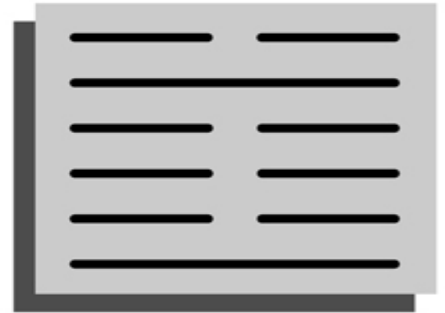


# Change Management Associates



April 2013

## Featured Topic



### All in the Family Determining Product Families in Job Shops

Dear Drew,

The response to our "We Don't Make Widgets" newsletter as well as to our "Lean in Job Shops" webinar is a clear signal of the tremendous interest in the subject of 'high-mix, low-volume' manufacturing. You spoke and we heard you. Therefore, we will devote a number of future newsletters to this subject, that will provide a deeper discussion of how concepts such as takt time, cellular/flow, and pull/kanban can be applied to job shop environments.

This month the discussion will cover how product families can be identified in a high mix environment. This is often the critical first step for people to begin to see their organizations through a simpler set of lenses. It has proven to be a breakthrough exercise that provides the vision and path to dramatically improve flow through the application of cellular/flow concepts.

To complete this exercise first one must assemble a list of products or parts that have been produced in say, the past 12 months. For each item the "routing" must be identified. The required equipment or processes for each, and the sequence they are used to complete the product or part. Envision a spreadsheet with a list of products or parts on the left hand side and a list of required processes across the top. The list of parts can be several thousand items long in some "high mix" environments. The list of processes can be several dozen. There is an 'X' under any process that a particular part or product requires. It is often desirable to attach to each part additional information such as the "next higher assembly", the main assembly in which the part is consumed, as well as the end product that is shipped to the customer. This information proves useful when performing different sorts on

## Upcoming Events



**CMA and our network affiliates have the following events scheduled:**

### AME Events:

**Central NY Roundtable**  
Syracuse, NY  
May 2, 2013

Hosted by Cooper Industries, this 3 hour session is meant to allow regional organizations to network and share experiences. Organizations in the area are encouraged to attend this inaugural event and help to define future content. For more information [click here](#)

**Harley-Davidson**  
York, PA  
May 15, 2013

A special tour of H-D's new facility will be provided. An afternoon workshop on Performance Measurements will be provided. Go to the

the data

Remember that the goal is 'one piece' flow where parts can move from station to station or process to process with no batching at any process and minimal queues between steps. Of course it would be further desirable to flow parts together that are used in the same sub-assembly or final product. Then the processing of assemblies can begin earlier, thereby reducing lead time through the production system - a key objective of flow.

The list of parts are sorted so that 'groups' or 'families' of parts or products that share similar processes can be identified. This is an important first step to determining whether particular pieces of equipment should be dedicated to particular 'product families' in order to improve flow. For this purpose it is usually desirable to have the process times for each step, as well as the demand for the part of product, on the same spreadsheet. This would make it quite easy to determine the resource requirements of a particular family. Just keep in mind, the objective is to improve flow, not keep every process occupied at all times. The acceptable amount of 'utilization' will depend on many factors including the demand on particular equipment of other "families", the number of pieces of equipment available, the cost versus the benefit of purchasing additional equipment to allow for dedication to particular product families, and other factors.

Now sometimes the sequence of processes between parts of products is not always the same. This should not discourage you. With a little ingenuity it may be possible that more parts or products can be processed in the same sequence. Often part sequencing is what it is simply because of preferences of manufacturing engineers, CNC programmers, or machinists. Modest changes to programs, tooling, or just mindsets can overcome the difficulty of differing sequences. Such opportunities to standardize flow are best identified by use of a cross-functional team approach.

In other situations, the difference in sequencing is not really an issue. In one company a series of interchangeable machining cells were established each with turning and milling capability, as well as various secondary operations. Different products required different sequencing (milling then turning, or turning then milling). But there would only be one job running through the cell at any time, maybe two. So it really didn't matter as long as the machinists processed them one piece at a time between machines.

Another obstacle could be work content between products or parts. What if one part requires 10 minutes to complete and another 100 minutes, just to exaggerate the point? Can they be run through the same cell? There is a general guideline of 30% - as long as the work content for one part or product is 30% or less when compared to other parts, then they should be considered in the same product family. However, this is just a guideline. The question is can the part be moved from process to process with no batching at any process and minimal queues between steps, and be able to meet the required takt time? The total work content may or may not impact the ability to flow, but rather the ability to meet the required takt time. Perhaps there is an opportunity to flex people in or out of the cell or flow system to provide the necessary capacity to meet demand.

