Abels & Kemmner
SUPPLY CHAIN EXPERTS

DRIESCHER INCREASES THROUGHPUT AND SIMULTANEOUSLY INCREASES DELIVERY TIME

Customer:
Fritz Driescher KG

Project:
New logistics business model and market-synchronized value stream

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Increasing market fluctuations and the variety of variants as well as shorter delivery times with delivery dates that could not be postponed caused a lot of extra work and unrest in production and final assembly at Fritz Driescher GmbH & Co. KG in Wegberg. In addition, there was a large amount of manual control work in scheduling, along with the resulting loss of efficiency. Together with the experts from Abels & Kemmner, the management redesigned the logistics business model and built a market-synchronized value chain from component production to final assembly.

High level of vertical integration across plants

The production was characterized by a very high level of vertical integration, with the order-related component production providing the components required for the final assembly of switchgear and switchgear. The component production consisted of machining, the sheet metal processing center, the robot welding center, the powder coating system, small assembly and the supporters-production (second plant). The final assembly then assembled the switchgear and switchgear from the components manufactured in-house, based on the order.

Initial situation

In order to be able to survive on the market as the only medium-sized company in its sector, DRIESCHER WEGBERG requires not only technically and qualitatively excellent products but also a high degree of flexibility in meeting customer requirements - and this with extremely short delivery times and a high level of adherence to deadlines.

Although the delivery of the switchgear and switchgear assembled on order was largely met on schedule (the delivery dates are fixed.

ABOVE

The **Fritz Driescher KG** in Wegberg is a medium-sized company specializing in the development and construction of switchgear and switching devices for the energy supply.

The product range includes medium-voltage switchgear (SF6 gas-insulated and air-insulated), medium-voltage switches (outdoor and indoor), transformer stations, low-voltage switchgear and high- and low-voltage fuse links.

www.driescher-wegberg.de

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and cannot be postponed), the scheduling situation has become increasingly critical in recent years. Delivery dates could only be met with great friction and great commitment from all those involved. The previous logistics business model was designed in the form of order-related component production and order-related material provision for final assembly. Due to market fluctuations, the increase in the variety of variants and shorter delivery times, this logistics business model has now reached its limits.

Furthermore, the order center had to compensate for the lack of detailed capacity planning and the partial scheduling of component production dates into the past through manual prioritization.

The result was constant coordination between component production, central warehouse, final assembly and order center; an almost impossible task due to the complexity of the products and the variety of parts.

As a result, components were constantly missing in the final assembly, which led to parts and systems that could not be fully assembled being stored there. Component production, particularly machining, struggled with high order backlogs and long lead times. Thanks to the great flexibility of the working time accounts in component production and the relatively high proportion of standard parts manufactured, the delivery dates were still saved at great expense and thanks to large inventories.

In order to continue to manufacture, assemble and deliver economically, quickly and on schedule, a new, optimized logistics business model was required, which would also provide DRIESCHER with new competitive advantages.

Good conditions for 80/20 leveling

Before the optimized logistics business model was designed and implemented, a detailed analysis of the current situation was carried out. A portfolio analysis of the individual parts made it clear that a large part of the production capacity (approx. 69%) was only achieved by around 10% of the parts that were required fairly regularly and were therefore well suited to so-called pull control based on the supermarket principle.

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The remaining 90% of parts to be manufactured took up the remaining third of the production capacity. This meant that an 80/20 leveling in production was the core element of the new logistics business model. However, in order for this 80/20 leveling to work smoothly, a number of prerequisites had to be checked or created.

For example, it was necessary to ensure that sufficient production capacity was kept free in the medium term for order-specific parts so that these parts could be manufactured as quickly as possible without a queue.

It was also necessary to check

- how the XY or Z items are distributed across the different machines in the different production areas,
- how evenly the capacity load with XY parts on the one hand and Z parts on the other hand is over time,
- whether the material flows can be partially physically separated by assigning separate machines to the Z parts,
- whether line production can be set up for different material numbers.

As the results of the analyses showed, the existing capacities in the various production areas were sufficient over time to produce both the XY items to be stocked and the Z items to be manufactured on order on time. A separationthe material flows between XY and Z articles or even line production on different material numbers was not necessary or useful.

Full production hoppers had to be emptied

However, a lead time analysis in component production showed that, despite a balanced inflow and outflow of production order hours, there were long order queues in front of the various capacity units in production, which were primarily responsible for the long lead times. The work backlog was on average 21 working days and led to major problems with meeting deadlines in component production.

