

journal

A PUBLICATION BY THE KAHL GROUP

AMANDUS KAHL
DEVEX
HEINEN FREEZING
THEIZ
NEO MONTEC
NEUHAUS NEOTEC
PRUESS
SCHULE MÜHLENBAU

Journal 2023



Dear Readers,

We are delighted to welcome you to the latest edition of the KAHL Group Journal. Once again, we would like to take you on a journey of discovery through our corporate world, focusing on current developments, moments of success and ground-breaking innovations.

Since its foundation, KAHL has embodied values such as family solidarity, the highest quality, tireless commitment and constant further development. With this journal, we would like to give you an insight not only into our day-to-day business, but also into the hearts and minds that make KAHL what it is: Our dedicated employees, whose ideas and creativity drive us forward every day, and our valued customers, with whom we develop and realise visions together.

Be inspired by the stories of our teams who are passionate about their visions. Discover our most exciting projects, learn about our valuable partnerships and find out more about our commitment to social responsibility and sustainability.

For us, this journal is more than just a publication; it is a bridge that brings us closer together. We invite you to engage in dialogue with us, share your thoughts and become an active part of our journey together. Your feedback is vital to our growth and continued success.

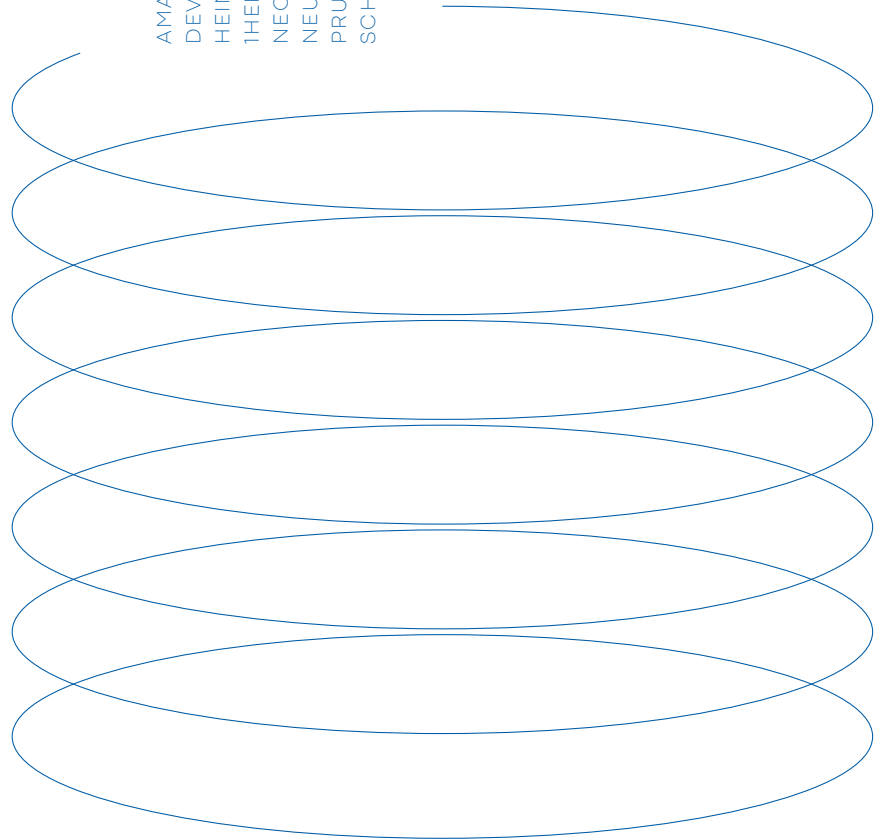
Thank you for being part of the KAHL family. We hope this edition enriches your understanding of our company. Together, we look forward to a bright future!

Best regards,

**Your Managing Directors Uwe Wehrmann, Dr. Victoria Behrmann,
Wolfram Krabbe and Joachim Behrmann**

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01

Innovations

Energy-Efficient Pelleting of Spelt Husks: A Game Changer for Livestock Farming?

Spelt husks are of great importance to many livestock farmers. Not only do they provide high quality bedding for chickens and other farm animals, but they are also a high fibre feed. However, for easier storage and transport, it is recommended that they are converted into pellets. This is where AMANDUS KAHL comes in, revolutionising the process to make it as energy efficient as possible.



Ziegenaus Bennomühle uses an AMANDUS KAHL pelleting and cooling plant to pelletise much more energy-efficiently and to exploit the advantages of pellets in the areas of storage, transport and further processing.



The flat die pelleting press is already in operation at the Ziegenaus Bennomühle mill in Friedberg, Southern Germany.

Spelt husks are produced as a by-product of extracting starch from spelt. While the grain is used as the main ingredient in the baking industry, the husks are excellent for animal husbandry. They may be relatively low in nutrients, but their high crude fibre content makes them an ideal feed supplement. They also protect the animal's stomach from becoming overacidified. And their ability to absorb moisture makes them an excellent bedding material.

For storage, transport and further processing, it is advantageous to process the spelt husks into pellets. Pelleted spelt husks are less susceptible to dust, hygienically clean and a real alternative for animals that are allergic to certain bedding products. They are also a varied feed for horses, cattle and poultry. Their high crude fibre and cellulose content makes them a valuable ingredient in compound feed formulations.

The pellet form offers benefits not only to the animals themselves, but also to manufacturers, suppliers and users. "The bulk density alone is more than six times higher than that of unpelleted spelt husks," says Karsten Beck, sales engineer at AMANDUS KAHL. While the weight here is around 100 kilograms per

cubic metre (kg/m^3), in pellet form it can be up to $650 \text{ kg}/\text{m}^3$. This makes selling easier. Packaging in sacks and big bags is therefore simpler. Storage and transport are also space-saving and cost-effective thanks to the compact design. In addition, spelt husk pellets can be easily broken up for further processing, e.g. in a compound feed mill.

Flat Die Technology Overcomes the Disadvantages

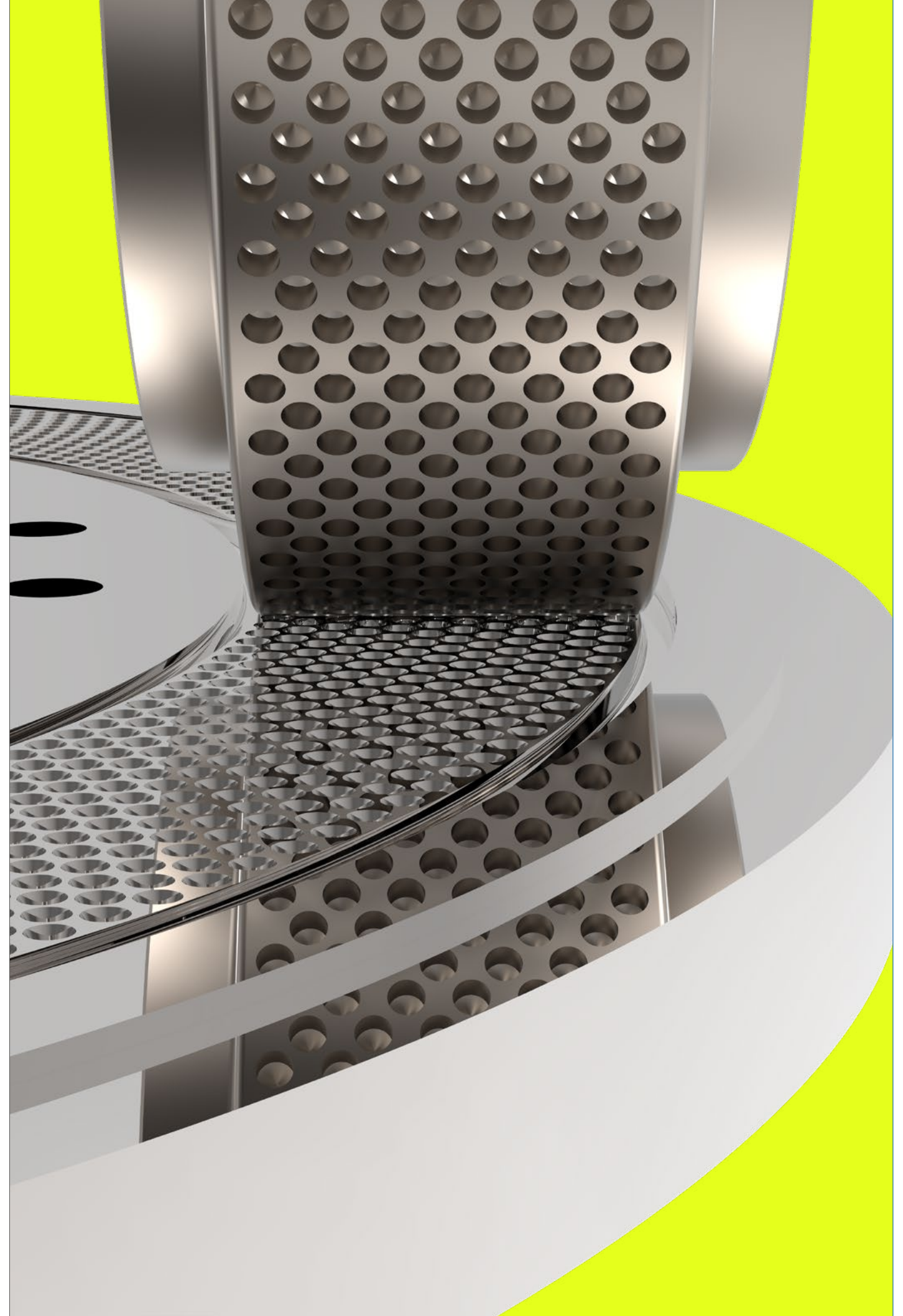
Despite the many benefits, many feed processors and livestock farmers have been reluctant to use pellets, because pellet production usually requires a lot of energy. This is comparable to wood pelleting and is reflected in the price. This is where AMANDUS KAHL's flat die technology becomes a game changer. The flat dies of the presses can be supplied with different hole diameters.

As soon as the product to be pelleted is fed into the pelleting area, it is pressed through the holes in the die by the pressure of the pan grinder rollers. This pressure, combined with friction or shear, compacts and defibres the product. Not only is this process particularly energy efficient, but it also allows coarser particles to be processed, saving the entire

grinding process. This in turn provides a significant cost advantage in terms of investment and energy savings. This allows the company to make the entire process more than 20 % more energy efficient.

