

# APS BERK - FROM ARBITRATION TO AGILITY

*Karl Belk, MIOM, APS (Approved Prescription Services)*

## INTRODUCTION

Originally formed during the merger of Rhone Poulenc and Rorer Health Care and now owned by TEVA Pharmaceutical Industries Ltd., APS Berk is the second largest UK generic pharmaceutical company in its market sector.

With its Distribution, Sales & Marketing and Headquarters in Morley, Leeds and manufacturing and product development site in Eastbourne, Sussex, it has an annual sales turnover of approximately £50 million and trades through Wholesalers and directly to Retail Pharmacies and Dispensing Doctor practices.

The manufacturing facility in Eastbourne covers 100,000 sq. ft with a warehouse of 45,000 sq. ft and has been in use since 1954. It is dedicated to the production of solid dose pharmaceuticals currently manufacturing and packaging 1.8 billion units.

The workforce of 258 technically competent, long serving and well motivated staff operate the plant around the clock from 8:00am Monday to 9:00pm Friday.

The operation utilises many traditional and state-of-the-art technologies and equipment covering wet granulation, dry blending, tablet compression, capsule filling, film and sugar tablet coating, tablet printing and finally packaging into pots and blisters.

Under the ownership of TEVA, significant capital investment is being made in those operations in Eastbourne and to support these actions, an improvement program is underway covering three critical areas:

- Process reliability
- Cost of quality and
- Planning.

## BACKGROUND

For many years, the planning function had been viewed in two ways from two groups of people.

The senior echelons of management saw the process as something that simply 'happened' and was not worthy of, nor indeed needed, their attention or any form of additional resource other than the intellect of the existing planning team. The shop floor supervision's view was, conversely, one of a complex, black art that relied on years of experience, intuition and clairvoyance - a myth that planners are often happy to fuel!

The results of these conflicting views, however, are very similar. Basically, the processes undertaken were allowed to roll on unchecked for logic or effect. Then came the realisation that the business's desires to improve customer service were being seriously hampered by a manufacturing plant whose output did not match the needs of the market. The reason's for this were very apparent, so apparent that they had gone unnoticed!

Understanding the effects of market demands on a complex, multi process manufacturing plant and being able to translate them into credible plans was clearly the first target. This was achieved, and dramatic improvements in customer service gained by:

- educating marketeers in the constraints of manufacturing and educating manufacturers in the key driving elements of the marketing rationale
- establishing a cross-functional group from marketing, planning and logistics was organised to meet monthly, after the generation of the monthly forecast and charged with joint responsibility for customer service.

The effects of this newly educated cross-functional group were three-fold. Firstly, it gave directors a point of contact and interest in the process. Secondly, it demonstrated that there was no artistry in planning - it is logical. Thirdly, it demonstrated to the planners that they could not control their end of the bargain any where near sufficiently well without further support.

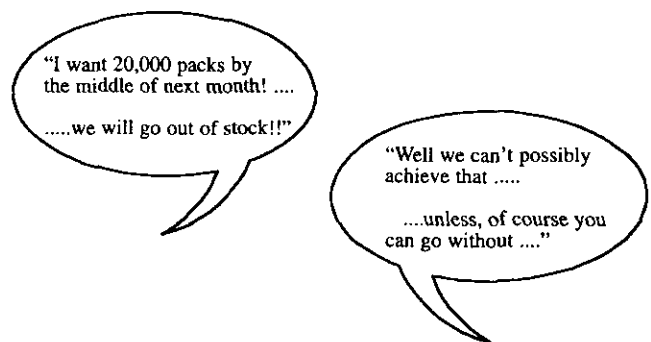
Happy in the knowledge that we understood the process and the cause and effects of demand and product mix changes, we now faced the challenge of supporting that understanding with a system that can give visibility of decisions, actions taken and their effects. Furthermore, we wanted to extend the logic of the process backwards into the; currently subjective, demand arbitration and associated decision making process. Although many such systems exist in part, this would not be a satisfactory solution, that would merely continue the trend in patching up a process when it springs a leak.

## ISSUES TO CONFRONT

- Replacement of the adversarial and subjective 'win-lose' demand arbitration process with a 'win-win', policy driven and objective system
- The dynamism of the planning process
- Control, rather than the mildly organised chaos that has resulted from an inability to align process completion and subsequent process start times
- Customer service through correct inventory apportioning.

