CASE STUDY

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Lanner Helps AstraZeneca Gear up for a World Bestseller

AstraZeneca, one of the top five pharmaceutical companies in the world with sales of over £11 billion, is bringing several new drugs to market over the next few years. The ability to bring these to market quickly and to meet expected demand from day one will be critical to the future profitability of the company. One of the new products is an important class-leading drug in its field. It is anticipated that it will be an international bestseller and the company is gearing up for launch in 2002. The performance of the drug's supply chain is critical to enabling AstraZeneca to achieve its launch targets and satisfy long-term demand for the new drug. Bulk manufacture of the drug is a multi-stage process carried out at brand new state-of-the-art manufacturing facilities. Lanner Group was commissioned by AstraZeneca to undertake a detailed analysis of the manufacturing site to underpin supply chain performance.

In addition to helping increase capacity 10% and identifying a potentially costly operator shortage problem, Lanner also helped AstraZeneca improve communication. The company developed a process board to provide an instant view of plant status.

Lanner consultants carried out a structured program to optimise the performance of the site. The goals were to:

- Ensure timely movement of material at each stage of the manufacturing process through the warehouse.
- Assess whether proposed equipment levels were sufficient to meet throughput.
- Optimise operator numbers, shifts and skill levels.
- Identify "smart" scheduling rules to increase capacity.

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Company	AstraZeneca
Industry	Chemical/Pharmaceutical
Application	Supply Chain/Production Efficiency
Benefit	10% Capacity Increase and More

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A key feature of the program was the use of Lanner's own WITNESS simulation software. By constructing computer models of the site, Lanner has effectively enabled the plant to be run before it has been built. The work has provided AstraZeneca with tremendous insight into plant performance, its capacity and its constraints. Significant changes in the planned operation of the plant have been made as a result, and Lanner has developed an operational "process board" to ensure its smooth operation. Lanner's approach and the resulting benefits are described in more detail below.

The Internal Supply Chain

The bulk manufacturing process is in three stages. Raw materials are converted into crude, before purification and then milling. Initially, production is at a Technology Transfer Plant (TTP), which is used to test the conversion of small-scale manufacturing trials to large-scale bulk manufacture. Two new production plants are then coming into operation in 2001-2002 to complement and eventually supersede the TTP. Adjacent to the plants is a mill.

At the heart of the operation is a warehouse receiving raw materials and storing batches of crude, pure and milled material. Management of material flow through the warehouse is critical to the operation of the process. The high value of the milled product means that production must not be lost through non-availability of material, yet work in progress and lead-time must be minimised.

Lanner Approach

Lanner adopted a modular approach to the work, starting with the warehouse and then looking at each of the production facilities. Within each module, a common approach was taken:

Static analysis of workload
Process documentation was analysed to develop detailed process maps identifying the main direct and indirect tasks and corresponding cycle times.

A data manager was developed to calculate the workload under the range of throughputs detailed in the five-year product plan. Utilisation of resources and processes was also calculated.

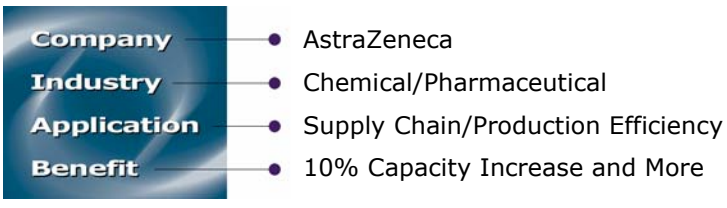
Dynamic analysis of workload
The data manager was linked to a WITNESS simulation model of the process. The model enables the effects of shared resource, variability and interaction to be quantified. For example, an operator that is 80% utilised could still constrain output if he or she is frequently required in two places at once!

Optimisation
Equipment levels, production scheduling and control rules, operator levels and skill mix are varied in the simulation model to optimise throughput.

Lanner consultants spent the majority of the project located on site working alongside production staff. A key feature of the project was the use of "lunch-time progress meetings" to report progress and share understanding.

Benefits

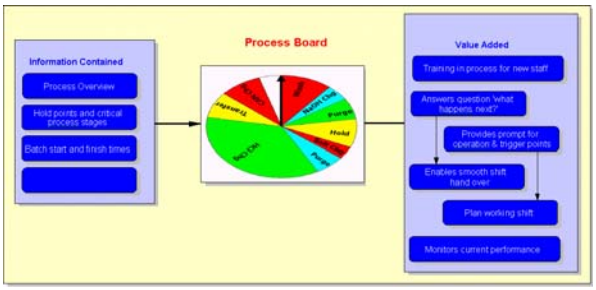
- Development and testing of a two-footprint kanban system to control movement of batches of material between the warehouse and production plants. This enabled continuation of the five-day week in the warehouse while supporting seven-day working of the manufacturing process.
- Identified production loss that would occur without additional operators prior to go-live equal to millions of dollars of lost production. These operators have been recruited and trained.
- 10% capacity increase through smarter production scheduling rules
- Avoidance of duplication of effort and ensuring the deployment of best practice across the project teams linked to each plant.



- Identified weaknesses in communication, particularly on shift hand-over. A physical production board was developed and located in the control room to overcome these. This is described below.

Process Board

The long cycle times, number of batches in the system and increased number of operators mean that the plant is more complex than many of AstraZeneca's bulk plants. In order to realise the theoretical capacity, timely carrying out of operator tasks is vital. The process board was developed to provide an instant view of plant status, including location of batches and the time and nature of the forthcoming tasks. The information contained and value added is shown below:



The process board was developed in conjunction with the process technicians. An initial scoping study was carried out to ensure clear definition of the scope of the board and its purpose. During the project, a number of alternative designs were evaluated by producing a number of mock-ups. The design optimises the trade-offs between ease and speed of use, immediate visual impact and level of detail.

Despite some scepticism during the design phase, the board has proved a tremendous success. It played an important role during initial implementation, and has proved an effective communication and planning tool from day one. The board is now in continuous use, delivering the expected benefits in terms of shift workload planning, and enabling a smooth hand over between shifts.

Conclusion

A key feature of this project has been the quantitative and visual contribution made by computer simulation. By running the virtual plant, changes to resources, equipment and operating rules have been made to ensure that the design meets the capacity requirements from the start. The visual nature has enabled the sharing of information and best practice between the separate project teams, and ensured rapid buy-in to proposed changes. The improvements have been embedded into a practical process board for ongoing management of production.

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About Lanner Group

Lanner helps organisations achieve rapid and effective business change. Based in the UK with subsidiaries and partners in Europe, the Americas and the Far East, Lanner works with more than 3000 top multi-national companies.