The technology has already been proven in practice. The flat die press is already in use for spelt husk pelleting at the Ziegenaus Bennomühle mill in Friedberg, Southern Germany. The family-run business offers a range of mill products, including a variety of flours and grains, as well as feeds for horses, poultry, small animals and more. "For a long time it was uneconomical for us to pellet spelt husks. In the meantime, however, we are using an AMANDUS KAHL pelleting and cooling plant for pellet production, which enables us to pelletise economically and thus pass on the many advantages of spelt husk pellets to our customers," reports Andreas Ziegenaus, Managing Director of Ziegenaus Bennomühle. The plant includes a pre-bin, discharge screw, water proportioning system, mixing screw, pellet press and cooler. AMANDUS KAHL was also responsible for the design of the plant.

In conclusion it can be said: Thanks to innovative technologies such as those from AMANDUS KAHL, spelt husk pelleting is experiencing a well-deserved renaissance. The key to success is an energy-efficient production process. ←



Grain Shortages in the Compound Feed Industry: Green Forage is more than Just an Alternative

The global grain supplies are at risk. Ukraine, one of Europe's biggest grain producers, has virtually no infrastructure left because of the war with Russia. Ports are blockaded and exports have been stopped. This situation is also forcing the compound feed industry to find alternatives. In the current grain crisis, green forage is once again gaining in importance.



Green is the colour of hope – and this is more topical than ever. Wherever you look, everything is to become “green”: Energy, sustainability concepts, cars, even steel, strategies, entire companies. The only thing that does not need to change colour is green forage. Interest in green forage for livestock is growing again. There are social and political reasons for this, as well as nutritional and practical benefits for the animals. In agriculture in particular, it is important to provide animals with high-quality and nutritious protein feed. Green forage such as meadow and clover grass, but also alfalfa and herbs, are good nutritional supplements. The material, which is readily available in this country, makes it possible to feed animals such as cattle, horses, sheep and goats with high-quality protein. Green forage contains structural carbohydrates and a variety of vitamins and minerals as an alternative source of protein.

Green forage is particularly in demand in areas with large numbers of cattle, as it is an indigenous feed. Cattle in Germany need green forage as an important protein source. It provides a regional alternative to imported and often genetically modified protein feeds such as soya. In addition to large-grain legumes such as peas or field beans and domestic oilseeds such as rapeseed, green forage offers a regional feed alternative. Green forage is not only readily available and inexpensive, but depending on the mixture and in pellet form, it is also particularly palatable due to its caramelised sugar taste. This increases the feed intake of the individual animal.

Pelleting Increases Availability

There are many areas in this country where nutrient-rich grass grows in spring and summer. But for the cold season, solutions are needed to preserve the green forage all year round. Pelleting is the best way to preserve as many nutrients as possible. First, the large-volume grass is harvested and dried. It is then pressed into smaller pellets or larger grass cobs. Pelleting is the gentlest way of preserving feed, as the nutrient compound is retained naturally. For example, the crude protein content of cobs is significantly higher than that of hay.

Drying and pelleting nutrient-rich green forage results in a much smaller volume with little loss of nutrients. This makes transport easier and more economical, as more of the dried grass can be transported in a smaller volume. The pellets are also easy to store. The compacted form and low water content means that they can be stored for long periods of time without problems. This prevents the spread of fungi and other pests. ----->

Challenges Depending on Intended Use and Feeding

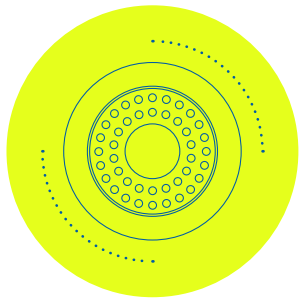
Due to the high demand, pellet press manufacturers must develop plants that deliver maximum output with low energy consumption. At the same time, the presses must be designed so that the raw materials and end products can be adapted to a wide range of requirements in the feed industry. Different raw materials are required for different animal species. The final product desired by the customer varies in size and shape depending on the application and recommendation. Therefore, AMANDUS KAHL has developed a pellet press especially for the green forage industry. The largest KAHL pellet press has a die diameter of 1500 millimetres. Compared to the previous standard model in the green forage industry, the press 45-1250, the open perforated area of the die has been increased by around 50%, while the footprint of the press has remained unchanged. As a result, the new model can be easily integrated into existing drying lines.

As the rollers pass over the flat die, a thick layer of product is created between them. Due to the special configuration of the press, high throughput is possible even with high-fibre materials. This type of press can also be used for other fibrous products such as maize, straw, hay and spent grains. The five pan grinder rollers of type 55-1500 are 240 mm wide and 450 to 550 mm in diameter. They crush the product well by means of the shearing action and convey it efficiently into the holes. The roller speed is < 2.5m/s, ensuring smooth and safe operation.

Higher Capacity with Lower Energy Consumption

The larger perforated area allows more product to pass through the die during the pelleting process. That is why the new flat die pellet press achieves a 50% increase in output compared to the previous model. "Products rich in crude fibre, such as grasses, are characterised by a significantly increased volume, but have a very low net weight," says Dennis Werner, Sales Area Manager at AMANDUS KAHL. The press 55-1500 has to hold large quantities of raw material, but at the same time consume little energy. For this reason, it is equipped with only one motor instead of the previous two, and handles the quantities of green forage to be processed easily and efficiently. The cost of spare and wear parts per tonne is lower than before, and fewer consumables are required. **The 55-1500 is available with different bore diameters between 6 and 18 millimetres to give the user the most individual application. The roller gap is easy to adjust and the pelleting tools can be changed quickly. This ensures a high degree of flexibility in pellet production.** At the end of the process, the pellets are broken to a defined length. Many special shapes are possible, such as clover leaves or square cobs.

Recent months have shown that green forage is a good choice for species-appropriate and sustainable animal husbandry. Grasses and similar plants are not only beneficial as a source of protein, but also because they are easy for the animals to digest. The prerequisite is that the raw material is processed gently. ←



Golden Fields and SCHULE: From Animal Feed to Plant Proteins for Human Nutrition

From specialising in high-quality animal feed to expanding into plant proteins: Golden Fields shows how innovation works in the agricultural sector.



Golden Fields started as an agricultural company in 2017 and quickly specialised in high-quality animal feed, especially roughage and pellets. The company's mission is to harness the gifts of pure nature and deliver them to animals, providing them with the nutrients and energy they need. To this end, Golden Fields has quickly established relationships with farmers and customers in regions such as the Baltic States and Finland. Fresh feed is transported directly from the field to the factory where all feed products are manufactured. The focus is always on the goal: maximum value creation and sustainable supply chains. Golden Fields' partners include global players such as Al Dahra and Bunge. They guarantee the sale of the products that Golden Fields produces.

Expansion into the World of Plant Proteins

Golden Fields planned early on to expand its product range to include plant proteins and thus also to produce food for humans – an issue that is becoming increasingly important in nutrition worldwide. This is where SCHULE Mühlenbau comes in. SCHULE designs customised plants for the hulling sector. Processes for the treatment of all cereal products such as oats, rice, spelt, barley, millet, wheat and sunflower seeds are part of the product portfolio. There are also processes for treating pulses – including peas, lentils, beans, soybeans and rapeseed. At the end of 2022, SCHULE was awarded a contract for the design and construction of a hulling line for peas and field beans. This also included the coordination of a downstream protein shifting plant. The aim of the hulling process: A fraction of hulled grains with a minimum of hulls. SCHULE uses the whitening machine "Verticone" for this purpose. The product passes through the working chamber and is whitened by a set of stones.



Depending on the intensity set, the machine whitens the surface to a greater or lesser extent and removes the adhering impurities. The resulting whitening bran is extracted via the screen basket through a separate aspiration connection on the side. Air cools the product during the whitening process and at the same time facilitates the discharge of adhering whitening bran and dust particles. **The machine is characterised by its variable adjustment options, especially when it comes to setting the whitening gap. This allows the quality of the end product to be precisely controlled.** After hulling, the plant processes the hulled grain fraction by finely grinding and screening it. The result is fractions rich in protein and starch, ideal for human consumption.

Sports nutrition, bars, drinks, crisps and textured proteins such as TVP (textured vegetable protein) are among the many applications for vegetable proteins. Commissioning of the plants is planned for 2024. ←

Recently, the company has also started to serve the market for plant-based products for human nutrition – thanks to the technology of SCHULE Mühlenbau.

www.goldenfields.ee

Tradition Meets Innovation in Grinding Technology

The world of grinding technology never stands still. At the INTERPACK trade fair in Düsseldorf in May this year, NEUHAUS NEOTEC impressively demonstrated that it is always at the cutting edge of technological progress. Among other things, the KAHL subsidiary presented its latest development: the grinder SPECTRUM. It represents the next generation of grinding technology.

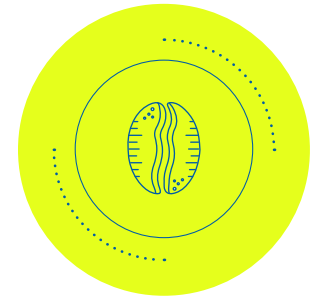


The NEUHAUS NEOTEC grinder has always played a central role in the grinding of coffee beans and other products from the food and chemical industries. Our in-house developments range from the NT and NN machines to the WMK series for high throughputs and the WMS series for smaller volumes. A new addition is the NEOGRIND line, designed to meet special requirements. The grinder SPECTRUM has also been available since mid-2023. It is an advanced reinterpretation of the large grinder WMK and was presented for the first time with great success at the INTERPACK trade fair in Düsseldorf in May of this year.

The new grinder SPECTRUM combines the decades of experience of the WMK series with the innovative features of the NEOGRIND series. At the very first glance, SPECTRUM impresses with its aesthetic cover, compact design and integrated systems for pneumatics and cooling water regulation. All components are housed dust-protected behind covers that can be fixed or easily removed with quick-release fasteners, depending on the application. Electromechanical interlocks prevent the covers from being removed unless the machine is at a standstill, ensuring operator safety. The design also focuses on ease of maintenance, whether it is the externally accessible central lubrication system during operation or the simple roller change. During operation, all relevant parameters can be visually monitored and adjusted both from the switch cabinet and from a control room. When integrated into an MES system and with motorised grinding gap adjustment, several recipes can be implemented per production cycle.

