



TOMORROW'S MANUFACTURING TODAY

DALE MCQUEEN, LANNER GROUP'S PRACTICE LEADER FOR THE PHARMACEUTICAL SECTOR, LOOKS AT HOW SIMULATION CAN INCREASE EFFICIENCIES AND CUT COSTS

The pharmaceutical companies of today face a completely different set of challenges compared with five years ago. In the past, the onus was firmly placed on increasing outputs to ensure profits, without much thought to achieving manufacturing efficiency. The spiralling costs of developing NCEs (New Chemical Entities) has meant that pharmaceutical companies need to cut costs in other areas of the business to ensure that as few resources as possible are taken away from the research and development divisions of the organisation.

Furthermore, newfound challenges brought about by increased competition, challenging targets, higher customer expectations and shareholder influence has put added pressure on the shoulders of pharmaceutical manufacturers. On the whole, it is fair to say that manufacturers face one of the most difficult periods in recent times.

Survival of the fittest?

One analyst recently said that pharmaceutical companies cannot expect to thrive if they keep to their current operational manufacturing structure. Perhaps it would be fairer to say that manufacturing companies probably will not survive, let alone thrive, if they continue to operate in the same vein. In order for pharmaceutical companies to secure their long-term future, they need to rethink their operational strategy in order to manufacture more efficiently.

In many cases, this will involve building brand new facilities or at least adapting current plants to make the necessary cost and efficiency savings. The choices that pharmaceutical companies make today are pivotal as they need to ensure that they are establishing manufacturing facilities that will reap savings both today and in the future.

Pharmaceutical companies will have to decide which process improvement projects should be applied. They will need to consider where they should be applied; when they should be applied; how much should be spent to achieve a predicted benefit; whether an existing facility should be improved or a new one built, and whether investment in new capital equipment can be justified.

Future gazing

This is no mean feat and unfortunately, requires a manufacturing crystal ball, capable of forecasting what will work for individual pharmaceutical companies in the future. With such a crystal ball still in the development stage, pharmaceutical companies face a very real challenge that refuses to wait for a later date. They must somehow assess which options will give them the best return on

investment and which will meet performance targets effectively and efficiently. They need to consider what degree of risk they are comfortable in taking and what the potential implications could be if they make the wrong decision.

Coming to a considered conclusion will not be easy, if at all possible, by using existing static planning methods, as they will be unable to deal with complex systems which cannot provide quantifiable performance measures when demand and supply vary by year, week, day or even hour. This drives the need for a different approach, one that can handle complex interactions as well as variations in supply and demand.

Certainty in an uncertain world

The answer lies within a dynamic modelling approach. Manufacturers need to add science to the decision-making process to reduce the risk. A simulation software solution can offer certainties in the outcome of proposed productivity improvements prior to implementation and capital spend. For example, it offers the opportunity for pharmaceutical companies to repeat a site improvement programme across an entire global dose-form manufacturing network.

Users can gain an understanding of the precise manufacturing capability and capacity for any manufacturing site, for any given product portfolio. The software can in turn expand that knowledge across a pharmaceutical company's entire network at any point in time. As a result of this, pharmaceutical companies can formulate new product introduction plans that will maximise the speed of bringing a drug to market. Companies can then manufacture for clinical trials with no disruption to their global manufacturing schedule. This means that users are able to balance manufacturing networks to minimise transportation costs and delays to market, while balancing global manufacturing networks with respect to seasonal variation.

Existing static planning methods in the form of manual spreadsheets could not hope to achieve such results; results that have now become a necessity rather than a luxury in the current climate.

Practice makes perfect

To elaborate on how simulation software can help pharmaceutical manufacturing, is perhaps best illustrated with an existing case study. Simulation software has recently been used by a leading global pharmaceutical company to provide a working model of a plant before production had started. A modular approach to the plant was adopted and the team

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working on the project developed a process board to give an instant indication of plant status. In addition, the implementation of a scheduling system controlling the movement of material batches between the production plant and the warehouse area, effectively and efficiently controls the inventory. This led to an indicated increase in production capacity of 57% and a more efficient use of resources.

Existing manual spreadsheets currently deployed by the mainstay of pharmaceutical companies are mostly primitive and counter productive for future planning. It would be easy for pharmaceutical companies to accept defeat under current market conditions, but a change in strategy can make a world of difference. Pharmaceutical companies need to work towards a solution that will guarantee long-term survival and prosperity. Put simply, it is perhaps inconceivable that in today's manufacturing world, any large capital investment decision could be made without support from simulation solutions. The cost of such a model is inconsequential in respect to the capital sum invested in product manufacturing projects.

Simulation is not a luxury; it is a necessity - one that is pivotal to the daily functions of all pharmaceutical manufacturers. It is the most effective way of providing pharmaceutical companies with an informative strategic plan capable of establishing manufacturing facilities that will reap savings both today and in the foreseeable future, and it cannot be ignored.



FOR MORE INFORMATION

Dale McQueen
Pharmaceutical practice leader, Lanner Group Ltd.
T +44 1527 403400
T +44 1527 551372 (direct)
M +44 7818 428 756.
E DMcQueen@lanner.co.uk