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Concepts for a successful production of textile parts in Germany

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Introduction

Today's textile market for machinery and spare parts suffers from its own success in some respects. Improved machines produce a lot more fabric per time unit and use less spare parts for maintenance. Customer demand for fabrics is not increasing as much as the productivity of the machines. This leads to a tough competition where good quality is indispensable and pricing becomes a more and more important factor. To meet these demands in a high-wage country in terms of long-term competitiveness, a manufacturer has to fulfil some basic and therefore simple requirements: The whole management system for production and administration has to be extremely efficient. The production programme has to include some unique selling points offering actual benefits for the customers. To be really successful, more aspects have to come together. The following paper is supposed to provide a first insight into the way of thinking at Kern-Liebers thus being successful subject to the rules of this market.

Some basic facts

The main plant of the group, founded in Schramberg in 1888 for the production of clock springs, was moved out of the valley to plain territory above Schramberg in 1972 and was expanded, step by step, to an effective area of 52,000 sqm (560,000ft ^{2}). Therefore, the company can rely on more than 100 years of technical experience and, against this background, can set up business plans in terms of time periods looking far ahead into the future.

The group's four product divisions develop dynamically and consistently.

- The traditional Spring Division manufactures high-tech springs e. g. for safety belts, anti-blocking systems (ABS), piston rings, cable rewinders and nozzle holders in diesel engines.
- Experience in the processing of cold-rolled strip steel and tool production was very helpful for setting up the knitting parts division in 1946. Presently, the firm's program comprises over 30,000 different types of knitting parts making it one of the biggest manufacturers worldwide of flat parts for circular, flat and warp knitting machines.
- The division for fine blanked and stamped parts contributes to the market success of world famous companies in numerous sectors thanks to its efficiency and reliable quality assurance. Moreover, Kern-Liebers delivers structural components ready for assembling that comply with the customers' wishes for more manufacturing depth (by the supplier).

An increasing demand for the company's product range involved an expansion of its tool shop as well as the design and production of own machinery. This, again, served as a basis for the development of the dosing technology division, which builds dosing installations for the processing of reactive plastics for many purposes.

This diversification ensures an enormous flexibility and efficiency. Each market is itself fluctuating, sometimes changing rapidly from a lull to a boom. In the past, it was shown that the different markets seem to be anti cyclical to each other. This means, re

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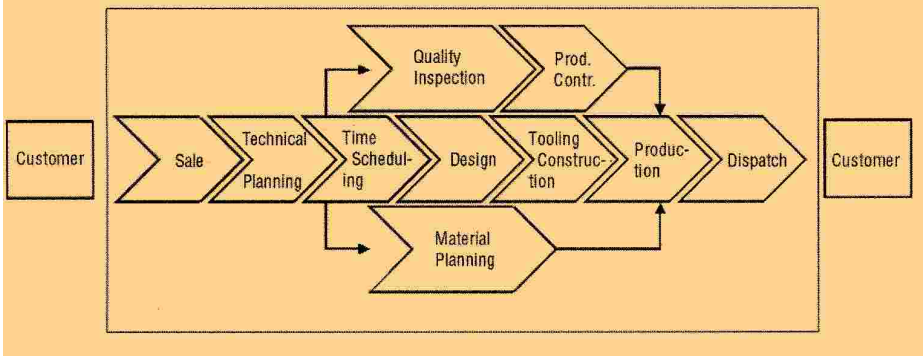

Traditional management system

sources like personnel or machinery can be moved or shared very flexibly, whilst still being kept within the company.

Another advantage of the structure described above is the resulting synergetic effect. Some of the best innovations are made when people of different divisions talk to each other without hesitation and based on their different technological yet combinable backgrounds. Examples will be shown later.

Globalisation

Kern-Liebers is a Swabian familyowned company with 21 manufacturing subsidiaries and associated companies on all continents. Nevertheless, the majority of the flat parts is produced at Schramberg. Worldwide, 2670 employees are working for the Kern-Liebers group, of which 1260 are at Schramberg.

The constant success led to the foundation of Kern-Liebers Knitting Parts GmbH which started working in an own, brand new building in April 1999, on 12,000 sqm (129,200 ft^2) reserved exclusively for the texile industry.

Development of management principles

As simple as they may appear at first glance, as complex and exacting flat parts are when looked at with a deeper insight. A large variety of roughly 30,000 items, combined with high quality standards such as some 1/1000 of a mm tolerance in certain dimensions, mass production of millions of pieces for some types and a demand of only some hundred pieces per year for others lead to a relatively large portion of manual work.

Therefore, the skills of the employees and the configuration of their working conditions are a major issue for success. This leads to the basic question: What is the best configuration?

To answer this question, we first have to look at the customers. Their markets change very rapidly in volume and product preferences, no matter whether they are machine builders or producers of fabrics. Moreover, competition is a factor of growing significance. A supplier has to find a way to combine different requirements: flexibility, speed, reliability, high quality and price.

The above described situation was the starting point for the idea of forming work groups. Kern-Liebers looked for similar parts with a high volume which would justify a different production principle; A clearly defined, small group of people producing a limited variety of parts. The idea of "production island" was born. The product line for the first island was found quickly when a new type of parts had to be installed at Schramberg,"guide needles", parts for warp-knitting machines were chosen to be the first.