Trade Fair Premiere Wins Over Renowned Coffee Producer

SPECTRUM is available in a new intermediate size of 1250mm in addition to the familiar roller lengths of 1000mm and 1500mm. This allows us to better meet the individual capacity requirements of our customers. The grinder is available in one-to three-stage versions and can be combined with a powerful compactor. The premiere of SPECTRUM at the Düsseldorf trade fair immediately impressed a leading global coffee producer, resulting in an order for two large machines. The new grinder also marks a generation change in design responsibility. Mr Ziemann, a design engineer of many years' standing and highly regarded by customers, has moved to the field. The responsibility for SPECTRUM has been handed over to Mr. Tregubow, who has been working successfully in product development and design at NEUHAUS NEOTEC for many years and who is enthusiastic about the new challenge. ←



Freeze-Drying Food – Can Also Be Done Sustainably

The modern food industry is characterised by sustainability and energy efficiency. In the freeze-drying sector, DEVEX wants to act as a pioneer and set new standards in quality and resource conservation. Time to take stock.

As the need for greener and more economical production grows, the food industry is increasingly recognising the value of technologies that improve product quality while conserving resources. A prime example of this is the energy-efficient freeze-drying of food. DEVEX recently presented its latest development: the state-of-the-art batch dryer series CVD-CFD, one of the most efficient and economical of its kind for vacuum and freeze drying.

The Basics of Freeze Drying

Freeze-drying, also known as lyophilisation, removes water from materials, especially food. **The product is first deep-frozen and the water is sublimated under vacuum. In this way, the water is directly converted to a gaseous state. The structure, flavour and nutrients of the product are retained.** Although freeze drying was once considered energy intensive, technological advances have resulted in more efficient drying systems. State-of-the-art control technologies and refrigeration systems further reduce energy requirements.

Benefits of Energy-Efficient Freeze-Drying

- Food stays fresh longer, reducing waste.
- Gentle processing preserves nutrients, flavour and texture.
- Advanced technologies reduce energy consumption.
- A smaller environmental footprint through energy-efficient processes.



DEVEX's latest CVD CFD dryer series sets the standard for efficiency. It can be modularly expanded to increase production capacity, and its sophisticated design meets high hygiene standards. Special coatings in the heating system optimise energy consumption and reduce production times. With a volume of up to 14000 litres, the CVD-CFD 360 is the largest batch dryer of its kind. An advanced recipe management system ensures that the dryer is always energy efficient.

Conclusion and Outlook

Energy-efficient freeze-drying has great potential. It benefits both the food industry and the environment. Research and development into energy efficiency is making it increasingly sustainable and economical. Extending the shelf life of food, preserving nutrients and reducing energy consumption are important steps towards sustainable food production. DEVEX and its customers are actively contributing to this. ←



Autonomous System from PRUESS for the Pharmaceutical Industry

To give solid pharmaceutical dosage forms such as tablets and pellets an attractive colour spectrum, they are treated with colouring solutions in special coating or fluidised bed systems, which PRUESS also offers. What has been missing so far is an automated recipe process and the creation of a digital batch report to document all quality-sensitive parameters.

Until now, most pharmaceutical producers around the world have produced these colour solutions manually, according to fixed recipes, in so-called mixing rooms under strict clean room conditions. The mobile mixing vessels used to date are functional but comparatively simple in design.

This changes fundamentally with the independent system designed by PRUESS for the production of granulation liquids, colouring fluids and sterile solutions. This system comes equipped with its own control system and recipe management software, which is fully validatable. It offers the flexibility of both automated and semi-automated preparations. This makes the production of colouring fluids, granulation liquids and sterile solutions child's play with the autonomous system from PRUESS.

Simple Operation and Remote Diagnostics

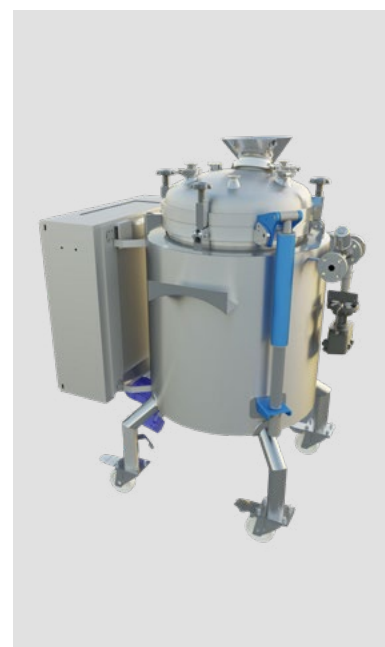
Accurate dosing of the ingredients is achieved using pharmaceutical-compliant flow measurement systems or pre-registered barcode containers. The system also incorporates an integrated control unit that simplifies batch record creation and enables the tracking of partial batches. **With working volumes ranging from 33 to 180 litres and an electropolished, dead space-free design, our system meets the stringent standards of a GMP-compliant magnetic stirrer. Operation is via a visually appealing user interface on a 12" to 17" touch screen.** It also complies with GAMP 5, 21 CFR Part 11, and is CIP/SIP capable. The system is even capable of seamless communication with downstream production units. For added functionality options include heating and cooling jackets,

electrical trace heating, pressure vessel design, ATEX design, high containment design, and a barcode scanner for pre-weighed partial batches. Moreover, our system can be operated from a tablet and is well-suited to ATEX applications. To ensure continuous optimum performance, we offer a remote diagnostics system that allows process support, remote maintenance and troubleshooting 24/7, worldwide. For security reasons we can only access the system after it has been connected by the customer's authorised personnel. In the event of a power failure, our system is equipped with a UPS power supply for controlled shutdown of the control system, together with log storage of all critical process parameters. ←



Basic equipment

- Working volume 33–180 litres with a nominal volume of 200 litres
- GMP-compliant magnetic stirrer
- Dead space-free design
- Own control system with visualised user interface
- Recipe control for production processes and cleaning
- Batch record
- Data transfer to customer process control systems and databases
- Communication with downstream production units such as high-shear mixers and coating systems
- CIP/SIP
- HMI as 12"–17" touch screen
- Meets the requirements of GAMP 5 and 21 CFR Part 11



Optional equipment

- Heating and cooling jacket in the cylindrical section with fully welded insulation
- Electrical trace heating
- Pressure vessel design
- ATEX version, inside zone 0, outside zone 1, 2, 21, 22
- High-containment design for the addition of solids via split butterfly valves
- Connection to customer measuring devices such as weighing systems, flow measurements, etc.
- Barcode scanner for pre-weighed partial batches
- Tablet operation also for ATEX applications
- Remote diagnosis system
- Software programme for remote diagnostics and as a maintenance tool
- UPS power supply

The background features a light blue gradient. A vertical line runs down the center of the page. Several overlapping circles of various sizes are scattered across the page, some on the left and some on the right of the vertical line. The circles are drawn with thin, light blue outlines.

02

Sustainability

High Performance – But Energy Efficient, Please

As the cost of electricity and gas rises, so does society's awareness of sustainability. As a result, companies are striving to make their production as "green" as possible. The crux of the matter: The performance of the machines and plants must not suffer.

How can the energy efficiency of individual process steps be optimised without having a negative impact on the overall process? AMANDUS KAHL pursues several strategies.

At AMANDUS KAHL, the entire plant portfolio – from feed production to the pharmaceutical industry and biomass processing – can be combined. This includes processes such as crushing, conditioning, mixing, drying, pelleting and cooling. Energy-efficient design and operation result in high throughput rates with low wear parts and maintenance requirements. We give you an overview.

Smart Wood Pelleting with the Pan Grinder Mill

As a fresh biomass, wood has a relatively high moisture content. In order to produce high-quality wood pellets, a number of process steps must be taken into account, especially in the case of ring die systems. The wet wood chips must first be crushed in a wet mill before being dried and then re-crushed in a hammer mill. Only then is pelleting performed on a ring die. **The grinding steps require a lot of electrical energy, so this is a particularly effective area for savings. These are achieved, for example, by the pan grinder mill. It is suitable for energy-efficient grinding and even eliminates the need for a second grinding step after drying for certain pellet qualities (e.g. domestic fuel).** The difference between the pan grinder mill and the conventional wet mill is that the former crushes the raw material transversely to the fibre direction and thus more uniformly. For the production of industrial

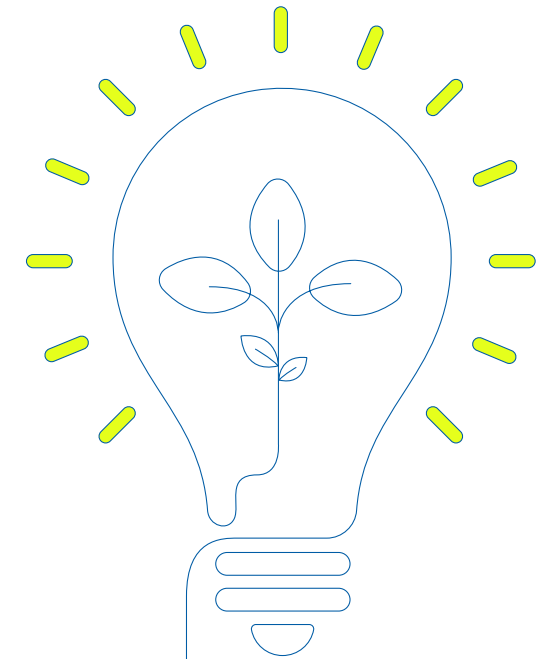
pellets with particle size requirements, additional crushing in the direction of the fibres facilitates dry grinding. Compared to the hammer mill, this already results in energy savings of around 17%.

Drying after defibration saves additional energy because the plant is already preheated in the first step. After wet grinding and drying, 40 to 50% of the wood particles processed by the pan grinder mill are already suitable for pelleting. This eliminates the need for further dry grinding. This not only saves capacity and energy, but also increases the throughput in tons per hour.

Efficient Animal Feed Production Thanks to Crushing Roller Mill and Expander

The production of animal feed, like the production of wood pellets, requires many different production steps. The crushing roller mill is the preferred crushing machine instead of the hammer mill. It processes various types of grain and legumes. Two counter-rotating, grooved rollers crush the grain into small particles. The resulting pressure reduces the power requirement of the plant by 70% compared with the hammer mill. A new variant of the crushing roller mill developed by AMANDUS KAHL further improves energy efficiency: It has individual variable frequency drives with energy recovery.