## DEMAND ARBITRATION

This is the phrase coined to describe our process, undertaken at regular monthly meetings, that attempts to align the capabilities of the manufacturing facilities with the desires of the marketing group. That sentence alone may already have the reader picturing an argumentative meeting.



Often, the two statements above would be some way from the truth: "we will go out of stock" probably meant that we would have a couple of weeks worth of stock and "we can't possibly achieve that" was the best response when one had no idea of what was really achievable.

It is not the intention to ridicule the process, it has been instrumental in our recent improvements and any forum that brings together marketing and operational personnel to discuss demand and supply should be applauded.

The meetings are constructed around an in-house developed rough cut capacity modelling system. The system was developed to target our main bottleneck resources, which are used in the first of up to five production stages.

The meetings are attended by five senior members of staff, lasts for two days and are held at a hotel midway between our two sites.

Simply, the rough cut capacity modelling system calculated the demand for bulk product from the finished pack demand generated in the master production plan from BPCS. Where the demand exceeded the capacity, manufacture was moved manually from period-to-period to balance the capacity. This often meant making product later and risking stock outs.

The arbitration element of the process takes the form of a series of questions such as:

"It is not feasible to make the twelve product families needed in this month. If we drop these two, then we can make the other ten. However, if you must have one of these two, then five others will need to be dropped.  
What's it to be?"

"If I agree to drop this product back a month, could you increase the quantity of that one?"

Questions like these are asked over and over as each finished pack requirement was considered one-by-one.

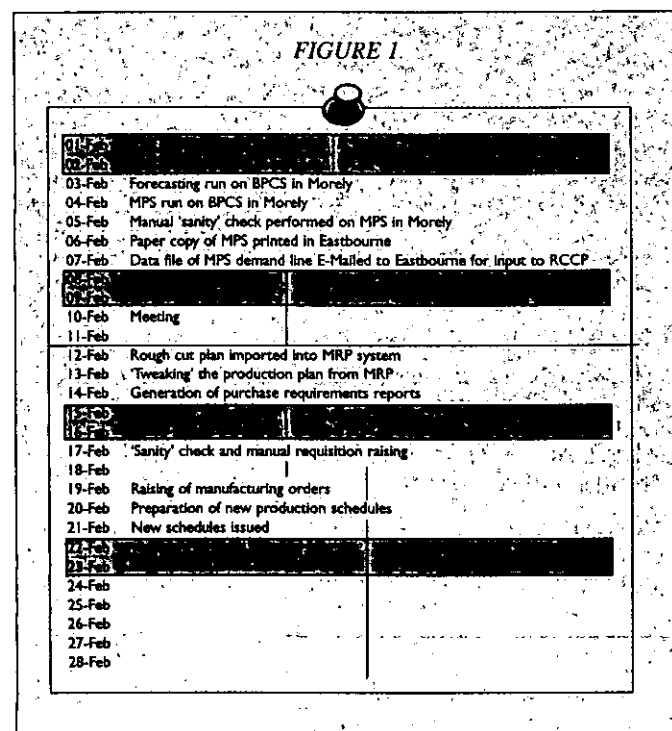
The process has addressed the original bottleneck. However, it has now moved to another stage and different set of resources!

It is clear that continuing in this manner will not take us any further forward. As the frustrations grow over the inability of the plant to provide a continuing improvement in service, the bonds that have grown between marketing and operations may start to crack.

The desire is to implement a PC based solution that logically models the decision making processes used in the meeting. Then, instead of reviewing each and every product in detail, the system can generate the answers rapidly and only exceptions need to be addressed.

### DYNAMISM OF THE PLANNING PROCESS

The following Figure 1 shows the time frame and stages that currently exist in the planning process. For this example, events in February 1997 are shown:



It can be seen from this example, that dynamic is not the word to describe the process. It is a full three weeks after the new forecast is produced that the manufacturing plant is in a position to alter its schedules. This means that, for three weeks, we may well be manufacturing product that we do not need and not manufacturing those that we do.

