



A major highlight of 2015 was BOGE being awarded the prestigious OWL Innovation Prize for our innovative High Speed Turbo (HST) Compressor.

HIGHLIGHTS

- Outstanding: Innovation award for BOGE HST | 1+2**
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Award for outstanding innovation **BOGE High Speed Turbo chosen for OWL Market Vision**

Dear reader,

Once again, we can look back on an extremely successful year for our business. In 2015, BOGE achieved a turnover of €130 million, exceeding the previous year's result by about €10 million. This is mainly due to two things: the start of a comprehensive programme to optimise our proven piston and screw compressors, and the expansion of our product range.

A 30% increase in turnover over four years is testament to a vitality that is demonstrated across all areas of our company. With this, the need for skilled personnel is also increasing – 50 new employees were hired in 2015 alone. To present BOGE as an appealing employer globally, we recently implemented an advertising campaign with a specific focus on utilising social media channels to provide in-depth insights into the company by highlighting individual employees and their career at BOGE. There is further information about this and more on the following pages.

Happy reading!

Wolf D. Meier-Scheuven *Thorsten Meier*
Wolf D. Meier-Scheuven, Managing Director Thorsten Meier, Managing Director

Never before in the history of BOGE had there been such an overwhelming response to a new development as there was to the revelation of our innovative High Speed Turbo Compressor technology (reported in AIRMAG). It even received a special accolade.

The "all-star" jury of the OWL Market Visions 2015 award judged the HST technology worthy to receive the sought-after prize in the Industry and Trade category. They were especially impressed by the ability to convert innovative ideas into competitive advantages on the market. In addition to criteria such as uniqueness, customer value and added value compared to similar solutions, the judges also looked at the consequences of the innovation on the company's future viability.

From greenfield approach to show-stopper

The initial desire was to radically reduce the number of components in the compressors. This was followed by an ambition to demonstrate to everyone the benefits of doing so. "We rethought the compressor in just about every detail," recalls Peter Boldt, Head of Research and Development at BOGE. So step by step, an ingenious design principle was implemented. We started by developing a motor shaft with air bearings –



Poised to change the industry

a requirement for achieving extremely high engine speeds beyond 100,000 RPM and a complete absence of oil. Indeed, the BOGE High Speed Turbo Compressor, driven by a permanent magnet motor, is achieving a previously inconceivable energy efficiency and radical improvements in all critical areas: size, weight, power consumption, sound pressure level and maintenance requirements. Perhaps the most amazing thing is the impact on overall costs: these can be reduced by up to 30% for an HST model compared to a conventional oil-free screw compressor.

Significant contribution to environmental protection

Thanks to its high energy efficiency when running under load and in idle operation, plus the comparatively low CO₂ emissions and complete absence of oil, the BOGE HST makes a significant contribution to improving energy and resource efficiency as well as environmental and climate protection. This enormous innovative leap also moved the jury to proclaim BOGE as a "global innovation leader". A fantastic achievement which spurs us on even further!

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The range is now growing to meet demand

BOGE HST series is setting new standards



Oil-free compressors are stepping up a gear. Our drive shaft with air bearings is good for up to 120,000 RPM.

With its HST technology, BOGE is introducing a solution that meets the requirements of the future in every respect. The dramatic improvement in energy efficiency, in particular, fulfils the desires of industries right across the board. Now this innovative range of compressors is being further developed using a staged approach.

When it comes to efficiency, BOGE High Speed Turbo Compressors are in a league of

their own. Being the first in Class 0" oil-free compressor technology ensures they have a major competitive advantage – and not only for users in particularly sensitive industries. Modern production processes can often have highly sensitive machines and devices, which means the requirements for process reliability are also increasing. High-quality oil-free compressed air is therefore increasingly becoming the benchmark.

Right on schedule

We introduced our HST series with its powerful model at 220 kW, which supplies 36.57 m³ of air per minute. The roll-out of the next model – the HST 110 – will start from the middle of this year. The smallest model, the HST 55 (which delivers 7.97 m³ of air per minute) is expected to round off the series by the start of 2017 at the latest. All the HST models herald the start of a paradigm shift in service. Maintenance will take on an entirely new role. It will, therefore, proceed rather like a software update which optimises compressors over their

entire life cycle and adapts them even more closely to requirements.

