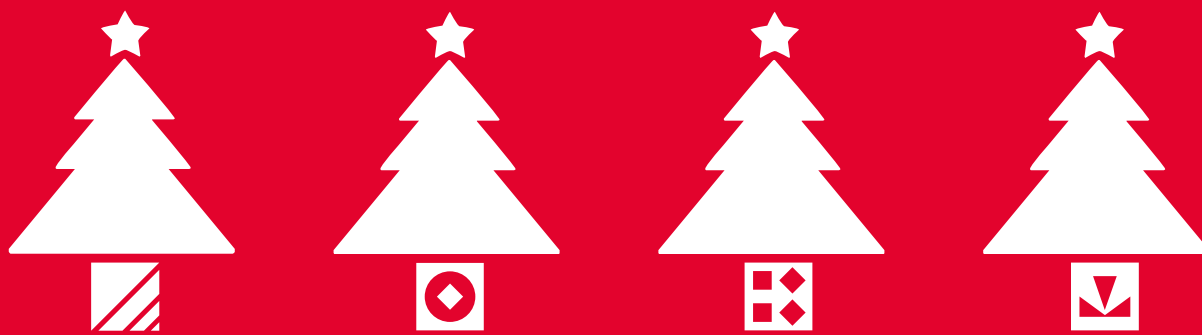


Merry Christmas

AND A HAPPY NEW YEAR



THE YEAR 2018

**Dear customers,
dear employees**

Just as in 2017, 2018 was also marked by a positive development and capacity utilization in all companies and divisions of the JOEST Group.

Unfortunately, JOEST was temporarily severely weakened in terms of staffing due to the flu epidemic that raged in the spring. This and delivery problems, especially of well-known suppliers, meant that we were unable to meet some of our delivery dates promised to our customers as we usually do. We would like to apologize again to our customers and assure them that we have taken comprehensive countermeasures.

The significant increase in personnel costs in Germany due to the unexpectedly high tariff agreement with the labor unions will further boost the expansion of production in our worldwide subsidiaries.

Despite the unpredictable American trade policy and geopolitical tensions, we expect a stable development in 2019. Especially through our subsidiaries worldwide, we are robust and flexibly positioned for changes at the international level.

This optimism is also supported by the 100th anniversary of the JOEST group next year. Only a few family businesses manage this.

We thank all employees for their commitment as well as our customers and partners for the good cooperation.

We wish you and your families all the best and hope to be able to continue our successful course together in 2019 in the spirit of partnership.

Dr. Hans Moormann, Dr. Marcus Wirtz



A century for your bulk material

**—
JOEST celebrates next year
100th anniversary!**

Come and visit us on our booths.
We are happy to welcome you!



POWTECH (Nuremberg)
April 09 - 11, 2019
Hall 1 Booth 1-145



GIFA (Düsseldorf)
June 25 - 29, 2019
Hall 17 Booth A18

SUCCESSFUL, EVEN IN UNCERTAIN TIMES

INTERVIEW. 100 years of JOEST next year - Interview with Managing Director, Dr. Marcus Wirtz.

These are turbulent times - the Diesel emission scandal, political shocks, e-mobility and Industry 4.0 challenge the foundries. Nevertheless, JOEST continues to write its success story unabashed. Rising sales and employee figures show that the company is doing a lot right. JOEST can confidently look forward to its 100th anniversary next year. How did the company from Duermen achieve this? GIESSEREI spoke to the JOEST Managing Director, Dr. Marcus Wirtz.

Your company is successful in the market and boasts increasing sales and employee figures. You obviously did a lot of things right. In your opinion, what was decisive for this development?

One of the key aspects of our success story is the history of the company. JOEST celebrates its 100th anniversary next year. We have remained true to ourselves throughout the years. We have been manufacturing vibratory machines for a long time, but have remained open-minded and have added additional technologies to our portfolio. We have developed these consistently and made it possible for the company to continue to grow in a generic and organic way with new applications and technologies. Today we offer everything the market asks for - from small individual machines to large solutions. We fulfill the wishes of many foundries with complete solutions. We have developed ourselves in line with the customers and their needs. Listening and counseling is essential - and of course experience.