The expander is very suitable for refining feed components. It is generally used prior to pelleting or for the production of expandate. The all-rounder is a pressure conditioner for mixing and kneading, homogenising, agglomerating and also short-term conditioning. Expanded feed mixtures increase both press output and pellet quality. The expander increases the output of the pellet press by 25 to 30%, and even doubles it for other types of feed. →



Doseable Pellets Thanks to Flat Die Press

Pelleting presses turn even large-volume materials such as compound feed, straw, wood and other biomass into compact pellets. This saves transport costs. AMANDUS KAHL has been a specialist in the manufacture of flat die presses for over 100 years. The design principle is the key to process optimisation.

The presses are equipped with a flat die, available with different hole sizes, and rotating pan grinder rollers that roll over the die. KAHL flat die pelleting presses process significantly larger particle sizes and fibre lengths than conventional ring die presses.

In the pelleting chamber, the product to be processed is pressed through the die holes by the rollers. This reduces the energy consumption per ton of pellets produced.

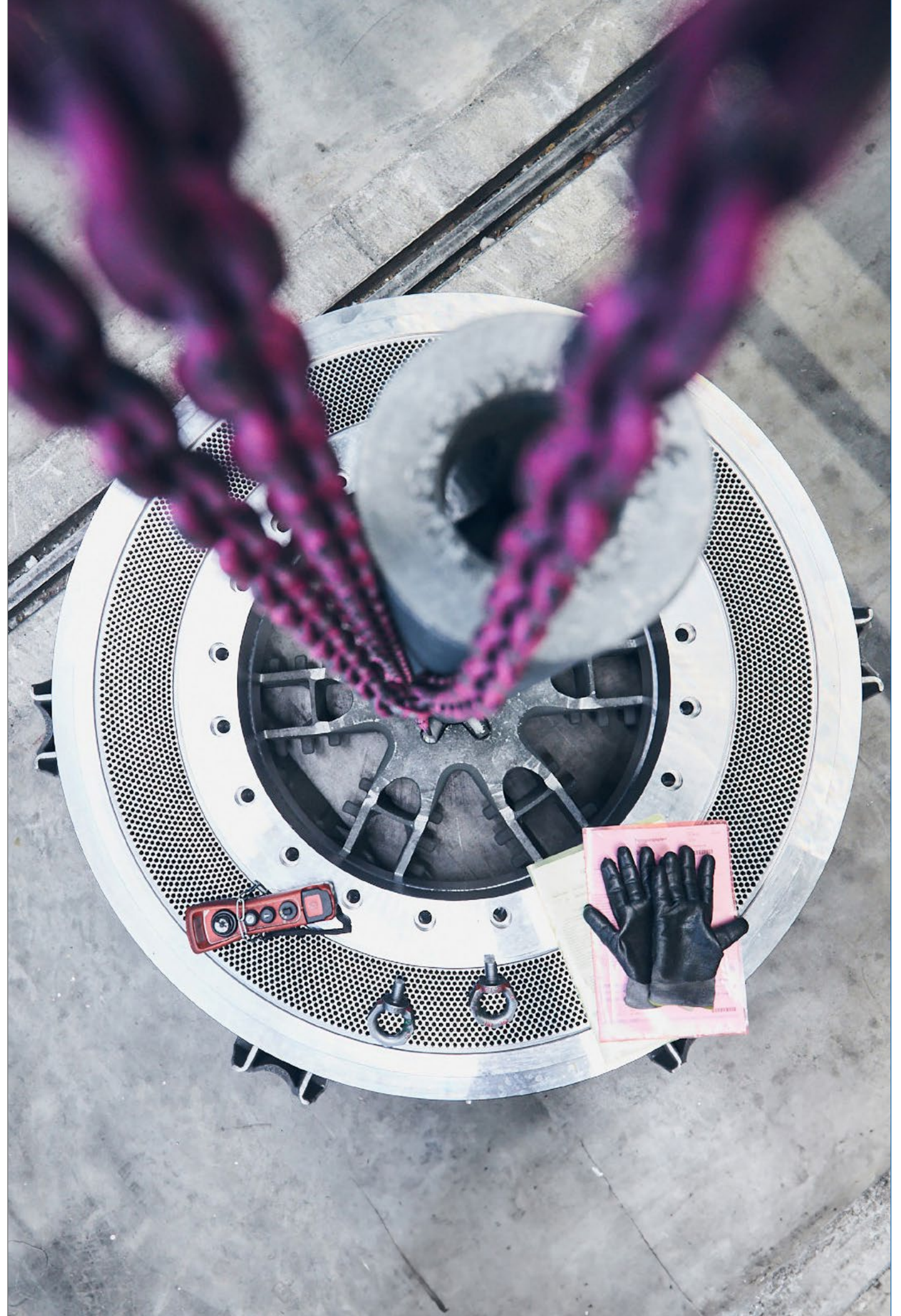
Intelligent Automation for Sustainable Production

For AMANDUS KAHL, efficient processes and intelligent automation are the key to continuously reducing energy requirements in production. The pellet press control system EAPR and the automatic roller gap system DISTAMAT are intelligent control systems from the machine manufacturer that help to optimise operation and enable the energy supply to be adjusted. The press control system EAPR controls the automatic operation of KAHL flat die presses equipped with the appropriate switching and control systems. The EAPR consists of a local control cabinet with graphic touch panel and intuitive software for easy setting of process parameters of e.g. press, proportioning screw, mixer etc.

Once these parameters have been set, operation is fully automatic, including error and alarm messages and system diagnostics. It is even possible to access the system remotely in the event of a problem.

The roller gap system DISTAMAT for KAHL pelleting presses controls the maintenance of the preset roller gap. The DISTAMAT increases the level of automation, process stability and quality assurance. During operation, the system automatically adjusts the process pressure and the thickness of the product layer on the die. As a result, less manpower is required, service life is increased and energy consumption is greatly reduced.

When each individual process is adapted in an energy-efficient and intelligent way, the combination of plants and techniques can achieve maximum efficiency in the production process as a whole. ←



Excellence with LEED Platinum: Starbucks Sets New Standards for Sustainable Coffee Production in China

The Starbucks China Coffee Innovation Park (CIP) opened on 19 September 2023. The Innovation Park combines the most advanced and efficient roasted coffee plant of the entire Group with a coffee experience park that includes parts of the roasting plant. And right in the middle: a NEUHAUS NEOTEC roasted coffee plant.



With the groundbreaking ceremony in Kunshan in 2020, Starbucks has created a state-of-the-art coffee production centre in China that is superlative in every way. With a total investment volume of US\$220 million, it is the largest Starbucks project outside the United States. In addition to the roasting plant, it includes a distribution centre with a fully automated 34-metre high storage system and an impressive experience centre. All of the roasters, who were carefully selected for coffee production, underwent 600 hours of intensive training in the US and China to develop unique roasting profiles for the Chinese market in the future.

Special emphasis was placed on energy efficiency, ecology and sustainability. The coffee plant was built to LEED Platinum and China Green Building Three Star1 standards, setting leading sustainability standards for carbon emissions, energy and water consumption, and waste. **LEED stands for Leadership in Energy and Environmental Design and is a global green building rating system. Platinum is the highest rating that can be achieved.** For example, a fifth of the building's energy needs are met by solar panels. The panels cover a total area of 26 000 m². The goal is to recycle 90 % of waste.



With the new plant in China, Starbucks has extended its previous cooperation with NEUHAUS. In order to set new standards in energy efficiency for roasting, Starbucks has opted for NEUHAUS NEOTEC technology and exhaust air management. The energy balance is impressive: Compared to the roasting technology used in the past, the energy saving is around 30%. The same applies to the reduction of CO₂ emissions.

The CIP now boasts the most modern and efficient roasting plant in the entire chain. It will provide the Chinese market with unique roasting profiles. In recent months, Starbucks has been able to gain initial experience with the roasting technology from NEUHAUS NEOTEC in Ganderkesee at its US locations. ←



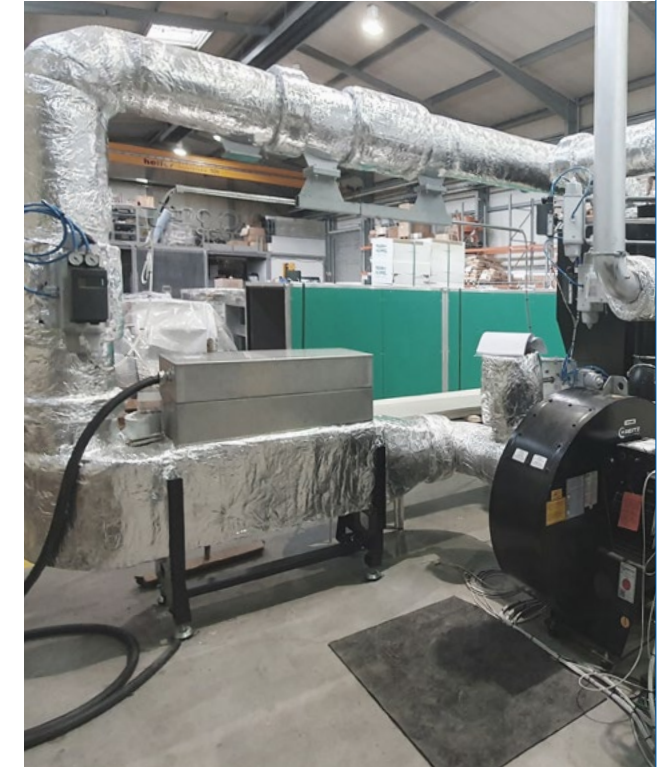
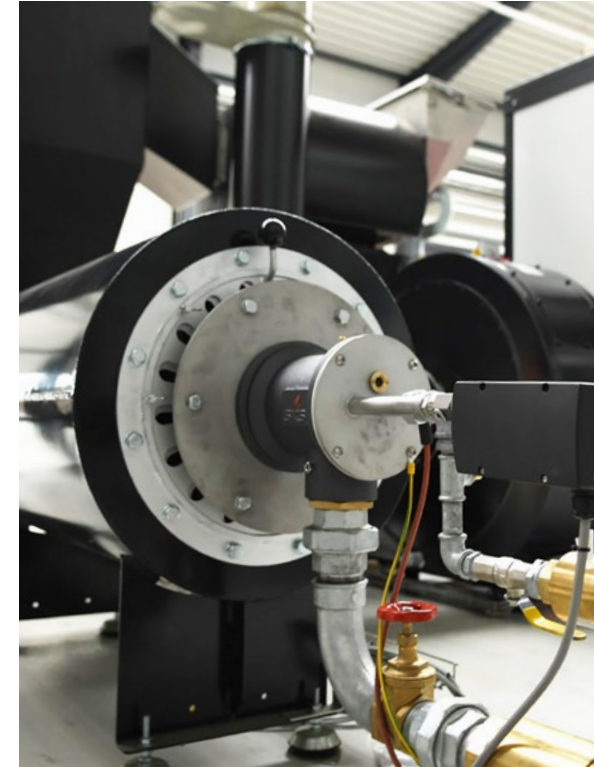
BE GREEN by NEUHAUS NEOTEC: Energy-Efficient Innovations for the Coffee Industry

NEUHAUS NEOTEC is revolutionising the coffee roasting industry with green and energy-efficient innovations. As a pioneer in the electric heating of roasting air, the company focuses on alternative energy sources and sustainable technologies. With the “BE GREEN” initiative, NEUHAUS NEOTEC underlines its commitment to the environment and the future of coffee roasting.