The success story continues

Since introducing the first HST model, BOGE has been feeding all prospective customers with monthly mail shots containing selective detailed information, which has increased traffic to the HST microsite.



For more no-obligation information, just scan the QR code or learn more at boge.com/hst



Thanks to a consistent reduction in the number of components, oil-free compressors are able to achieve a smaller footprint than ever before, ideal for more restrictive applications.

By popular demand, scroll is now also available in a smaller format

BOGE EO: expanded power spectrum



Wherever 100% oil-free compressed air is required: BOGE EO Series

Ultra-quiet, low-vibration and 100% oil-free – these clear advantages of the scroll compressor are making BOGE's EO series hugely popular. With the new EO 6, BOGE is now targeting other sensitive fields of application that require completely oil-free compressed air, but can cope with less power and appreciate the even smaller footprint.

It is a dilemma familiar to dental surgeries and medical laboratories, for instance: technical compressed air must be absolutely pure, on the one hand to avoid putting patient health at risk, and on the other to prevent particles of contaminated compressed air collecting in the valuable and sensitive devices. These could rapidly shorten their product life and impair their functionality. This is not the only requirement, however, because in dental surgeries in particular, compressors are used in the immediate working environment. This is where the new EO 6 comes into its own. Its especially compact design makes space-saving installation possible, and the noise emission is so discreet that the compressor can also be used directly in the treatment room. These benefits of scroll technology are, of course, also much appreciated in other industries, where oil-free compressed air is indispensable, such as smaller food-processing companies.



EO 6 launches in third quarter

Tailor-made convenient controls

The EO 6 competes in the performance class up to 5.5 kW and is available ex-works, either as compressed air system EO 6 R (on compressed air receivers) or as compressed air centre EO 6 DR (with built-in refrigeration dryer). Dry compressed air can thus be generated with 8 to 10 bar on exactly the same floor space. The duplex EO 6 TR unit provides even more flexibility and offers double the output. Depending on requirements, this can be used in the base load change or as additional redundancy, and is conveniently controlled via the LC display and sensor keys of the standard base control unit. The optionally available focus control 2.0 additionally has an integrated energy efficiency display and proudly boasts up to 16 compressor units.



Interested? Just scan the QR code or learn more at boge.com/eo

Fluctuating compressed air requirements? Maximum efficiency guaranteed

The new BOGE C 16 F is causing a stir in the 11 kW class

The belt-driven C 16 F smooths out pressure fluctuations and virtually eliminates idle times as if it were child's play. In addition to being extremely quiet, having an excellent product specification and offering superb value for money, it has yet more aces up its sleeve – such as high delivery rates and energy efficiency values that set the standard in the 11 kW class.

Energy conservation was the top priority when this new screw compressor, which is cooled by oil injection, was being developed. The only option, therefore, was an IE3 motor due to its modest power consumption; a compact airend from our own efficiency family additionally



The standard frequency converter guarantees efficient processes and prevents damage to the material too.

ensures excellent values for specific power consumption. Moreover, the compressor was to be operated directly in the workplace. We therefore opted for a sound-insulated suction filter and heavy grey cast iron housing which dampens sound right at the source. With 63 dB(A) at full workload, the BOGE C 16 F is consistently trimmed for quiet operation, helped incidentally by the low engine speeds.

Integrated frequency control

The C 16 F's integrated frequency control is ideal where compressed air requirements fluctuate considerably: the frequency converter ensures continuous 25 to 100% free air delivery control to adapt the compressed air quantity to the changing operating conditions at any time. If less compressed air is required, the compressor's power consumption drops. This keeps idle times to a minimum and smooths out pressure fluctuations. What's more, the soft starts and stops prevent damage to the material, thus prolonging the compressor's service life. In fact, tests show that up to 30% in energy can be saved with the C 16 F when it is used this way!

Simply intelligent

The design of the C 16 F is both intelligent and simple. All parts requiring maintenance are easily accessible, which means that maintenance takes less time. The standard configuration with the focus control 2.0 intelligent machine control and the optional configuration with a refrigeration dryer make the machines versatile

"The energy revolution: somebody has to make a start."

Olaf Fiedler,
German Sales Manager



Possibly the quietest compressor in the 11 kW class: the frequency-controlled C 16 F will win you over with its high delivery rate and exemplary energy efficiency.

all-rounders. And depending on individual requirements, the C 16 F delivers a maximum pressure of 8, 10 or 13 bar and delivery rates ranging from 0.53 m³ to a maximum of 1.96 m³ per minute.



