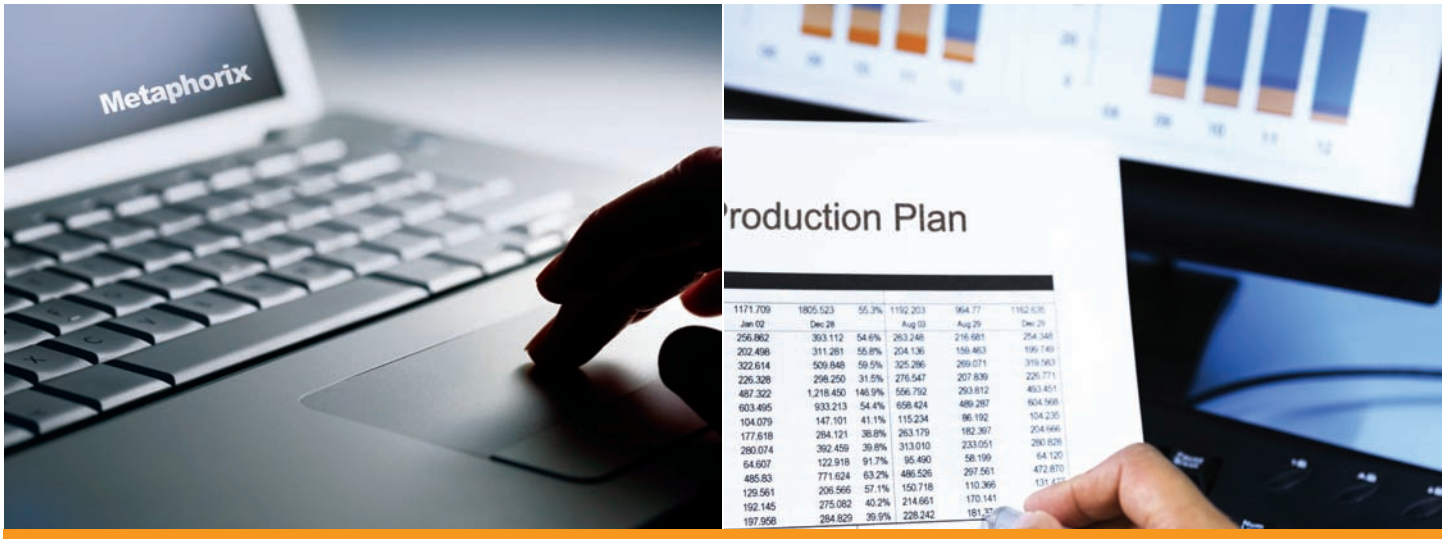


FCSScheduling

Finite Capacity Scheduling for Microsoft Dynamics NAV users

FCS is a solution designed to efficiently plan production activities generated within Microsoft Dynamics NAV and to distribute the work load among the available resources.

It creates a user-friendly interface for the planner to analyse, manage and adapt the plan to changing demand conditions.

Overview

FCS is a flexible, graphical planning tool that allows users to carry out a number of key planning and scheduling activities.

The system uses data taken directly from Dynamics NAV to offer a number of important functions for production planners.

- Planning of internal and external manufacturing.
- Optimisation of finite or infinite resources.
- Planning of production orders to meet sales demand or stock requirements.
- Increasing delivery time reliability.
- Synchronisation of raw materials with production.
- Efficient management of changes.

The calculation of the plan takes just a few seconds. It can be executed several times a day or each time there are important changes to the demand for manufactured items.

In each planning calculation, FCS offers the best plan based on pre-defined criteria.

The system will also allow you to change the plan manually and these changes will be retained in future versions of the plan.

Basic Features

FCS takes data directly out of NAV and uses it to build the plan. Once the desired plan is achieved, this is reflected in NAV when FCS posts its changes back to the ERP system.

The update of the data out of and into NAV can be set to happen automatically or can be triggered manually.

The plan is calculated using material availability from NAV as a limitation. FCS is tightly integrated with NAV logic, using the same terms and definitions. Some of those common definitions are:

- Overlapping (send ahead quantity)
- Serial or parallel routing
- Internal or external resources (subcontracting)
- Absenteeism
- Tracking system

FCS takes into account other restrictions. Some restrictions it introduces as rules to ensure the integrity of the plan. These can be set on or off by the user.

Others are created by users and they add to the processing in FCS, allowing them to reflect the real conditions they face when programming the production orders.

The basic restrictions capable of being introduced in FCS are:

- Does not allow the user to set actions in the past.
- Work-in-progress limits the capacity of the resources.
- One single resource can process only one operation at a time (when the actual resource is defined as a finite capacity one).

Production orders are planned in consecutive order by the date of delivery – the most urgent orders are planned first.

FCS Techniques

FCS uses a number of techniques to improve the planning process.

Operations Insert

The first thing that FCS does is look for inactivity intervals in order to locate the operation being set up, taking into account the saturation of the corresponding resource.

Alternative Resources

The biggest potential to improve plant planning is in the use of alternative resources.

