DISKOVER in Action

Case Study:

Mehler Texnologies

DISKOVER revolutionises planning and scheduling
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By Ralf Schechowiz, Lothar Szymkowiak (Mehler Texnologies) and Dr. Bernd Reineke (Abels & Kemmner Ltd.)

Thanks to the high transparency of DISKOVER SCO, Mehler Texnologies can now influence logistical parameters much more specifically to improve delivery capability, reduce stock on a lasting basis and reduce the effort involved in scheduling. The new scheduling software DISKOVER SCO is described by schedulers not merely as a tool, but as a “loaded weapon against stock”. Before it could be used, however, there was some preliminary work to be done.

Initially, the objective was clear for the specialist for coated industrial textiles – to reduce stock and simultaneously improve delivery capability. This represented a huge challenge for everybody involved: in the past, procurement and production were planned and controlled across multiple locations based on rudimentary sales figures. One reason for this was the plant-intensive nature of the production processes, which turned out to be anything but flexible. Also, the production locations focused, predictably, on the utilisation rate of the plant and on achieving the highest output possible. These restrictions are renowned for driving stock upwards, and are often regarded as fixed and irrefutable. Upon closer inspection, however, it emerges that this is not always the case.

Lack of IT functionality
Exacerbating the problem was the fact that IT systems only supported planning and scheduling processes in the most rudimentary way. A lack of utilisable sales figures from Production meant that Scheduling was forced to produce its own sales estimates. Without appropriate IT support, sales estimates were produced only because of experience and intuition. It is understandable, then, that buffers were built in at various points in the process, eventually resulting in overstocking. A lack of stock transparency during the individual production stages within the organisation itself was another contributor to high stock levels, as intuition was applied here, too. It was for this reason that management decided that change was needed, and commissioned Abels & Kemmner Ltd. to carry out an analysis to estimate a potential inventory reduction.

What is achievable?
In a first, preparatory step, a standardised analysis of excess stock was carried out. The result of this analysis – which was rushed and somewhat unfocused because of standardisation – indicated a clear inventory reduction potential of approx. 15% to 20%.
A complementary sensitivity analysis carried out at short notice indicated even higher potential if Production could significantly reduce lead times from three months down to one month. Based on both analyses, the project team decided to tackle the potential first with the help of scheduling and methodological improvement measures. Subsequently, the production restrictions were to be tested and, where necessary, optimised. Doing this would require the following, among other things:
• Weaving mills would need to retool for multiple days, depending on the textile involved.
• During finishing, the same textiles/coatings would be combined and produced rhythmically in stages.
• This would result in dynamic replenishment lead times of up to multiple weeks, depending on whether one particular colour had just been completed or was about to go into production.
• The goods produced would be assessed after production, as not every quality grade of material can be used for every end product. It is possible that not enough material of a particular quality is supplied by a single batch.

Early on during the first standardised excess inventory analyses, it became clear that the predicted results would only be achievable with significant effort using the existing IT environment. For this reason, management decided to implement the SCM optimisation tool DISKOVER SCO, from SCT Supply Chain Technologies Ltd., parallel to the project. This decision enabled leverage of the following synergy effects:
• Quick implementation of project results with prototypical mapping in DISKOVER SCO.
• Ideal learning curve resulting from users quickly becoming familiar with the tool.
• Flexible mapping of logistical parameters, rules and agreements.
• Recognition of direct impacts of changed parameters.

To reach the set targets, Abels & Kemmner adopted a proven approach:
  • Classifying items using the ABC/XYZ analysis
  • Defining stock strategies
  • Depicting production restrictions in the simulation models
  • Establishing planning and scheduling parameters

**ABC/XYZ analysis reveals stock drivers**
Results of the ABC/XYZ analysis clearly showed where the elements driving up stock were located: for one, the AX and AY items were highly stocked, corresponding with targets set by Scheduling, which were to have high availability of top-selling products. In addition, the highly sporadic item CZ2 was clearly too heavily stocked, a result of both a stocking strategy that was unsuitable from a logistical perspective, and an unfavourable range policy.
Original state of inventory distribution in ABC/XYZ portfolio

After the ABC/XYZ analysis, the project team set up simulated scenarios by specifying logistical parameters (see table). In the DISKOVER simulation, a period in the past is reconstructed in terms of planning and scheduling, this time with different logistical settings and methods. The resulting simulation values can be compared with actual production values, so that the advantages and disadvantages of changes to settings can be established. In an iterative procedure, simulation results are tested and evaluated so that optimised modifications can be made to the settings.

In the classic approach, the planning system’s existing settings are initially used to simulate a variety of different degrees of delivery capability to get a first indication of potential. In many cases, however, these settings cannot be applied exactly as they are, as either the data is incorrect or the product-based and logistical restrictions are not represented. Particularly during complex production processes, this should be compiled by the project team and represented as parameters. This is the case here, since the coating of industrial material is applied in a particular order determined by colour. In addition, there was a requirement to establish a cycle in which individual products are produced. This affects, for example, the settings to be established for the replenishment lead time and minimum lot size.