To find out more, just scan the QR code or log in at boge.com/c16f

Refurbished trade-in airends

35% cheaper, plus factory warranty

It is recommended to replace highly stressed airends used in screw compressors cooled by oil injection. Such preventive maintenance can save money in the long-run because emergency repairs and breakdowns can prove very costly. The replacement programme, which BOGE has now added to its range of services in response to demand, shows how it is possible to save even more in doing so.

Instead of new airends, BOGE now offers all customers professionally refurbished replacement compressors – rebuilt, with new bearings and much cheaper than a new airend. A fair deal, because exchanging an old airend for a new one is approximately 35% cheaper. And because we only use original BOGE parts when refurbishing airends, we guarantee the same assembled accuracy, material quality and functionality.

You have our word

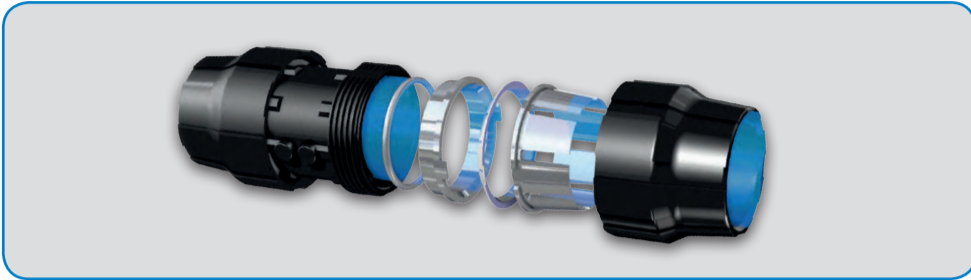
BOGE stocks the right airend for screw compressors with oil-injection cooling of every class, ready for trade-in. Even for some models for which new replacement compressors are no longer available! The replacement airends are refurbished and undergo extensive final functional testing, allowing BOGE to provide a twelve-month full factory warranty. The only condition for this offer, which includes a 35% credit voucher, is that the rotors of the "old airend" must be manually rotatable.



Preventive maintenance combined with efficiency maximisation: new replacement programme for airends

What belongs together is now growing together

BOGE AIRficient – innovative pipe system



BOGE is famous for highly efficient compressed air systems, but until now, we have been unable to offer a complete solution for external pipe systems. This is about to change, because the path from the compressor to the application, in particular, is a critical point in steel or copper piping known for its tendency to corrode. AIRficient is BOGE's innovative aluminium pipe system that considerably improves the quality and efficiency of compressed air.

It was long overdue, but state-of-the-art compressed air stations are now installed with control units in anticipation of Industry 4.0, and in parallel, leak measurements attempt to pinpoint any weak spots during compressed air transport. With BOGE AIRficient, what belongs together now grows together: you can expect the pipe cross-section and quality of the compressed air (or of the vacuum or nitrogen) to remain unchanged over the entire lifetime, thus guaranteeing low differential pressures and maximum flow rates.

