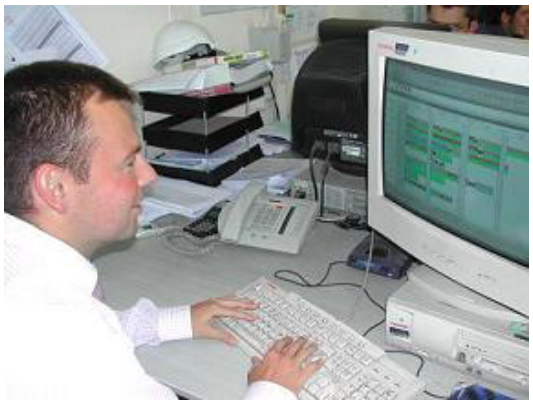
Empowering the Planner

Is the fresh food sector showing us the way to be truly Lean and Agile?



Much has been written about lean manufacturing over the years and one of the major 'wastes' that lean manufacturing initiatives target is inventory in all its forms, raw materials, WIP and finished goods. If you have read what has been written, or paid for a lean practitioner to advise you, you will have inevitably concluded that IT will play no part in any lean initiative, and that Visual Production Control (VPC), typically in the form of Kanbans and supermarkets, is the only way forward.

We can all learn by looking at how other people solve their problems, and then developing a solution for ourselves based on their experience, but in manufacturing it is rare to get this type of 'cross pollination' between different verticals. For example, how often do staff or consultants move between, say, food and precision machining? They are typically seen as having no commonality and no one would consider experience of one sector to be useful in the other.

Preactor International is proud of the broad spread of its user base, and unlike most manufacturing professionals we are in a position to compare the different planning, scheduling and production control techniques used in different verticals. One of those sectors is fresh food, and using the inventory definition this sector has always been lean, because they have no choice. When you have products and raw materials whose shelf lives can be measured in hours or a few days, carrying significant inventory has never been an option.

On top of the intrinsic lack of inventory extreme agility is often also required. Say you are running a bakery and you have to deliver many different products, with shelf lives measurable in hours, to many outlets. The agility required to make your entire product portfolio each day is then compounded by the fact that the delivery trucks will leave at intervals during the day, but each requires the complete range of products. You probably cannot afford to make a whole days worth of, say, cream horns in one batch, because you will not then have the capacity to make all the other products required for the first delivery truck. So now you require the agility to cycle through your complete product portfolio several times each day.

All of this is then compounded by the variability in demand caused by factors as fickle as the weather, so the production schedule you used yesterday, will probably not work today.

So if you visit one of these companies will you find the Kanbans etc. which are seen to characterize lean processes? No, the use of VPC is rare in these industries for the simple reason that Kanbans are WIP, and VPC essentially creates a make to stock process. Any variation in demand will soon lead to WIP that is shelf life expired. So how do they cope

with controlling these ultra lean processes and the variable demand? The answer is that they aim for the ultimate lean implementation, Make to Order (MTO), and in many cases the food sector is bucking the trend for empowering shop floor personnel to make scheduling decisions, and is empowering the planner instead. Is this a good idea?

If you use VPC scheduling decisions are based on empty Kanbans. The emptying of a Kanban triggers it to be refilled by the operators at the upstream process. This works well with stable demand and reasonable shelf life products, however the operators are working in isolation because they have no other visibility of other processes, late arriving orders, etc., nor do they have visibility of company wide key performance indicators (KPIs) such as minimizing late deliveries, minimizing production costs and so on. Variations in demand will cause problems that the operator cannot be aware of.

An empowered planner, on the other hand, can see the whole picture and will make scheduling decisions, such as changes in priorities for customers, based on company wide KPIs. With the whole picture the planner can make the trade offs that are bound to be required, e.g. utilisation (large batches) vs. delivery performance (small batches), and variations in demand are handled easily. Ultimately the shop floor has only to cope with a single KPI – schedule adherence, safe in the knowledge that the company KPIs have been taken care of by the planner.

How do we empower the planner? Simple, we give them the tool no lean practitioner will mention, a computerized Advanced Planning and Scheduling (APS) system. This will use a finite capacity model, that takes into account both resource and material availability, to rapidly produce a good schedule for the plant that meets the company KPIs. If necessary the planner can quickly perform multiple ‘what ifs’ on the schedule, comparing the results to determine the best compromise for the KPIs.

The APS will dynamically aggregate the small batches of the same or similar products that an MTO environment inherently produces, so in our bakery we can balance our attempts to keep batch sizes up with the needs of delivery performance. The aggregation will be re-calculated each time we re-schedule, so we are sure that our process utilisation is as good as it can be under the current conditions.

The planner will re-schedule as often as required by process disruptions and demand changes, often several times per day. In the most planner empowered plants the APS becomes an intrinsic part of the production control system, and no schedule decisions are made without first testing them on the APS. When an issue arises the planning and production staff will gather round the APS to resolve the problem whilst still striving to meet the company KPIs.

Case studies from the fresh food sector show the impact that APS systems are having on what are already lean processes. 50% reductions in WIP and lead time have been reported, along with less ‘shorting’ of the customers requirements. Whilst not all the techniques used in the fresh food sector can be applied to more general manufacturing, we can certainly learn from their use of APS software to make lean processes even leaner