At NEUHAUS NEOTEC, we focus on energy efficiency and the use of green energy sources in coffee roasting. Our company was a pioneer in the electric heating of roasting air and was the first roasting plant manufacturer to implement an electric roasting machine for high production volumes in the United States. With the “BE GREEN” initiative, we have introduced several energy concepts that are now part of the NEUHAUS NEOTEC portfolio. We offer various energy sources for our roasting plants: conventional burners for liquid and natural gas, hydrogen burners and electric heating coils. The latter energy option is becoming increasingly attractive to our customers, as the exhaust gas treatment is much simpler. Since no combustion takes place during heat generation, there are virtually no emissions. Only the emissions from the roasting reactions in the coffee beans require post-treatment. Although the infrastructure for large-scale electric or hydrogen power plants

is not yet available everywhere, alternative energies are gaining political and economic importance. **The development of solar and wind power is making steady progress. New technologies are making it easier for companies to produce their own electricity and use it cost-effectively for their own needs.** Intelligent energy management enables the use of different energy sources.

But NEUHAUS NEOTEC sees the “BE GREEN” initiative not only as an opportunity to develop new plants with innovative energy concepts. In recent years, we have developed solutions to make existing plants more energy efficient. For the large roaster series RFB, we have been offering an individual inspection of the technical equipment and optimisation recommendations since 2021. For example, by using a new generation of fans with a modified impeller design, we can reduce electrical energy consumption by up to 30%.



An Exciting Alternative to Conventional Catalysis

NEUHAUS NEOTEC also offers tailor-made solutions to meet the growing global demand for emission reduction. In addition to proven catalytic exhaust gas cleaning systems that effectively oxidise all relevant CxHy compounds at low temperatures, we are constantly developing new process plants for the coffee industry. Regenerative thermal oxidation (RTO) is an exciting alternative to conventional catalysis for large, continuously operated plants because of its low energy consumption and the fact that the cleaning systems maintain their high temperature level during operation with virtually no loss.

With the latest joint venture project for the development of a UV-C cleaning plant, NEUHAUS NEOTEC once again presents itself as a technical pioneer in the industry. The combination of exhaust gas humidification, UV light treatment and activated carbon filtration breaks down harmful exhaust gas compounds at low temperatures and without fossil fuels. With the “BE GREEN” initiative, NEUHAUS NEOTEC has embarked on a forward-looking path. Our goal is to continue to be an important innovation driver in the industry as a global supplier of machines and plants for coffee refinement. ←

Energy-Efficient Evaporation Plants – and the Challenges They Pose

Today, sustainable business is more important than ever. Companies can lay the foundations with their machinery. With its evaporation plants, DEVEX promotes sustainable production processes. The latest technologies, combined with modern processes, promise significant energy savings and represent an environmentally friendly approach.

At a time when energy efficiency and sustainable industrial processes are in the spotlight, technologies to improve evaporation processes are coming to the fore. DEVEX evaporation plants with mechanical vapour compressors demonstrate how innovation can reduce energy consumption and deliver both economic and environmental benefits.

Evaporation plants concentrate liquids by evaporating substances such as water or solvents. They are used in many industries, including food production, chemicals and waste water treatment. However, traditional plants often waste energy and operate inefficiently, resulting in high costs and significant environmental impact. This is especially true for older models that were designed in an era of cheap energy.

Energy efficiency can be increased by using a mechanical vapour compressor in the evaporation plant. This compressor collects and compresses the evaporated water from the evaporation process in order to return it into the process. This saves energy and minimises the need for live steam.



Benefits of these evaporation plants:

Energy saving

Using compressed steam from the medium as a heat source reduces live steam requirements and therefore operating costs.

Reduced water consumption

Less live steam also means less fresh water is required.

Increased capacity

Increased energy efficiency can often lead to an increased production rate without using additional resources.

Environmentally friendly

Lower energy and water consumption minimises environmental impact and reduces the ecological footprint.

The DEVEX advantage

Every DEVEX plant is tailor-made. DEVEX always

guarantees the use of the latest technology. Plants are not only equipped with vapour compressors, but are also specially adapted to the customer's needs. State-of-the-art processes and controls significantly reduce energy consumption. With DEVEX plants, the investment usually pays for itself in a short time.

Conclusion

Evaporation plants with mechanical vapour compressors represent a decisive step towards reducing energy consumption in industrial evaporation processes. In an era of environmental protection and sustainable business, these technologies offer much more than just economic benefits. They are the key to global energy and environmental solutions. Investing in such innovations not only improves your own efficiency and competitiveness, but also contributes to a sustainable future. DEVEX is a competent partner for these technologies and supports customers with extensive know-how. ←

A Brief Portrait: the 1HEIZ Group

The KAHL Group offers its customers solutions for biomass processing. For some years now, we have also been directly active in the biomass sector through our subsidiaries within the 1HEIZ Group.

At its sites in Eberswalde and Calau, Brandenburg, the 1HEIZ Group produces electricity, heat and high-quality wood pellets that generate very little particulate matter when burnt. The wood pellets are produced in an environmentally friendly way, with 1HEIZ using waste products from wood processing. The wood comes exclusively from sustainable forestry. Today, biomass is one of the most important cornerstones of the energy transition. The 1HEIZ Group has therefore qualified as a participant in the voluntary SURE certification system, following the adoption of the European Directive on the Promotion of Energy from Renewable Sources. SURE defines the production of biomass according to sustainability criteria.

The 1HEIZ Group operates biomass power plants with a total rated thermal input of 84 megawatts. These power plants convert the mechanical energy generated by burning wood directly into electricity. **With a turbine output of more than 23 megawatts, they generate around 165 million kilowatt hours of electricity. This means that the 1HEIZ Group can supply up to 60 000 households with electricity.**

The power plants mainly use industrial wood and wood chips from forest residues as well as wood from landscaping and road maintenance as fuel. All the raw materials come from the Brandenburg region. In addition, the power plants supply thermal energy that is used in pellet production to dry the raw material.

At the Eberswalde site, the 1HEIZ Group produces ENPlus quality wood pellets in a plant built by AMANDUS KAHL. For the production of the wood pellets, 1HEIZ uses the flat die pelleting presses from AMANDUS KAHL, with an annual capacity of more than 60 000 tons of wood pellets. ←

www.1heiz-pellets.de



03

Success Stories

Milestone: The First SCHULE Rice Mill in the USA

SCHULE Mühlenbau has recently set another milestone in its long history. Together with its long-standing partner Bratney Companies, the KAHL subsidiary has entered the huge US rice mill market for the first time. The owner-managed Inland Cape Rice Company will rely on SCHULE's know-how and plants in the future – for the benefit of a significantly more efficient production process.



The Inland Cape Rice Company, based in Scott City, Missouri, is the only family-owned rice farm in the USA. Run by health experts, the farm offers nutrient-rich rice straight from the field. The farm is run by owner Sam Schneider. Early on, he specialised in jasmine rice and long-grain white and brown rice. To make production faster and more efficient in the future, Schneider decided to invest in his own rice production facility.

Based on a proven partnership with Bratney Companies in North America – a designer of turnkey plants for industries such as animal feed, coffee, wheat processing, brewing and, of course, rice processing – SCHULE took on the challenge of applying for the project at Inland Cape Rice. With success: The very personal contact from the very beginning, with quick problem solving and decision-making on the part of SCHULE and Bratney, scored points with Sam Schneider and his team. While SCHULE was now supplying the main machines, Bratney was primarily responsible for planning the building and installing the plant. Together, the two companies have developed a compact small mill capable of producing up to 4 tons of quality rice per hour. The plant also performs cleaning, shelling, sorting, grinding, polishing and colour sorting.

The speed with which the project was planned and the plant installed is remarkable. Everything went smoothly from the start of the project in September 2021. After the construction of the building on a "greenfield site", the installation of the mill took place from April to August 2022 and the commissioning took place in October of the same year. This short period is evidence of efficient project management.

In addition, the project was characterised by the uncomplicated and personal consultation of all those involved at all times. Thomas Kock, Area Manager at SCHULE Mühlenbau, recalls with a smile: "Sometimes we had web meetings while Sam Schneider was sitting on one of his harvesters. This shows the straightforwardness and pragmatism that made this project a quick success."

Conclusion

SCHULE Mühlenbau's entry into the US market in partnership with Bratney Companies is an important step for market development in North America. With high-quality equipment, local service and a tailor-made solution for the customer, the Inland Cape Rice Company's rice mill is a symbol of innovation and tradition in rice farming. ←

Up to 30 % Energy Savings with Plants from PRUESS

PRUESS GmbH has become a key supplier to Destilla GmbH's new factory through innovative ideas and high-quality work. What started as an enquiry for an extraction plant resulted in an offer for five plants and plant relocations within a year.

