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INTERVIEW WITH

Dr.-Ing. Eggert de Weldige (on the left),
technical CEO of Maschinenfabrik
Köppern, and CIO **Andreas
Engelbrecht**

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NEW

MASCHINENFABRIK KÖPPER

SPECIALIZATION



MASCHINEN- FABRIK KÖPPERN ...

employs about 145 people in Hattingen, where the company was founded, and about 240 people worldwide. After the decline of the original field of specialization, coal dust briquetting, due to the recession of coal mining in the Ruhr region, the company had to turn to new fields of specialization. There are three of them today, and yet all plants are quite similar since they all consist of two counter-rotating rollers for processing material fragments.

1. BRIQUETTING IN METALLURGICAL INDUSTRY:

Additives for alloying are often fine-grained or dust-like. In order for them to be capable of melting, they have to be briquetted since dust would immediately burn above the melting point. A whole set of other substances are also briquetted in basic materials industry, e.g. dolomite as additive for metallurgy, aluminum chips or sodium cyanide, which is required for washing gold out from the source rock.

2. COMPACTION:

During this process, the material is firmly pressed together, making it appear as artificial stone. Mainly potash and NPK, as a mixed fertilizer, are compressed to a solid mass and then immediately pelletized and further treated. The resulting products are fertilizers.

3. COMMINATION:

Material fragments are ground between two rollers that are running relatively slowly. These grinding rollers, high compression roller mills, are relatively huge while weighing up to 350 tons. The rollers compress the mostly mineral material, causing the material to break at the grain boundaries, and then further comminute it. It was not before the 1980s that this method was invented, with the ball mill as its fiercest competition. A ball mill is composed of a rotating cylinder with a diameter of up to seven meters, which is filled with steel balls and the material to be ground. In order for the steel balls to crush the material they have to rotate in the mill, thus requiring high energy input. The high compression roller mill, in contrast, accomplishes this with half the energy input. The resulting product is a finely ground material, as it is required by the cement industry.



„During the last release change we have put great effort in reducing customizations to a minimum. The ERP system itself has developed, which allowed us to reduce the customizations.“

Andreas Engelbrecht

NEW SPECIALIZATION

Maschinenfabrik Köppern is a family-run business with a long tradition in the plant engineering industry. In the course of the structural change in the German Ruhr region, the company based in Hattingen was forced to specialize on new markets for its briquetting plants – with great success. Managing director Dr.-Ing. Eggert de Weldige (on the left) and head of IT Andreas Engelbrecht outline their goals for the operation of their ERP software.

ITM: *Mr. de Weldige, can you give us a brief summary of your company's history?*

EGGERT DE WELDIGE: The machine factory was founded more than 110 years ago on the site of a smelter situated on the river Ruhr. This smelter had been acquired by a man called Köppern, who then took on to producing briquetting plants shortly afterwards. By means of these plants, coal dust, a residual product created during the process of coal washing, can be briquetted.

With the beginning decline of coal production in the 1960s, briquetting plants for coal dust were no longer required. The company was forced to turn to new markets and has specialized on three fields: briquetting metallurgical substances, compaction e.g. for the production of fertilizers, and comminution in so-called high compression roller mills (see box on page 20).

ITM: *In which way do your plants vary?*

DE WELDIGE: Only slightly. The presses are all constructed with two counter-rotating rollers of different diameter and length, but the product is basically the same.

ITM: *How big is the entire market for these products and where would you rank yourself?*

DE WELDIGE: We are not a global player, but rather a niche enterprise. However, we are highly competitive in our niche and with the three methods mentioned above. The complete market volume is hard to define; in the field of briquetting and compression plants we consider ourselves a global market leader. In the field of high compression roller mills, we belong to the top three or four companies acting on the market.

Since we can cover three product fields, we can compensate for drawbacks in one market segment by means of the other two segments. We can concentrate on one machine technology and, as a relatively small company, still play in the upper league in various fields. For instance, there are not many companies that offer powder metallurgy, which is used for wear-resistant roller hard-facing. We mainly depend on technology as a driving force on the market.