Often the more important consideration of highly variable work content is the

[AME website](#) for more information.

## **Improvement & Coaching Kata Workshop** Chicago IL April 30, 2013

Hosted by Littelfuse. What about improvement between the 'events'? Come learn about an improvement methodology that can be practiced on a [daily](#) basis. This one-day workshop is based on the popular University of Michigan 3-day program. [Click here](#) for more information.

## **Lean Enterprise Institute Workshops**

Toronto, ON  
July 25-27, 2013  
Lean Office workshop, Problem Solving, Leader Standard Work and other workshops will be offered at the Toronto Airport Marriott Hotel. [Click here](#) for more information.

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**Be sure to check out our publications!**

"Lean Office & Services Simplified"  
(2012 Shingo Prize recipient)

"The Complete Lean Enterprise"  
(2005 Shingo Prize recipient)  
VSM for Administrative & Office Processes

variation of individual process times within the sequence. This is important because it can 'throw off' the process-to-process balance required to maximize flow. What is required is for someone or several people to sit down, look at the individual process times and determine the best way to process the part or product so to maximize flow. Further, a cross-functional team approach may yield improvement opportunities at particular processes that will result in a more balanced sequence. Then Standardized Work can be developed for each part or product. Overcoming the challenge of balance is a key breakthrough that allows for many more parts or products to be considered in the same family as others.

Envision a 'playbook' of standardized work sheets that depict the best way to process parts in order to optimize flow along with visual depictions of how the cell or flow system will be set-up and/or run each part or product. This could be developed and provided for different levels of demand, if necessary. There would be a 'playbook' for each product family that includes dozens or even hundreds of parts, often organized into 'sub-families'. This documentation would be referred to prior to the start of each part, thereby minimizing the transition time from part to part.

In one 'job shop' a preliminary determination was made as to how best to run a part at the time it was being quoted. Rudimentary standardized work and a visual depiction were created as part of the quotation process, as well as a determination of which cell or family the part would be processed in, if an order was received. This did not require much time during the quote process as the people involved developed a deeper and deeper understanding of flow concepts. The documentation was referred to and updated once an order was received and the appropriate 'playbook' updated. Each new part was reviewed with the cell team as part of their morning huddle thereby insuring a smooth and effective introduction.

The term 'job shop' covers a wide spectrum of manufacturers from low volume but repetitive environments to true 'one off' companies where a part is made and may never be made again. In all cases each organization needs key individuals within to have a deep understanding of flow concepts so that they can adapt them to cope with the circumstances that represent challenges to optimize flow. And the first step of that process is to identify product families or groupings of parts that are processed through a similar series of value creating processes. With a little creativity more parts than first believed can be included in the same product family.

Best Regards

Drew Locher

Managing Director, Change Management Associates

## Announcing new CMA Website!!

We are pleased to announce that we have redesigned our website. It will still have all of the content that you have come to expect - articles, newsletters, project and service

**"Value Stream Mapping for Lean Development"**

**NEW!! "Unleashing the Power of 3P: The Key to Breakthrough Improvement"**

Books are available at [www.productivitypress.com](http://www.productivitypress.com)

Go to [www.cma4results.com](http://www.cma4results.com)  
Click on "Newsletters" to find past newsletters. Recent newsletters are:

**"Improvement Kata Speaking Helps Improvement Kata Thinking"**

Slideshare available on website.

**"We Don't Make Widgets - Lean for Job Shops"**  
Takt time, pull systems, cellular/flow and more - all applied to low volume/high mix organizations is covered

**"By the Numbers"**  
A reflection of learning over the past 25+ years on the subject of Lean Accounting

**"Finding the Scientist in You: Real Learning Comes in the Journey"**

**"Help Wanted: Using Visual Management to Drive CI"**

**"Debunking a Myth about Lean Office"**

**"What's Your Problem? The**

descriptions and more - along with new features. Use the new Contact form to send us your questions. We promise 48 hour response time. Video clips are now available on the subjects of 3P and Lean Office & Service. Based on your suggestions, there are now separate 'Articles' and 'Newsletters' pages. A search feature will make it easier to find the content you are looking for. So [click here](#) to go to the new CMA website and check it out.



**You can now follow us on Twitter @DrewLocher**

## Basics of Problem Solving"

"Because I Said So"  
Managing by Objective (MBO)  
versus Striving for Target  
Condition

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