The flavour industry is expanding all the time, and Germany as a location has to prepare for the future in order to keep up. In April 2021, PRUESS GmbH received a seemingly ordinary enquiry: Destilla GmbH needed a new single-stage extraction plant, as the customer was planning and building a completely new factory. During discussions, PRUESS GmbH was able to continuously expand the scope of the order, as the customer had already been provided with high-quality work and innovative ideas in advance and was still being advised. Destilla GmbH's special processes require individual plant development. Their production facilities are fundamentally different from those of other customers worldwide. Findings and elaborations were already recorded in the pre-sales phase. With detailed analysis and solutions, we were able to convince the customer that the PRUESS plants were much more energy-efficient. With this detailed work and innovative approaches, PRUESS achieved energy savings of more than 30% in some areas. Philipp Bockey, project manager at PRUESS, explains: "There is still considerable potential for improvement in this sector, which is becoming more and more important these days, but is not seen in the same way by all competitors. That is why we often bind the customer to us in the first sales conversation and demonstrate our added value compared to the competition. We also differentiate ourselves from the competition at this early stage and provide facts and figures to back up our work."



Strong Partner for Process Engineering

Thanks to this professional approach, Destilla implemented the proposed measures and selected PRUESS as the main process engineering partner for the new plant. PRUESS is not only responsible for the relocation of the plants, but also for the integration of new and existing plants into the new building. **This is a challenging task as it requires excellent time management and precise schedules to keep production losses to a minimum. Such comprehensive planning allows problems to be identified at an early stage and installations to be managed efficiently.** The precise schedule provided to the customer clearly shows the order in which the plants must be built and relocated in order to minimise production downtime.

Most Modern Plant of its Kind Thanks to Optimal Overall Coordination by PRUESS

PRUESS GmbH has proven its outstanding expertise in process engineering as well as excellent project management and communication. In addition to technical design, the overall coordination of large projects is one of the core competences of PRUESS GmbH. Destilla GmbH's confidence in the PRUESS staff goes so far that the overall coordination of the new factory construction in the area of control technology and process engineering has been placed in the hands of PRUESS GmbH. "Our aim is to build plants that are absolutely 'state of the art'", says Bockey. The new plants and the factory under construction will be among the most modern of their kind in the world. Destilla GmbH is striving for further growth, and this new building is a decisive step in this direction. ←

04

Employee Portraits

Bernd Ottlinger

Bernd Ottlinger has worked for AMANDUS KAHL in Reinbek, near Hamburg, for 41 years. In this interview he explains what keeps his passion alive and what is crucial in sales.

Mr Ottlinger, you have been working for KAHL since 1982, mainly in sales. Such a long tenure with one company is rare these days. Why have you remained loyal to the company for more than four decades?

In the past, if you felt comfortable in a company, you stayed there for life, at least in this country. At KAHL, people still stay with the company for a long time. This is certainly due to the diversity of the company. We are active in many different industries, such as the sugar industry, the compound feed industry, recycling, chemical plants and many more. Each of these industries has its own processes. If you want to sell something, you have to understand at least some of these different processes. It never gets boring and remains a constant challenge.

Many also change jobs in order to broaden their horizons in a different company. Hasn't that played a role for you?

There are many exciting things to learn and experience at KAHL, so your horizons are constantly being broadened. We are active in many countries and you can get around the world quite a lot with good knowledge. In addition, there are many interesting colleagues at KAHL who are a pleasure to work with.

You have experienced a lot in your long time with the company. Are there any particularly memorable moments?

For a salesperson, there is nothing better than closing a deal that the team has been fighting for. You have to deal with competition and sometimes difficult price negotiations. You have to explain the technical advantages of our machines and plants in a way that is easy to understand, and often the offer has to be adapted several times to the customer's individual needs. Negotiations can go on for months. When you finally close the deal, it's a very nice moment. I've had a few of those.



“A good sales manager must be a trainer and motivator”

Bernd Ottlinger
Deputy General Sales Manager at AMANDUS KAHL

Which deals are you particularly proud of?

One highlight was the development of the FIBEX technology together with British American Tobacco. We developed a process together with the customer, tested it first in our factory and then in theirs, then commissioned a pilot plant in Bayreuth and finally carried out a roll-out in 2005 – first in Europe, then worldwide. Today, we have 65 extruders in operation at BAT and generate a significant spare parts business.

What is FIBEX technology used for?

Tobacco residues that cannot normally be used in a cigarette are processed into a fibre that can be incorporated into the cigarette. Our process does not require any binders: The fibre is produced using only water and steam, a purely thermo-mechanical processes.

What makes a good sales manager?

A sales manager deals with people and sales. Both can only be partly learned as a certain degree of natural talent is required. At KAHL, you should also understand our technology and our processes – at least to the extent that you can explain them well and plausibly to customers. Of course, you also need to be able to put yourself in the customer's shoes.

Doesn't that apply to all salespeople?

Of course it does. Salespeople need to enjoy dealing with people and be sociable, but at the same time they need to be goal-oriented when working on an order. On the one hand, you have to be decisive, and on the other hand, you have to make the customer feel comfortable during the conversation and the purchase. Finally, there is the commercial and legal side, which determines how a transaction is handled and secured.

What exactly does a good sales manager have to master?

The sales manager has to find employees who he is convinced will one day master it all, and he has to help them learn. So he has to be a good trainer. Also a motivator who can keep the team's spirits up when it counts. This works best when everyone enjoys their work and knows what they are capable of – that is the only way to keep a team successful in the long term.

Has selling changed over time?

It has become even more demanding and lengthy. In the past, a handshake was often enough; today, contracts often have to be drawn up with the help of lawyers. And the business has become more global: in the past, many competitors were based in Europe; now they are in China and all over the world.

What is the best way to attract customers to AMANDUS KAHL products?

That varies from market to market. The high quality of our products and their long service life are important. Then there is reliability, which applies not only to the product but to the entire plant. A pellet press is not a coffee maker: It's not enough to pour in the ingredients and press a button, you have to know something about the whole process. For KAHL, reliability also means helping customers to understand this process and supporting them during machine commissioning and new challenges. Our service gives customers the assurance that they have made the right decision in choosing KAHL machines.

What advice would you give to future salespeople to help them become successful salespeople?

Stay curious and willing to learn. Learn to understand how things work; to explain them, but also to help improve them. Salespeople are also ambassadors for the customers in our company. It is only through feedback from the markets that we learn what the companies need. This is the only way we can adapt to the markets and further develop ourselves and our technology.

What are your wishes for the future?

A lot of innovative power. KAHL is a centipede on the move with very different products in many different markets. We want to stay that way. Markets change and products need to be developed. You have to be flexible all the time. When I joined KAHL in 1982, the company was heavily dependent on the sugar and compound feed industries. In recent years, we have been pelleting a lot of biomass, mainly refining wood waste into fuel pellets. At the moment, the focus is increasingly on the recycling sector. This changes all the time, but if you are flexible and come up with brilliant ideas for machines and processes at the right time, you will continue to be successful and grow.

What role do employees play?

A crucial one. To come up with great ideas, you need people who have been with the company for a long time and have learned a lot, because the ability to innovate also comes from knowledge of the past. You need staff who know what we have tested before, where there have been successes, where and how we can build on them. The company is underpinned by this knowledge, which we have accumulated over decades.

Which machine is your heart beating for?

I can't decide. But I can say which machine is the most important for the company: It is still the pellet press. We live from and for the pellet press.

Why is that?

We have a good and reliable spare and wear parts business for our pellet presses, which produce around the clock for our customers in a wide range of industries worldwide. We manufacture the spare and wear parts ourselves at our factory in Reinbek and achieve a high level of customer loyalty through quality and readiness to deliver.

This also applies to other key machines in our product range, such as the annular gap expanders, extruders and crushing roller mills. ←

A Salesman: Bernd Ottlinger

- *October 1982: First student trainee at AMANDUS KAHL. Studied industrial engineering at the Elmshorn Business Academy and at the same time completed internships at KAHL in all departments (including training workshop, apparatus engineering, assembly, accounting, design, project processing and sales).*
- *1986: Started work in the sales department of KAHL, especially for the Southern German and Austrian markets.*
- *1989: Takeover of further markets: Switzerland and Hungary*
- *1995: Deputy head of sales department 3. Sales area: Germany, Scandinavia, Baltic States, Poland, Hungary, Romania, Bulgaria, Yugoslavia*
- *1997: Sole sales manager and authorised representative for sales department 3 and technical customer service*
- *2017: Takeover of sales department 5 (special products such as pharmaceutical raw products, chemical products and waste in the USA and Canada) and deputy sales manager of the entire company*

Alexander Bach

Alexander Bach has been working at SCHULE Mühlenbau in Reinbek near Hamburg for 13 years and has been Head of Design for two years. In this interview he gives an insight into working life at SCHULE.

Alexander, how did you come to work for SCHULE?

Through a headhunter. At the time, I was working for a special machinery company in Lüneburg and the headhunter noticed me. SCHULE invited me to an interview. Afterwards, I said: "OK, I'll change jobs".

What was your background?

Secondary school, training as an office information electronics technician, technical secondary school, military service, cooperative study of mechanical engineering – i.e. training as an industrial mechanic and studying mechanical engineering at the same time – and since then I have been working. I have been at SCHULE since May 2010.

What awaited you at SCHULE?

I was headhunted into the company to develop the Drum Groat Cutter (TGS). This machine cuts hulled oats, rye and similar products for the production of baby flakes. My job was to rebuild the TGS, which had existed in the company since the 1950s, but for which there were practically no blueprints, and bring it up to date. The background was that SCHULE wanted to serve the oat market more strongly again. To do this, the company needed its own machine for the core processes.

When did you present the new TGS?

After about a year. It was the first machine I taught to run. We gradually developed the TGS based on customer feedback. At the same time, I worked on other machines, such as whitening machines. In the meantime, I have got to know practically every one of our machines.

What projects have you been responsible for?

In 2015, we developed the TGS 3000. It has a much higher capacity. It does not have a bigger motor, it has bigger perforated drums with 7200 holes instead of the previous 6000. But we have also worked on getting the grain into the holes better and increasing the capacity per hole. In particular, we have changed the buckets and the product guide. The number of holes alone would not have allowed us to make the leap in capacity.



"Teamwork is the key"

Alexander Bach
Head of Design at SCHULE Mühlenbau

Which projects in other areas were particularly close to your heart?

The introduction of Product Data Management, or PDM for short. It was not easy to get our data into this system. The PDM should reflect the entire process: from planning at KAHL and at our company, the common interfaces, the technology and the management of the data. Sometimes fields are overwritten alternately, so solutions had to be found. The PDM covers the whole group, so it has to be correct for the whole group. It is now working, but it still needs to be maintained and optimised.

You have been Head of Design since 2021. What do you do there?