What were the milestones in the development of JOEST?

To steadily strengthen its growth, JOEST has made acquisitions that are optimally suited. In 1995, we acquired the Uhde-Schwingungstechnik. Herweg joined in 2002: In addition to the vibration technology, JOEST now also offers weighing technology and special solutions. The conveying in vacuum was made possible.

In 2006, JOEST took over DIETERLE, a manufacturer of lifting and tipping equipment that transports, lifts, tilts, doses or decants bulk materials. DIETERLE GmbH & Co. KG merged with JOEST GmbH + Co. KG early 2018 and is no longer an independent company, but another strong JOEST group brand. In this way, we have expanded and supplemented our portfolio, and now offer an even wider range of products.

A company is only successful in a team.

What is the role of your employees in the growth?

Naturally, our employees are central to our success. We attach great importance to employing primarily foundry engineers in our foundry division or employees from the foundry sector. Everyone carries the foundry DNA in themselves. This allows for a completely different access to customers. Furthermore, JOEST has a very good staff structure of older and younger employees, from experienced and talented employees. Today, having on-site

contact is more important than ever in international business. We have a total of ten subsidiaries. At least one on each continent, where we also manufacture, have spare parts ready and employ engineers. A key success of the JOEST group lies in the successful internationalization strategy of the last 20 years. Now we are present in different countries and keep a close eye on what each country needs. This global presence also makes it possible to balance a weakening market with a stronger one.

How does success translate into numbers?

The success can be seen in the development of sales and employee figures. They rose by 10 to 15 percent respectively in the past three years. Today, JOEST has 365 employees in Germany - 15 more than a year and a half ago. Sales worldwide rose to more than 90 million euros.

Good numbers despite adversity - the Diesel emission scandal also had an impact on the suppliers to the automotive industry. How did it impact JOEST?

Of course, the exhaust gas scandal has damaged the image of German mechanical engineering. At first there were irritations, projects were sometimes postponed. But there were reinvestments, the irritations are only insignificant. The scandal was so far not as significant as expected. We were able to balance the dent with other applications. Especially since the European foundries are becoming more and more international.

Welchen Einfluss haben wachsende Erwartungen an What impact do growing expectations for efficiency and sustainability have on your business?

We pay attention, for example, to efficiency in drive technology, which has always been one of our core competencies. An example: We have produced a large cast iron cooler - the largest vibrating machine in Europe - which is only powered by a 15 KW motor. We lower the energy consumption, even as the cast coolers get larger and larger. In addition, we at JOEST naturally optimize our own production processes and production halls. The conversion to state-of-the-art technology, such as LED lighting and cold-beam heating systems, significantly saves on energy.

How did you manage to meet the increasing demands?

In fact, the requirements are becoming more and more complex - but we enjoy tackling them. To do this, we develop new processes and optimize machines, controls and plant technology. This applies for example to the core sand crushing. In order to meet high requirements, we have also steadily increased our development staff. We also offer a dual degree program, which we are significantly expanding for the different areas. In addition, we are preparing ourselves as a strong training company for the future. We currently have 35 trainees - from the commercial sector to production. As customers increasingly demand a local presence, JOEST founded another new company in Korea in 2017. In China and Korea, there is

a clear demand to produce locally, which we also live up to. We are well informed about different countries and we have a combination of local and international staff here.

Business units usually do not all develop at the same pace. Which product portfolio for foundries shows a particularly strong growth at your company?

What are the reasons?

