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Sage Line 50 Manufacturing Controller

Sage's new Graphical Planner engine is built around market leading Planning & Scheduling systems developed by Preactor International and is tightly integrated with the latest version of Line 50 Manufacturing Controller. This is a finite capacity graphical planning tool that enables you to calculate and run resource plans for all demands. Different production plans can be produced and saved for the same set of demands, so you can assess the impact on your resources for example, when adding overtime or extra shifts. You can then raise orders for a selected date range based on the most appropriate MRP suggestion.

Records Kept

Work Centres

- Work centres are defined as groups of machines that carry out similar tasks. In the Bill of Materials module, for each operation in the process you can define which work centre can carry out the operation.

Operation Set up Time

- Each operation can have a setup time assigned. The set up time appears as a thinner black bar in front of the operation bar in the graphical planning window.

Shift patterns, vacations, shutdowns

- For each resource you can define standard shift patterns for each day of the week. In addition you can define in advance holidays, vacations or shutdowns when the normal shift pattern is not valid.

User defined resource states and efficiencies

- In the Graphical Planner you can define many different states for a resource. Examples are on shift, off shift, breakdown, planned maintenance. Each state can be given an efficiency value; for example on-shift would be 100% and off-shift zero percent. This is used by the programmes when calculating an operation start and finish time. Each state can be given a colour and shading in the sequencer overview for ease of identification. The user can also add more states for example "Half Speed". Perhaps resources run slow for a period of time after a weekend so you might want to have a state of "Half Speed" for the first two hours every Monday morning. These states are also used for manual insertion of calendar exceptions such as an unforeseen breakdown.

Process rate by item, per hour and per batch

- You can define how you wish the Graphical Planner to calculate the run time for an operation by specifying the process rate as time per item, rate per hour or a fixed time for the batch. This data is read from the Sage Bill of Materials module during the "Import Dynamic Data" run but may be modified within the Graphical Planner.



Finite and infinite resources

- In most cases you will want to define resources as having finite capacity however in some circumstances infinite resources are used to model certain processes. For example a sub-contract operation may always have a 2 day lead time no matter how many batches are sent and in this case an infinite resource called “Sub-Contract” might be used to model the delay. A third alternative “Infinite with Shift Patterns” is also available. This might be used for example if our sub-contractor did not work at weekends so that the 2 day lead time would be extended if sent on a Friday.

Manual and interactive breakdowns

- You can add calendar exceptions to any resource using the resource time window. An example of a calendar exception is a breakdown when the resource will not be available for an expected period of time. It could be minutes, days or weeks. Exceptions can be extended or reduced by dragging and dropping the “edge” of the exception time period.
- Another exception would be a planned maintenance period

Icon editor

- Each operation in the sequencer is displayed as a coloured icon when in the unallocated jobs window or in the resource time windows. These icons may be customised using the icon editor.

Order Status Indicator

- An order can be given a status such as Suggested, Released, Confirmed. The user can associate a pattern change to the operation bars in the sequence overview for each order status type.

Product dependant changeover times

- The user can define a Like to Like set up time against the Product Group attributes table. This will give an alternate set up time to be used if an operation follows a previous operation having the same attribute code. For example the set up time for an operation linked to product A is 30 minutes but if this follows an operation on product B, where product A and B have the same attribute, then the set up time taken is only 5 minutes.

**Tasks Supported****Scheduler – job sequencer**

- The Sequencer has an interactive planning board where you can drag and drop operations from one resource to another, and update the completion times on-screen.
- The Graphical Planner uses an algorithmic sequencing method of loading work onto the planning board. This is often referred to as sequential or "job at a time" sequencing, the sequencer attempts to balance the load across resources whilst meeting due dates. Each job is selected in turn and all operations are added to the schedule using the constraints that have been defined. All operations for the next job are then processed, and so on, until all jobs have been loaded.
- The sequence in which the jobs are selected can be due date, priority, or schedule file order. The direction of loading can be forward from the current time, backward from the due date or bi-directional, whereby up-stream operations for a job are backward sequenced and down-stream operations are forward sequenced, around the selected operation.
- You may sort jobs to generate a preferred sequence of loading, e.g. sort by due date and then by priority.
- Many schedules can be tried and compared before being released to the shop floor for execution.