Fast installation and comprehensive protection

The pipes in this system are available in all current diameters from 20 to 110mm

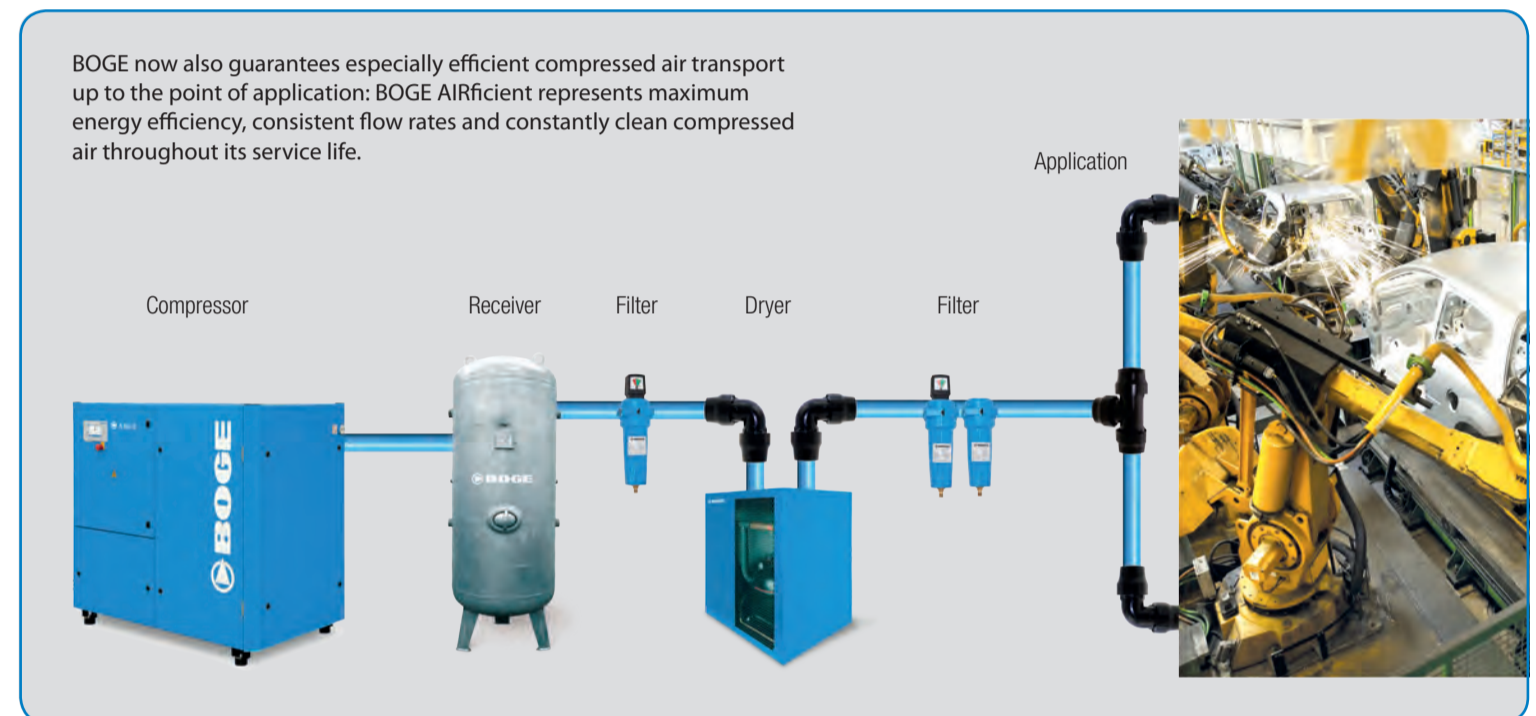
and are made from a high-performance aluminium alloy that is extruded, degassed and treated with a titanium-based coating to prevent any oxidation. Not only is the material free of silicone and oil, but it is also resistant to oil, UV rays and aggressive environments. This system can, moreover, be installed more quickly than steel or copper pipes, and no special tools are needed – the installation time should be reduced by about half.

All of the system's components are designed for temperatures between

-30 and +80°C at 16-bar operating pressure and have self-extinguishing properties. The high-quality materials and careful finish promise a maximum product life – BOGE thus provides a ten-year guarantee for material defects.



For more information, just scan the QR code or log in at boge.com/pipework



Colossal performance And ... action!



It's not often that an extinct species can be brought back to life by compressed air. But recently the opportunity arose in the Eden Project – a 50-hectare botanical garden in the south of England. The aim was to animate the prehistoric giants using compressed air for a dinosaur exhibition. The BOGE C 30 F proved just the solution here: its frequency-controlled compressed air supply ensures continuous free air delivery and thus keeps the noise level suitably low. The perfect way to create a realistic illusion with deceptively authentic movements.

Frank Maschke takes charge of aftermarket operations

From troubleshooter to strategist

The aftermarket business is set to fundamentally change in the next few years. Frank Maschke is sure about that. He should know. Since 2004 he has served as a BOGE global service engineer, and since 2010 he has been responsible for the company's second-level field service. Frank Maschke was appointed Head of Aftermarket in March 2016.

The department is thus headed up by a member of staff who is affectionately known at BOGE as "our Red Adair", because there was always a "fire" to be fought somewhere. Furthermore, for a long time he was responsible at the highest technical level for all countries in which BOGE did not have its own subsidiary. As a result, he often didn't know on a Friday where he would wake up on Sunday. Frank Maschke will thus accumulate fewer miles in the future and will make a robust contribution to formulating the aftermarket's new role in the Industry 4.0 age. For him, the fact that this issue is at the top of the agenda today has to do with

the start of production of the BOGE HST series. "With this model having such a radically different design, the aftermarket structure also has to be established for this field," explains Frank Maschke, and you can tell that the experienced training consultant already has specific ideas about how this should look.