The acquisition and implementation of a suitable PC based system will allow a radical re-engineering of the above process and allow a more rapid response, in terms of changing plans, to needs of the new forecast. In achieving this, the BPCS MPS will be bypassed and the raw forecast used as the input data, the monthly decision making meeting will become a review session with fewer people, the MRP system will be disposed of and capacity balanced schedules will be produced within a few days of the forecast.

### CONTROL

The first production stage is currently scheduled to the shift and the final stage scheduled to the day. The stages and resources in between, that is most of them, are not scheduled at all. The final stage schedule is essentially a running order list based on product that happens to have finished bulk manufacture.

The average total lead time at present is forty seven days. The total value adding processing time within this is less than two days. The remainder is queuing and waiting time.

Creating the dynamism spoken of above must be supported by the ability to schedule at every stage for every resource in order that materials move on to the next process with minimum delay.

It is anticipated that this will reduce the total lead time to approximately fourteen days and in doing so, bring the amount of work-in-progress down from seven to two weeks.

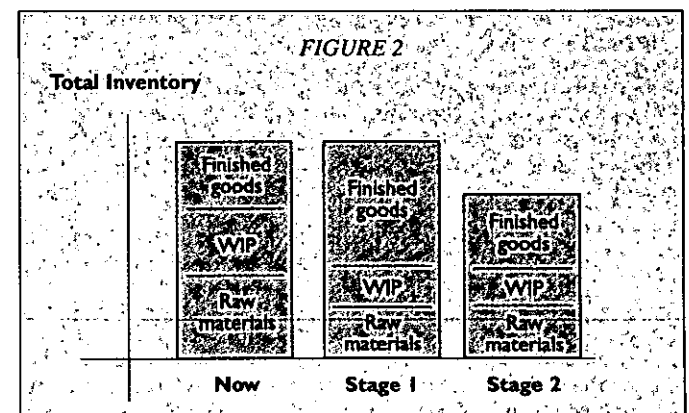
Dynamism and control will enable the plant to offer agile response to market changes - something our competitors cannot.

### CUSTOMER SERVICE

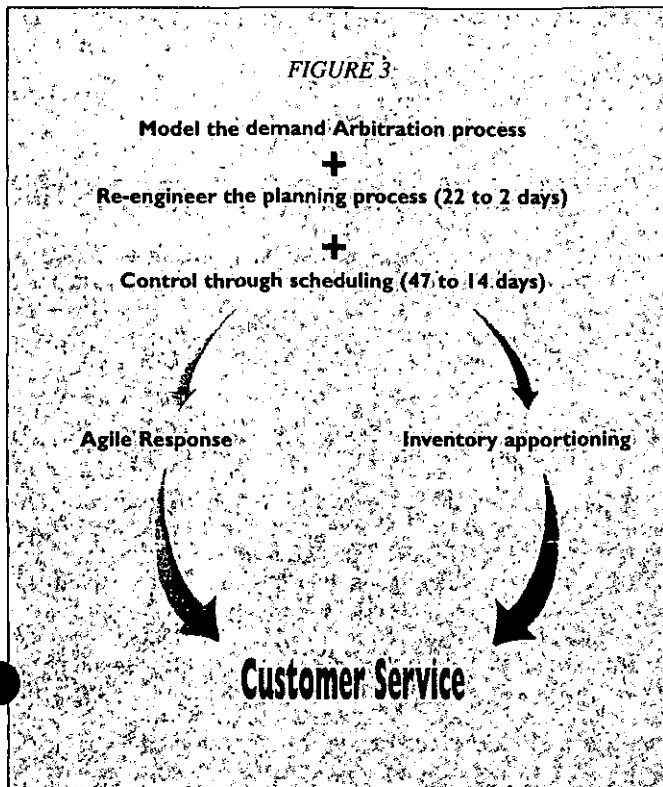
Customer service is of paramount importance. Our customers demand product from stock. Therefore, if money is to be invested in stock, the finished goods inventory needs maximising and other inventories minimising.

As with most organisations, inventory reduction programmes are constantly being exercised. While we wish the new system to support overall inventory reduction, it is not of prime importance in the early stages, apportioning the investment the first aim.

Figure 2 below shows a three stage approach to inventory management with the new system. Stage one addresses the raw material and work-in-progress inventory by converting our current excess into saleable product and hence giving improved customer service. Stage two then begins to challenge finished goods safety stocks and produces the reduction in total inventory.