ITM: *So you have to invest a lot in research?*

DE WELDIGE: Yes, we are cooperating with a number of universities, such as the Bergakademie in Freiberg, the RWTH in Aachen, and the Ruhr University of Bochum, with which we closely work together on key issues. We also conduct research and development ourselves. For this purpose, we have founded a subsidiary, the

Köppern Entwicklungsgesellschaft. It develops new products for the machine factory, conducts metallurgical development, and helps developing machine technologies.

ITM: *How many plants do you construct per year?*

DE WELDIGE: As a plant manufacturer we are a contract manufacturer. The plants are usually constructed when we receive an order. This consequently leads to fluctuations: years with little revenue followed by years with high revenue when the plants are finally delivered. This is why it is hard to give an exact number of plants per year. We are not a mass-producer, ...

ITM: *... but a make-to-order manufacturer.*

DE WELDIGE: Yes, we produce individual products, which has been an important factor for choosing proALPHA as ERP system. During the selection process, we dealt with various solutions for the industry, studied references, and came to the conclusion that proALPHA would suit us best – even though the competition's systems might have suited us as well. At our company, the system is used in the machine factory and in the development company.

ITM: *Which system did you use before?*

ANDREAS ENGELBRECHT: At the end of the 1970s, Köppern, like many other companies, introduced IBM and the domains of accounting and payroll accounting to data processing. At the beginning of the 80s, the materials management and production control modules were about to follow. We then decided against the market leader IBM, which was developing software at that time, and implemented the Kopias system by Dakota.

In the course of the years we had to create a large number of interfaces to the surrounding systems. We could maintain this procedure up to the year 2005, including the order entry module, which was written by ourselves in RPG, and further programming in Cobol. We then decided to deploy an integrated complete solution, because with a large number of self-programmed software solutions and interfaces, it can easily become a big problem if the responsible employee gets sick or even retires...

ITM: *What did this selection process look like?*

ENGELBRECHT: At the beginning of the selection process we worked with a consulting agency, later three companies were given the opportunity to present themselves. This also included proALPHA, which we finally chose after a long dialog.

ITM: *Did the implementation of the system involve a system house or a proALPHA partner?*

ENGELBRECHT: No, proALPHA implemented the system by itself. We have a contact person at proALPHA with sound knowledge of our processes.

ITM: *Which modules of the system do you use?*

ENGELBRECHT: We are using all modules except for the Product Configurator. We have used the Configurator at first, but then had to realize that the implementation would have required too much effort: Filling the tool would have been in no relation at all to the result to be expected.