FCS follows the ‘balanced loading’ criteria between equivalent machine centres (CME).

A CME is a group of machines with the same capacity from the quantitative and qualitative point of view.

A good definition of the CME is very important in order to obtain correctly balanced planning.

By using these techniques, FCS generates production planning proposals.

FCS Scheduling

From those proposals, the user can use FCS's sophisticated charts to make changes in the plan in order to adapt the real plant situation and meet the production demand.

Functions

Drag and drop tool

This tool has been designed to allow users to make manual changes whilst maintaining the consistency of the plan.

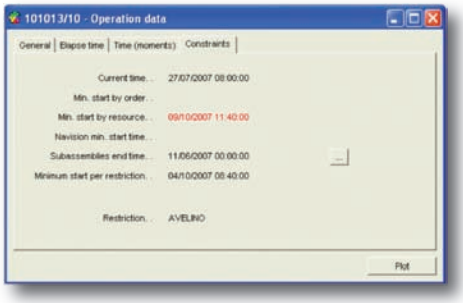
The order of sequence of a certain machine centre can be changed and an operation from a machine centre can be moved to another one, if it is set as an alternative.

Search facilities are available so that users can see the alternative machines available where the operation concerned can be transferred.

Constraints tab

This tab, located in the Operation Data window, is a powerful tool that allows you to analyse the results of the calculation of the plan.

The screenshot below shows the situation where the beginning of the first operation of a production order is dictated by the earliest date that resources are available.



Resource over-capacity area

In this area of the screen, FCS displays the parts of the planning time horizon for the selected resource that are over capacity.

'Available to Promise'

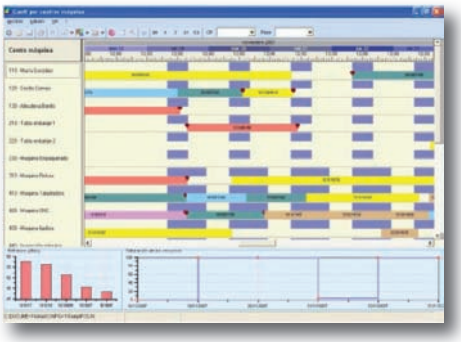
This option allows users to simulate the inclusion of a new production order in the plan.

The program calculates the next available to promise date for the introduced product and quantity without having to move any existing production order.

The program shows the selected route and the simulated time of each operation and all the components involved in the manufacture of the product.

Due date

This is a window showing an analysis of the results of the plan in terms of customer service. This is generally the first window the user opens after the system calculates a plan.



View plan

If the user selects one or more production orders, products or machine centres, the system shows a Gantt chart of those items.

In the Gantt chart only the selected operations appear in colour. The remaining unselected operations are shown greyed out, though it is possible to click on any block of the diagram.

A dialog box opens with information relative to the block. This allows you to focus on just the aspects of the plan that you want to analyse.

Capacity graphical representation

In the Gantt graph, time periods with capacity are differentiated from periods with no capacity (night break, weekend, holidays etc.). This is shown separately for each resource.

Capacity changes

There are two ways to alter the capacity – graphically or by means of a dialog box.

In addition, it is possible to repeat the capacity change 'n' times for 'n' days for the same machine or different machines.

This is useful in situations covering overtime, special shifts or unavailability of a machine through maintenance, breakdown or transfer.

These changes to the capacity will be reflected in Dynamics NAV when saved, like calendar movements.

'Undo' and changes analysis

Up to five versions of the plan are saved in memory, holding details of the plan prior to the last five changes.

With the 'undo' function, users can go back to see any of the previous versions. It is also possible to select any of the five plans using the menu.

The impact of the changes can also be analysed. A new window opens displaying the previous and present advances and delays, plus a column with the absolute differences between both plans.

Planning comparison

The same tool used in the analysis of the changes can be used to make plan comparisons.

Simple restrictions

Users can add an additional restriction to the system – for a worker, a mould, a tool etc.

A 'simple' restriction has neither calendar dates nor quantity of capacity associated with it. The system verifies that no two orders are using the same resource simultaneously.

'Train' type setting

This function allows the classification or grouping of production orders using technical criteria. Grouping orders allows you to connect similar orders in the style of a 'train' to improve productivity by reducing change times.

However, grouping has some negative effects on delivery dates and stocks in progress. The impact calibrator is the tool used in order to increase or to decrease grouping as well as its impact.

Summary

The FCS Finite Capacity Scheduler is a valuable addition to the standard planning routines available in Dynamics NAV.

It delivers a graphical representation of data that is easy to use and that allows users to change and mould the plan to suit their specific needs.

The flexibility within FCS helps users to build the best possible plan for their production demand based on their resources and constraints.

For more information about our products and services, please call: **01675 432400,** email us at: **sales@metaphorix.co.uk** or visit our website: **www.metaphorix.co.uk**

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Microsoft Partner
Gold Enterprise Resource Planning

Metaphorix Limited • 3 Temple Court • Temple Way • Coleshill • Birmingham • B46 1HH