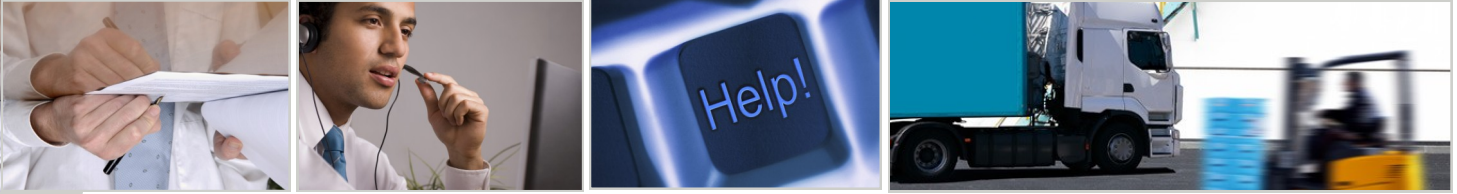


## Business Need: Production Management



### Accommodate variable end-products which result from re-grading and unpredictable chemical processes

Using SYSPRO's co-products and manufacturing inspection functionality, you can easily cost and capture the receipt of multiple products of varying grades from jobs originally planned for single-grade items.

You can choose to apportion costs between components and co-products according to a percentage breakdown for the entire material, operation and sub contract costs, or you can define percentages against specific operations and materials.

SYSPRO's Work in Progress inspection system gives you the tools to record the inspection details of manufactured items and, depending on the results, select to receipt, scrap or rework quantities. Units in inspection are visible, but unavailable for use until accepted into stock. Within the inspection function, you can capture detailed records of counts, inspection, scrap, rework and stock receipts.

You can receipt inspection items as the original product to manufacture on the job, or as a different product or products, which is useful for end products of variable grade. Also, you can receipt items into a warehouse different than what was originally planned.

### Adopt LEAN manufacturing practices

From enabling the identification and tracking of non-value adding activities inherent in your current operational processes, to the automation of manual processes, SYSPRO's powerful functionality provides you with the tools to implement your LEAN initiatives. Its integrated nature and ease-of-use facilitates the effortless extraction of financial and operational information required for Value Stream Mapping (VSM).

SYSPRO's Inventory module is a synchronized hub providing a consolidated view of all stock locations and those activities that impact inventory optimization and customer service levels, as well as the end-to-end elements of costs and lead times. Features such as Pareto and obsolescence analysis can assist in identifying those products that are suitable for VSM focus, while SYSPRO modules such as Engineering Change Control, Bills of Material, Work-in-Progress and Factory Scheduling facilitate the evaluation of targets for kaizen programs, such as reduction in design and manufacturing costs, cycle times, queues and setups.

SYSPRO's powerful inspection, serial tracking and lot traceability functionality aid in the identification and tracking of the source of defects, thereby enabling the implementation of kaizen initiatives towards the principle of 'Quality at the source'. The queries and reports in Work in Progress enable you to quickly assess the statuses, inventories and costs associated with work in progress, and provide metrics on utilization, efficiency, scrap and rework, while customer and supplier delivery performance metrics are provided by SYSPRO's powerful sales order and purchase order functionality.

SYSPRO's Inventory and Bills of Material modules enable the modeling of the LEAN techniques of batch size and setup reduction on costs, lead time and inventory. SYSPRO's Factory Scheduling provides graphical tools to assist you in optimizing your scheduling and sequencing processes, to reduce setup and overall lead time, and improve manufacturing flexibility and sale-to-customer flow. This, along with the inventory optimization and production planning features, enable you to refine the pace of production to match the pace of sales. Furthermore, features such as sales order / job / purchase order linking facilitate the electronic implementation of true pull supply chain processes where appropriate.

Document Flow Manager and SYSPRO e.net solutions enable you, not only to automate resource and time-intensive processes such as order processing, but also to handle increased volumes from global customers by providing order taking and acknowledgement on a 24/7 basis, thereby improving lead time and freeing up staff to perform other value-adding tasks. Furthermore, SYSPRO's XML-aware solutions enable version-independent integration with best-of-breed shop floor monitoring and control systems.

The system's sophisticated reporting and analytics tools enable user-defined reports and queries, while its powerful customization functionality enables the creation of efficient workflows to implement business rules and standardize business processes. Additionally, the Office Automation and Messaging module enables the automatic raising of alerts, triggers and events, based on user-defined criteria, thereby aiding prompt problem solving and process improvement.

SYSPRO's flexible integrated features and best-practice focus give you single-point visibility and control, providing support for the implementation of your LEAN initiatives.

