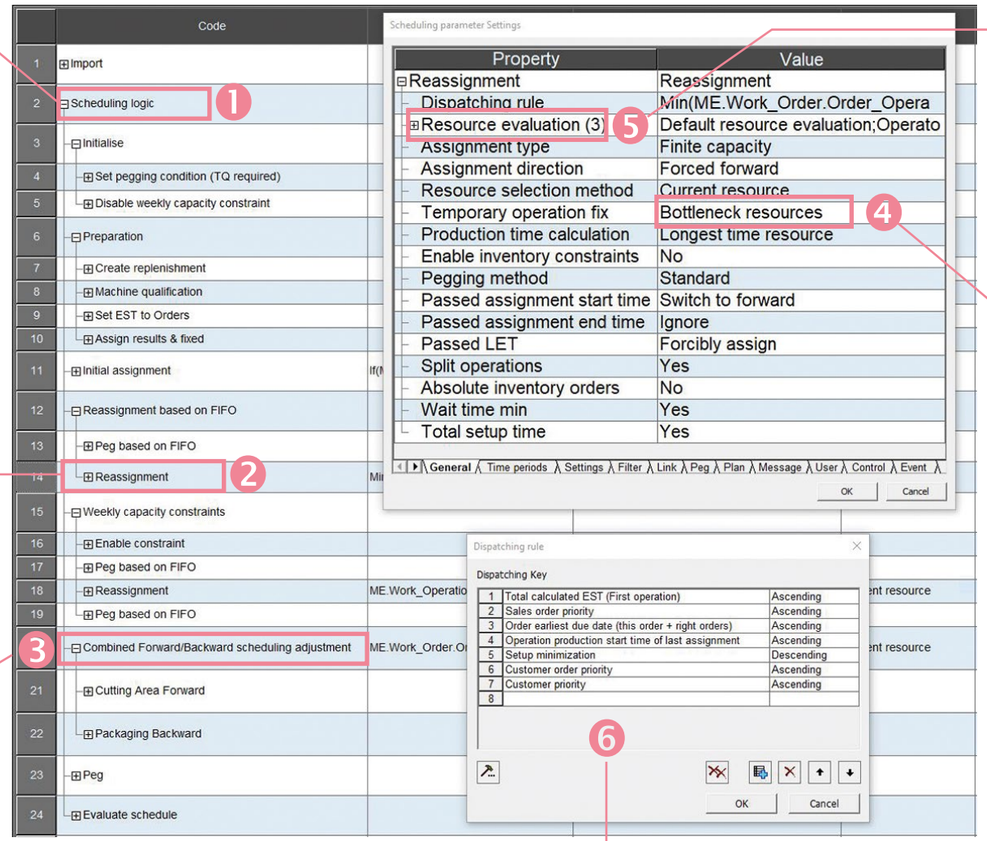
- As a white box system, Asprova is intuitive to use and easy to understand.
- Dynamic constraints can be modelled by using expressions.

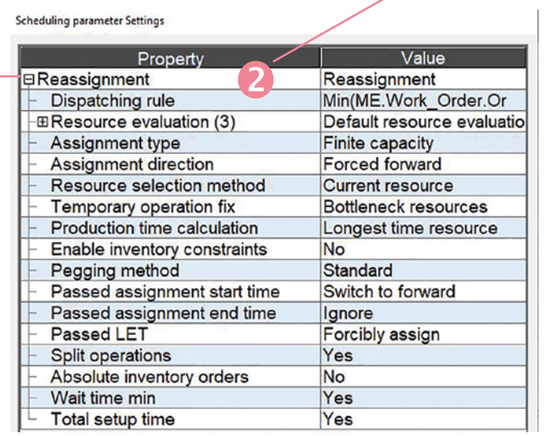
TAILOR-MADE OPTIMIZATION WITH STEP-WISE SCHEDULING

❶ Automated Scheduling

It is impossible to optimally schedule a factory manually. To help you obtain the best results possible, Asprova uses a customized scheduling logic that you can run through step by step. You can configure the scheduling logic and set different strategies, testing scenarios to clearly see how you can meet your goals optimally.

With configurable, automatic logic, you have the time and ability to fine-tune your schedule, hitting business targets, even rapidly moving ones. Select your strategy, and with the press of a button, Asprova's powerful scheduling logic is brought to bear, and a new scheduling for the next shift, week, month, or year is at your fingertips in minutes or even seconds.