One of my tasks is to teach new people about mechanical engineering in the mill sector. Because when they come to us, they usually have no idea about mill construction, about the processes, the procedures in our company and our machines. We often have people who have never designed a machine themselves. It all takes time.

How long does the on-the-job training usually take?

It usually takes three to six months to be able to design machines. Then he or she is familiar enough with the PDM and the SAP systems to be able to do something. Of course, speed is still an issue. It takes almost two years before someone is responsible for a product. But then the mechanical engineers and designers know the machines from front to back, as well as the processes around them. →

Are designers responsible for a specific machine?

I want one person to be responsible for a particular product group and for everything that crosses his or her desk in relation to that product group. In the past, there were constant changes and the know-how for the further development of the products was not gathered or was lost. On top of that, there are a lot of things that we have to regulate depending on the order. For example, sensors, fluidised-bed dryers and coolers, some of which we design ourselves and some of which we buy in. This shows that process engineering is becoming more and more part of the design.

What is the biggest challenge in your daily work?

The many different requirements of our machines, also due to our international customers who manufacture different products for different target markets.

Describe SCHULE in 3 words.

Flexible, solution-oriented, reliable. – We adapt to our customers and look for a solution that makes sense for them, both technically and economically. And we always try to be very reliable and execute the orders quickly.

Can you give us an example?

Sunflowers, for example. The baker wants nice, whole seeds to sprinkle on the bread. The oil miller, on the other hand, does not want whole seeds, but crushed seeds so that the oil can be extracted. This results in completely different requirements for the same machine.

What distinguishes SCHULE Mühlenbau from its sister companies in the KAHL Group?

I don't see any major difference, except that we are the smaller company and a bit more pragmatic. For example, we take over the tasks of colleagues who are absent. We support each other.

Are there interfaces with the other members of the Group?

We help each other. There are also smaller joint customer projects. We are about to start a larger, more permanent project for the production of meat substitutes: That's where we process the peas and beans.

Table selector, impact huller or drum groat cutter – which team do you belong to?

I don't have a favourite. The machines only work together. When I started in 2010, the first complete plants were being delivered. This development has continued. You need a wide range of machines to process grain. I would like us to produce more of them ourselves: de-awners, closed circuit husk separators, flaking roller mills, for example. Each machine has its own challenges, and new products made on it add more. There's no room for boredom.

What are your personal wishes for the future?

That we buy fewer machines and develop more ourselves, and that we become faster in the process. ←



Christoph Markmann: Salespeople Become Influencers

Christoph Markmann is sales manager and authorised signatory at DEVEX in Warendorf near Münster. In this interview, he talks about his job, changes in sales and the future of extraction, evaporation and drying.

Christoph, what is your daily routine like?

The nice and exciting thing is that I don't really have a routine. I talk to suppliers and customers, process enquiries, create quotations, prepare exhibitions and negotiate contracts – it's a wide range of activities. Half of my day is usually planned, and the other half usually comes up on the day.

What fascinates you about DEVEX?

DEVEX is a relatively young company, but it has a lot of know-how, enormous potential and a promising portfolio. I am also fascinated by the fact that no two plants are the same: each one has to be designed individually for each customer. In addition, there are numerous applications in different industries where our plants can be used. I'm really keen to increase this potential.

What are the DEVEX's strengths within the KAHL Group?

As we do not think in machines but in plants, DEVEX is unique within the KAHL Group. There are only a few standards for the configuration of the plants, but the focus is on the tailor-made solution for the customer. We reinvent ourselves for each plant. We are always at the cutting edge when it comes to innovation and efficiency. This flexibility in finding the best solution for the customer is probably our greatest strength.



“Our plants are designed for maximum efficiency”

Christoph Markmann
Authorised signatory at DEVEX

What has been your most important project to date?

The sale of several freeze driers to a customer in Kazakhstan. The challenge was both the size of the project and our entry into the Central Asian market. I was more of a team manager in the background, coordinating things, preparing quotations and contracts and making sure that the local team had all the information and tools they needed to close the deal.

What are the main challenges for DEVEX?

We are well positioned with our portfolio, particularly in the food industry. We are benefiting from two main trends: the growing global population and the trend towards a more natural diet. The use of natural substances for alternative foods and meat substitutes is increasing. So our extraction, concentration and drying plants will continue to be in high demand.

What role does sustainability play?

All processes need to be as efficient as possible. Ideally, energy, raw materials and other product components should be fully utilised and processed. The quest for sustainability plays into our hands because our plants are designed for efficiency and reliability. ----->

What qualities do you need most to be successful in sales?

It is a common belief that a salesperson has to be good at talking a lot. Rhetoric is certainly not unimportant, but talking a lot does more harm than good. A successful salesman listens to the customer and asks the right questions to fully understand the customer's needs. A successful saleswoman is an intermediary between the customer and the internal team. It often takes fewer words than you might think, but all the more listening and empathy for both parties.

How is sales changing?

Sales processes are becoming increasingly complex. On the one hand, this is due to stricter norms and hygiene standards. On the other hand, digitalisation: the desire for a digital twin of a plant, for example, is increasingly influencing the purchasing decision. It remains to be seen what role AI will play in the purchasing process. To keep up with all these developments, we need to stay one step ahead and help set the standards. Salespeople will also become influencers – even more so than they are today.

Is customer advice becoming more important?

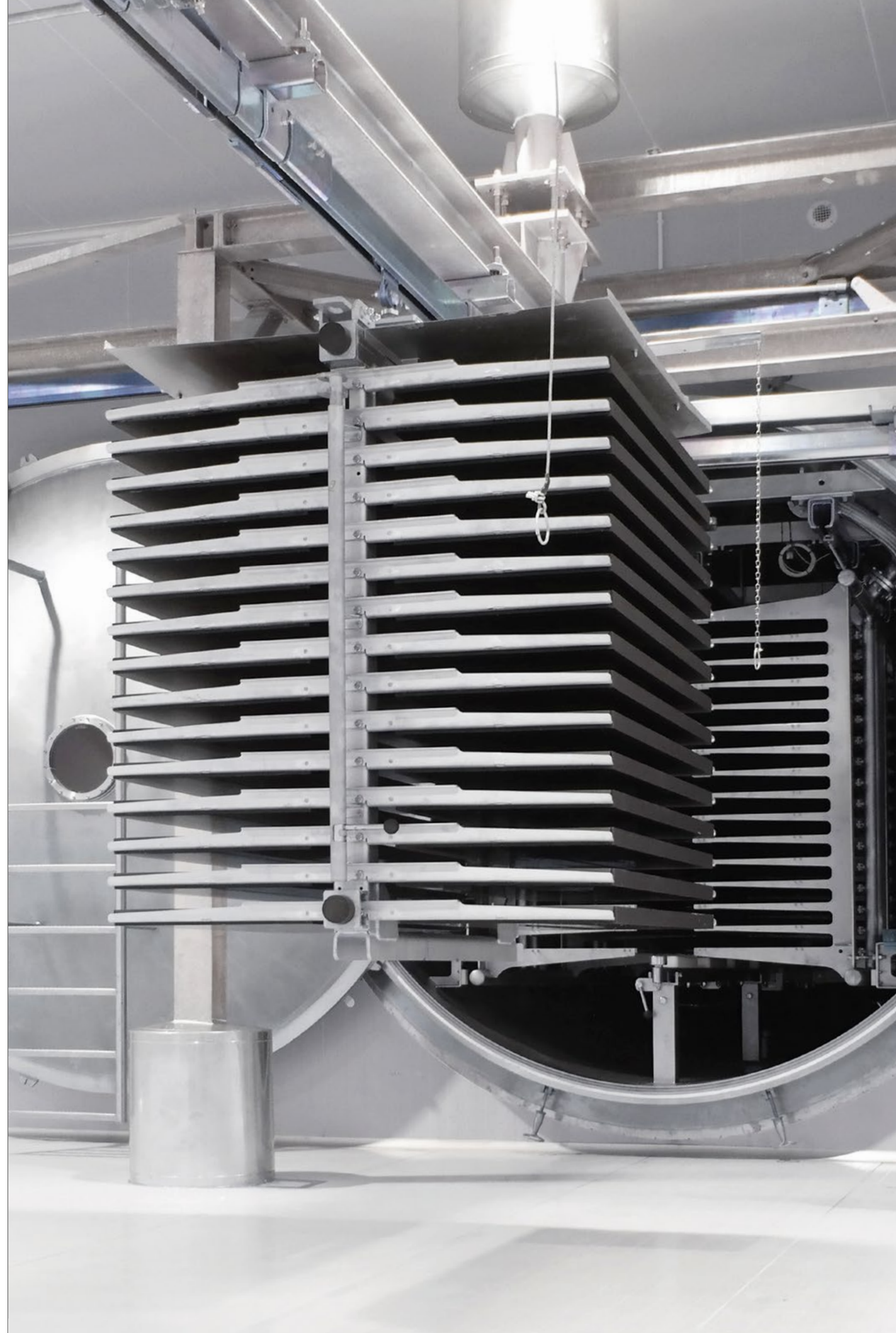
Absolutely. The process know-how of many customers is decreasing, so they want to transfer the risk to the suppliers. Sales will therefore become an even more important interface and, despite all the digital tools, will have to invest more capacity in good customer advice.

Extraction, evaporation or drying – what are you most excited about?

All three. Each has great potential and we want to offer our customers the best solution in each. ←

Christoph's career

- *Dual study programme in mechanical engineering with parallel training as a technical product designer for white goods*
- *Master's degree in mechanical engineering*
- *Worked for a large plastics processing company in southern Germany*
- *Most recently head of department for product management and application technology for a business unit*
- *Joined DEVEX in Warendorf at the beginning of 2020, initially as Business Unit Manager*
- *From 2021, head of sales*
- *From 2023, authorised signatory and member of the Management Board*



Philipp Bockey

In the spotlight today: Philipp Bockey, Project Manager and Sales Engineer at PRUESS GmbH. Read our profile to find out how his career started, which projects he has been involved in and which tasks he finds particularly exciting.

Your name: Philipp Bockey

Born on: 23 April 1991

Your position:

Project Manager and Sales Engineer

What's your favourite food or drink?

I don't really have a direct favourite food, but I'm a big fan of seafood and fish. I can name my favourite drink pretty clearly: Skiwasser, whether raspberry or elderberry (laughs). I cannot understand at all why this drink has not yet spread from Austria to other parts of the world.

