# SIEMENS
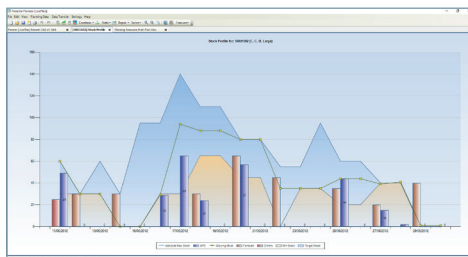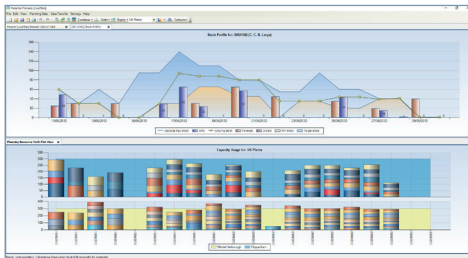*Ingenuity for life*

# SIMATIC IT Preactor AP

**Advanced planning software**

siemens.com/plm

## The MPS problem

Master Production Scheduling (MPS) is a key part of the MRP process that runs within an ERP system. The input to MPS will be future customer demand so it will typically be made up of a mixture of actual sales orders and forecast demand.

There are two main purposes behind the MPS process which both require MRP to have some visibility of future demand. The first is so that MRP can suggest the manufacturing orders that will need to be made and the second is to suggest the purchase orders will need to be raised for bought in items.

The fundamental MPS problem is that the process does not take into account manufacturing capacity. It simply works with the due dates from future demand and this can result in your MRP suggesting orders that simply cannot be processed in the relevant timescale.

The common solution to this problem is to pre-process future demand through one or more spread sheets before it is loaded into the MPS. This process is often called Rough Cut Capacity Planning.

The spread sheets are used to calculate how much of and when each product should be made taking into account some key process parameters such as: rough cut capacity, desired stock level limits, shelf life, etc. The resulting 'smoothed' data is then used to create an accurate MPS in the ERP system.

As with any spread sheet based solution, this can work quite well if data volumes are low and there is little variation in demand, but if there is a large numbers of products that share the same production capacity and/or highly variable demand, then the spread sheets become very difficult to manage.

## SIMATIC IT Preactor AP general features

Planning can be executed in finite or infinite capacity mode and planning time periods can be days, weeks, months or a combination of all three.

Parameters can be set against each item codes which allows different calculations for each item. For example some products may be in 'make-to-stock' mode whilst others are in 'make-to-order' mode.

If used together with a Preactor scheduling system, detailed production schedule information can be sent back to the planning system and this will override planned volume with scheduled volume. MPS can then be re-calculated using production schedule as the base for new results.

### SIMATIC IT Preactor AP make-to-stock

In the food, drink, consumer goods or similar sectors, it is quite likely that production process is in 'make-to-stock' mode, in which case the primary driver in creating the MPS will typically be forecast of future demand.

Unfortunately, forecast demand may vary greatly over time because of seasonality, promotions, weather, special events, etc. However, these significant variations in forecast demand can easily result in an unrealistic MPS, where there is not enough production capacity to meet the peaks in forecast.

SIMATIC IT Preactor AP imports current stock levels plus actual and forecast demand. It then considers rough cut capacity, pack forward figures, target days of stock cover, manufacturing preferences, minimum/maximum re-order quantities, re-order multiples, product shelf life, etc. to propose an accurate and achievable MPS.

Production capacity can be specified as a quantity, duration or weight and using the Preactor calendar system capacity can be varied over time. The capacity available then limits the production volume created in each period.

Once an initial MPS has been created, the data can be displayed as both stock profile graphs and capacity usage graphs. The MPS can be changed by simply clicking and dragging a point on the stock or capacity graphs, and the production of a particular item can be

moved from one planning period to another. Any changes made will be reflected in all the linked plot and grid windows.

The planning BoM can also be exploded by SIMATIC IT Preactor AP and then the production plan for lower level items is calculated in the same way. Based on the BoM explosion and the production plan, the proposed material purchase requirements can be exported to an ERP system, Excel, etc. for action.
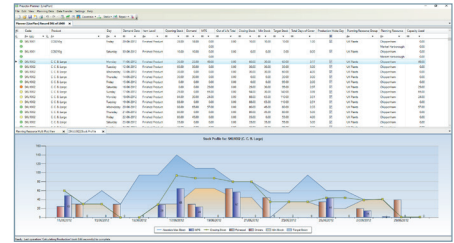
### SIMATIC IT Preactor AP make-to-order

In a 'make-to-order' environment, the stock levels of finished and/or intermediate items will not be part of the key process parameters, but there will still be the need to evaluate the effects of future demand changes on the manufacturing process.

For example, for complex assemblies in the aerospace sector, each finished item may have a deep BoM (Bill of Materials) and be made up of thousands of individual components. Many of those components are manufactured in-house and they share production capacity, so there is a complex relationship between manufacturing capacity and demand.

When a change in demand occurs, whether that be in terms of quantity or delivery dates, there is a need to be able to quickly assess if it is possible to meet the new requirements.

It is possible to import demand changes into SIMATIC IT Preactor AP and create a new 'what if' plan. The planning BoM will be exploded and SIMATIC IT Preactor AP will show if there are any capacity issues. If there are issues, an acceptable MPS can be created by working interactively.