### Control product design changes

Constant innovation is one of the key factors to remaining competitive and on-going research and development to design new and better products is integral to the industry. Your ability to design new products and modify existing designs, as well as improve time-to-market is critical to remaining competitive and profitable.

SYSPRO provides tools to streamline and track the introduction of new product designs and amendments to existing designs, along with relevant costings. SYSPRO's Engineering Change Control (ECC) enables you to apply strict control over your design-to-market processes by providing an integrated rules-based electronic workflow system with full version control, security and auditable history.

ECC gives you the tools to record and track new and modified product design and process changes, assess the impact of these changes on costs and associated data, and control the change routing and approval processes. ECC's queries, audit trail, history and archive facilities, give you quick on-line access to details of prior product versions, as well as the option of reverting to the production of a prior product version if required. In addition, the facility to attach copies of product design drawings to version and release levels provides access to visual details of revisions.

The Where-used Query facility enables you to identify all items affected by the raising of an Engineering Change order for all routes identified as being under Engineering Change Control. In addition, SYSPRO provides a 'replace component where-used' facility that enables the quick replacement of one item with a valid substitute item, thereby streamlining design changes.

SYSPRO's ECC, Bill of Materials, Work-in-Progress and Factory Documentation modules enable you to implement controls to ensure that your products are manufactured under consistent processes, to the correct designs and specifications. Single-level, multi-level, co and by-product bills are all catered for and flexible bill definitions accommodate complex component and sub-assembly requirements.

Constant innovation is one of the key factors to remaining competitive and on-going research and development to design new and better products is integral to the industry. Your ability to design new products and modify existing designs, as well as improve time-to-market is critical to remaining competitive and profitable.

### Control product design changes for batch processing environments

Constant innovation is one of the key factors to remaining competitive and on-going research and development to formulate new and better products is integral to the industry. SYSPRO's Engineering Change Control (ECC) enables you to streamline and apply strict control over your design-to-market processes by providing a rules-based electronic workflow system with full version control, security and auditable history.

ECC gives you the tools to record and track new and modified product recipe and process changes, assess the impact of these changes on costs and associated data, and control the change routing and approval processes. ECC's queries, audit trail, history and archive facilities, give you quick on-line access to details of prior product versions, as well as the option of reverting to the production of a prior product version if required. In addition, the facility to attach copies of product drawings to version and release levels provides access to visual details of revisions.

The Where-used Query facility enables you to identify all items affected by the raising of an engineering change order for all routes identified as being under engineering change control. In addition, SYSPRO provides a 'replace component where-used' facility that enables the quick replacement of one item with a valid substitute item, thereby streamlining formula changes.

SYSPRO's ECC, Bill of Materials, Work-in-Progress and Factory Documentation modules enable you to implement controls to ensure that your products are manufactured under consistent processes, to the correct formulae and specifications. Single-level, multi-level, co and by-product bills are all catered for.

Flexible bill definitions accommodate complex raw material and intermediary requirements to ensure precision in quantities required for bulks, batches and packs. You can define each structure level in a bill based on absolute fixed quantities, fixed quantities per, or wet weight percentages. Precision is further enhanced by SYSPRO's allowances for high tolerances in quantity definitions, as well as the number of levels catered for in a multi-level bill.



**The Competitive Edge Since 1986.**



## **Business Need: Production Management, cont.**

### **Maintain accurate job costs**

In 'to-order', as well as project and service environments, job cost accuracy is essential in attaining correct pricing and profitability, as well as to assess the reliability of the quoting process, while in standard costing environments, it is essential for tracking the validity of current standard costs.

For 'to-order' environments, SYSPRO's Quotations module enables detailed estimates based on all aspects of the job (or jobs) and the automatic creation of jobs, purchase orders and sales orders based on approved quotes. This ensures the integrity of the quoted and margin information throughout the system. For project and service environments, this same functionality is available with the added benefits of hierarchical analysis of costs and margins per head and section.

SYSPRO's fully integrated solution enables the capture, tracking and analyzing of job and product costs and profitability in real-time. Details of expected versus actual costs for material and scrap, internal and external labor, fixed and overhead costs per job, or group of jobs, is available through SYSPRO's powerful querying and reporting features. This enables the identification of exceptions and problems as they occur, such as areas of high cost expenditure, production scrap and rework, and problems in the quoting process. Furthermore, for those businesses wishing to take advantage of government and private enterprise grant programs, detailed R&D job data is easily extracted for regulatory reporting requirements.