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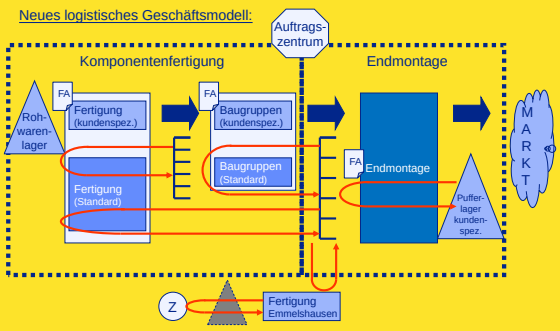
In order to position component production correctly in logistical terms and to align it with short lead times and high adherence to deadlines, the work in progress in component production had to be reduced with the following direct measures:

- The production work in progress was reduced to the new required target size by temporarily increasing production capacities through additional and ghost shifts as well as outsourcing of orders.
- A personnel capacity control system was developed and installed that shows the short-term need for personnel capacity for the various sub-areas of component production. With this tool, production management was and is able to shift employee capacities according to current production requirements and plan the temporary work capacities precisely in terms of time and quantity.
- Production orders were only dispatched on time and no longer prematurely.
- Production orders were generally no longer scheduled back into the past.
- Over the course of six months, these measures succeeded in reducing production order processing times to an average of four days.

Furthermore, as part of the current analysis, the planning and control in scheduling with the Baan 5 ERP system as well as the work organization in final assembly and component production were analyzed in detail and evaluated using data technology.

New logistics business model:

Once a production situation has gotten out of hand, the situation can only be remedied by properly balancing the production chain in terms of capacity and orders. Based on the results of the current analysis, the consultants defined and designed the new logistics business model and the necessary fields of action. The aim was to adapt the logistics business model to market requirements and to build a value chain that is in sync with the market.



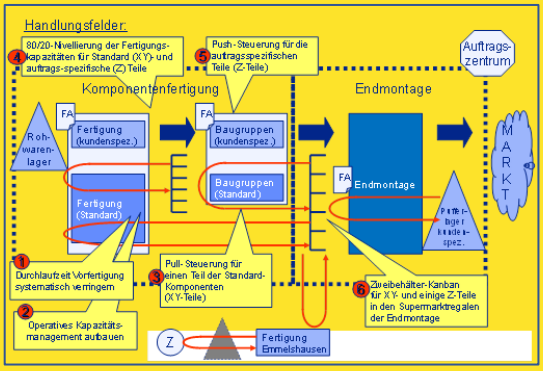
The definition of the fields of action and packages of measures associated with the new logistics business model and to be implemented is as follows:

Final assembly:

- Two-container Kanban for XY and some Z parts on the supermarket shelves of the final assembly.

Component manufacturing:

- Systematically reduce the lead time for component production,
- establish operational capacity management,
- 80/20 leveling of production capacities for standard parts (XY) and order-specific (Z) parts,
- Pull control for some of the standard components (XY parts),
- Push control for the order-specific parts (Z-parts).



"Hare" and "Hedgehog" strategy in component manufacturing

As the current analyses confirmed, the article structure was ideally suited to 80/20 leveling. Whereas previously all articles were manufactured to order and only stored based on batch size, the AB/XY articles ("hedgehog articles") are now stored under the

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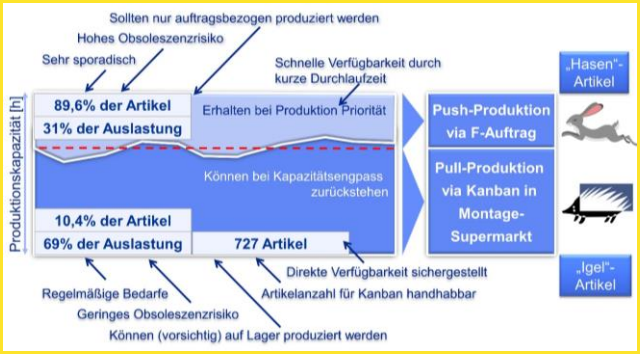
new logistics business model using pull control (via Kanban) to manage inventory in the central warehouse or on the supermarket shelves for final assembly. The big advantage is that the capacity is now more continuously utilized.

Despite this new inventory level for the AB/XY items, the inventory levels were reduced. All items that are to be manufactured on a order-related basis can now be manufactured in a prioritized manner with short lead times and quick availability (“rabbit items”) (push production via production order in the ERP Baan 5 system).



Pull control via Kanban

A pull control via Kanban was set up for the regularly used items. For this, a corresponding extension for the Kanban control had to be programmed in the Baan 5 system. This was also necessary for the two-container Kanban system in the final assembly.

Today, the Kanban cards of the empty containers from component production are scanned in the central warehouse and the yellow and red areas of the Kanban board are monitored electronically in Baan.

If the red area is reached, component manufacturing must start production; if the yellow area is reached, it can do so. The yellow area has created additional flexibility in component manufacturing in order to optimize capacity utilization.

Operational Capacity Management

A simple Excel Access application also helps to create capacity planning based on the Baan 5 data for all production capacities.