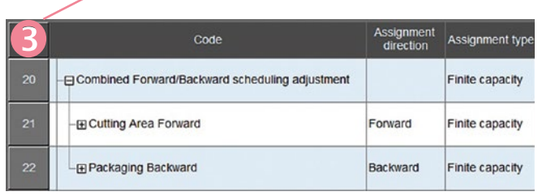


❷ Reassignment Scheduling Parameter

A commonly used, yet powerful, technique for optimization is reassignment based on parameters. For example, Asprova can generate a schedule based on capacity, then reassign orders based on a critical sequence or another capacity constraint. This very quickly creates a schedule that is realistic and credible.

❸ Combined Forward & Backward Scheduling

Work can be scheduled using a combined optimization strategy — forward, then backward, and again as needed based on specific parameters. This often a reliable way of hitting multiple targets, for example starting orders just in time while improving on-time delivery at the same time.



❹ Bottleneck Scheduling (Midpoint Scheduling)

Using a combined pull and push principle, Asprova can perform bottleneck scheduling at a high level. The production cycle is determined by the bottleneck processes, and upstream and downstream processes are scheduled around them. As a result, wait times are minimized, and overall lead times are significantly reduced.

❺ Resource Evaluation

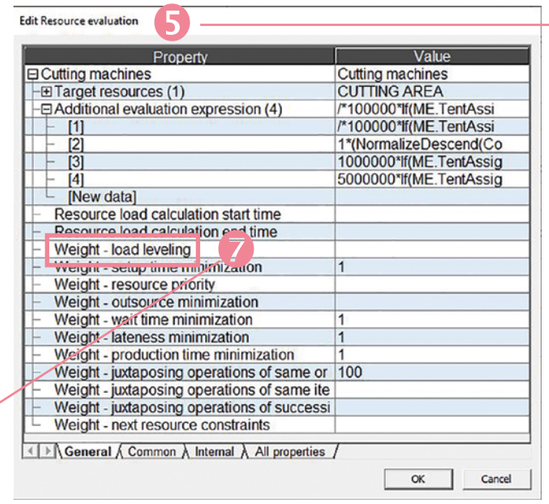
Asprova determines how to best utilize resources according to the parameters set in your scheduling logic. The schedule Asprova creates will improve load leveling, minimize setup and wait times, reduce order delays, and decrease inventory.

❻ Dispatching Rule

The dispatching rule is an order and process sequence sorting rule. In other words: Orders and individual processes thereof are scheduled according to a variety of set dispatching keys, which include priority, delivery date, technological parameters, ABC-customers, customer order positions, and many more.

❼ Load Leveling

One often successful strategy Asprova can utilize is distributing processes evenly across all available or key resources to level out the overall resource load, enabling you to meet your customer demand on time while retaining flexibility.



ASPROVA APS – MODULE INFORMATION

APS

Advanced Planning & Scheduling

Perform long, mid, and short-term detailed scheduling across sales, manufacturing and purchasing in a single module, using all of Asprova's versatile scheduling features.

MS

Manufacturing Scheduler

Schedule all factory resources at finite capacity in fine detail, with all the full features Asprova's scheduling logic provides.

MRP

Material Requirements Planning

Use Asprova's MRP functionality to schedule with fixed lead times tracking any number of parts to a high degree of complexity, whether alternate BOMs or overwhelmingly large parts lists.

SED

Schedule Editor

Edit and make modifications without disrupting the workflow of the scheduler.
Integrate feedback and manual changes easily with the automatic scheduling process.

BOM

Bill of Material

Update master data freely while scheduling work is being done on the main module.
Create items on the fly and edit.

MES

Manufacturing Execution System

Here the production floor, sales department, and management teams can quickly interface with the schedule. Custom charts and tables can display what is valid for production managers, who can also input feedback directly into Asprova.

NLS

Network License Server

Licenses can be managed, and users can be set up with permissions, as necessary.

DS

Data Server

Manage project data on a network, on a virtual machine, or in a cloud solution, as needed.

MODULE OPTIONS

MS **MRP**

* Sales Order

Based on customer orders, Asprova dynamically generates, assigns, and pegs manufacturing orders to meet demand. Based on forecasts in the Sales Plan, production can be planned and even executed before firm orders or call-offs are available.

