



Business  
Software  
for People

cc | process manufacturing

BY-PRODUCTION    OPTIMAL PRODUCTION BATCH SIZES    SET-UP TIME OVERVIEW  
QUALITY MANAGEMENT    RESEARCH & DEVELOPMENT    HR REQUIREMENTS MATRIX  
SEQUENCE PLANNING    COSTINGS  
LOT MANAGEMENT    ORDER NETWORK    PLANNING BOARD AND CONTROL ROOM CONNECTION  
SPLITTING OF PRODUCTION ORDERS    WORK GROUP UTILISATION  
RECIPE MANAGEMENT    COMPONENT AVAILABILITY  
PRODUCTION SIMULATION    PRODUCTION STRUCTURE

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# cc|process manufacturing

Industry Solution for the Process Industry based on Microsoft Dynamics NAV

## CONTENT

The industry solution cc|process manufacturing built on Microsoft Dynamics® NAV provides companies in the process industries with an international industry solution.

This solution supports business processes ranging from sales through production with complete integration with the finance system (SEE FIGURE 1).

During the development of cc|process manufacturing, special attention was paid to the industry's core business requirements. Among them are recipe administration and development, an efficient production and sequence planning, a quality control, as well as forward and backward-directed lot tracking with trading unit administration. Additional modules, such as an integrated hazardous substances management system and an automotive connection, supplement the delivery. An optional workflow module aids process configuration and documentation.

Developed in close collaboration with the industry, all functions provide proven best practices. cc|process manufacturing offers scalable process control and a standardized introductory method that all businesses, whether small, medium-sized or large, can equally benefit from the solution.

## THE BEST POSSIBLE SUPPORT FOR THE SALES DEPARTMENT

### Order Network

The order network is a hierarchically structured overview that displays the logistical interconnection of sales orders and the dependent manufacturing and purchase orders. It is an important controlling agent for coordination and planning when it serves as a basis for decision-making in interdepartmental meetings that occur on a regular basis. This display allows for the early detection of possible production