A current trend is that due to increasing demand, several brake disk foundries are investing in box form plants with horizontal division in order to produce the castings with a structure which is point symmetrical to its axis of rotation. The configuration of the molding boxes is maximized; the performance of modern molding equipment is significant. This requires casting/sand separation plants in appropriate dimensions. In the production of engine blocks made of cast iron materials increasingly methods are used in which the casting has no direct contact with the wet casting sand, but rather is enclosed by an outer contour core structure to meet the accuracy and reproducibility, demanded by the required thin casting wall thicknesses of up to 2.5 mm. Such filigree castings require special unpacking procedures. This can not be managed with conventional separation channels. In the production of aluminum cylinder heads and several components for electric cars in gravity die casting, the cavities of the castings are mapped by built cores. For reasons of emission protection, increasingly inorganic binders are used for the production of these cores, replacing the traditional organic cold box process. It has been found, however, that the dust produced during the various post-coring process steps is significantly finer and partially respirable, i.e., penetrates into the alveoli. This considerably raises the demands placed on the plant technology with regard to dust-proofness and wear resistance. Since our concepts consistently reflect the indispensable feedback of customer experience, we have suitable solutions that meet these requirements.



Which markets may come to the fore?

We can see expansions in Mexico and Turkey. The automotive industry is growing, increasing the need for foundries. Especially since end users expect the foundry to be located nearby. In addition, there is an investment backlog in North America. Much of the production was shifted especially to China. Now a lot can come back. The political and financial problems and conflicts - recently in Turkey - as well as tweets from the US, however, can stop such developments overnight and lead to shifts to other countries. Therefore, our international presence is essential.

E-mobility is thus coming increasingly into the spotlight. How do you rate this market?

It will be a long time before there are no more combustion engines left. The demand for trucks is very high. Truck transport is increasing enormously and e-mobility is less important here and will not represent a solution for the foreseeable future. I consider the goals of e-mobility announced by politicians in Germany to be unrealistic. But I have the impression that this will calm down and they will come to their senses, to more realistic assessments and time frames. (Including combustion engine). This includes hydrogen propulsion and the classic internal combustion engine in other regions, where these are constantly optimized.

The share of hybrid drives will rise significantly in the coming years. This requires about 25 to 30 percent more weight in castings. According to expert estimates, this trend will continue until at least 2035. If the share of pure electric vehicles increases gradually, the proportion of castings will decrease significantly, but many castings will be required for the charging infrastructure and the growing number of wind turbines.

Could markets develop differently? In China, North America - and Africa in the long term - the demand for engines is immense, and the distances to be covered are even greater. The internal combustion engines will continue to play their part in this. But one thing is clear: E-mobility is a trend, the share of E-mobility will continue to grow. There will be a mix: in the urban area rather electric motors and hybrid technology (with internal combustion engine). This includes hydrogen propulsion and the classic internal combustion engine in other regions, where these are constantly optimized. In order to meet future requirements for fleet consumption, the share of hybrid drives will increase significantly in the coming years. This requires about 25 to 30 percent more weight in castings. According to expert estimates, this trend will continue until at least 2035. If the share of pure electric vehicles increases gradually, the proportion of castings will decrease significantly, but many castings will be required for the charging infrastructure and the growing number of wind turbines.

Industry 4.0 is the future.

How do you position yourself here?

Industry 4.0 is a special opportunity, we are working intensively with it. We have already developed some solutions: Thus, we provide a clear allocation of data on the castings, bring together numerous parameters and allow tracing of data. For example, the customer knows where things are. The goal is to detect mistakes earlier and avoid them. It's all about reporting of faults, avoidance of failures and preventive maintenance. Our vision is that you can tell why a casting error occurred. All data - such as temperature, speed, humidity, inventory and noise level - should be merged. An important example: The



controllers we develop should not just control. We already have intelligent controls - the platform is there, so the hardware is there. Now let's see how we use them, so that these controls can unfold their full potential. For this purpose, the controllers are additionally equipped with intelligent software. We want to offer both: normal and intelligent controls.

Without innovations there is no further development of the company.

With what strategy do you proceed here?

The field of research and development is essential for us. That is why we work together with various universities, for example with the Technical University of Aachen and the University of Applied Sciences of Münster, Steinfurt department. We award master's and doctoral theses. Furthermore, I am a member of the board of the VDMA trade association Metallurgy and Chairman of the Department of Mineral Processing. Here, global strategic issues are discussed.

What investments did you use to accelerate the development of your company?