Physical frame: First, a production island requires a clearly defined space of its own where no other department interferes. Within the marked boundaries, the machines necessary to produce the whole group of products, are installed. It is very important, that the capacity of the machines be absolutely sufficient and that the whole range be incorporated into the island so that «waiting for work» is reduced to a minimum. The people and their time are the company's most precious resource.

People: They have the duty to make the right product at the right time and at the right price. They are supposed to organize themselves in order to reach that goal. Training is a basic concept to ensure that the workers are capable of operating different machines and places and to make sure they understand the principles of such an island. Altogether, this enables them to provide the customer with a continuous production even when some members are ill or on vacation or retire. This results in a very interesting and challenging job for all workers.

People must be motivated for the new duties. Like a company which records profits and losses according to the economic situation, the income of the workers is now influenced by their productivity. They obtain a constant basic payment for their qualification, an additional payment for their individual influence on productivity within the group (which is defined by the whole group for each member), and another additional bonus payment (which is the same for all members and only depending on their effectiveness) for the output rate of high quality parts. If they work more efficiently, they get more money. The laws in Germany only allow for a relatively small portion of efficiency-related income for workers. Nevertheless, this is where the workers can afford to buy luxury goods from when basic needs like rent and food are being paid by the constant part of the monthly income.

At Kern-Liebers, this was the first step to build a factory within a factory, a unit being part of a fractal structure. And, what is more, it was a very successful one. Today, the company produces guide needles successfully against competitors in low-wage countries.

This success lead to the installation of several other production islands. Still, the whole factory works on the basis of the traditional sequential system according to fig. 1. The next step was to link the technical department closer to production. Product manager, tooling designer and production planning were supposed to take part. This was installed for the production of sinkers and flat parts for circular knitting machines. An office was installed inside the production hall on the working floor. Big windows made

sure that a close contact between working personnel and clerks was possible. Short response times and quick decisions on a broad basis were made possible this way. The idea of production islands entered into a new stage, the so-called "segment".

Due to the constant growth of Kern-Liebers, the time for a new overall structure arrived in 1999. The company was separated into several divisions, Kern-Liebers Knitting Parts GmbH, the textile division, being one of them. A new building was constructed and commissioned in April 1999. All principles discussed before were now combined and put into effect under one roof. Today, the company is working in one division with two segments, flat and circular knitting, where flat knitting also incorporates weaving and warp knitting. Production consists entirely of production islands. Even those parts that cannot be part of a traditional island, are put together in a production island of their own.

Unique Selling Points USP

Market strength is based upon different aspects. One of them is the unique selling points offering a real benefit for the customer. In the field of flat parts, USP's are rarely found due to the long existence of this field and the fact that the basic concept of most of the parts has remained the same for many years. Nevertheless, Kern-Liebers provides its customers with the following USP's:

G-Parts: The better the edges of the parts are rounded and the smoother they are, the better for the production. The USP "G" is a process during which nearly fully rounded, extremely smooth edges can be achieved even inside the throat of sinkers. Less lint, less breakage of the yarn, better look of the fabric due to a greater uniformity of the loops are the results. This better overall performance can usually be sold at the same price level. This is an ideal benefit for the customer.

New slider surface: Newly developed knitting machines are supposed to increase reliability and speed compared to the last generation. In the field of double cylinder machines, there seemed to be a maximum speed level. If the machine builders tried to increase speed beyond this point, problems with slider breakage started. Kern-Liebers has a long experience with valve springs for the automotive industry. In this case, «Knitting Parts» could make use of that. The production of these springs includes a process for improving the surface against breakage. The group applied this system in a modified way to the sliders and tested them with very good results. Today, Matec and Lonati are both using sliders with the new surface to design and build machines and are providing their customers with an outstanding performance due to the overall concept.

The new slider surface is a good example for a synergetic effect at Kern-Liebers. It could only be produced thanks to the company's various technological sectors.

Quality Management

Development, production and sales of knitting parts and sub-assemblies for textile machines at Kern-Liebers Knitting Parts GmbH have implemented a quality management system. An audit, documented in a report, has verified that this quality management system fulfils the requirements of the DIN EN ISO 9001 standard.

Sales structure

Textile machines are installed in nearly every country of the world. As a result of globalisation, machines can be moved very quickly from one country to the other depending on the best conditions for production. A producer must be able to follow these movements very quickly. In many countries of the world, Kern-Liebers parts are sold to knitters through Groz-Beckert subsidiaries, which guarantees a high standard for the sales. In many other countries, dealers who are well known in the market deliver Groz-Beckert and Kern-Liebers products at the same time. This partnership offers benefits for both companies and, also, for the customer, e. g. just one contact for both needles and flat parts.

Machine builders directly contact the company for delivery and new products. This proved to be the best way to obtain the large quantities they need and the solutions to individual technological challenges they have in store.

conclusion

It is usually not just one factor that is responsible for success. KernLiebers' success is based upon an integral system of structures and measures adapted continuously to particular situations. Another reason for success is the company's long-term experience combined with a futureoriented thinking. In this way, the group may justifiably consider itself a reliable partner for its customers who can provide them continuously with high-quality parts at competitive prices along with special, unique benefits.