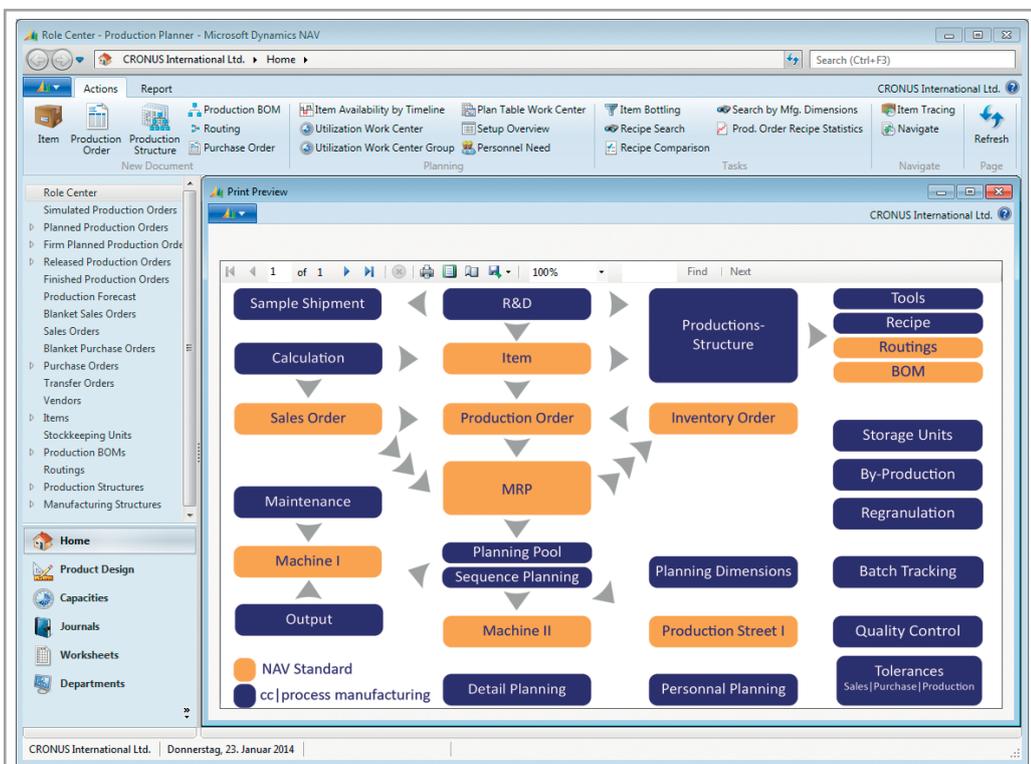


FIGURE 1 | COSMO CONSULT | PROCESS MANUFACTURING OVERVIEW

variances such as missing raw materials or insufficient machine capacity; the on-time delivery performance can be optimized and inventory can be reduced.

**Delivery, Production, and Sales Tolerances**

During delivery, production and distribution of specific items, deviations between the expected and the actual amounts can occur. Of course, these deviations are only acceptable within predefined delivery tolerances. cc|process manufacturing provides functionalities that control these over- and under-deliveries in the purchasing department as well as during production and sales. For every item a default tolerance can be determined, which will be automatically adopted during the acquisition of sales and purchase order lines. Deviation tolerances for over- and under-deliveries will be stored continuously.

**Returnable Container Administration**

Should the produced material be delivered in returnable containers, they remain in the possession of the producing company. An integrated returnable container administration provides an overview of the container inventory, circulation and demand.

**FLEXIBLE AND ACCURATE CONTROL OF PRODUCTION**

cc|process manufacturing offers extensive and comprehensive functionalities to set up and configure production structures, recipes, bills of materials (BOMs) and routings.

**Production Structure**

The production structure expands Microsoft Dynamics NAV and provides a single overview form that allows for the registration of all necessary materials and necessary procedural steps in accordance with the method of production BOM. Routing lines no longer need to be connected individually but are automatically correlated.

Here, production variants can be created contingent on lot sizes or packaging types (SEE FIGURE 2).

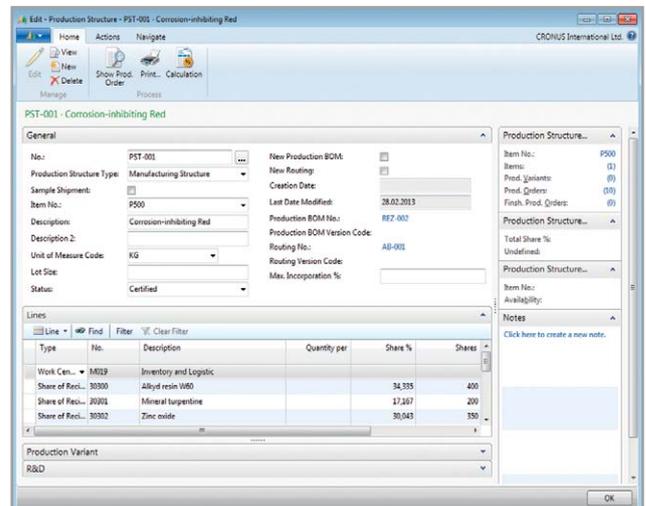


FIGURE 2 | PRODUCTION STRUCTURE

**BOMs and Recipes**

Inventory component (BOM) information is among the most important data structures that production companies have to track and maintain. When a certain item is produced, the ordering of material or its gathering from the inventory is ultimately based on the BOMs.

While BOMs generally refer to a discrete final product, recipes are the basis for the manufacturing of certain quantities of a process product. Recipes can be stored in the system either in percentage or proportionate terms. Main recipes with additional parts are recalculated automatically. Recipes can be entered manually or derived from the production structure. BOMs and recipes may also be used in combination, as is needed for bottling or packaging processes.

**Routing**

A routing describes the production process relating to the individual work steps, including respective work and setup times analogous to the BOM. The necessary raw materials and corresponding qual-



ity checks or tools and inserts can be assigned for every operation through according allocations. Lead and setup times can be configured within the system independent from the routings. This includes fixed lead times, for example for mixers and dryers.

**Sequence Planning**

Time and again, everyday operations in production control are characterized by short-term changes due to unplanned machine failure and unexpected customer orders which necessitate high planning flexibility and transparency.

Taking into account freely defined planning parameters; the integrated sequencer can be used to minimize setup times while optimizing utilization and transparency of production processes (SEE FIGURE 3).