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Capacity requirements (machines/personnel) are now monitored for each production stage based on the production requirement dates. This means that current and future bottlenecks are immediately visible and can be actively addressed and thus avoided in most cases.

Two-container Kanban for XY and some Z parts on the supermarket shelves of the final assembly

Previously, the central warehouse provided all components for the order-related assembly of the switchgear and switchgear for final assembly. Due to the large number of items required for a switchgear and the problems in component production, final assembly often had to contend with missing components. As a result, employees could not finish building the partially assembled switchgear and had to store components temporarily, which led to space problems and frequent searches for materials.

Under the new logistics business model, all XY and some Z items are stored in a two-container Kanban system in the final assembly. The final assembly was redesigned so that each of the eight assembly areas could have its own Kanban shelves and pallet storage spaces. If a container is empty today, a relocation order is generated in the central warehouse by scanning the corresponding barcode. The empty container must be refilled within two working days. During this relocation time, employees use the second Kanban container with the required components.

This system makes it possible to supply the final assembly with standard components with a delivery readiness of over 98% in some cases. A huge reduction in outsourcing processes also relieved the central warehouse in particular. In the transfer processes from the central warehouse to the final assembly, the warehouse now prioritizes the order-related components, just like the component production, which in turn has led to a high availability of all components in the final assembly. In the final assembly, a total of 3,176 items for the eight assembly areas have so far been converted to the two-container Kanban system.

In order to avoid the problem of switchgear that cannot be fully assembled and its intermediate storage with subsequent material search, the material provision (picking reports) for the order-related manufactured items was reorganized in Baan so that transfer orders to final assembly are now only carried out if 100% material availability of all components for an assembly order is given.

Rules, scheduling parameter optimization, monitoring of production segmentation

In order to efficiently implement the push and pull control for component production and the two-container Kanban system in final assembly, the planners and dispatchers regularly adjust the planning, control and dispatch settings in the Baan 5 ERP system for each item. The "operating point" is always adjusted so that the value chain functions at minimal cost.

In order to achieve this, it was necessary to develop a set of rules for optimizing the system settings (technical jargon: planning parameter optimization). The set of rules defined the parameter settings for the individual article classes (ABC/XYZ/ELAN/etc.), such as push/pull control, level of readiness for delivery, safety stock, ordering method, etc.

The entire range of articles that the order center handles is structured in

- Components with reasonably uniform requirements, and
- Components with low repetition, sporadic demand or customized parts.

While the first group of parts is controlled via Kanban organization, the second group continues to be controlled conventionally in order to avoid unnecessary inventory and still meet delivery dates and further shorten delivery times.

Applying the rules to all items and determining the parameter settings to be changed in the Baan 5 ERP system can no longer be done manually. The effort required would be far too great.

Automated disposition parameter maintenance using the DISKOVER system

Due to the variety of system settings that need to be changed, this is now done using the DISKOVER software, which has also been used to analyze the current situation and simulate various scenarios.

With the help of DISKOVER, planners and dispatchers can perform three other important tasks regularly, efficiently and semi-automatically in addition to scheduling parameter optimization:

1. the checking of the push/pull items for component production as well as the two-container Kanban items on the supermarket shelves in final assembly. DISKOVER determines which items need to be removed from the Kanban system and which need to be switched to Kanban and provides this in the form of a report.
   This regular maintenance is necessary to ensure that the right parts are controlled in the Kanban system and the right parts in the Push system in the future. Without this maintenance, the entire production system would become unbalanced in the medium term.

2. the readjustment of the 80/20 leveling. In order to keep the 80/20 leveling in balance, DISKOVER calculates how much production capacity must be kept available for the customer-specific push orders and which capacities can be used on average for Kanban production. Depending on the available Kanban capacity,

3. the re-dimensioning of the Kanban articles. This involves determining and simulating how large the article-specific circulating stocks and thus the number of Kanban cards per Kanban article must be. Too many cards result in unnecessary stocks, too few cards lead to delivery readiness problems.

Practical experience and successes

The new logistics business model and the market-synchronized value stream have led to a great calming of component production, the central warehouse and final assembly at DRIESCHER WEGBERG.

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The high level of delivery readiness in final assembly, the high level of adherence to deadlines and the increase in throughput in component production – without increasing capacity – as well as the high level of acceptance and satisfaction of employees are evidence of this.

The Kanban-controlled items have become so-called self-runners that only need to be checked and readjusted at regular intervals; the order center, production, central warehouse and final assembly can concentrate on the components to be manufactured on an order-related basis.

With the implementation of the new logistics business model, DRIESCHER.WEGBERG has significantly strengthened its competitive position on the market, which is impressively reflected in the disproportionately high growth in incoming orders.

Kanban shelf supermarket shelf

Final assembly final assembly

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