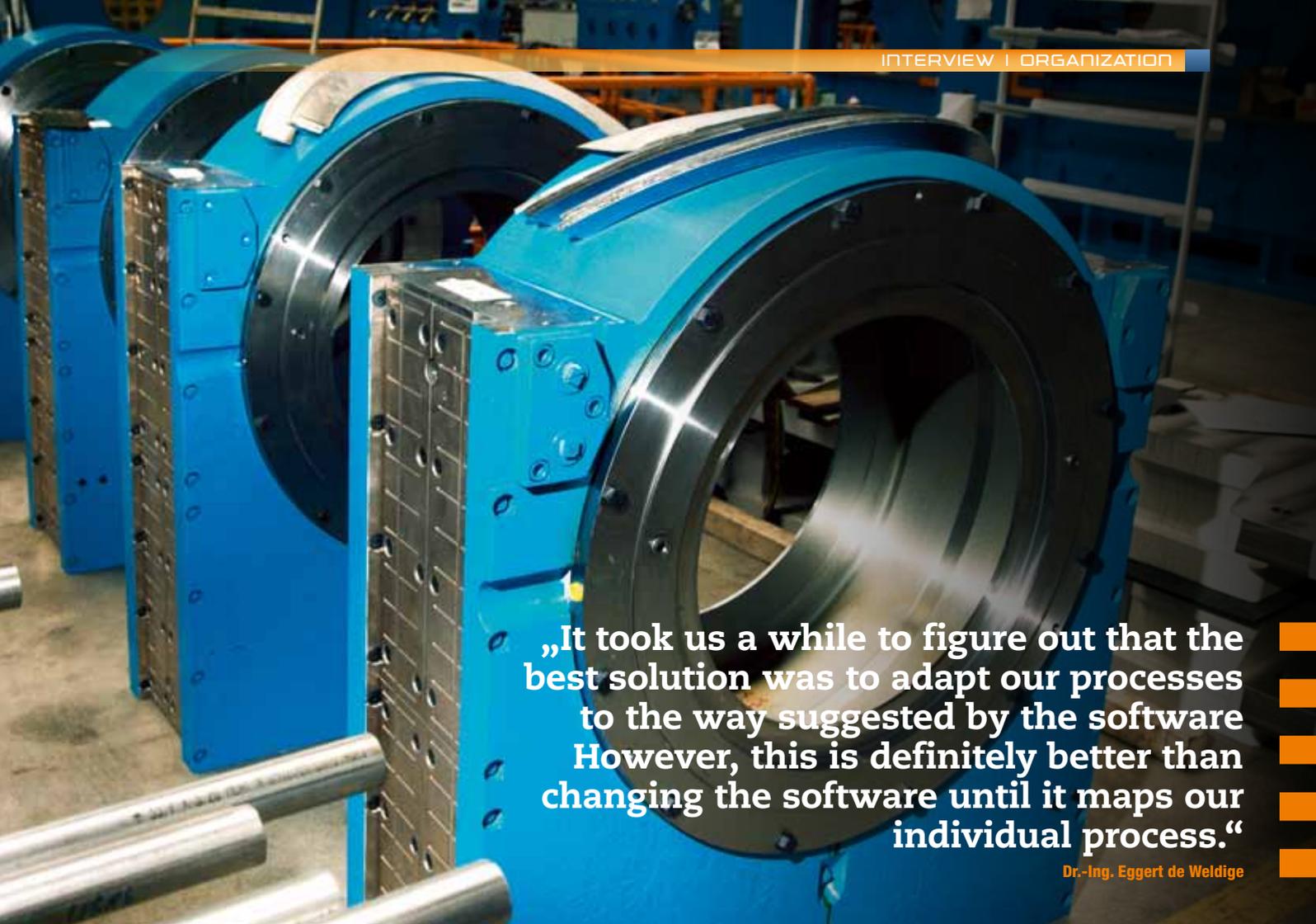
ITM: *Which hardware systems do you use?*

ENGELBRECHT: We started with IBM-36 machines and then switched to the AS/400, until we finally turned to the Windows Server with SQL database in the course of the implementation of the ERP system.



Since the material to be ground for the cement industry usually is highly abrasive, the surfaces must not wear too quickly. In addition to the pressures pushing the capabilities of steel to the limit, this is the main demand on the construction of high compression roller mills.





„It took us a while to figure out that the best solution was to adapt our processes to the way suggested by the software. However, this is definitely better than changing the software until it maps our individual process.“

Dr.-Ing. Eggert de Weldige

ITM: How did the transfer take place?

ENGELBRECHT: After materials management and production had been transferred and were ready for operation, we had to face a few challenges. These mainly resulted from the switchover to the new hardware since the users had to experience a major change from green screen display to a graphical interface. The entire workflow process obviously has also changed. Another factor commonly perceived as positive presented a problem to us: our low personnel turnover. Most of our employees have been working with Kopias for a long time. Consequently, we had to endure statements of the following kind: „This used to be better“ and „We need the document on green paper.“ We had to cope with this every day.

It took us one or two years until we had a firm grasp of the new system and could take on new modules. Today, we extensively use the DMS, for example, since it has been well accepted. We see the potential to extend the DMS to further departments.

The system proved to be very stable, as shown with the switchover to the current version of the ERP system in 2011. Thanks to a proALPHA consultant, the project virtually presented no problem to the users. It is understood that switching the version takes some effort, but already the first attempt was flawless.

ITM: Which effects do you perceive due to the integrity of the system?

DE WELDIGE: Clearly the user guidance as well as a fast and reliable process control. We know that this is a continuous procedure. Our processes undergo constant changes since we are always on the quest to make them even more efficient and faster. We know

that we depend on reliability, highest quality, and accurate processes to be able to persist on the global market. It is not an option for a German plant manufacturer to use prices as a means for ensuring market shares, or to even expand and increase them.

