Columbus Manufacturing®
Once you *know* how...

REAL WORLD SCENARIOS
Volume 1
Cases 1 - 6

MANAGING PRODUCT COMPLEXITY

GETTING THE RIGHT MIX

INTEGRATING PRODUCT LIFECYCLE MANAGEMENT (PLM)

CONFIGURING PRODUCTS TO ORDER

REUSING COMPONENTS

FACILITATING PRODUCT PERSONALISATION

IMPROVING VERSION CONTROL AND TRACEABILITY

MANAGING ENGINEERING CHANGES

MANAGING PRODUCT COMPLEXITY

One of the biggest challenges discrete manufacturing companies face is the increasing complexity of the product, whether this is due to technological change, market forces or the need to customise the product to meet demanding customer requirements. It is essential to capture these requirements accurately and quickly, and flow this information efficiently through the organisation. Where these requirements change, additional control challenges arise because of the need to manage complex engineering change processes.

The costs of inefficiencies are often clear, but the risks of ineffective processes and systems may be greater in terms of dissatisfied customers. Regulatory compliance is increasingly a fact of life for manufacturers, but in safety-critical industries such as petro-chem, nuclear and defence, the failure to demonstrate full version control and traceability can have serious consequences.

The following case studies illustrate how Columbus has helped many companies address these issues using Microsoft Dynamics together with appropriate tools from the Columbus*Manufacturing* solution set.

Columbus*Manufacturing*®
Once you *know* how...

CASE 1:

Reusing Components

Issue

A supplier of shipping cases for mobile TV film crews has many customers with varying requirements, resulting in highly customised designs. The products are replaced frequently as the crews regularly update their equipment. Many customer requirements are similar to previous designs, but there was no systematic way of realising these potential synergies.

Problem

When a customer request for a changed or new design came in, the engineers relied on their memory of past work to determine if something similar already existed. This was generally ineffective, so they started to compile information on parameters relating to each design. Although this was an improvement, it still relied on memory to identify potential design synergies.

Remedy

Using the Columbus Product Engineering module, the business is now able to define for every product or subassembly the parameters which allow the next engineer to readily find previous designs. By searching for the footprint, cube, weight, shock tolerance, magnetism, moisture controls and fire-retardency requirements, the engineers are able to avoid "reinventing the wheel" by using products and components which are already designed, tested and qualified to industry standards.

Benefits

Once parameter data had been loaded for existing designs, the benefits started to emerge for new work:

- New designs are generated faster by re-using existing designs
- Customer "rush" orders are addressed quicker
- Design engineers focus more on solving engineering problems, resulting in smarter design decisions
- Higher re-use of existing designs, resulting in more frequent use of existing stock items and improved response times

CASE 2:

Integrating Product Lifecycle Management (PLM)

Issue

A manufacturer of large walk-in coolers for the restaurant and food service industries wanted to determine the feasibility and estimated cost of their designs. They also wanted to be able to assess the impact on existing orders of proposed engineering changes.

Problem

Although their CAD and PLM systems were linked, there was no automatic interface to their Microsoft Dynamics ERP system resulting in lengthy re-keying of data which was both costly and slow. Consequently they were unable to respond quickly to customers and occasionally committed to customer orders without knowing the likely costs. The engineering change assessment process was lengthy and inefficient.

Remedy

Integration between their PLM system and Microsoft Dynamics has now been achieved based on an off-the-shelf integration available as part of Columbus Connectivity Studio. Bill of materials data now flows freely from CAD to ERP, and cost and inventory data is returned into PLM. Columbus Product Engineering was implemented to facilitate control of these information flows. A managed engineering change process has also been introduced, supported by the Product Engineering module, so they are able to gain quick insight into the impact of design choices and thereby choose alternative options that reduced production costs.

Benefits

With the PLM/ERP integration bedded in and the improved control of the information flow, several benefits were realised:

- Duplication of effort was eliminated saving cost, time and reducing errors
- More accurate cost estimates resulting in better pricing decisions
- Greater ability to assess the impact of engineering changes in advance, particularly in terms of production costs
- Faster response to customers

CASE 3:

Configurating Products To Order

Issue

A company designs and manufactures fluid flow-meters to cater to a wide spectrum of customers, each having different needs. They were using in-house software which used customer requirements as an input to generate the detailed configuration of the meter to be assembled for that particular customer. This process was resource intensive and they required a more automated solution which would:-

- Generate the flow-meter design
- Create the relevant product definition in their ERP system
- Suggest an appropriate selling price

Problem

The company relied on the expertise of senior staff to manually configure the flow-meter based on each new demand from a prospect/customer. The configuration posed several challenges since it relied totally on manual selection at each stage of product design – a very time-consuming process. Even deciding the sales price for a particular type of flow-meter was time consuming. Pricing was performed by building up the cost estimates manually – again a lengthy and error-prone process.