MS **MRP**

* Purchase Order

Create purchase order proposal automatically, with precise lot sizes and replenishment lead times, considering all inventory levels and the detailed schedule.

APS **MS** **MRP**

KPI

The predictive KPI option provides financial key performance indicators to help evaluate schedules and plans. The evaluation can be performed for the whole project, selected orders, specific resources, selected items, or defined periods.

APS **MS**

Resource Lock

Instead of releasing the capacity of a resource right after production has finished, the resource remains locked for a set time or dynamically based on the assignment of subsequent processes. For example, a tank might be used for blending, but only after all subsequent fillings ended is it available for the next operation

APS **MS**

Time Constraint Max

Sets a hard cap on the time that can pass between subsequent processes—other rules like overlaps still apply. For example, perishable WIP such as food and beverages, chemicals, medicines, and others, must be processed within a certain time

APS **MS**

Group Assign

Instead of assigning operations sequentially, groups of operations or orders can be assigned together in one go. This way special relationships between them can be considered

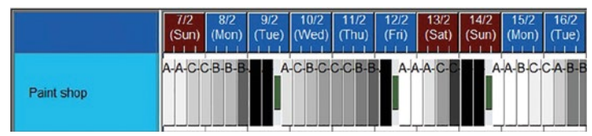
APS **MS**

Event

Automatically assigns events that occupy capacity based on defined conditions. For example, tanks must be cleaned for specific times depending on total run time, production process, and operator skill, and the time required needs to be calculated dynamically

APS **MS**

Optimization



Dynamically sequences operations considering multiple targets and constraints.For example, at a paint shop, colors must be sequenced from light to dark, but at a furnace process, temperature must be sequenced from higher to lower and due dates must still be kept.

* Included by default in Asprova APS

MORE THAN 3000 SATISFIED CUSTOMERS



- We have been developing our software continuously based on the very high demands of top lean companies
- The know-how of the lean scheduling systems of top lean companies is embedded in our standard package

Some of the companies who put their trust in Asprova

USERS AND THEIR SUCCESS WITH ASPROVA

GEBHARDT, Germany — Automatic Warehouses

GEBHARDT is a warehouse logistics systems manufacturer with a very high degree of in-house production. They implemented Asprova in 2016, scheduling in minutes thousands of production orders daily, each of which requires consideration of up to 100,000 components. They successfully reduced throughput times and doubled their output.



STRAUSS COFFEE, Poland — Coffee Roaster

STRAUSS is a renowned coffee roaster with strict requirements for bottleneck process management and silo utilization. They implemented Asprova in 2012, taking an OEE below 50% and raising it to above 85%, realizing process standardization, decreasing production and maintenance costs, and achieving close to 100% on-time deliveries.



KONTIO, Finland — Log House Manufacturer

KONTIO is the world-leading log house manufacturer. They implemented Asprova in 2015 without programming despite their highly complex processes. As a result, they reduced the time consumed for production planning by 70%, halved overall lead times, increased output, and cut their semi-finished inventory in half.



SCHOLZ, Germany – Plastic Injection Molds

SCHOLZ produces extremely high-precision molds. They implemented Asprova in 2018, scheduling orders with up to 80 highly complex components, each of which has many processes, all synchronized to final assembly. SCHOLZ can now re-schedule their entire order level of twelve months within seconds, multiple times per day.



Visit our website and watch compelling testimonial videos from our satisfied users at **www.asprova.eu**



Working with Asprova

About Asprova

Asprova is the world's leading APS software. Our continuing mission, started 30 years ago, is to empower every factory on the planet to reach the highest attainable manufacturing standards — becoming lean, efficient, and cost-effective.

What Does "Asprova" Mean?

At our inception 30 years ago, we had a dream of solving difficult problems. We wanted to revolutionize industry, impacting work on every level of the company. We were led by a spirit of inquiry, determined to understand the valuable members of the factory's team. Recognizing the tremendous shortfall of manual scheduling, and the far-reaching effect of the production schedule on every worker, we discovered our focus, and our name was born:

A dvanced
S cheduling
PRO duction
V alue
A dded

International Support

Asprova has offices in Europe, Asia, and North America, and we have a strong network of sales and implementation partner worldwide.

Available in Various Languages

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