BOGE HST: a driving force in Industry 4.0

With its High Speed Turbo Compressors, BOGE actually has an effective lever for expanding the aftermarket business. As far as Frank Maschke is concerned, great opportunities are opening up for BOGE to lead the way in the implementation of Industry 4.0. "In the future, modular machine designs will play a much greater role, and an essential aspect of service will consist in adapting machines to individual applications more effectively with software updates and upgrades. By optimising compressors over their entire life cycle, a broad field is opening up for the Aftermarket Division."



"The entire structure of the aftermarket segment has been brought into question since the start of the HST era."

Frank Maschke, Head of Aftermarket

2015 sets a new turnover record

BOGE on the crest of a wave

The figures tell a clear story: with an annual turnover of €130 million in the 2015 financial year, BOGE has exceeded the previous year's result by approximately €10 million. Looking at the past four years, the turnover gain is roughly 30%: the trend of much stronger growth than the industry average thus continues.

The company's growth is also reflected in staff numbers. Fifty new employees in total were hired in 2015 – at the headquarters in Bielefeld, BOGE Komponenten GmbH in Großenhain, Saxony, and in the 14 subsidiaries around the world. The company thus currently employs a staff of approximately 750, with 550 employees in Germany.

Without doubt, the innovative High Speed Turbo series is to thank for the Bielefeld



BOGE Managing Directors Thorsten Meier and Wolf D. Meier-Scheuven have good reason to be happy

compressor manufacturer's particularly good press in 2015. Its world premiere at ComVac provided headlines for specialist publications and much more. The news

that we had won the OWL Market Visions 2015 prize in December was, of course, also a cause for great joy. BOGE HST is certainly not responsible for the positive turnover

growth – the commercial success of this series will only become apparent in the future.

Ambitious turnover goals with good reason

Also emerging from the shadow of the HST sensation in 2015 was the new BOGE EO series – ultra-quiet, low-vibration scroll compressors that have been developed for particularly sensitive working environments. Furthermore, BOGE's well-established products, such as the piston and screw compressors, plus airends have been further optimised and have thus been able to achieve high sales figures. Reason enough for ambitious turnover goals. The company wants to cross the €200 million threshold by 2020.

Interview with Klaus-Dieter Korzeng, Area Sales Manager for the Middle East and Africa

The world of compressed air as seen from Dubai

Since 2006, PET expert Klaus-Dieter Korzeng has been flying the BOGE flag high at the Dubai site. Probably no one can assess how the markets throughout the region differ better than he can.

AIRMAG: Is the degree to which the PET industry has developed in the Middle East and East Africa similar to that at other locations?

K.-D. Korzeng: In a global comparison, the PET industry in Africa differs particularly in terms of the type of machinery. Linear blow moulding machines are primarily used here. While these are easier to run, they have lower production capacities than rotary machines. The blow air requirements per system and investment are accordingly lower and can instead be met by small and medium-sized high-pressure PET systems. Furthermore, in recent years in Africa many PET producers have emerged as suppliers to beverage manufacturers, which unfortunately increases the risk of contamination

during transportation of the PET containers to the bottle fillers. In the Middle East, however, the PET industry is more representative of the overall global scene. With water works and beverage manufacturers in particular, we predominantly find large systems with high production capacities. Incidentally, energy efficiency is also the most important factor in the Middle East, because electricity prices have gone through the roof.

AIRMAG: Is there a noticeable trend towards completely oil-free compressed air solutions?

K.-D. Korzeng: We are in fact observing a trend towards oil-free and frequency-controlled high-pressure systems. Oil-free compressed air systems are indispensable for food and beverage manufacturing. But there are also PET applications outside the food industry, where only oil-lubricated compressors are used. In addition to our oil-lubricated and filtered systems, BOGE offers oil-free high-pressure systems in various

sizes. Especially since the introduction of the BC HP converter, which breaks down oil residue into CO₂ and H₂O, the application range for BOGE oil-free high-pressure systems has expanded immensely – so we can cite more and more reference systems on various scales to beverage manufacturers and the pharmaceuticals industry.

AIRMAG: How do you rate the potential for BOGE in this sector?

