

Inventory – understand it before you slash it!

BY TIM MCLEAN*

ONE of the biggest costs in a manufacturing business, and often the largest commitment of cash, is inventory.

In 'lean' thinking all inventory is also waste. So what is the right level of inventory for your business?

An extremely common mistake by manufacturers is to treat inventory as a driver of business performance.

The theory goes, reduced inventory leads to reduced working capital which leads to improved return on capital.

Unfortunately what usually happens is that reduced inventory leads to reduced customer service levels, increased firefighting and reduced production efficiencies which then leads to lost business, increased costs and reduced profits!

The problem with attacking inventory in isolation is that inventory levels are an outcome of how you run your business, not a driver!

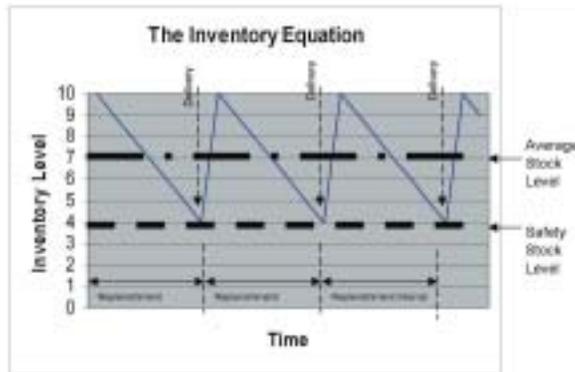
If you try to cut inventory without changing the way your plant operates you will simply run out of stock.

Good and bad inventory

Of course all plants have inventory they would rather not have. This "bad inventory" is made up of excess and obsolete inventory.

Obsolete inventory is stock of products that you no longer make, while excess inventory is stock in excess of that required to maintain your target level of customer service (more about that later).

Production batch sizes can also have a large impact on the level of excess stock. In some businesses a single batch can represent over six months' stock – a good reason to use lean manufacturing tools to reduce batch sizes.



The question is what is the right level of inventory for your company?

Your business needs a process to manage excess and obsolete stock.

The best approach is to prevent it by careful management of product launches and run outs and by use of lean manufacturing tools to drive down production lead times and batch sizes.

The important thing is to realise is that management of excess and obsolete stock is an ongoing process not a one off event.

The inventory equation

So how much inventory should your business carry? The graph below shows a theoretical cycle for inventory replenishment.

In an ideal world your average inventory will be equal to your safety stock plus half of your replenishment quantity (usually half your batch size in batch processes).

For example if you manufacture a particular product every week, then your replenishment quantity or batch size will be equal to one week's average consumption.

Safety stock on the other hand is a function of the amount of variability in the demand for your product, variability in your production process and in your supply of raw materials.

The more variable supply or demand, the greater the level of safety stock that you will need.

Various formulae are used to calculate the level of safety stock, but essentially they all do the same thing.

If you set a target level of stock availability, let's say 99% of all items in stock at any point in time, what is the level of safety stock required to achieve that level of availability.

The higher the level of availability required, the higher the level of stock required to achieve it.

So how do I reduce it?

Many things drive your stock levels—the level of stock availability you need, the level of variation in your usage of the stock, the level of variability in supply, batch sizes and production and material lead times.

Also in distribution networks, the number of stock points has a large impact on stock.

Frequently the first target is to attack suppliers to improve their level of service and beat up on sales people to provide better forecasts.

While these activities can be useful and are generally satisfying for the frustrated manufacturing manager, they are usually not the biggest drivers of inventory.

The biggest driver is lead time in your process. Use value stream mapping to identify and eliminate lead time. Quick changeover techniques enable you to reduce batch sizes.

Switching from monthly to weekly or daily replenishment will reduce the amount of replenishment stock and the need for safety stock by an order of magnitude.

Look at ways to consolidate freight through regular "milk runs" to reduce the impact on freight costs. Shorter supplier lead times also have a significant impact.

In your distribution network, every additional warehouse you add will increase the total stock of an item by over 40%. By reducing the number of points where an item is stocked, dramatic reductions in inventory can be achieved.

You may have to slaughter some parochial "sacred cows" if you want to cut the number of branch warehouses, but if you can offer more frequent and more reliable replenishment from the central warehouse, the argument becomes a lot easier.

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AS-Interface integration path

THE new Woodhead AS-Interface Gateway line is designed to provide an easy integration path for AS-Interface sensors and actuators into other fieldbus systems such as Profibus, Ethernet, or DeviceNet.

The Gateway acts as a master in the AS-I system and as a slave for the selected Fieldbus system.

For the master of the fieldbus system the Gateway always behaves like a modular I/O device. According to the company, system set-up, as well as error handling, can be done without any serial communication, simply by using the buttons and display

on the Gateways.

The AS-Interface system is a single master/slave system with cycling polling. Each network can support up to 62 slaves, each with up to four input and three output.

In summary up to 248 inputs and 186 outputs can be connected on each rung. With a single flat cable, power and information are transmitted to each slave.

In addition to the data exchange, AS-Interface network supports a detailed diagnostic interface regarding the power behaviour of the network.

Control Synergy 02 4966 5211.

Next generation software to be OPC based

GE Fanuc Automation has announced it is building its next generation Proficy solutions based on the new OPC Unified Architecture (OPC UA) standards.

GE Fanuc chief software architect Pete Sage said this was an extension of the Open and Layered approach that GE had been using for years with its Proficy software.

"GE Fanuc is committed to supporting standards as a key element of our product development strategy and OPC helps us with that.

"The real advantage is for the customer," he said, "by taking a standards-based approach to product development, interoperability with best-of-breed prod-

ucts becomes simpler.

"As the industry standardises on ISA-95 for data models and OPC UA to talk to those data models, it becomes simpler for multiple vendors' products to work together."

GE Fanuc is a founding member of OPC and an active participant in the development of the OPC UA specification. The specification is a result of analysis and design to develop a standard interface to facilitate the development of servers and clients by multiple vendors that can subsequently interoperate seamlessly.

The architecture is said to provide secure, reliable communications.

GE Fanuc 02 9531 6144.