We have been here in Dülmen since 1990 and have since been constantly expanding by investing in new plants and production capacities such as halls. The floor area increased from 40,000 to approximately 65,000 square meters. An example: Eight years ago, we built a completely new blasting and painting plant using state-of-the-art technology. Since then we can perform all paint specifications up to the highest quality requirements in a flexible and timely manner.

This is especially important when offering premium quality with short delivery times. On November 1, the new technical center went into operation. We built this even larger. Here we can run tests with customers for all solutions as well as machines and prototypes offered by JOEST. Over the past few years, we have invested a total of more than 10 million euros in our main site in Dülmen.

Are there plans for further investment in the next few years?

Yes, this includes, for example, the new machine technology of the flame cutting machine with integrated machining centers. We also employ welding robots to achieve productivity at a consistently high level of quality. As the

world leader in vibration technology with manufacturing facilities on every continent, quality is our top priority, no matter where in the world customers buy from us. Therefore, we continue to focus on Germany and plan further expansions, especially for quality-critical parts and components.

Investments are important, but also require qualified employees. How do you deal with the shortage of skilled workers?

We must note that it is becoming more difficult to find trainees. This applies especially to the field of electrical engineering. Basically, we are working very actively to avoid a shortage of skilled workers. Thus, for example, we have a good network with associations and universities. And we can offer employees many benefits. We have very good transport connections. We are in close proximity to Münster as well as Duisburg, Dortmund and Düsseldorf - without having to renounce the advantages of inexpensive rural living. A great location advantage. The dual course of study that we offer is also very attractive. Young employees have many and good international opportunities for development. Out of consideration for the families, the fitters are still working in the factory. The employees assemble the machines here, but then accompany them to the construction site for final assembly. It is important for us not only to keep our employees, but to offer an attractive, motivating work environment with prospects. And this is confirmed by the fact that they want to stay here!

Interview from Michael Vehreschild, 4P Communications, Kleve. Printed current issue (12/2018) of „GIESSEREI Fachmagazin“.



HIGH PERFORMANCE VIBRATING TROUGH FOR BOTTOM ASH

JOEST, specialist in vibration technology, optimizes the transport of bottom ash at the waste energy company AVR in Rozenburg.

AVR specializes in the processing of various types of residual waste and transforms this residual waste into energy and raw materials for households and businesses. These raw materials are made of metals and minerals. The minerals are reused, for example, in new paving stones. AVR extracts both raw materials from non-combustible parts; a mixture of moist waste incineration slag with scrap parts and fly ash. The material size is on average 300 mm, but with outliers up to 1,000 mm. An abrasive and corrosive substance with a tendency to soiling and clogging.

JOEST was commissioned to handle this slag during transport. The continuous flow of 50 m³ per hour is to be conveyed into a hopper and then directed to a swing conveyor, dosed and distributed. Always taking into account the material properties mentioned above.

JOEST supplies an individually tailored vibrating trough with a width of 1,800 mm and a length of 4,750 mm. Two unbalance motors ensure a linear direction of vibration. The complete trough is made of Hardox steel and additionally equipped with interchangeable 12 mm wear plates. JOEST also supplies the support structure including vibration damper and engine brake unit for a manageable start/stop operation.



JOEST BUILDS NEW TEST CENTER

GERMANY. In November 2018, JOEST completed the new test facility.

From now on JOEST customers have the opportunity to run any tests with their products on any JOEST machines.

In the new over 500m² Test Center a selection of test machines for all business units is available to run any customer specific tests to develop customer specific solutions. In a special lab screening, sifting, sorting, conveying and drying tests can be evaluated. This way the perfect solution can be developed and proven together with our customers.

Regardless if you need to dry, cool, screen, sift or sort your material or want to run tests on the patented RecoverMax system – come and try it out yourself to see that we can develop the best solution to process your bulk material.

The photos show the progress of the building process in time laps.



HOT, HOTTER, JOEST!

NETHERLANDS. JOEST supplies a spiral elevator for active carbon with a feed temperature of up to 300°C.

In June 2018, JOEST sold an approximately 7 meter high spiral conveyor to a customer in the Netherlands. The customer's goal was to cool the product feed temperature, which is up to 300°C, to a maximum of 60°C in the conveying process.