Sequence planning is especially useful for the scheduling of bottleneck machines, in order to be able to use the available production time as efficiently as possible.

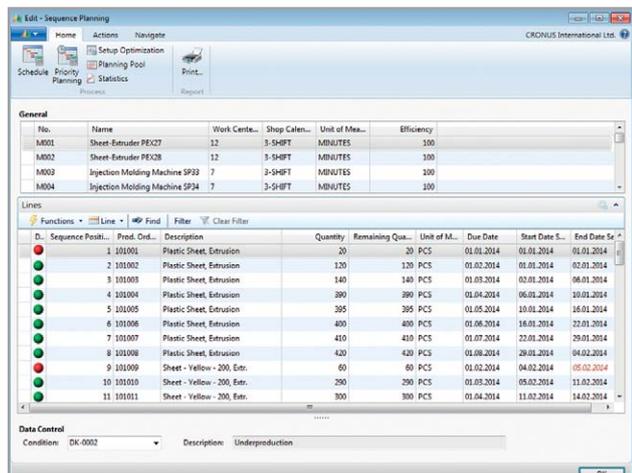


FIGURE 3 | SEQUENCE PLANNING

The core piece of the optimization is the machine scheduling that is capable of displaying complete production lines while also allowing for observation and planning directly at the machine. Orders can be easily postponed or moved from one machine to another as a whole or split into multiple parts. Time

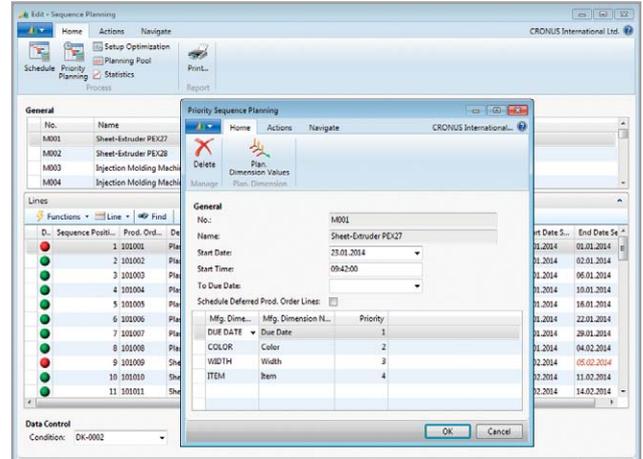


FIGURE 3B | PRIORITY SEQUENCE PLANNING

(lead, cycle, ramp-up and setup), tools (cavities and molds) and resources are considered automatically in this process. With one simple function, several similar orders can be combined into one.

**By-Products and Co-Products**

By-Production, also called combined production, describes the simultaneous intended or unintended production of several products within one operational production process. cc|process manufacturing considers these additional output quantities within the complete process: After a one-time set up of the proportions between main and by-products that result.

**Maintenance and Setup Jobs**

Setup jobs are created directly from a setup matrix containing information on the changes between item groups, items, or tools. Both setup or maintenance jobs can be assigned to or separated from production orders. The system offers the ability to compare tool setup times parallel to production (SEE FIGURE 4).

**Inventory Check**

For scheduling and sequence planning purposes, you can immediately check whether a particular material is in stock and which measures, if any, have to be taken.

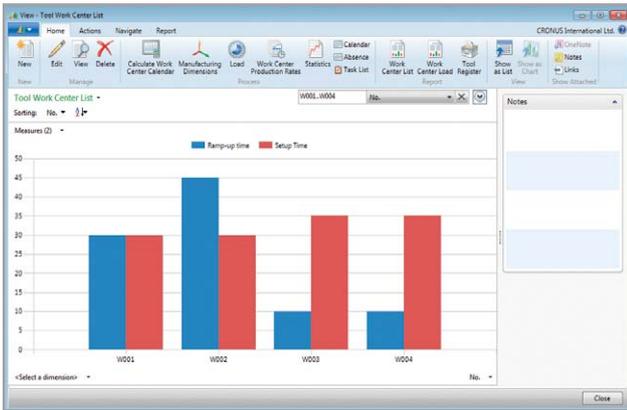


FIGURE 4 | BAR CHART DISPLAYING RAMP-UP AND SETUP TIMES

### Personnel Planning

In addition to organizing machines, tools, and raw materials, it is also necessary to assign the appropriate personnel with the necessary expertise to operate the machines and tools.

