

July 15, 2005

WHAT REPLANNING FREQUENCY WITH LEAN?

With Lean, why is planning frequency pertinent at all, much less replanning frequency? Aren't we supposed to be infinitely flexible and capable of delivering instantly the customer order just received? After all, years ago, planning was monthly: wasn't that leaner than nowadays, when lots of companies are burdened down with complicated and costly IT systems? Isn't that wasteful in itself?

The first rule of the Toyota Production System, in other words Lean Production, is: *no Kanban (customer signal), no production. Lean technology doesn't want us to anticipate.* Not anticipating, meaning oftentimes pushing products into inventory, is Lean's strength, but it's also its weakness. Aside from general calculations to level production, Lean does not anticipate the component requirements or its capacity requirements that the company needs to know in advance. So something else is needed to anticipate these requirements—if possible *without* pushing product into inventory—especially when the products do not have repetitive demand.

Chris Gray, one of our U.S. partners in the World Wide Excellence Partners (WWXP) group, and President of Gray Research (www.grayresearch.com), says, « In the Lean companies I work with, the Master Production Schedule (MPS) is set from some periodic leveling process and then remains unchanged until there is actual evidence of a significant shift in demand, not normal day-to-day variability. The Lean processes to level load help establish the Master Production Schedule (MPS), whose objective is to get the components and raw materials to arrive on time and to get the required capacity put in place. The MPS is decoupled from final assembly, which is done to customer order. The final assembly program may be adjusted every day, whereas the MPS, because it is stated by subfamily, is not frequently modified, only when it's evident a change in demand has occurred. »



What are **normal replanning frequencies**? Here they are:

Sales and Operations Planning (S&OP), including updating the Demand Plan and the Resource Plan: monthly, because they are adjusted and/or approved by Top Management. This includes updating takt (from the Demand Plan) and cycle time (from the Resource Plan).

Master Production Scheduling (MPS) + Material Requirements Planning (MRP): weekly or daily, in order to check them and to communicate frequently to the rest of the internal and external supply chain, the rates planned in the MPS, and to maintain accurate component requirements. The content of the MPS—the marriage between customer demand and the planned production quantities—is usually *analyzed* every day, but the MPS is not *modified* every day.

EPE I (Every Part Every...Interval), the minimum interval between two production runs of all the members of the same technological family: not recalculated but **replanned at each interval**, which is typically **weekly**, therefore corresponding with the frequency of the MPS (see our Technical Newsletter No. 22 for an explanation of EPE I).

Pitch, the interval between two pickups of production at the end of a cell or line: maybe every ten to forty minutes but often **an hour or a multiple of hours**. It corresponds to the frequency that Kanban containers or cards are sent back to the supplying cell.

Input / Output Control of the shop floor or at major suppliers: weekly.

Priority control of delivery dates by the stockroom and on the shop floor in real time or updated at the end of the shift or daily.

Preventive Maintenance: typically on every shift or between two shifts. Recall that Toyota spends about 4 hours per day per cell on preventive maintenance, whereas the typical Western company spends 4 hours per *week*.

Operational Equipment Effectiveness (OEE): typically monthly or weekly. (See our Technical Newsletter No. 16 on OEE).

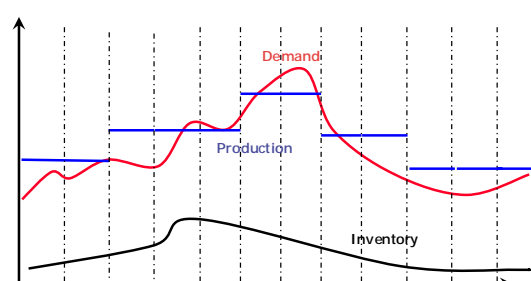
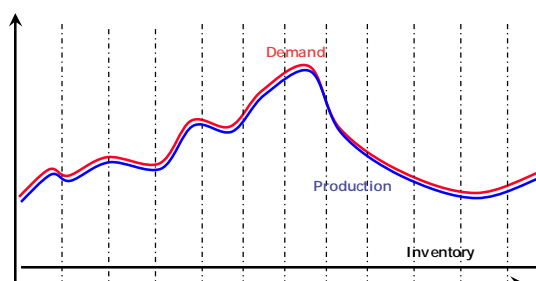
Let's not forget the frequency of verifying **Information Quality**: cycle counting of **inventory** at least **weekly**; for **bills of material and routings**, **weekly or monthly**; for the **customer order book**, **weekly or monthly**.

If the planning frequency of an entire supply chain, sometimes spread out over several time zones, could be coordinated and replanned at a weekly frequency (customer programs, MPS + MRP, and Supplier Schedules), that would be a great step forward for all the member companies in terms of customer service, Quality, and cost reduction. If one man forewarned is forearmed, then a company forewarned is worth a thousand forearmed, and a supply chain, ten thousand.

Note: Sometimes MPS and MRP are run on the arrival of each new customer order, to determine new components requirements. This is a major error, because it implies that there is no MPS at all, « since we can't make any forecasts in our business ». That is usually untrue, because people are obliged to make some forecasts anyway, for component and capacity planning. Exploding each customer order received practically guarantees lateness as well as tense relations with suppliers, who won't be able to deliver in short lead time because they had previously received no visibility of what was needed. A normal MPS + MRP run weekly, with the results communicated weekly, would have done that.

Sometimes the practical application of normal replanning frequencies strays from the ideal. Let's listen to Chris Gray again: « Master Schedulers at a large automotive Tier 1 suppliers I work with, know intellectually that they shouldn't chase demand and that they really should use any safety stock as an intelligent buffer to prevent overreacting. But in the heat of the battle most cannot resist the temptation to change the MPS when there has only been a small demand change. »

CHASING DEMAND: ATTRACTIVE BUT EXPENSIVE LEVELLING / ADJUSTING PRODUCTION THROUGH THE S&OP AND THE MPS



Changing the MPS every day creates an illusion of flexibility. Maximum flexibility means responding instantly to customer demand. That's impossible to do if the events of production and procurement have not been anticipated and updated at the right replanning frequency.