Remedy

The manufacturer selected the Product Builder module in Microsoft Dynamics to address these issues. The logic for the flow-meter configuration is built-in to suggest the combination of parts for a particular configuration. Based on the inputs entered, the system creates a new item code and configuration for the new flow-meter. The system also calculates and delivers the price of the configured model and enables the user to configure the product directly from a sales quotation.

Benefits

The main benefits are in increased efficiencies:

- Less dependence on the expertise of senior staff
- Lower costs to generate quotations and to process orders
- More accurate pricing

In addition, customers appreciated the faster response times and greater flexibility they needed.

CASE 4:

Facilitating Product Personalisation

Issue

A shoe manufacturer wanted to offer personalised sports training shoes to their customers. Each shoe would contain seven to eight different sections each of which could be personalised with a choice of colour and type of leather. This personalised approach would allow customers to walk into their store and customise their shoes there and then.

Problem

This new product strategy led to increased orders but their manual systems were not able to keep up with the demand. The main problem was providing the customer with a delivery date and sales price at the time of order. Managing this customised production strategy was also leading to an increase in manual work. Typically, it took a day to calculate and communicate to the customer, the sales price and delivery date, by which time the customer might reject the order. This also facilitated the unnecessary creation of item codes in the system which led to a large item master within a short period of time. The reporting and analysis of data was therefore very difficult which led to inaccurate forecasting for the next year.

Remedy

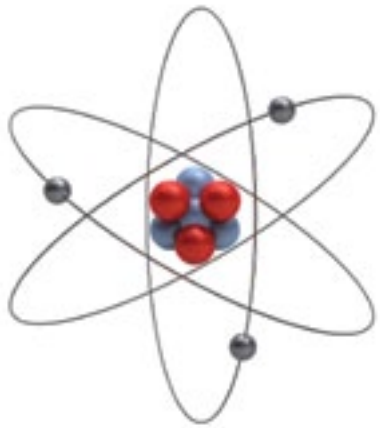
To address these issues the manufacturer has implemented the Product Configurator module of Microsoft Dynamics. This provides a user-friendly method for configuring the product and preventing the selection of incorrect colour combinations and leather types. It generates the sales price so the customer can now make an instant decision. Microsoft Dynamics supports "Capable To Promise" calculations which take into account both inventory and capacity in providing a delivery estimate. It then generates the production data needed for the order automatically.

Benefits

The company is now able to respond to their customer immediately, and at the same time the internal processes to fulfil the orders have been streamlined. They are also experiencing improved data accuracy in the reporting processes and increased confidence in forecasts.

CASE 5:

Improving Version Control and Traceability



Issue

A design and manufacturing company of highly technical equipment for the defence and nuclear industry needs to provide full control and traceability of any changes to component, sub-assembly and final product configurations.

Problem

Historically the company had relied on a manual engineering change approval system. This limited their ability to control changes that affected stocks and open orders, and didn't include a system for controlling changes to manufacturing processes. Tracking changes through to their stocks and being able to assess the implications and costs of a new version was difficult and time-consuming. Full life-cycle control was imperative, but manual tracking of components from purchase to sale, and in reverse, with all version history included in the trace was cumbersome, costly and difficult to manage.

Remedy

Using Columbus Product Engineering, the business has been able to introduce a full version control system with the additional options of batch and serial number tracking. All proposed change orders are now readily assessed to judge their impact on form, fit and function. An approvals step was built into the engineering change order process to ensure that the correct sign-off was received before effecting the change. As part of the process, all proposed changes are reviewed by product engineers to assess the impact on open orders, stock and partially completed production.

Benefits

The cost of processing changes has been significantly reduced and the speed of response limited the impact of changes on purchased stocks and work in progress inventory. But most importantly, regulatory requirements for full traceability were met.