Sub-contract operations

- When a works order or BOM contains sub-contract operations, the Graphical Planner will base the schedule on the expected elapsed time.

Comparative Gantt chart

- Many schedule alternatives can be saved. Using the Gantt chart you can compare one schedule with another. This can also be used to compare actual start and finish times for each operation on each resource and compare with a reference schedule.

Comparative order trace chart

- This option offers similar facilities for the comparative Gantt chart except that the vertical axis is based on order number. The "Normalise" feature in this chart positions all operations for each order relative to its due date.



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Resource waiting time plots

- Provides a plot for each resource showing the amount of work waiting for the resource across the period of the schedule. This feature can be particularly useful for highlighting bottlenecks over time.

Schedule performance metrics

- For any schedule the user may look at a standard set of statistics. The schedule performance metrics button will show for the currently loaded schedule:-
 - Job Count Date (Number and Percentage) “ Early, Late, Incomplete, Started
 - Job Completion Date (Total, Minimum, Average & Maximum) - Early Time, Late Time, Setup Time, Lead Time, Value Added
 - Resource Data (Percentage Minimum, Maximum & Average) “ Working, Setup, Unavailable, Idle, Utilisation
 - Schedule Span

At Risk Report and Highlighting

- Any order with the last operation finishing after the start of the delivery buffer is referred to as an "At Risk" order. At Risk orders and operations are highlighted in a number of ways. There are two additional buttons in the sequencer to highlight only "At Risk" operations or orders. Also in the editor any operation record that is "At Risk" is coloured yellow. A report is available to list "At Risk" operations.

Operation Progress and Hold

- The user can set operations to be in different states e.g. Not Started, Setup, Running and Complete. Depending on the operation progress selected the user can edit the Setup Start, Start and End Times for an operation.
- Any operation can be set to “Hold” using the toggle check box. When unallocated, this operation (and later operations in that order) will not be scheduled.



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Automated Functions

- Automatic transfer batching between operations
 - The user can allow transfer batching between operations. For example a batch of 100 could have a transfer quantity of 20. Then as soon as 20 parts have been completed the next operation can be scheduled for the subsequent operation. (The Graphical Planning module automatically calculates the transfer quantity using the operation details held in the Sage Routing and Works Order 'Percentage lead in' field and the order quantity.)
- Automatic schedule repair
 - The user has access to a schedule repair button. Schedule repair can be used to correct a schedule where small alterations to actual start and finish times for an operation have caused operations within an order to overlap (assuming transfer batching has not been defined as allowed). Schedule repair will keep operations on the same resource (where possible) but adjust the start and finish times for un-started operations to maintain the correct operation sequence within an order.

Reporting

Customised Report Writer

- The user can modify and save the in-built standard reports and create additional reports using the in-built Report Writer.

Schedule Analysis Reports

- The user has access to schedule comparison tables that provide additional data over and above the Schedule Performance Metrics report. This configurable tool generates tables in XML format to compare schedules based on defined criteria.

Standard reports

- Schedule Performance
- Work-to list for each resource
- Orders and Orders by Customer
- Route cards for each order
- To do Operation list by day
- Late operations and orders
- Shift patterns for each resource



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E-mail Gantt charts and reports

- The user can automatically e-mail Gantt charts (as a bitmap) or reports (in RTF format) from within the Graphical Planner.

Schedule export to Excel

- The user can export user defined production schedule data to an Excel spreadsheet.

Web Publisher

- The user can automatically create reports and Gantt charts in HTML format to display on a web page. These can be viewed using Microsoft Internet Explorer.

Integration with other modules

Sales Order Processing

- Integrates Sales Orders and Customers which are demand elements in the Production Schedule.

Stock

- Integrates with Stock to determine initial stock levels and to retrieve product attributes.

Bill of Materials

- Integrates with BOM to determine resource and time requirements.

Works Orders

- Integrates with Works Orders to determine replenishments and demands.

Material Requirements Planning (MRP)

- Integrates with MRP to determine replenishments and demands.