## SUMMARY OF ISSUES



## SYSTEMS INTEGRATION

A number of systems are employed at APS Berk, each introduced at different times to support various individual needs. These range from the use of BPCS, supporting the commercial aspects of the business such as finance, sales order processing and distribution, through mainframe systems running the inventory systems and manufacturing, to database packages to record and report on outputs, efficiencies and manufacturing data.

A full review of these systems is underway. However, it is recognised that desires to replace the disjointed systems with once all encompassing solution would be in excess of a two year project and require six-figure investment.

The improvement of planning and control could not be allowed to be delayed by such a time period. Therefore, the solution chosen needed careful consideration as to its immediate compatibility with existing systems and with potential future ventures undertaken.

All static, dimensional data, such as the items made, the resources available, the routings and bills of materials are to be maintained in the new system - it would become the principal source of planning data.

Variable data, such as sales forecasts, opening stocks and work-in-progress, need to be imported frequently. This information is currently generated within three separate systems. It is necessary, then, for each of those systems to be capable of receiving data from the new planning software and sending information back.

The data sources involved are BPCS, for sales forecast and finished goods opening stocks, a mainframe for raw material opening and allocated stocks and a DataEase database for work-in-progress, yields and purchase order status.

Each of these systems is capable of generating variable length comma separated files and, where necessary, accepting data in the same format.

The chosen package is, therefore, capable of communicating in this manner and also has the ability to converse with and interrogate other database driven systems directly for future development.

Equally important, the various functions of the chosen package operate sympathetically within the constraints of the others. For example, a top level production plan created directly from the raw forecast is not simply a wish list, we had that already in the form of the BPCS MPS. It considers the available capacity at all levels of manufacture and is capable of presenting an achievable target for finite scheduling while still maximising stock availability at minimum cost. Furthermore, the finite scheduling function also considers material viability as well as resource availability.

## SYSTEM IMPLEMENTATION

Finding the manpower resources needed for systems implementations of this nature is often difficult. Frequently, groups of about six people work exclusively on the project and implementation periods can be as much as two years.

APS Berk operates leanly and efficiently in regard of staffing. Therefore, the available resource for this project was minimal consisting of two people - from IT, our Business Analyst, and from Operations, the Customer Service Planning and Control Manager. Exclusivity was also a luxury that was not available and the 'day jobs' continued.

Working with us was the team from the software house, Insight Logistics, which in the main consisted of the project leader and two to three programmers. All things considered, this was a small group charged with a challenging task.

Following early discussions to ascertain the suitability of the system, the initial order was placed with Insight Logistics in mid-September 1996. There then followed a period of developing the 'rules' that the system would follow and identifying the constraints of our operation. After identification of the 'must have' features the process was continued by creating a wish list of rules and modifications followed by moving items to an action list as desired. This process allowed the team to manage the balance between a bespoke system and that of the off-the-shelf package approach. Also, this proved a very effective means of controlling the amount of money spent to achieve the desired levels of functionality.

The development stage, which took us to July 1997, to the form of a repeated loop of systems modifications followed by testing with real data. Over this period, the vital data, such as bill of materials, production rates, lead times etc., was also collected.

Delivery of the system was accepted during July 1997 and the first 'live' run was in October 1997, a project time of just thirteen months.

As anticipated, and clearly warned by Insight, the largest hurdles have not been system bugs or data errors but dealing with the education process of the rest of our operation and business. The issues ranged from disbelief that changes were necessary, through creating understanding of the system and new culture, to pure resentment that the new culture would be disassembling parts of individual's empires. Some of these hurdles have yet to be overcome.

## About the Author

**Karl Belk, MIOM** is the Customer Service, Planning and Control Manager (soon to be Planning, Purchasing & Warehousing Manager) at APS. Karl has worked at the Eastbourne site for thirteen years and has held both 'hands-on' and management roles in the areas of Quality Assurance, Packaging, Manufacturing, Customer Service, Production Planning and now also taking responsibility for Purchasing and Warehousing.

A member of the Institute of Packaging and The Institute of Operations Management, he has recently completed the Institute's Diploma in Production & Inventory Management.