### Detail Planning and Plan Table

Rough cut planning is followed by fine tuning. A variety of overviews help you identify problems in advance and allow for the initiation of counter-measures.

The plan table is structured as a matrix: In an overview of machines and time units, it shows all production orders in one view. The existing drill-down function allows users to extract all desired detailed information from the matrix immediately: Across several manufacturing departments or broken down to the individual machine – per day, week, or even month – an overview of utilization in percent, by the hour, or even by free capacity is displayed.

The setup overview reveals the number of necessary personnel.

### Calculation

Besides production planning, cc|process manufacturing offers calculation templates that can be supple-

mented by in-house calculations. You can determined which values may be changed in the calculations and which overhead rates – whether in percentages or as fixed costs - are to be taken into consideration.

Similar to other industrial branches, cost optimization is one of the declared aims of process manufacturing. A concurrent calculation allows for the visualization and recognition of discrepancies between pre-calculation in the planning phase and post-calculation after the completion of the production process. With the help of lot size calculation, the changing relationship between quantity and unit costs for larger quantities can be displayed in a matrix.

### LOT ADMINISTRATION FROM MATERIAL PURCHASE TO THE DELIVERY

#### Lot Administration

cc|process manufacturing guarantees a continuous lot administration, even if lots are fused. With a centralized information form it is possible to navigate through the complete system and – if necessary – to create branches leading to individual documents. This lot traceability assures an overview of the complete production and delivery line. It thus becomes easy to comprehend where a certain lot was delivered, which raw material lots were used during production and to whom they were delivered (SEE FIGURE 5).

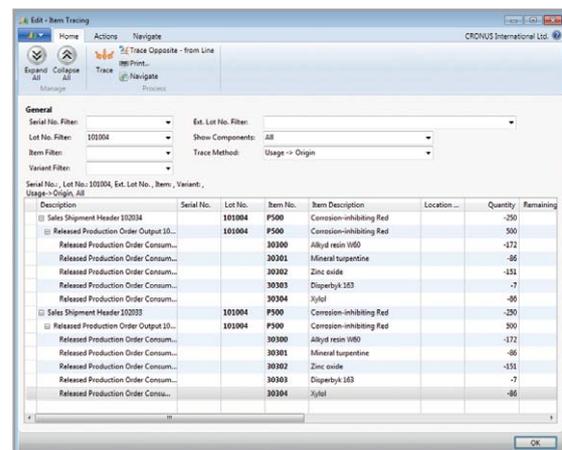


FIGURE 5 | LOT TRACKING

## cc|process manufacturing

Industry Solution for the Process Industry based on Microsoft Dynamics NAV

### Trading Unit Structure, Bottling, and Base Products

The display of several trading units of a product in one item or even in several items is possible. Through filling and refilling orders, new trading units can be automatically generated or passed on to the respective departments

### Release of Lots and Trading

Lots and trading units can be released and locked independently or receive another predefined status. For example, all inventories due to expire within the next three months can be earmarked for inspection.

### Automatic Lot Number

The system can assign the lot number automatically according to predefined rules. Furthermore, the lot numbers of products can be passed on automatically to subsequent lots in procedural, bottling or packaging processes. Also, the cutting and bottling of the finished product is integrated into the lot and serial number administration and is user-friendly. Any optional packaging material and ancillary storage equipment can be assigned in this process - even within one delivery.

### QUALITY MANAGEMENT FROM "SIMPLE" TO "COMPLEX"

#### Quality Status

A status can be freely allocated to each product and re-defined, as required. For example, this allows for settings which can prevent the delivery to the customer or its use in the production process. Locked products can be removed from the demand calculation.

#### Checklists

Templates with questions and possible answers – so-called checklists – can be integrated into every stage

of the process. These checklists provide the user with simple documentation of all standardized tests. Upper and lower limits for measurements values can be managed and compared with test results. Reports expedite a centralized overview of the results.