Stock strategies and production restrictions

At Mehler Texnologies, production restrictions had a considerable influence on the average achievable inventory levels and delivery capabilities. An overview of the parameter tendencies is represented in Figure 2. Here, the direction of influence is shown in terms of which parameters generally influence which command variables.
During the project, the specific implications for Mehler Texnologies were precisely analysed. Defining stock strategies was identified as the primary influencing variable, since production restrictions were not to be influenced in the context of this project. The project team began by determining which products should generally be stocked and which not – that is, which could be produced upon demand from the customer. These were items that were only sporadically or rarely selected by customers. Exceptions were, however, all catalogue items that must be able to be delivered on short notice, as determined by the market, and which thus needed to be stocked. Furthermore, the items that, on short notice, could be cut from basic items in storage should not be stocked. This decision resulted in a reduction potential of more than 20% of the stock of manufactured goods.

In terms of the remaining items on hand, the principle variable able to be influenced was the target delivery capability – the time in which the products should be delivered from storage.

Two principle aspects were taken into consideration when setting the target delivery capability:

1. **XYZ attribute**
   The less regularly an item is ordered, the higher the minimum inventory level that is required to achieve a high delivery capability. The correct minimum inventory level for regularly ordered items (X- and Y-items) is significantly lower. For this reason, the regular items should have a higher delivery capability, whereas a compromise was possible on the irregular items in this context.

2. **Product group (market influence)**
   Each product group is supplied to a different target market/clientele, who have varying requirements in terms of delivery capability. For instance, the automotive industry places higher demands on delivery capability than the building sector. Thus, product groups were allocated to one of three different delivery capability categories (high, medium, low).

Together, these influencing variables allowed a set of rules to be produced that determined the degree of delivery capability to be allocated. First, the product group and target service level category was determined (high-medium-low). As a result, the target delivery capability was obtained using the XYZ attribute as per the following table.
Rules for determining delivery capability

<table>
<thead>
<tr>
<th>Product group</th>
<th>Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGR 1</td>
<td>high</td>
</tr>
<tr>
<td>PGR 2</td>
<td>medium</td>
</tr>
<tr>
<td>PGR 3</td>
<td>high</td>
</tr>
<tr>
<td>PGR 4</td>
<td>low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LBG</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>Z2/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>high</td>
<td>98</td>
<td>98</td>
<td>95</td>
<td>-</td>
</tr>
<tr>
<td>medium</td>
<td>95</td>
<td>95</td>
<td>80</td>
<td>-</td>
</tr>
<tr>
<td>low</td>
<td>90</td>
<td>90</td>
<td>80</td>
<td>-</td>
</tr>
</tbody>
</table>

Rules for determining the degree of delivery capability to be allocated

The total potential calculated is represented as follows:

Implementation and experience

As previously mentioned, the results were implemented by using SCT Ltd.’s optimisation tool DISKOVER SCO, with which the entire analysis parallel to the project was carried out. The initial, prototypical implementation of the system served to evaluate the software in terms of its functionality and application. During this phase, the users became familiar with the software.

Further training and subsequent coaching sessions allowed the users to trust the results, and they quickly learned to utilise the advantages brought by the system. The task of performing calculations for planning and scheduling were now taken on by the system. By influencing the parameters, the planners can change and optimise the results. An important realisation for the planners was the fact that, “now, finally, the correct items are in stock. Before, production capacity had reached its limit and the inventory was made up of items that from today’s...
perspective are no longer produced. The availability of key variables relevant to planning means that incorrect decisions are avoided,” said Ralf Schechowiz, CFO at Mehler Texnologies. Users also point out the requirement for qualified operators when using the system: “DISKOVER is like a weapon against stock – it should be operated by trained specialists,” cautions Lothar Szymkowiak, Head of Planning at Mehler Texnologies. So that problems do not arise from operating errors, DISKOVER regularly monitors whether key figures are within an allowable range. If maximum or minimum values are exceeded, an alarm automatically notifies the Planners and Schedulers responsible.

DISKOVER SCO has become a fixed part of the planning and manufacturing process at Mehler Texnologies. A further functional feature of DISKOVER SCO was an additional use for Planners and Schedulers: the capacity module allows future production bottlenecks to be identified. These bottlenecks can be automatically adjusted using the relevant settings - DISKOVER diverts orders to periods during which there is capacity available. “We can finally take into consideration the plant holidays of our production locations. When changes are made in the operational calendar, changes are automatically suggested in planning,” said a pleased Lothar Szymkowiak.

About Mehler Texnologies
Mehler Texnologies is among the leading companies internationally in the coated textiles industry. More than 50 million square metres of material are produced and distributed annually under the brands VALMEX®, POLYMAR® und AIRTEX®. Its customers are companies in the processing industry. More than 60 years of experience in development and production are the basis of its well-engineered products. Continuous research and development improve existing composite materials and open new areas of application. State-of-the-art machinery ensures the high and consistent quality of the products. Active dialogue with planners, producers and processors from diverse branches and industries testifies to a close and trusting working relationship.

The industrial textiles are divided into eight product groups:

- Print
- Textile construction
- Sun protection
- Boat & pool
- Sport & camping
- Industry
- Environment
The basis of all industrial textiles is backing fabrics produced in weaving mills owned by the company itself. The coatings are comprised of multiple components, in accordance with their application. The result is high-quality textiles and high-tech products that are used in almost all branches worldwide.

Production takes place at two locations in Germany and one in the Czech Republic. Customers in more than 80 countries are served by distribution companies in Italy, France, Great Britain, Poland, Latvia, Romania, Turkey and the USA; as well as distribution partners in other European countries, Asia and Australia.