First activated carbon is added directly from an upstream process in the spiral conveyor. The product with different quality levels can be entered into the conveyor via two material feeding units. For better wear protection, the inlets and outlets are exchangeable.

The sections of the spiral, called flights, are combined in several circuits and connected to the cooling water supply, which provide for a temperature reduction. JOEST has provided a connection for customer dedusting of the product space in the spiral conveyor. Since the product can be flammable, the customer has additionally opted for an ATEX certified version.

The spiral conveyor has a non-stationary, resonating cladding that has been painted with a special heat-resistant coating. This cladding has been equipped with side inspection openings for better accessibility.

A particular challenge was the assembly at the premises of the customer. The spiral conveyor had to be incorporated into an already existing steel construction. For this, the cladding had to be retrofitted to the spiral conveyor. Since the customer operates his production fully continuously, only a small time window was available, which JOEST had to meet for the assembly.

Since November 2018, the spiral conveyor has been used by the customer in production and runs to the customer's complete satisfaction.



GOOD MARKET PROSPECTS FOR STANDARD CONICAL SEPARATOR IN CHINA

CHINA.

China's steel production covers about 50 % of global demand through burning fossil fuels and creating polluting sulfur compounds, making flue gas desulfurization a major topic.

Handan Iron & Steel Group as part of HBIS Group Co. Ltd has received much attention through its flue gas purification process and its long lasting effect. They use the properties of the activated carbon granules in order to reduce the exhaust gases to the emission standard. In this process, the adsorption potential of granulate is used to desulfurize the resulting exhaust gases.

Activated carbon granules (ACG) are a sensitive product that is difficult to recycle after use. To save costs and increase the usage rate, Handan has been looking for a solution and recently found one in the JOEST standard conical separator.

The separator is designed to separate activated carbon granules up to a size of 80 mm. By entering fresh air from below, it ensures that the light material reaches the top of the cone view and the heavy material is excreted at the bottom. With the aid of different air streams, both materials do not contact each other and the light material is discharged through a pipe system in another location. One of the advantages is not only the adaptability through several separator stages, but also the possibility to enter a high input rate.

Due to the success in separating, the JOEST subsidiary JOEST Vibration Technology (Beijing) Co., Ltd. (JCVT) is already involved in a growing amount of emission projects. China has created many new plans for the future, such as the cleanest and most efficient coal-fired power



plant in the world. Thus, we are convinced that the JOEST standard conical separator will have an excellent future in the Chinese market, making a major contribution to improving the Chinese environment.

BLUMENBECKER & JOEST – SUCCESSFUL TOGETHER

GERMANY. INDIA. MEXICO. Blumenbecker Automatisierungstechnik develops control system for a JOEST project in a metal foundry in Mexico.

Switching technology for extreme conditions

Vibrations like in a roller coaster at up to 50°C heat. These are not conditions under which switching technology feels at ease. But Uwe Podlich from Blumenbecker Automatisierungstechnik GmbH and his project team have achieved just that. On behalf of JOEST GmbH + Co. KG, they have developed and built heat-resistant and vibration-proof switching technology for two mobile furnace charging cars. Running on rails, the charging vehicles transport scrap material and alloying additives from the material boxes to the melting furnace in a Mexican metal foundry, where they then feed into the latter. Special feature: The control technology sits directly on the machines and is thus exposed to the extreme ambient temperatures as well as the strong vibration caused by the vibrating conveyor trough on the vehicle.

First turnkey project for the customer JOEST

It is the first total solution that BAT implements for the vibratory machinery specialist JOEST. The colleagues have been supplying JOEST with control cabinets since 2005. For the first time, engineering, electrical wiring, software development and commissioning were handled by BAT. All this with a very ambitious schedule of only twelve weeks. „In order to achieve this, work had to run in parallel from switch cabinet construction to electrical installation and software development. A close coordination of all participants was enormously important, „explains Project Manager Podlich.