CASE 6:

Managing Engineering Changes

Issue

A manufacturing company has a diverse range of electronic devices for process control and automation applications. Advances in technology and market competition necessitate constant improvement in the product design. These changes were controlled through a manual engineering change process, but it was becoming increasingly difficult to manage the variety, complexity and volume of change.

Problem

The manual process posed several challenges:-

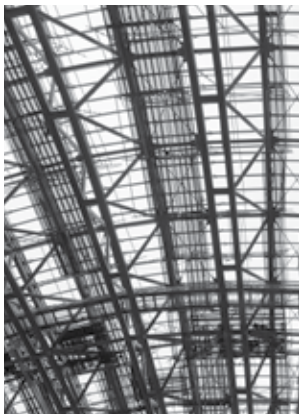
- Intensive labour requirements
- Over-reliance on different departments collaborating across the process
- Excessive paper documentation
- Inability to control product versions
- Unacceptable processing time for changes
- Inability to demonstrate traceability

Remedy

A complete end-to end engineering change management process has been deployed leveraging the engineering change features in Microsoft Dynamics. The process maps the tasks, roles, responsibilities and approval points from initial customer complaint or product improvement request, through assessment of the proposed change to implementation. Correct implementation was key – ensuring existing on-hand and in-progress inventory is dealt with, bringing in the replaced items, and updating records accurately.

Benefits

This was a big change for the company as engineering change impacts many departments and there was considerable amount of detailed procedure development and training to do. But the benefits have been substantial in terms of both increased efficiency in many areas as well as effectiveness in managing product change in a timely and accurate manner .



Columbus*Manufacturing*

The issues and challenges presented here and many more are addressed by Columbus*Manufacturing*. ColumbusManufacturing is an integrated business solution tailored for discrete manufacturers. It includes a combination of our award winning advanced discrete manufacturing software, our industry templates and implementation methodology all built onto the flexible and reliable Microsoft Dynamics platform.

Columbus*Manufacturing* starts in the supply chain, through warehousing, inventory, production planning, manufacturing, sales, service, equipment maintenance, delivery routing, engineering, shop floor control, sub contract management and project planning and tracking. It is widely known for delivering improved efficiency and reduced costs by integrating all supply chain processes while providing accurate business metrics for improved decision making.

Columbus*Manufacturing* allows you to utilise the solutions and functionality you need. To learn more about the various components, visit www.columbusglobal.com

- *Microsoft Dynamics AX or Dynamics NAV*
- *Columbus ADM (Advanced Discrete Manufacturing)*
- *Columbus SCS (Supply Chain Solution)*
- *Columbus BIS (Business Integration Software)*
- *Columbus RapidValue*
- *Columbus SureStep+*
- *Microsoft Dynamics CRM*

Introducing Columbus *RapidValue*

RapidValue has been designed and developed by Columbus to help organisations implement best practice business processes alongside their ERP implementation.

RapidValue is a Business Process Modeling solution that is fully integrated into Microsoft Dynamics AX, the foundational platform of ColumbusManufacturing

- *Streamline business processes for efficiency and speed*
- *Adopt best practices when appropriate to the business*
- *Standardise business processes across the organisation*

RapidValue enables customers to translate business process models into solutions while working directly in Microsoft Dynamics AX. *RapidValue* is designed to meet 80% of your industry requirements out of the box.

- *Business processes*
- *User procedures*
- *Application functionality*
- *User roles and profiles*
- *System set-up and base data*

Columbus *RapidValue*®
Once you *know* how...

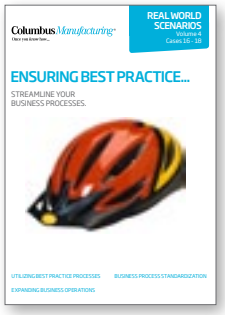
Columbus *Manufacturing*®
Once you *know* how...

The Columbus *Manufacturing* Real World Scenario Series

Volume 1
Cases 1 - 6

Volume 2
Cases 7 - 12

Volume 3
Cases 13 - 15



Volume 4
Cases 16 - 19

For more information on Columbus, our client's experiences and our solutions, please visit www.columbusglobal.com

ABOUT COLUMBUS:

Columbus currently employs over 1,000 dedicated professionals working out of 41 offices in 21 countries. With more than 20 years experience and 6,000 successful implementations, Microsoft recognises Columbus as a top global partner and has presented the company with virtually every award and certification available.

Columbus®