With SYSPRO's visibility to product cost details and profit margins, including for co and by-products, you can evaluate job cost performance, margin analysis and pricing with confidence.

### **Manage by-products**

SYSPRO provides a mechanism for configuring the manufacture of multiple items against a single bill of material, including those products that result from the manufacturing process but which are not included in demand planning.

This is useful for companies that produce by-products as a result of their manufacturing processes and who want to recycle, sell or use these by-products for some other value-added purpose, rather than write them off as unrecoverable scrap.

### **Manage capacity**

To execute your production plans and achieve a high level of manufacturing agility, you need visibility to current and future demands, resource availability, schedules and material plans, as well as user-friendly tools that enable you to respond quickly when things change. SYSPRO provides an integrated view of the elements that impact capacity planning, enabling improved resource management and utilization.

SYSPRO's Bill of Materials module provides the tools to maintain the demonstrated capacity for work centers and productive units, while SYSPRO Factory Scheduling enables the configuration of shift patterns and the identification and consideration of multiple constraints such as tooling. The Bill of Materials module enables the configuration of product routings from which Work in Progress and Requirements Planning derive the work center capacity required, dynamically adjusted for order or batch size.

SYSPRO's Requirements Planning module enables comprehensive demand planning and the modeling of the master schedule and other demand requirements on capacity profiles, over a user-defined horizon. Based on order requirement and lead times, the requirements calculation calculates the total capacity load for both open and planned shop orders, dynamically adjusted for batch size, by using infinite backward or infinite forward scheduling. It also provides a simple single-level forward finite scheduling tool.

More sophisticated finite scheduling and sequencing capabilities are provided by SYSPRO Factory Scheduling, including algorithm-based forward, backward and bi-directional finite scheduling, as well as operation sequence optimization. A user-friendly graphical interface affords a real-time view of your capacity loads, with one-click highlighting of bottlenecks to provide quick identification of problem areas. SYSPRO Factory Scheduling delivers a range of features from manual drag-and-drop to powerful what-if schedule modeling, providing a decision-support tool enabling you to balance demand and capacity constraints. Furthermore, SYSPRO's XML-aware solutions enable version-independent integration with best-of-breed shop floor monitoring and control systems, to enable up-to-the-minute querying and reporting in complex scheduling environments.

### **Manage complex production recipes**

SYSPRO's multi-level bill of materials functionality enables the definition of complex production recipes of up to 15 levels per route, and 10 routes per finished product. Control over recipe changes is seamlessly handled by the Engineering Change Control module, while a where-used query and substitution facility enables quick and easy replacement of ingredients. SYSPRO's powerful costing and what-if costing calculations, reports and queries provide a comprehensive and accurate picture of purchasing and production costs.

The work center and structures and routings facilities provide you with the means to define and maintain the elements required in a sequence of internal or subcontract manufacturing

operations, as well as the structural relationships between parent and component parts. Phantom bills are catered for to accommodate transient production items, and planning bill functionality aids option forecasting and planning. In addition, the configuration and manufacture of multiple items which are produced in a single process are catered for by SYSPRO's co-and-by-product features.

For each bill level, you can define ingredient quantities such as quantity per, fixed quantities or wet weight percentages in relation to that specific level's parent item. Component and operation copy, insertion, and move facilities enable straightforward maintenance of new and existing bills.

SYSPRO provides various operation run time methods, as well as material and progressive scrap functionality. The capture of various lead time elements enables accurate calculations of manufacturing and cumulative lead times, which in turn aid efficient materials planning and production scheduling, as well as product costing.

You can simulate the effects of varying batches sizes and subcontracting on product costs and lead times. You can also add information on tooling, operator skill levels, operation instructions and testing requirements to the operation and print these fields on SYSPRO's user-defined factory documentation.

The relationship validation function enables you to easily identify illogical relationships within your bills, while the structure validation function facilitates quick deletion of redundant or superseded components from bill of material structures.

The Work in Progress module enables seamless ingredient substitution where actual ingredients differ from planned. Furthermore, where intermediate or finished products differ from planned, the Work in Progress inspection functionality enables receipting of these products as alternate stock codes, or into alternate warehouses or bins.

SYSPRO's multimedia functionality enables you to attach visual and textual material, such as videos, photographs, and certificates of conformance, to structures and operations, to aid production and quality assurance staff, while custom forms enables you to create additional user-defined fields.

### **Manage component requirements**

SYSPRO enables the time-phased planning and execution of both dependent and independent component replenishment, as well as the efficient management of component issues to production.