Hobbies: My friends and my family are of course very important to me, as is my job, which I enjoy very much. I am also very enthusiastic about sport, I am interested in many sports and I read and consume a lot in this field. I'm also active myself, playing football and table tennis in a club, and you can often find me on my gravel or mountain bike. In winter, I also like to go skiing. Unfortunately, I have to cut back a bit this year due to an injury.

What will PRUESS be in five years?

We need to continue to grow and establish ourselves in the market over the next few years. As Mr Wildförster said last year, together with Devex Verfahrenstechnik we want to become the world's number one in thermal process engineering and I believe that both companies together have the potential to achieve this.

The three most important things in your life:

Firstly: friends and family, especially my girlfriend
Secondly: health
Thirdly: motor sports, football, skiing and cycling.

Education and studies:

I did my A-levels in my home town and then studied mechanical engineering at the University of South Westphalia in Soest, specialising in plant and process engineering. I wrote my Bachelor's thesis while working. I also worked as a student trainee for two years and started my Master's degree at the same time. But since my employer at the time wanted to sign me up sooner rather than later, I accepted an offer and didn't finish my Master's degree, or didn't have to (laughs).

Summer or winter?

To be honest, at our latitude in East Westphalia I couldn't care less, but if I had to answer the question about a holiday, it would definitely be a winter holiday in the mountains. I'd give up any summer holiday for that. So my answer is: winter!

Extraction or evaporation – and why?

Definitely evaporation! These plants can be designed in so many different ways and there are so many things to consider if the customer wants more than just the design for a single substance. I am also fascinated by the fact that so much about these plants is simply based on experience and it is almost impossible to write it all down. You just have to gather that experience and take it into account for future plants.

Which moment at PRUESS do you remember best?

It was very nice when a customer placed an order with us, knowing that our plants were more expensive than those of our competitors in that case. But we convinced them of the quality of our work and our commitment, and we were rewarded for that. For me, this is the most important and best confirmation of the work I invest.

What are you passionate about?

Professionally, I would say planning and designing a bespoke plant with a customer on a blank sheet of paper. Privately, there are a lot of things, but mainly I would say endurance racing in motorsport. But that answer is based on what my better half says, because she is often out of the picture for 24 hours at a time (laughs).

How did you come to work at PRUESS?

I was very unhappy at my old company, but I enjoyed the project work in this area, so I looked around for alternatives and heard a lot about PRUESS and applied there. I was seen and accepted as a great asset to the small team.

What are the major challenges in your position?

For me, customer satisfaction is the top priority, that we meet all their requirements to their full satisfaction. For me personally, it is also very important that the production department is happy to work with the plant afterwards. It is also important for me to have a good relationship with the suppliers who can deliver our quality. But of course we at PRUESS have to calculate the projects reasonably and also make money from them. It is certainly a great challenge to balance all this at all times.

Who would you like to read about next here?

Robert Unkenholz! But one question should be that he has to tell some funny anecdotes from his career so far, believe me, it will be an article worth reading. ←



In which department do you work?

We at PRUESS GmbH are still relatively small, so I wouldn't say that I work in a specific department. I am responsible for sales, project management, process engineering, processing and also EI&C. Our boss likes to call me an all-rounder. So I would just leave it at that.

Why do you like working at PRUESS?

As we are still a very small company, we can actively participate in all kinds of decisions. I also have all the freedom I need to implement and execute projects, as long as the results are right. It is a big responsibility, but also a lot of fun.

What do you like best about your current position?

I can accompany the customer and the project from enquiry to assembly and finally to commissioning, and I can contribute my ideas at any time in parallel with the customer's requirements. We can also discuss things together.

Which project you were involved in do you remember best?

Actually, I have positive memories of all the projects I have ever supervised and implemented in Indonesia because it was so much fun working with the customer and so many things happened on site that were funny. Sometimes you shake your head because it is simply a different world. But the bottom line is that it was always great and the customer and the country are incredibly likeable.

05

**Guest
Contributions**

At the Heartbeat of the Processes

Smart sensors are the basis of Industry 4.0. Endress+Hauser supports its customers by making sensors smarter in many cases: by integrating functions for diagnostics, verification and monitoring. This even enables predictive maintenance.

According to a study by AI specialist Senseye, large industrial plants lose an average of 323 hours of production time per year. The average loss due to downtime is US\$170 million per plant. So it's no wonder that three out of four companies have made predictive maintenance a strategic goal. The basis for this is provided by smart sensors.

On the way to the Smart Factory, companies face a number of questions: How can a plant operator know in time that a process is not running smoothly or that there is a problem with a piece of equipment? How can product quality be ensured, safe measurement operations maintained and process interruptions avoided? "This is why Endress+Hauser has developed Heartbeat Technology," explains Daniel Persson, Process & Portfolio Manager for Innovation. It is integrated in a wide range of instruments for flow, level, pressure and temperature measurement, as well as for liquid and gas analysis. With Heartbeat Technology, field instruments monitor themselves and even detect changes in the process. "This allows for reliable detection of anomalies and timely implementation of corrective measures."

The technology is based on signals that field devices capture in addition to the primary measured value. These signals are used for different diagnostic, testing and monitoring functions. This has several

advantages: It improves the reliability and safety of measurements, increases the efficiency of measurement operations while complying with regulations and, last but not least, avoids unexpected downtime and increases productivity.

The basis of Heartbeat Technology is Heartbeat Diagnostics: With up to 97% coverage, instruments continuously check themselves in the background and report their status. In the event of instrument failure or process disturbance, they provide clear information on what is happening and what needs to be done next. All diagnostic information is classified in a uniform and standardised way according to Namur NE107. The safety of the measurement is also increased and the required safety levels are maintained for longer.

With Heartbeat Verification, instrument performance can be verified at the touch of a button without interrupting the process. Among other things, it automatically checks that instrument components still maintain their original reference values and indicates the presence of specific system faults that could affect instrument or process performance. The verification concept is traceable in compliance with ISO 9001 and certified by an external authority. "Self-diagnostics and verification improve process performance and enable optimisation of calibration and test intervals," says Daniel Persson.



Daniel Persson
Process & Portfolio Manager
at Endress+Hauser



Dozens of Applications

Even more can be deduced from sensor signals, such as whether demanding process conditions are adversely affecting the instrument. Typical examples include corrosion or abrasion of sensor components, the appearance of foam in a tank or build-up on the sensor surface.

"Heartbeat Monitoring functions detect these factors and convert them into easy-to-understand information about the instrument and the process," explains Daniel Persson. By observing these parameters over time, plant operators can reliably and promptly identify undesired deviations. "There are now close to 40 applications across all measurement parameters and technologies for condition monitoring for process optimisation or predictive maintenance," he adds.

→ Flow

Coriolis flowmeters detect the presence of corrosion by analysing the vibration behaviour of the measuring tube. They also use oscillation damping to detect the formation of deposits and can identify inhomogeneities in process media, such as gas inclusions. Magnetic-inductive instruments analyse the electrical conductivity within the measuring tube and can also detect the formation of deposits. Ultrasonic sensors, on the other hand, detect deposits based on signal strength and the acceptance rate of inhomogeneities in the medium.

→ Pressure

Differential pressure transmitters monitor signal noise during operation to detect process anomalies—for example, whether a differential pressure line is clogged. →

If a defined threshold value is exceeded, the instrument signals the need for maintenance. Loop diagnostics detect increased measuring circuit resistance due to leakage currents from corroding terminals or a decreasing voltage supply. Freely definable pressure and temperature limits can provide information on undesired dynamic pressure surges, faulty trace heating or insulation.

→ **Level**

Radar level meters use the relative echo amplitude to determine whether and how much foam has formed on the liquid surface. When a certain application-specific limit is reached, a signal can be sent automatically to activate the sprinkler system to reduce the foam level. This optimises the dosage of defoaming agents. In addition, a build-up of deposits on the radar antenna can be detected, for example, to control demand-oriented compressed air cleaning. Radiometric measuring instruments calculate the expected operating time of the radiation source and the remaining time of the photomultiplier based on its activity. Limit switches detect corrosion, abrasion and build-up on the vibrating fork based on the fork frequency.

→ **Analysis**

Analysis sensors (pH, ORP, disinfection, dissolved oxygen, turbidity, photometry and conductivity) and samplers calculate a sensor condition index and key performance indicators to help operators increase measuring point availability and optimise plant maintenance. The sensor or instrument condition index can also be used to identify sensor ageing.



Insights: Heartbeat Technology from Endress+Hauser provides information about the condition of an instrument and helps to optimise processes

→ **Temperature**

With the Endress+Hauser self-calibrating thermometer, the deviation between the temperature reference and the RTD sensor is recorded and stored in a memory. This allows deviations over time to be recorded and trends to be identified. A message is output when a pre-defined limit is reached.

More Functionality through Networking

Most of the functionality of the Heartbeat Technology is accessible from the instrument. However, the full potential is unlocked when field devices are integrated into the plant infrastructure or even connected to the cloud. "In a networked environment, not only are tasks performed more efficiently and conveniently, but additional functions are also available, such as generating a verification report and monitoring Heartbeat Technology parameters," says Persson.

www.endress.com



70 Years of Endress+Hauser

Endress+Hauser celebrates its 70th anniversary this year. The roots of the company were laid in 1953 by the Swiss engineer Georg H. Endress and the German Ludwig Hauser, head of a cooperative bank, in a private flat in Lörrach: Endress, who was 29 years old at the time, saw the potential of the new electrical measuring technology – until then, filling levels had to be read off laboriously or measured by hand. The experienced banker managed the company carefully and steered it through its turbulent early years.

Endress spent four decades at the helm of the company, opening up new markets and new areas of activity. In 1995, he handed over the helm to his second eldest son, Klaus, who continued his father's work but also put his own stamp on the company. Matthias Altendorf took over as CEO in 2014. In particular, he is driving forward the issue of digitalisation: in the products, in the interaction with customers and in the business processes.

Today, Endress+Hauser is a leading supplier of measurement and automation technology for process and laboratory applications. With 15000 employees, the company generates sales of 2.9 billion euros. The family-owned group pursues a long-term strategy that combines profitability with ecological and social responsibility. "The process industry has the potential to be a driving force for positive change through its efforts in the areas of energy transition, sustainability and resource consumption," said CEO Matthias Altendorf at the Global Forum in Basel, which was attended by some 850 customers from around the world to mark the anniversary in June. ←

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