ITM: Which are the customers' demands on your company?

DE WELDIGE: Their main interest is placed on the punctuality of the delivery. Our plants are the key components of factories that can easily cost up to one billion euros or dollars. They have to be available on time, take up operation at once and without any problems, and then keep on operating in a reliable way and without any failures. It goes without saying that our processes are geared to meeting these demands. The tool used for modeling and continuously improving these processes is our ERP system.

ITM: Can the standard software map these continuous improvements? Or do you have to add your own components yet again?

DE WELDIGE: Yes, it largely maps these improvement opportunities. Our challenge is to understand the standardized process as suggested by the solution. It took us a while to figure out that the best way was to adapt our processes to the suggested way. It is definitely better than changing the software until it maps our individual process, as we used to do before.

Changing an ERP system at one or several instances entails considerable effects. This realization was hard and ▶

required enormous efforts at persuasion. Fortunately, proALPHA offers alternatives for many cases and additional configuration options. As a mechanical engineer for individual plants, it took us a while to find the ideal customization for us.

ITM: *Is this easier for mass-producers?*

DE WELDIGE: ERP systems are rather tailored to mass production, which is more linear and easier to map. Yet the suggestions of the system can help us to optimize our processes as a manufacturer of individual plants. At this point we have to keep working on our processes in order to bring them closer to the standard system. This is not always easy since we are used to decide on the processes. Why should a program be entitled to tell us how we can work more efficiently? Indeed this is more often the case than we would have liked to admit it at the beginning.

ITM: *Can you give us some examples of these adaptations towards the standard and the benefits resulting from them?*

DE WELDIGE: We are currently trying to integrate lot tracking, which is currently mapped in a secondary process, into the ERP system. Since lot tracking is closely interwoven with acquisition, purchasing, internal logistics, mounting, and delivery, we want to entirely cover it in proALPHA for the parts which are subject to lot tracking. This might be required for reasons of quality, security, or costs.

ITM: *Do you not require any individual programming at all?*

ENGLBRECHT: Not entirely, of course. When switching to the last version we have tried to reduce these customizations to a minimum. The ERP system itself has developed, which allowed us to reduce the customizations. In order to maintain our release capability, we have attached great importance to the clear documentation of our customizations.

ITM: *Do you have a company-own IT department for the ERP system?*

ENGLBRECHT: Yes, we have three employees working on the infrastructure. One employee is explicitly responsible for the ERP systems while another one takes care of the CAD system.

ITM: *Do you consider outsourcing?*

DE WELDIGE: Our main concern is our data falling into the wrong hands in case we entrusted them to a third party. Although we are acting on a small market, the competition is fierce – and not that many of these plants are sold. Consequently, we attach great importance to the protection of our data, and do not entrust any other party with them. At the same time we have strict rules concerning data security, which might puzzle new employees at first.

Another decisive factor besides the security aspect is the fact that we are continuously striving for ideal processes. This requires that the IT employees understand the processes. This requirement cannot be met by external consultants since they are not constantly available, and the responsible persons change. We consider data processing as an integral component of the company. Consequently, it has to be on site. Furthermore, I do not expect fewer costs from outsourcing.

ITM: *Speaking of security: How do your employees who take care of the service and maintenance of the plants all over the world access the ERP system?*

DE WELDIGE: The 20 employees currently maintaining the plants have hardly any access to our internal data. They are allowed to retrieve their e-mails, but that's it. At this point we consciously

A predecessor of the plants offered by Köppern today has been sold to the Sophia-Jacoba coal mine in Hückelhoven in 1924, where it operated until the mine was closed down in 2005.



keep to our data security requirements. The desire for a bigger, global network yet exists – with all due caution.

ITM: *Can you think of any approaches?*

ENGELBRECHT: The only way of a remote access to our systems would be via VPN. Moreover, the employees will only be entitled to view the data, but not to download or edit them. This might sound a bit behind the times, but we do not want our data to be all over the cloud.

DE WELDIGE: You should also consider that our business is not a fast-paced business – just like the entire plant engineering industry, too. We are not dealing with mobile devices, sneakers, or razors, but with industrial goods. One plant can operate for more than 20 years. Consequently, we are moving in larger cycles and do not depend on short-term marketing campaigns, nor do we have to pull new innovations out of the hat. Our customers take their time to carefully make a decision since the plants are not as inexpensive as a razor.