The system's component to-operation linking facility on both standard and non-standard product bills of material, as well its order policy, lot sizing and dynamic lead time functionality, ensure that automatic replenishment calculations for dependent demand satisfy quantity and date requirements. Independent demand for spares is also catered for through the use of SYSPRO's multi-level MPS and forecasting functionality.

Inventory order point indicators, such as reorder point, minimum/maximum levels and safety stock, provide the tools for other replenishment planning approaches that may be better suited to optimizing inventory in your environment.

SYSPRO enables the quick review and execution of suggested actions for component purchasing and production, using either the requirements calculation or trial kitting criteria as a source. For make-to-order and engineer-to-order environments, sales-order-to-job linking, purchase-order-to-job linking and the bill of jobs features enable the automatic raising and linking of component requirements for a customer order line. Extensive purchase order and blanket purchase order functionality, as well as SYSPRO's electronic collaboration tools ensure fast and secure communication of orders to suppliers around the globe.

SYSPRO's multi-level trial kitting facility enables you to quickly check that you have all components required for a standard part, job or bill of jobs before issuing any materials or launching a job onto production and, if not, where shortages exist. The kit issues facility determines the exact issues required for a user-defined range of job operations, helping to avoid cluttering the production area with unnecessary component inventory. Where production runs are short and work in progress control is not required, SYSPRO's backflushing facility enables you to issue components used, on receipt of the parent product.

SYSPRO's where-used query and replace facilities enable seamless replacement of one component with another throughout relevant bills of material, while the Engineering Change Control module enables full version and release level management of this process if required.

### **Manage different units of measure for different levels in product bills of material**

SYSPRO's Inventory module enables the definition of multiple user-defined units of measure (UOM) for stocked items: Stocking UOM, Alternate UOM and Other UOM. In addition, a separate manufacturing UOM will be available in version SP3. These units of measure, along with their conversion factors are used in various parts of the system to ensure accurate quantities for sales, purchasing and production.

For production purposes, SYSPRO's multi-level bill of materials functionality enables you to



**The Competitive Edge Since 1986.**



## **Business Need: Production Management, cont.**

define the manufacturing recipes and methods for bulk, intermediary and pack items, allowing for up to 15 levels per route, and 10 routes per finished product. For each level in a multi-level bill, you can define ingredient quantities as quantity per, fixed quantities or wet weight percentages in relation to that level's parent item.

### **Manage dynamic product schedules**

To gain the competitive edge, you must have the agility to respond to market demands at all levels of operation, without increasing costs and waste, and sacrificing efficiency. Whether you use line, batch or project processes, your scheduling activities must balance competing objectives. This includes the efficient management and execution of re-scheduling activities when business priorities and plans change or unexpected events occur.

Having the capability to create and execute an achievable schedule requires a comprehensive view of the current situation and available resources, as well as the tools to perform efficient re-scheduling if necessary. SYSPRO's visual scheduling products provide this capability to suit all levels of sophistication and complexity, from basic manual drag and drop, to automatic algorithm-driven scheduling and changeover optimization.

Particularly suited to job shop, batch process and project environments, SYSPRO Factory Scheduling provides the planner with an interactive decision support tool that helps balance demand and resource availability. Optimization is enhanced through the consideration of priorities, constraints, and conflicts, as well as sequencing and synchronization requirements. Automatic forward, backward and bi-directional scheduling is available, along with manual intervention. The customizable graphical interface enables quick and easy identification of schedule loads, job and operation statuses and links, and resource availability.

One-click schedule performance metrics, as well as the ability to run, save and compare schedules, provide what-if capability and enable the scheduler to choose the best option for the current circumstances.

Whether you operate a simple scheduling environment requiring single-constraint finite scheduling, or a complex environment requiring multi-constraint and rules-based finite scheduling, SYSPRO can help you optimize your scheduling activities with its Graphical Planning Board (GPB), Factory Scheduler (FS) or Advanced Scheduler (AS).

### **Manage raw material lead times**

Strict management of raw material lead times is vitally important in controlling overall procurement costs and attaining customer service level targets. SYSPRO enables you to monitor quoted purchasing lead times against actual supplier delivery performance and to flag reliable suppliers of specific raw materials as certified in the system, as well as to track blanket purchase order contracts.

Component-to-operation linking and component offsets facilitate the implementation of JIT and LEAN purchasing principles. In addition, inventory order point indicators, such as reorder point, minimum/maximum levels and safety stock provide the tools to help you mitigate problems associated with unreliable supply of long-lead time items.

### **Optimize production capacity and increase manufacturing efficiency**

Increasing manufacturing efficiency means getting the right balance between demand and supply, while optimizing capacity, improving throughput, and reducing waste and variable costs. SYSPRO provides interactive decision support tools that give you visibility and control over all inputs and outputs.