New control concept involved a change of mindset

The time frame became even tighter when the end customer changed the entire concept of the offer phase at the start of the project. Instead of the planned central control station, the controls should now be a component of the vehicles. „That made it necessary to develop a fundamentally new technical concept,“ remembers René Findling, who has managed the project as a key account manager. The phone lines were pretty busy between BAT and JOEST at the time. The two project managers Uwe Podlich (BAT) and Reinhard Pannenbäcker (JOEST) consulted each other on daily basis.



Software programming and commissioning by KAT

Solutions were found in close teamwork. This included installing only vibration-resistant and heat-resistant elements, strengthening the control cabinets against vibrations and installing extra air conditioning units. In addition, the cabinets were equipped with a rubber buffered suspension. Programming the Allen Bradley controller, which is not widely used in Europe, was a further challenge. „But even here Blumenbecker was able to deliver thanks to its international presence,“ says Pannenbäcker with appreciation. Blumenbecker KAT Automation Private Limited of India has programmed the control software and is also responsible for the commissioning of the vehicles in Germany and Mexico. „With Mhapne Prabhav, we have our own contact person for projects with the KAT“, which, according to Podlich, makes the German-Indian cooperation fast and flexible.

All in all a successful project that makes JOEST as well as Blumenbecker wanting to do even more. Joint follow-up contracts for which BAT is turnkey supplier are already in the pipeline.

Press Release and Photos: B+M Blumenbecker GmbH

EXHIBITIONS 2018

WORLDWIDE



Aufbereitungstechnisches Seminar, Austria
January 25 - 26, 2018



ISRI, USA
April 17 - 18, 2018



Österreichische Giebereitigung, Austria
April 26 - 27, 2018



IFAT, Munich
May 14 - 18, 2018



N-EXPO, Japan
May 22 - 25, 2018



VracTech, France
October 16 - 18, 2018



Ankiros, Turkey
October 25 - 27, 2018



SOLIDS, Dortmund
November 07 - 08, 2018



Mining Turkey
December 13 - 16, 2018

8 RUNNERS - 2 RELAYS - 1 TEAM

GERMANY. JOEST team takes part in the 17th Volksbank Münster Marathon

For the 17th time, 9,000 runners and 6,000 relays start the Volksbank-Muenster-Marathon in Muenster am Schlossplatz on Sunday 09/09/2018. The marathon is one of the largest marathon events in Germany and has been voted the most popular in NRW six times in a row.

JOEST was also represented with a total of eight runners, i.e. two relays. The relays consisted of employees from various departments. Designers, sales staff, commercial employees and managing directors were part of the JOEST relays.

The 'pure joy of running' was the motto of this year's marathon and both JOEST teams successfully crossed the finishline at the historic Prinzipalmarkt in good spirits. The first team finished with a time of 03:38:12 and the second shortly afterwards with 03:42:36.

For many people running is an individual sport, but it is much more fun in a team. The two teams show how important team spirit is and how motivated our colleagues represented the JOEST team in Münster with a lot of fun.



FIVE MONTH ON ANOTHER CONTINENT

AUSTRALIA. My Internship at JOEST Australia Pty Ltd.

After completing my training to becoming an industrial clerk, I worked with EIRICH at the sales team Asia and Australia in Hardheim, where I already had the pleasure of working with JOEST Australia. Upon my decision of wanting to go studying (Management and Sales: Industry at University of applied Sciences Heilbronn), I already knew that I wanted to do my practical semester abroad. Now I'm spending this unforgettable time from August until end of December 2018 with JOEST Australia, which earned me the envy of my fellow students remaining in Germany for their work placement.

My duties are creating new brochures and leaflets, as well as other marketing- and sales-related tasks. The open and friendly attitude of Australians made my start in Perth fairly easy, which I am very grateful for. This work placement grants me invaluable impressions and experiences into the Australian culture and way of working, which will benefit me after finishing my studies. Besides from work I also enjoy traveling and experiencing Australia.

I sincerely hope this is not my last visit to the Australian continent and can only approve that Australia is always worth a journey.

Sabrina Müller

Social Media

Imprint

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