

Automated Production Scheduling

Questions/Answers

For a plant manager each daily operation is a new challenge: unachievable delivery dates, raw material quality variances, machine break downs, bottlenecks in the process chains, delays in the supply chain, etc. Each plant manager can prepare a long list of daily problems, each one involving a performance variance different from the scheduled plan. The need for a tool supporting the plant manager in scheduling and launching the operations, and in reacting to sudden changes was very strong, but due to the complexity of industry production scenarios, the solutions on the market have been unsatisfactory to this point.

Matrix has filled the gap between "needs" and "solutions" with A.P.S. (Automated Production Scheduling). The following represents a series of most frequently asked questions surrounding the APS System, and our answers which follow:

Q: With APS you are tackling a complex problem with many variables, isn't there a risk in preparing the "perfect plan", only to have it unattended when the inevitable change in the plan occurs.

A: APS does not replace the planner with a computer program, but gives him the information and the support necessary to overcome a sudden problem. As it is impossible to manually handle all the variables, APS assists the planner in finding the best solution.

Q: Can you explain the APS objectives in detail?

A: APS is a module helping the planner to schedule Production Orders, while reaching very specific targets:

- **On-time completion**
- **Minimizing set-up time**
- **Minimizing work-in-progress**
 - **To run on the optimal resource**

Let's try to explain the meaning of each target:

On-time: Respects both the production order step dates and the final ship dates, while at the same time respecting the step synchronization. The steps are spaced using a "lead time" for a more realistic plan and for more flexible plan dates.

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Minimizing Set-up Time: The features of the step to be scheduled are checked against already scheduled steps, taking into account each step's properties (property rules mechanism).

Minimizing Work-in-Progress: The Production Order steps can be scheduled "at latest possible time" (optional), thus reducing the inventory along with the production chain.

To Run on the Optimal Resource: The property rules mechanism is used to check the features of the step to be scheduled against the resource features, helping to choose the best available one.

Q: What is a specific strength of this solution?

A: There is a real plus of APS; it works on-line. Production order progress, and production order changes are immediately acquired on-line by APS. This means that the planner works with updated data and the decisions taken are supported by the latest information.

Q: Is there other information of interest to our company?

A: Management handling the scheduling will be interested in APS's defining of terms. This list will give planners a fair idea of the variables handled by the program.

Job: Job is a production request step, part of a step or a step re-processing.

Groups: Several jobs joined together for scheduling.

Work Station: A working environment for a planner; includes work centers to be scheduled and work centers to be viewed only.

Work Center: A group of resources similar from the planner's point of view.

Work Center Process: Operations that are carried out on a specific work center.

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Resource: A production facility that has a certain production rate, available in specific dates/times. It can be a single machine or any production unit. A resource is connected to a specific work center and to a specific resource category.

Resource Split: Splitting a resource into sub resources that can handle a number of components at the given time.

Capacity Reservation: Reserving a resource to use a certain set-up in a certain period.

Occupation: Which set-up occupies the machine in a certain time; Jobs, groups, and capacity reservations, are all future or current occupations.

Property: A data element relative to a step and a resource, that defines the resource/step characteristics. Examples: Width, Shade, Number of Weft Colors etc.

Bin: List of jobs to be scheduled or already scheduled.

Gantt: List of resources along with a time scale that the planner has to schedule the jobs/groups on.