

Concurrent Engineering – A Lean Methodology

Let's say that we want to build a new operations centre. There will be warehousing and manufacturing activities at this new centre and the goal would be to produce a design that will utilize assets and materials to their maximum potential. In order to do this, we would want to tap the expertise of many different types of personnel. Bring in the consultants? Not necessarily...there is an alternative.



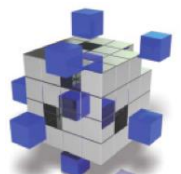
Concurrent Engineering is a methodology that organizations can use when trying to reduce design, overhead and material costs. It can also be used to reduce the opportunity for workers to be injured on the job. The basis of Concurrent Engineering is that a customer engages suppliers in confidence to design new products, The customer brings forth their requirements and engages one or more suppliers to fulfill various parts of the solution.

new facilities or new storage methodologies. The customer brings forth their requirements and engages one or more suppliers to fulfill various parts of the solution.

The Requirements

As mentioned, we want to build a facility that will have both warehousing and manufacturing activities. For simplicity sake (and because I have a word limit for this article) we'll concentrate on the operational aspects and leave the sales and administrative (front office) aspects to the imagination. As the customer, we need to come up with our needs. Here's a beginning list:

- ✚ Material storage. We'll need racking, material movement equipment, various sizes of bins and packaging and consumables.
- ✚ Material safety. We'll need to understand the safety concerns associated with the types of materials being used and the storage/movement solutions that are proposed.
- ✚ Material tracking. In order to maintain excellent inventory accuracy by location, we'll need to have an appropriate inventory system in place.
- ✚ Material and operations planning and control. Appropriate computer systems to plan the types of operations envisioned and provide timely, accurate feedback to management will be needed.
- ✚ Material usage. When producing our product we'll want to ensure that the materials we'll use and production machinery are compatible and the best for the intended use.



The Suppliers (and what they bring individually)

The suppliers that specialize in material storage can tell you all about the various racking and bins they provide and what environments their products can be used in. Additionally, they can provide guidance on safety tolerances, product maintenance and handling. The suppliers of material movement equipment will bring similar expertise to assist in the specification of the various types of products used to move material from one place to another dependent upon the various specifications of the products being moved. From a materials tracking viewpoint, the suppliers will come along with everything from RFID and Programmable Logic Controllers (PLC) to barcode with RF to straight barcode with data docks. Some may also have warehouse management software or alliances with organizations that provide complimentary software. Finally, the system needed to plan and control the operations will be needed.

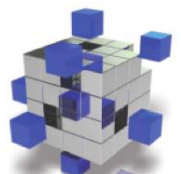
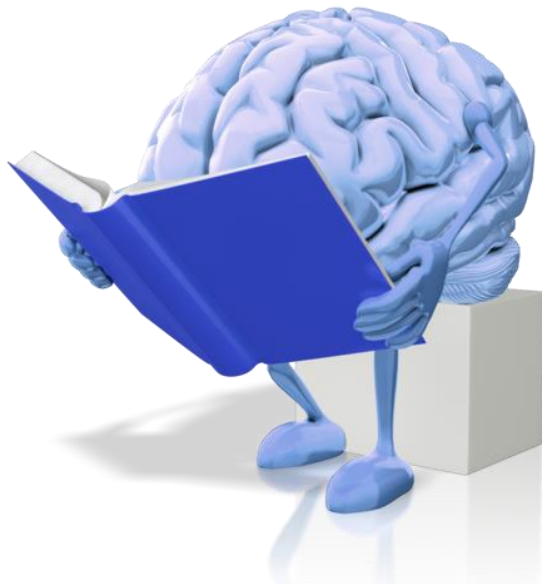
The suppliers will bring their people into the cycle when needed to 'assist' you in making a decision. However, not all of these suppliers have totally complimentary products. Therefore, you could purchase assets from two suppliers that don't necessarily work together. You could also end up purchasing a Caddy in one product and a scooter in another. They are not doing to operate at the same speed or efficiency so the Caddy has to slow down to the speed of the scooter and you don't get to enjoy the full ride experience of the Caddy or use all of its neat features.

Concurrent Engineering

What if we brought the vendors that need to integrate with each other together for a brainstorming session?

The storage and movement people deal with the products that need to move and store materials throughout the facility. They concurrently engineer a safe, efficient and complimentary solution to the requirements detailed. The movement and material tracking folks get together to determine the best and most cost effective method of tracking material in (and outside) of the facility. Oops, we forgot something. In the midst of talking to the material storage, tracking and movement folks, we are reminded that material must also come in and leave the building. Let's get the logistics folks in to discuss the most likely methods and equipment that will be needed to deal with material coming and leaving and have the movement and storage people in on that session.

Looking at managing the facility, we should be talking to the various technology vendors that offer Advanced Warehouse Management (AWM) and ERP functionality. Sometimes these are separate suppliers, but it also could come from one supplier. However, when looking at the AWM/ERP functions we should also have the material tracking and control folks (RFID, etc.) in those discussions that involve the technology and application interface of the various systems.



From a production standpoint, material vendors are very good at being able to understand the application of their raw materials to the production of an end product or component thereof. They are able to suggest potentially better products than originally specified or better methods of production with those materials. They also provide knowledge relating to the safe storage and use of materials they provide. Engaging them in discussions with the potential providers of production, material movement and storage vendors will ensure the optimum outcome. This is also a great step towards implementing a Quality-At-Source program as described in earlier articles.

Summary

I've just exposed the tip of the Concurrent Engineering methodology. There are several benefits to utilizing CE in the product design process that were not discussed including one that is becoming increasingly important...the 'time to market' cycle of new or enhanced products. In today's competitive environment if you can be the first to market with a good quality and low cost product then you've gained a major competitive advantage. If you can continually be ahead of the competition with enhancements to the product, you'll eventually dominate that product market.

About the Author

Ken Cowman's career has spanned over 43 years with 11 of those in operations management followed by more than 30 years as an enterprise solutions and continuous improvement project manager, educator, seminar leader and management coach. He has had over 70 articles published in various magazines.

A founding executive of the APICS Peel Chapter, Ken was part of the OMERIC team that wrote the Fundamentals of Operations Management courses for APICS. He is also the past Chair of the Business Operations Management Program Advisory Committee at the School of Business at Centennial College.

Ken is also the author of Emercomm's Lean Enterprise Management methodology and leads the team that develops the LeanControl RTO© applications.

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