ITM: *Do you consequently perceive a delayed impact of the overall economic situation?*

DE WELDIGE: The global cycles always affect our industry in anti-phase. The investment decisions for factories in which our machines and plants are operated are made when the business is booming. When the economic cycle has reached its maximum, it is bound to drop again. At this point, the investment has already been made. And when the economic cycle is at its low point we do not receive any orders.

ITM: *How do you handle this?*

DE WELDIGE: We never experience a continuous workload, and for this reason we have to be very well organized and flexible. This can be achieved by flexible working hours and time accounts, where overtime can be credited and drawn down again. We are neither an office with fixed working hours nor a retail store with regular opening hours. We have no influence on these conditions since they are dictated by the market.

ITM: *Which challenges are you currently experiencing in the IT department?*

ENGELBRECHT: We want to enhance the connectivity of our ERP system to CAD tools. At present, the released CAD drawings are updated not more than once per day in the ERP system. It is our goal for 2013 that purchasing can directly access the CAD drawings from within the ERP system.

DE WELDIGE: We want the designer to enter the data once when creating a new article. These data will then be available in the drawings database of the CAD system, and mirrored in the ERP system, in a redundant but always up-to-date way. We have discussed these plans with proALPHA, but had to realize that they cannot be put into practice at this point and without further ado. I do know that it is possible. I happen to know a successful Solid Edge product which is a CAD system with interfaces to SAP. They interact perfectly, but I have to admit that both systems have been newly introduced. Of course this interconnection proves to be way more difficult in an already existing infrastructure.

ITM: *Is it not also a matter of the programs used and how widely they are used?*

ENGELBRECHT: It is indeed. We know that proALPHA have successfully implemented this interconnection of CAD and ERP before, but not with our CAD system. It is not the most widely spread

program, but suits our purposes very well. We do not just replace a system like this, especially when we have just changed the release.

ITM: *CAD and ERP are a never-ending story. Which one is the leading system at your company?*

DE WELDIGE: The ERP system is leading. We will have to face a major task during the integration, even regarding the speed and complexity of the process.

ITM: *What are the major problems you are expecting with the connection of both systems?*

DE WELDIGE: I have got the impression that there is a yawning gap between the worlds of the CAD developers and ERP developers. This can be compared to the gap between electrical engineers and mechanical engineers. The problem already starts with the question of responsibility. If we told proALPHA they were the leading system, they would have to guarantee for identical data in the CAD system – a system they have not programmed and thus do not know. Of course proALPHA would reply that they could not guarantee for this. The same applies to the CAD developer in turn. And both parties are right. But we cannot accomplish this either, since we are neither mechanical engineers nor software developers.

So we are dealing with a real interface problem, but as far as I know a solution is already being developed. As long as there are no certified interfaces yet, no one will go out on a limb. That is, unless an ERP provider identifies a large number of companies among its customers that all use the same CAD system and desire a higher integration. We will have to wait for one of these to happen.

ITM: *Could the reason for this also be that business economists and engineers of some companies have different opinions about the distribution of competencies and leadership?*

DE WELDIGE: I do not think that we are in such a situation. We are driven by technology and our merchants understand and accept this concept. It is our goal that a designer does not have to introduce a new part at two different places. One entry should do it, also in terms of error prevention: Different descriptions such as „screw hexagonal“, „hexagon screw“, and „hex screw“, all with their own part number, are a thing of the past. These factors taken together allow us to benefit from better and faster processes.

Another important aspect are access privileges: The employees working with the ERP system must be able to always view the current and correct drawing. The possibility of blocking incorrect and old drawings is essential.

ENGELBRECHT: Our first approach consists of providing the employee with a button in the ERP system that allows him to retrieve the current drawing as a PDF file, including the drawing number and the correct revision number, which he then can send to the contractor, for instance. This does not represent a full integration, but a step into the right direction. We are convinced that we will soon be provided with a satisfying solution. After all, the CAD integration is not only desired by Köppern.