The Material Requirements Planning system gives you an integrated picture of your demand and supply, as well as your available capacity, enabling you to model what-if scenarios to produce viable replenishment and production plans. SYSPRO's Factory Scheduling assists you in maintaining accurate and up-to-date production schedules that take account of the complexities of your factory. This enables better co-ordination between work centers, increases productivity, reduces work in progress and achieves better customer service levels.

Material and labor tracking, as well as cost, scrap and utilization management is facilitated through SYSPRO's Work in Progress module, which enables you to track in-process production at every stage and identify problems as they occur.

### **Reduce bottlenecks**

Critical to continuous improvement strategies is the reduction of overall product lead time to enable companies to be more agile and responsive to unpredictable and changing customer demands. Identifying and reducing the number and severity of manufacturing bottlenecks is crucial to any lead time reduction strategy. SYSPRO's Work in Progress module provides tracking of expected versus actual operation times, assisting you in identifying bottleneck patterns and inaccurate demonstrated capacity estimates.

Where nothing can be done to remove short term bottlenecks, management of production schedules to take account of bottlenecks is critical to optimizing your production resources and providing realistic order delivery dates. SYSPRO Factory Scheduling provides one-click highlighting of bottleneck operations on existing schedules, as well as what-if scheduling and sequencing to optimize utilization of available production resources.

### **Reduce lead times**

One of the key contributors to maintaining a competitive advantage in the global market is the ability to deliver quality products to customers within their expected delivery date, in a shorter time than your competitors, and within your cost constraints. To do this, you need to be able to analyze lead time constituents and non-value-add activities, from order taking to delivery, so you can identify and eliminate waste. SYSPRO's integrated nature gives you complete visibility across the entire supply chain, enabling the co-ordination of activities, while its powerful tools help you to monitor and improve lead time performance.

SYSPRO e.net solutions and import functions facilitate improved electronic collaboration with your customers and suppliers, thereby reducing the time and margin for error for activities such as order processing and the creation of customer-specified designs. Supplier performance data provides you with comparison of original due date to receipt date for purchased items, while the capture of customer request date at order entry time enables reporting on customer delivery performance by customer, by order line.

For engineering or build-to-order items, SYSPRO's Quotations module enables the capture of all build details and costs, thereby enabling you to calculate realistic delivery dates. It also facilitates the quick conversion of an accepted quote into the relevant details in Work in Progress, Sales Orders and Purchase Orders. This reduces capture time and errors, as well as the time taken to raise the paperwork.

For stocked items, SYSPRO enables the capture of standard purchasing lead time for components, as well as the automatic calculation of manufacturing and cumulative lead times for manufactured product based on the elements of operation times in the Bill of Materials and Quotations modules. At the design stage, the Engineering Change Control module helps you streamline and control the product design process, helping to reduce the time from concept to market.

Material and distribution requirements planning helps you identify what you need and when you need it based on standard lead times dynamically adjusted for batch size for selected sources of demand and their requirement dates. Powerful queries provide pegging and time fence information to enable effective decision-making.

Work in Progress job data provides job and operation planned and actual start and finish dates, which enables you to identify bottlenecks in production. In addition, SYSPRO Factory Scheduling provides excellent visibility to your production scheduling activities, facilitating improved use of manufacturing resources.

### **Track material and operation flow through manufacturing**

To identify and reduce waste and inefficiencies in the production process, you need real-time access to accurate material and labor flow data. SYSPRO enables you to easily query the status of your work in progress in terms of costs, material and scrap quantities, labor hours and manufactured quantities. In addition, optional lot traceability and serial tracking functionality enables you to identify the jobs to which traceable raw materials have been issued.

In SYSPRO, the material and labor allocations are created manually for a non-standard job, or automatically for a job created from a bill of material or estimate. In all cases, you can specify whether the materials are required a certain number of days before the job finish date, or at the start of a specific operation. This provides complete visibility to the material and labor that is required for any particular job, and when it is required in the production process. Also, once a job is in progress, you can easily pinpoint where the job is currently located in the routing, as well as what material has been issued so far, and the job's overall progress.

Trial kitting mechanisms provide complete visibility to the availability of materials required for jobs. Flexible posting functionality enables you to issue materials and labor to jobs at any time via a number of methods, including specific and kit issues. In addition, SYSPRO e.net solutions and Job Import functionality enable seamless integration of shop floor data collection systems.

Powerful queries and reports provide detailed information on job status and delivery performance information.