K.-D. Korzeng: The global potential of PET is immense and is dominated by the oil-free high-pressure pistons of our competitors. However, I see good opportunities to further expand our share of the PET sector. The growth rates of the PET industry are clearly at the expense of the glass industry – the need for compressed air systems is thus growing.

AIRMAG: How strong a foothold does BOGE – even from the point of view of service – have in the Middle Eastern countries?

K.-D. Korzeng: It's very different from country to country and depends a great deal on particular BOGE "compressor population" numbers. We have been able to increase the regional turnover considerably since the Dubai branch opened in 2006. Up to 2,500 BOGE machines are operational in our core markets. This is naturally accompanied by a very encouraging service business that we operate partly with our own, but also with other



Klaus-Dieter Korzeng has been successfully working for BOGE in Dubai for many years.

distributors' experienced service engineers.

AIRMAG: How is BOGE represented in the region?

K.-D. Korzeng: As a general rule, we often use our distributors' stands at local trade fairs in various countries and are naturally represented at those with BOGE exhibits and our own staff. Furthermore, we attend trade fairs such as the Arab Health and Gulfood, and regularly host sales and service seminars in Dubai.

AIRMAG: What role do the "Made in Germany" and "Best of German Engineering" labels play in your customer acquisition?

K.-D. Korzeng: One that should not be underestimated. Both are very advantageous for opening doors, because the high regard of German product quality in general and that of BOGE in particular are very pronounced in the Middle East too.

AIRMAG: Thank you for the interview. We wish you plenty more success!



The potential of PET industry is far from being exhausted.

New job advertisement campaign

Face-to-face recruiting



Mareike Heinrich was promoted to head up the R&D department at Boge in the very year that she gave birth to a daughter.



Aljoscha Schlosser started out as a "dual apprentice" and ended up as an assistant to the Executive Board within three years.



Gerrit Kunkel, a future mechatronics engineer, benefited from the "tandem" model which gave him an experienced mentor at his side.

For years, BOGE has advertised for jobs with notices using its branding as the theme. Nowadays however, potential applicants want to be addressed more personally. BOGE's new eye-catching job advertisement campaign, which features

in image adverts, vacancy columns, on our website and in social media channels, thus depicts themes that instantly trigger a we@boge feeling. Individual employees representing the company – shown in an authentic working environment – relate

their personal career path here. Arranged in a series, the individual themes vividly show the diverse opportunities on offer in this modern and successful family business. As a globally active and dynamically growing company, BOGE

offers everyone the prospect of getting started, regardless of whether the applicants are young talents or experienced veterans. At the same time, we of course show how we view issues such as the work-life balance.

How truffle manufacturer Wiebold gets air

Between tradition and Industry 4.0

A family business based in northern Germany, Wiebold Confiserie, has diligently observed how small crafters of high-end products are becoming increasingly thin on the ground and has, therefore, relied on state-of-the-art production and quality assurance processes for years. Perhaps it is because of the similar business philosophy that Wiebold has put its trust in another long-standing, owner-operated company from Bielefeld ...



Occasionally more can be achieved through reliable professional service than with rapid commercial success: we first came into contact with the well-respected traditional company by way of a no-obligation offer of compressed air measurement; but before BOGE was entrusted with Wiebold's ambitious modernisation plans with compressors from its own factory, we firstly had to prove ourselves by performing maintenance on the existing compressors by other manufacturers. Confidence in the Bielefeld company's expertise thus grew, and when Wiebold pressed for the creation of a "Production 4.0", BOGE was already a partner on an equal footing.

Forward thinking runs in the family

Just like with BOGE, the upgrade to a contemporary pioneering company did not involve downsizing – quite the opposite: Wiebold is expanding, and the long association of its staff with the company speaks volumes. The fully digitised production ranges from automatic order acceptance that flows directly into the planning of six-stage manufacture, and the possibility of tracing every single batch with bar code management, to the continuous exchange of information with customers. The dual



The family firm Wiebold, which was established nearly 50 years ago as a handcraft business, now runs on "Production 4.0".

frequency-controlled BOGE C 30 F machines also contribute to smooth functioning (along with filtration, cyclone separators and BPS pressurisation system).

From preparation of the machine room to the piping, BOGE was responsible for every aspect of the reliable compressed air supply.

Feedback

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LEGAL NOTICE

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