### cc|quality management

An optional module permits full integration of more detailed quality management functions including management of test instruments and methods, automatic creation of test schedules according to article or vendor, as well as a vendor evaluation can be fully integrated and is available as an additional module.

### TOOL ADMINISTRATION

For certain companies in the process industry, the tool administration is indispensable. cc|process manufacturing contains machine operations, tool utilization, deployment and repository management. Using formulas that can be stored in the system, all data necessary for production planning and the calculation of manufacturing costs is taken into account – even if a tool has been changed.

Checklists for tool deployment, changes or maintenance can be saved while information on amortization or on contracts can be assigned in same manner as quality control information.

### RESEARCH AND DEVELOPMENT: "...FROM AN IDEA TO THE PRODUCT!"

The complete path from an idea (or customer order) to the finished product can be administered with cc|process manufacturing. Without having to set up all items, a development department can compare recipes, perform calculations, record assumptions and create manufacturing orders while accounting for purchase requirements. For example, it is possible to specify data in the product setup by percentage weight or percentage volume including density





calculation. If the add-on hazardous materials management is integrated, the materials database is directly accessible. Additionally, the process for shipping samples is also available during the creation of an item. Finally, all process stages can be subjected to a cost analysis to ascertain a new product's profitability.

## MAINTENANCE TEMPLATES AND MAINTENANCE ORDERS

cc|process manufacturing contains an internal maintenance module for monitoring and executing maintenance and service orders. Users can prepare maintenance templates and define maintenance intervals. You can have maintenance orders created automatically, in addition to performing unscheduled maintenance tasks at any time. Time and material demands as well as external resources can be considered in the planning. Scheduled shutdowns can be coordinated with production planning in an overview.

## GRAPHIC EXTENSION FOR SEQUENCE PLANNING

Incorporating all the functions of cc|process manufacturing, the graphic extension cc|graphical extension makes for more transparent visualization of data using different colours. Graphical control on complex data assists in simplifying data analysis to support key business decisions (SEE FIGURE 6).

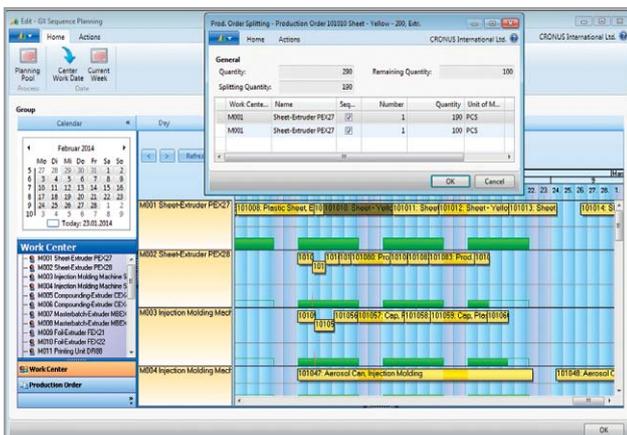


FIGURE 6 | GRAPHICAL EXTENSION WITHIN MICROSOFT DYNAMICS NAV

## ADD ON MODULES

COSMO CONSULT has a range of add on modules to optimise a large number of business transactions in the area of process manufacturing:

- ▶ Graphic design add-on
- ▶ Workflow management
- ▶ Extended quality management
- ▶ EDI and automotive connection
- ▶ Mobile data acquisition and barcode scanning
- ▶ Hazardous substance management
- ▶ Production data acquisition and time recording
- ▶ Project management
- ▶ and much more

## RESELLER PROFILE

Naviona is a Microsoft partner and Dynamics NAV reseller with a long history of implementing and supporting the manufacturing verticals from COSMO Consult. As the premier reseller we have become the go-to partner for advanced manufacturing implementations based on Dynamics NAV in the US.

Naviona is the 'Navy SEALs of Dynamics NAV'; we are experienced, well trained and we get the job done. Our customer base is primarily manufacturing and distribution companies where finance, operations and inventory management are in focus.

The services provided includes everything from project management to development, we do full Dynamics NAV implementations, optimizations of business processes and ongoing support. We are also available if you just want a second opinion about something related to Dynamics NAV.

Our team is located across the US, from Tampa in the southeast to San Diego in the west. Feel free to contact us for more information or to request a demo.

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